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Estimated Discard and Catch of Groundfish Species in the 2014 US West Coast Fisheries

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Executive Summary

The primary objective of this report is to estimate fishing mortality of groundfish species in U.S. west coast fisheries during 2014 and evaluate mortality estimates relative to Annual Catch Limit (ACL), Acceptable Biological Catch (ABC), and Overfishing Limit (OFL) harvest management goals. These management goals are published in the federal groundfish regulations for selected groundfish species (50 CFR 660 Subpart G, 78 FR 580). Based on a recommendation from the Pacific Fishery Management Council's (PFMC) Scientific and Statistical Committee (SSC), we present groundfish mortality estimates by species, whenever possible (PFMC 2014b). Our primary findings include:

- Estimated fishing mortality exceeded 2014 OFL harvest goals for a single groundfish species or complex: California scorpionfish – south of 34°27' N. latitude (103% of OFL). The California recreational fishery contributed approximately 98% of this mortality.

- Estimated fishing mortality of three additional groundfish species was above 80% of ACL: petrale sole (91%); sablefish, north of 36° N. latitude (88%); and black rockfish, south of 46°16' N. latitude (86%).

- Of the eight PFMC-defined rebuilding or rebuilt groundfish species, three (darkblotched rockfish, petrale sole and widow rockfish) increased in ACL percentage from 2013 to 2014.

- Twenty-eight FMP-listed groundfish species or complexes (67%) had fishing mortality estimates which were less than 50% of 2014 ACL harvest goals.

- Fishing mortality estimates for all groundfish combined were lower in 2014 relative to 2013 in the non-hake IFQ trawl, non-nearshore fixed gear, open access California halibut, non-tribal shoreside hake, and Oregon recreational fisheries (Somers et al. 2013). All other sectors showed an increase in overall groundfish mortality relative to 2013 levels.

- A nearly equal proportion of groundfish species or complexes increased (51%) as those that decreased (49%) in estimated fishing mortality from 2013 to 2014.

Summaries of 2014 catch from the following groundfish fishery sectors are included:

Commercial -

- Shore-based Individual Fishing Quota (IFQ) Program*****
  - Limited entry (LE) trawl permits – fishing bottom trawl gear
  - LE trawl permits – fishing fixed gear
  - LE trawl permits – targeting California halibut with bottom trawl gear
  - LE trawl permits – targeting Pacific hake with midwater trawl gear
- At-sea Hake Co-op Programs*****
  - Pacific hake catcher-processor (C/P)
  - Pacific hake mothership catcher- vessel
- Open access (OA) bottom trawl - targeting California halibut*****
- OA fixed gear nearshore (Oregon/California)*****
- Fixed gear LE sablefish primary season (tier endorsed)*****
- Fixed gear LE non-primary sablefish (non-endorsed and daily trip limit sectors)*****
- Fixed gear OA daily trip limit*****

Exempted fishing permit (EFP)

Tribal –

Shoreside hake

At-sea hake

Non-commercial –

Recreational (Washington/Oregon/California)

Research

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

Commercial -

OA pink shrimp trawl – Washington/Oregon/California*****

OA bottom trawl

Other gear groups - not trawl, pink shrimp trawl, or fixed-gear

Fixed gear targeting non-groundfish

***** indicates sectors that use federal observer data

Data Sources

Data sources used to estimate groundfish fishing mortality include landing receipts (fish tickets), onboard observer data, recreational catch, research catch, and discard mortality rates.

Fleet-wide landing receipts (a.k.a. fish tickets) are the cornerstone of retained catch information for all shoreside sectors of the commercial groundfish fishery on the US west coast. Fish tickets are trip-aggregated sales receipts issued to vessels by fish-buyers in each port for each delivery of fish. They are provided to fish-buyers by a state agency and must be returned to the agency for processing. Fish tickets are designed by the individual states. Washington, Oregon, and California each have a slightly different fish ticket format. Each state conducts species-composition sampling for numerous market categories reported on fish tickets. Market categories represent either a single species or a mixture of species. Fish ticket and species-composition data are submitted by state agencies to the Pacific Fisheries Information Network (PacFIN) regional database, which is maintained by the Pacific States Marine Fisheries Commission (PSMFC). For analytical purposes, the percentage of weight of each species within market categories obtained from species composition sampling was applied to the fish ticket data used in our analyses. Landed weights from sampled market categories were distributed to individual species whenever possible.

Fish ticket landings data for the calendar year 2014 were retrieved from the PacFIN database (05-27-2015) and allocated to various sectors of the groundfish fishery as indicated in Figure 1. All additional data processing steps are described in the methods section below. Discard is defined in this report as only catch which is discarded at-sea. Discard at the dock is coded in PacFIN fish ticket landings data and is thus accounted for in landing weights in this report. Landing weights are presented in round weight (complete weight as caught, prior to any dressing), as any conversion factors (e.g. for at-sea processing) have already been applied by state agencies or in PacFIN.

Discard estimation focused on commercial groundfish fishery sectors with scientific at-sea observations of discards, conducted by the Northwest Fishery Science Center (NWFSC) Fishery Observation Science Program, Fishery Resource Analysis and Monitoring Division (FRAM). The West Coast Groundfish Observer Program (WCGOP) and the At-Sea Hake Observer Program (A-SHOP) observe distinct sectors of the groundfish fishery. The WCGOP observes a number of different sectors of the groundfish fishery, including IFQ shore-based sectors, limited entry and open access (OA) fixed gear, and state-permitted nearshore fixed gear sectors. The WCGOP also observes

several fisheries that incidentally catch groundfish, including the California halibut trawl and pink shrimp trawl fisheries. WCGOP data from each of these groundfish sectors and fisheries were used for the purposes of discard estimation. Mortality estimates were summarized from the A-SHOP data for the at-sea Pacific hake fishery, including: catcher-processor, mothership, and mothership catcher-vessel. No tribal fishing in the at-sea hake fishery occurred in 2014.

The NWFSC WCGOP program was established in 2001 by NOAA Fisheries (National Marine Fisheries Services (NMFS) (66 FR 20609). All commercial vessels that land groundfish caught in the United States Exclusive Economic Zone (EEZ) from 3-200 miles offshore are required to carry an observer when notified to do so by NMFS or its designated agent. Subsequent state rule-making also requires vessels that fish for groundfish within 3 miles of shore or participate in other state-managed fisheries to carry federal observers when notified.

The WCGOP's goal is to improve total catch estimates by collecting information on west coast groundfish species discarded at-sea. Detailed information on data collection methods employed in each observed fishery can be found in WCGOP manuals (NWFSC 2015a, 2015b). Estimates of observer coverage, observed catch, and a summary of observed fishing depths for each sector can be found at:
http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/sector_products.cfm

The sampling protocol employed by the WCGOP is primarily focused on the discarded portion of catch. To ensure that recorded weights for the retained portion of the observed catch are accurate, haul-level retained catch recorded by the WCGOP observers are reconciled with trip-level fish ticket records. The WCGOP data are linked to fish tickets by fish ticket identification numbers obtained by the observer and are adjusted so that the total trip pounds of retained catch in the WCGOP data equal the total trip pounds on the fish ticket(s). This adjustment is necessary because observer retained catch weight estimates in the trawl sectors often consists of the visual estimate used in the vessel's logbook, while the fish ticket weight is a physical measurement and is legally binding (for more details see: http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_processing.cfm). Additional data processing steps are described in the methods section below.

The A-SHOP has conducted observations of the west coast at-sea hake (a.k.a. Pacific whiting, henceforth referred to as hake) fishery since 2001. Prior to 2001, observer coverage of the west coast at-sea hake fishery was conducted by the North Pacific Groundfish Observer Program. Current A-SHOP program information and documentation on data collection methods can be found in the observer manual (NWFSC 2015a). The at-sea hake fishery has mandatory observer coverage, with each vessel over 38 meters carrying two observers. Beginning in 2011, under IFQ/Co-op Program management, all catcher vessels that deliver catch to motherships are required to carry WCGOP observers.

For all WCGOP, A-SHOP, and PacFIN data, we maintain confidentiality of persons and businesses, as required by the Magnuson-Stevens Fishery Conservation and Management Act (often referred as Magnuson-Stevens Acts or MSA), which is most recently reauthorized in 2007
(http://www.fisheries.noaa.gov/sfa/laws_policies/msa/documents/msa_amended_2007.pdf). NOAA Fisheries guidance recommends, and NWFSC Fisheries Observation Science Program follows, the "rule of three," which states that, "Information from at least three participants in the fishery must be aggregated/summarized at a temporal and spatial level to protect not only the identity of a person or a business, but also any business information."

Each year, a certain portion of the ACL for groundfish species is harvested through research activities. In 2014, research programs that caught groundfish included the NWFSC's groundfish bottom trawl survey, Pacific hake acoustic survey, and rockfish hook and line survey, the International Pacific Halibut Commission's (IPHC) longline

survey, as well as other scientific research permits. All groundfish research catch information was provided to NOAA's West Coast Regional Office (WCR). These data were then summarized by the WCR and included in this report. In this report, the WCR applied depth-dependent mortality rates to research catch of lingcod was applied where depth data was available (PFMC 2014a).

In addition to these data sources, estimates of discard mortality rates were provided by the PFMC Groundfish Management Team (GMT) (PFMC 2014b). The GMT is an advisory body to the PFMC that is comprised of representatives from federal, state, and tribal agencies and is involved in evaluating management performance and alternatives for groundfish fisheries between the U.S. borders with Canada and Mexico. For the purposes of this analysis, the GMT provided discard mortality rates, which estimate the survival of discarded catch, for big skate (new for 2014 data) in trawl sectors only; for sablefish, longnose skate, and lingcod in trawl and fixed gear sectors; for spiny dogfish in hook and line fixed gear sectors only; and for some individual species and major species groups reported in the state-permitted fixed gear nearshore sector (for all discard mortality rates, see Tables A-3 and A-4 or PFMC 2014b). Trawl mortality rates have only been generated for bottom trawl gears and therefore were only applied to discard estimates generated from bottom trawl gear. We assume 100% mortality for all species caught with midwater or pink shrimp trawl gear, because species-specific mortality rates have not been identified for these gear types.

Methods

Discard Estimation Methods Overview

We used a deterministic approach to estimate discard mortality for all WCGOP observed sectors of the groundfish fishery. Observed discard rates for each species were expanded to the fleet-wide level to estimate total discard amount. Because of differences in data availability and management structure among sectors of the groundfish fishery, expansions were applied with minor differences between fishery sectors (see methods below).

The stratification scheme used in this analysis is inconsistent with the sampling design employed by the WCGOP. The overall WCGOP sampling design is based on a stratified multi-stage random sampling. This design-based framework distributes observational effort more evenly coast-wide than simple random sampling, and uses prior information (landings) to improve the efficiency of sampling allocation. Strata employed in this report provide mortality estimates that are relevant to the spatial and temporal structure of groundfish management. The validity of stratification in terms of isolating variance in discard has not been rigorously tested. Until more work can be completed to evaluate which strata (area/depth/season) are most appropriate for discard analyses, broader stratification is often warranted to ensure adequate sample size or to meet confidentiality mandates.

For the first time in this report, in addition to standard error, we have provided the coefficient of variation (CV) of discard ratio for each species (or species group), as another measurement of statistical uncertainty. We calculated the standard error (SE) of observed discard ratio for each fish species, as described in Pikitch et al. (1998). The standard error of discard ratio was then divided by the discard ratio itself to calculate the CV of the discard ratio. Within a given stratum, the CV of the discard ratio of a fish species is identical to the CV of the expanded discard estimate of the given species (Lee 2015). Thus, it can serve as a very informative statistics for discard estimates.

In all cases where an FMP groundfish species grouping, nearshore species grouping, or unsampled catch category was used to compute discard ratios, any retained weights that were recorded by the observer but that did not appear on fish tickets were excluded from the denominator. This was necessary to prevent double-counting associated with differences in the species codes used by observers and processors. For instance, while observers may record rockfish catch at the species level, various species of rockfish are often grouped, weighed, and recorded together on the fish

ticket under a grouped species code (e.g., NUSP = Northern Unspecified Slope Rockfish). When using a single species in the denominator, (e.g., sablefish in the fixed gear fisheries), any retained weights in observer and fish ticket data that share the same species code will match and adjust properly.

Species were defined and/or grouped for this report according to the WCGOP Data Processing Appendix (http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_processing.cfm). A complete listing of groundfish species is defined in the Groundfish Fishery Management Plan (Table A-1 or http://www.pcouncil.org/wp-content/uploads/GF_FMP_Ch1-6_Sept-22-2010_Am23_AM16-5_NMFS_PFMC_FINAL.pdf).

In all tables, (--) was used when there is no actual numeric value (i.e., the species was not caught). Values appear as 0.0 when a value exists but is smaller than the decimal places allotted. A value of NA represents that the calculation is not applicable for a particular species or stratum or that the calculation did not produce a result (e.g., very small values might result in NA from a standard error calculation). Grey shading indicates that values include estimates of both discard and retained catch.

IFQ Fishery Discard Estimation

The IFQ/Co-op managed groundfish catch share fishery operates with a variety of gear types and target strategies, which depend on where catch is delivered and processed.

Catch delivered to shore-based processors (IFQ):

- Bottom trawl: Bottom trawl nets were used to target a variety of groundfish species.
- Midwater non-hake trawl: Midwater trawl nets were used to target midwater non-hake species, such as widow and yellowtail rockfish.
- Pot: Pot gear was used to target groundfish species, primarily sablefish.
- Hook-and-line: Longlines were primarily used to target groundfish species, mainly sablefish.
- LE California halibut trawl: Bottom trawl nets were used to target California halibut by fishers holding a state California halibut permit and a LE federal trawl groundfish permit.
- Shoreside hake trawl: Midwater trawl nets were used to target hake.

Catch processed at-sea (Co-op Program):

- Mothership catcher vessels: Midwater trawl nets were used to target hake. Catcher vessels deliver unsorted catch to a mothership. The catch was sorted and processed aboard the mothership.
- Catcher-processors: Midwater trawl nets were used to target hake. Catch was processed at-sea.

In 2011, the implementation of the IFQ management program resulted in changes to fishing regulations which, in turn, resulted in development of new methods for estimating fishing mortality under the IFQ fishery. For example, in the non-hake IFQ sectors:

- Vessels must carry NMFS observers on all IFQ fishing trips.
- Observer sampling priorities were shifted to focus more on IFQ and rebuilding groundfish species.
- The use of multiple gear types (trawl or fixed gear) were allowed for fishing under a Federal groundfish trawl-endorsed permit, although only one gear type is allowed per trip.
- A limit of one IFQ reporting area could be fished per trip.
- Individual fishing quotas (IFQs) were established for a subset of groundfish managed under the Fishery Management Plan (FMP).

Shore-based IFQ Sectors

Fleet-wide discard estimates for the shore-based IFQ sectors were derived from WCGOP observer data and fish ticket landings data (Figure 1). Fish tickets associated with the IFQ fishery were defined by analysts through an extensive quality control and review process of all available data sources, including those utilized for in-season management. For a description of the IFQ fishery and observer data collection, see: http://www.nwfsc.noaa.gov/research/divisions/fram/observation/catchshares_how.cfm .

IFQ bottom trawl vessels can hold a California halibut bottom trawl permit and participate in the state-permitted California halibut fishery. Limited entry California halibut tows can occur on the same trip as tows targeting IFQ groundfish and were identified at the tow-level based on the use of bottom trawl gear and the following criteria: 1) the target was California halibut and more than 150 lbs. of California halibut was landed or 2) the target was nearshore mix, sand sole, or other flatfish, and the tow took place in less than 30 fathoms and south of 40°10' N. latitude. All IFQ bottom trawl tows that met at least one of the above requirements were analyzed using methods for IFQ discard estimation to reflect the sampling protocol performed by observers on the boat. Tow targets are typically determined by the vessel captain. In this report, as in the previous report, these trips were combined with IFQ bottom trawl to maintain confidentiality.

Observer data from the IFQ fishery were stratified by sector, gear type, and management area to the finest possible level while maintaining confidentiality (Table 1). When sample size was adequate (10 hauls or more per strata) and data confidentiality could be met, we further stratified by season and depth. Records were separated into two groundfish management areas, north and south of 40° 10' N. latitude. Each management area was divided into three depth strata (0-125, 126-250, >250 fathoms). The depth strata used in the present analysis highlight the areas shoreward and seaward of RCA closures relevant in the fishery management framework and provide consistency when evaluating discard or bycatch over time, as depth-based spatial closures change. The fishery was further stratified into two seasonal strata: winter (November-April) and summer (May-October), reflecting seasonal changes in RCA boundaries, fishing effort, and target species (e.g. winter petrale sole). Lastly, observations from tows made by IFQ vessels participating in the LE California halibut fishery were combined with all other observations of bottom trawl gear due to low sample size and confidentiality guidelines.
In 2011, an observer coverage rate of 100% of trips was mandated. However, on rare occasions (e.g., observer illness), tows or sets are unsampled. In some cases, tows or sets may have some portion of unsampled discarded catch recorded in very broad or mixed categories (Table A-2). We used ratio estimators to apportion any unsampled discard weight to specific species within each stratum, based on what was observed in the sampled catch. Values used to calculate the expanded discard weight of groundfish species from each WCGOP unsampled catch category in the 2014 IFQ fishery are presented in Tables 2a and 2b. Discard ratios and expansion factors are presented by area, gear type, season and depth. Only strata with unsampled discard weight are shown.

To obtain the estimated discard weight of a species (W) when the entire haul or set was unsampled, the unsampled discard weight, summed within the stratum, was multiplied by the ratio of the discard weight of the species (summed across sampled hauls within a stratum) divided by the total discard weight of all species in all sampled hauls within a stratum:

$$W = \sum_{p} x_p \times \frac{\sum_f w_f}{\sum_f x_f}$$

where, for each stratum:
W = estimated unsampled discard weight of a given species in a stratum

p = unsampled haul
x = total weight of discarded catch of all species
f = sampled haul
w = sampled discard weight of a given species

In hauls with unsampled catch categories, unsampled discard weight was recorded as non-IFQ species (NIFQ) or IFQ species. Unsampled IFQ species weight could be further categorized into IFQ flatfish (IFQFF), IFQ rockfish (IFQRF), IFQ roundfish (IFQRD) and IFQ mixed species (IFQM) (Table A-2). IFQM included all 2014 IFQ managed species (see Tables A-1, A-2 or 78 FR 579 for a listing of IFQ species in 2014). NIFQ included all fish species encountered that were not designated as an IFQ species in 2014 management. Observers are instructed that IFQ hauls or sets in which they record unsampled categories cannot also contain sampled species that are within the unsampled category to avoid double counting. Rarely, observers are unable to sort discard by IFQ status, resulting in an unsampled discarded catch that contains both IFQ and non-IFQ species (ZMIS). Even less often, entire hauls, including species that would have normally been retained, are discarded at-sea either because of errors (e.g., net rips before landed) or operational considerations (e.g., deliberate release of catch from net before landing because of safety or other concerns). In these instances, the observer records a visual estimate as unsorted catch, included both discarded and retained species (UNST). Very infrequently, haul data fail quality control measures. This first occurred in 2014 for 22 bottom trawl and 32 longline hauls. In these cases, all observer recorded data for the entire trip was ignored and discards were estimated based on known retained values from fish tickets. These and other changes to estimation, discard rates, and management are documented in Table A-5.

To obtain the estimated discard weight of a species (W) in strata that include unsampled categories, the unsampled discard weight, summed within the stratum, was multiplied by the ratio of the sampled discard weight of the species (summed within a stratum) divided by the sampled weight of all species that are included within an unsampled category (NIFQ, IFQFF, IFQRF, IFQRD, IFQM, ZMIS) within a stratum. When entire hauls, including typically retained species, were unsampled (UNST), the same formula was applied, but included both discarded and retained weight for all species. Failed data (FAIL) was estimated using the ratio of discarded to retained for each species, multiplied by the known retained weight from fish tickets to estimate the discarded catch at the trip level. Estimated discard weight of the species was calculated and summed across unsampled categories:

$$W = \sum_{y} \left(\sum_{p} x_{p,y} \times \frac{\sum_{f} w_{f,y}}{\sum_{f} x_{f,y}} \right)$$

where, for each stratum:
W = estimated unsampled discard weight of a given species within a stratum
y = unsampled catch category (either NIFQ, IFQFF, IFQRF, IFQRD, IFQM, ZMIS, UNST, or FAIL)
p = unsampled catch
x = catch weight
f = sampled catch
w = sampled discard weight of a given species

Expanded discard weights of a particular species obtained using the equations above for unsampled hauls or hauls with unsampled catch categories were then added to the sampled discard weight of that species (from sampled catch) within each stratum to obtain the total species-specific discard weight per stratum (Tables 2a, 2b).

Coast-wide landings, sampled discard weight, estimated discard weight, and estimated fishing mortality in the 2014 shore-based non-hake IFQ sectors and the LE California halibut fishery are reported in Table 3a. All mortality rates applied in these sectors are reported in Table A-3. We apply a 50% mortality rate to discarded sablefish and lingcod weight caught by IFQ bottom trawl and LE California halibut trawl sectors. These rates are assumptions made by the GMT and carried over from management under the pre-IFQ LE groundfish bottom trawl sector (before 2011). We apply a 20% mortality rate to discarded sablefish caught by IFQ longline and pot gear. This rate is an assumption by the GMT, previously used in non-nearshore groundfish fixed gear sectors. We apply a 7% mortality rate to discarded lingcod caught by IFQ hook-and-line gear, previously used in nearshore groundfish fixed gear sectors. We also apply SSC recommended discard mortality rate assumptions (previously made for stock assessment purposes) for longnose skate (trawl = 50%, fixed gear = 50%) and spiny dogfish (hook-and-line fixed gear = 50%) (PFMC 2012). New in this year's report, we apply a 50% mortality rate to big skate discard in bottom trawl sectors (PFMC 2015a, 2015b).

The 2014 hake fishery which delivers to shore-based processors was observed by WCGOP under the IFQ fishery and discard was estimated in the same manner as described above, except that no mortality rates were applied. Prior to 2011, this fishery was conducted under an Exempted Fishing Permit (EFP). It continues to operate as a "maximum retention" fishery, where minor amounts of operational discard at-sea are permissible provided the observer accounts for the discard weight. The total estimated weight, comprised of the sampled and expanded discard weight and the landed weight, is reported by species for the shoreside hake sector in Table 3b.

At-Sea Hake Co-op Sectors

The midwater trawl fishery for hake is comprised of three at-sea processing fleets: catcher-processors, motherships with catcher vessels, and a tribal catcher vessel fleet delivering to motherships. The A-SHOP produces estimates of total catch (discarded and retained) in the at-sea hake fishery. Observers sample unsorted catch and provide a visual estimate of the proportion retained, at the species level. Discarded catch weight is calculated on a haul basis for the total weight of all species. The discard weight estimate, along with the proportion retained, form the basis for the two at-sea hake sectors summarized in Table 3b. In 2014, the tribal fleet did not make any at-sea landings; shore-based tribal landings are presented in Table 15. Coast-wide landings or retained catch, sampled discard weight, estimated discard weight, and estimated fishing mortality in all 2014 hake IFQ/Co-op Program sectors (shore-based and at-sea) are reported in Table 3b.

California Halibut Bottom Trawl Fishery

For a description of the California halibut bottom trawl fishery, vessel selection, observer coverage, vessel waivers, and prior California halibut bottom trawl reports, see: http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/halibut_trawl.cfm

Fleet-wide discard estimates in the California halibut bottom trawl fishery were derived from WCGOP observer data and fish ticket landings data. All California halibut vessels are permitted by the state of California. However, limited entry (LE) California halibut vessels also have a federal limited entry groundfish permit, whereas open access (OA) vessels do not. The WCGOP provides observer coverage for the LE California halibut fishery under the shore-based IFQ fishery and isolates data for the LE California halibut fishery based on criteria listed in the previous section. Because there are so few vessels carrying both permits, LE California halibut data are now aggregated with IFQ bottom trawl data to maintain confidentiality. Whereas 100% of LE California halibut trips are sampled in accordance with IFQ management, the WCGOP randomly samples the OA California halibut fishery at a much lower rate. Thus the two components (LE and OA) now have different sampling priorities, protocols, and selection design and therefore are analyzed separately.

Discard ratios for the OA California halibut fishery were calculated by dividing the observed discard weight of each species or complex by the observed retained weight of California halibut. The fleet-wide landed weight of California halibut was then used as a multiplier to expand observed discard ratios to the fleet-wide level (Table 4). Fleet-wide landings were compiled from OA trawl fish tickets (see Figure 1) for those vessels that had a state-issued California halibut bottom trawl permit.

The discard estimate for each species was computed based on the following equation:

$$D = \frac{\sum_t d_t}{\sum_t r_t} \times F$$

where:

D: discard estimate for a given species
t: observed tows
d: observed discard weight for a given species
r: observed retained weight of California halibut
F: weight of retained California halibut recorded on fish tickets for the fleet (expansion factor)

Table 4 presents estimated fishing mortalities of groundfish species caught in the 2014 OA California halibut trawl fishery. All mortality rates applied in this sector are reported in Table A-3. A 50% mortality rate was applied for discarded lingcod and sablefish, which are assumptions made by the GMT and carried over from management under the pre-IFQ LE groundfish bottom trawl sector (before 2011). We also applied an SSC recommended discard mortality rate assumption (previously made for stock assessment purposes) of 50% for longnose skate (PFMC 2012). New in this year's report, we also applied a 50% mortality rate to any big skate discard in the California halibut fisheries (PFMC 2015a, 2015b).

Pink Shrimp Trawl Fishery

Fleet-wide discard estimates for the pink shrimp trawl fishery were derived from WCGOP observer data and fish ticket landings data (Figure 1). For a description of the pink shrimp trawl fishery, vessel selection, observer coverage, vessel waivers, and prior pink shrimp trawl reports, see: http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/shrimp_trawl.cfm .

Discard ratios for each state pink shrimp fishery were calculated by dividing the observed discard weight of each species or complex by the observed retained weight of pink shrimp (Table 5). The fleet landed weight of pink shrimp was used as a multiplier to expand observed discard ratios to the fleet. Table 5 presents landings, final discard estimates, and total fishing mortality in the 2014 individual state pink shrimp trawl fisheries.

Discard estimates for each state were computed based on the following equation:

$$D = \frac{\sum_t d_t}{\sum_t r_t} \times F$$

where:

D: discard estimate for a given species
t: observed tows
d: observed discard weight for a given species

r: observed retained weight of pink shrimp
F: weight of retained pink shrimp recorded on fish tickets for the fleet (expansion factor)

In reporting of data prior to 2011, pink shrimp fish tickets in the area north of 40°10' N. latitude were compiled for a single discard expansion factor, and south of 40°10' N. latitude landings were summarized as part of the remaining incidental fisheries. Previously, observer data from all state pink shrimp fleets in the north were combined to calculate discard rates. However, WCGOP coverage of the Washington pink shrimp fleet began in 2010 and coverage of all state fisheries in 2011-2014 were sufficient to further stratify the analysis by state.

Non-Nearshore Fixed Gear Sector

Fleet-wide discard estimates for the LE and OA non-nearshore fixed gear sector of the groundfish fishery were derived from WCGOP observer data and fish ticket landings data. For a description of the fixed gear sectors, vessel selection, observer coverage, vessel waivers, and prior fixed gear sector reports, see: http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/fixed_gear.cfm

Fish tickets for fixed gear that did not have recorded sablefish or nearshore species were included in the non-nearshore fixed gear sector only if groundfish landings were greater than non-groundfish landings based on a unique vessel and landing date (Figure 1). Fixed gear fish tickets where non-groundfish landings were greater than groundfish landings and sablefish or nearshore species were not recorded were summarized as incidental landings (Table 14). Fixed gear fish tickets with non-groundfish landings greater than groundfish landings but also containing sablefish or nearshore species were classified as non-nearshore fixed gear or nearshore fixed gear sector, respectively. The commercial fixed gear fish tickets with recorded nearshore species weight were not used in this portion of the analysis, regardless of whether they included recorded weights for sablefish. These fish tickets were instead included in the nearshore fixed gear groundfish sector (see next section). Fish tickets associated with the Pacific halibut directed commercial fishery were isolated and removed from our analyses based on landed catch of Pacific halibut recorded on the fish ticket on the day of the opening or within two subsequent days. Fish tickets generated from fixed gear fishing under the IFQ fishery were also excluded.

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

Data used in these analyses were collected by WCGOP from the following fixed gear subsectors in order of priority: LE sablefish endorsed primary season fixed gear, LE '0' tier (non-endorsed), and OA fixed gear (non-nearshore). LE sablefish endorsed vessels that were fishing outside of the primary season or that had reached their cumulative tier quota in the primary season were not observed. However, observed LE '0' tier discard rates were used to expand these landings, as these are the best available discard rates for these sectors.

Observer data were stratified by subsector, gear type, and area (where applicable) (Tables 6-8). Area strata (north and south of 36° N. latitude) are based on PFMC area management for sablefish trip limits. Gear type was defined as longline gear or pot/trap gear. If landings were made by a fixed gear subsector for which there were no or very few WCGOP observations, the most appropriate observed discard ratios were selected and applied to these landings based on similarities in the fishery management structure, fishing and discard behavior, and the gear fished. For example, the LE non-sablefish endorsed fixed gear subsector landed 15.5 mt of groundfish with pot gear in 2014 (Table 7). Given similarities in gear type and catch composition, OA fixed gear pot data were selected as the most appropriate source of information to compute a discard ratio, which was then multiplied by the LE non-sablefish endorsed fixed gear pot landings to generate estimated discard.

Explicit depth stratification of fixed gear fishing effort is not possible because there are no fleet-wide estimates of fishing depths. However, management restricted most fixed gear fishing to depths greater than 100 fathoms in the area north of 40° 10' N. latitude and to depths greater than 150 fathoms in the area south of 40° 10' N. latitude.

The number of observed vessels, trips, and sets are summarized for each subsector in Tables 6-8, along with sablefish and FMP groundfish fleet landings (excluding Pacific hake) used as a measure for expanding discard from observed trips to the entire fleet (expansion factor). Retained groundfish was used as the denominator rather than sablefish weight alone because some subsectors and, in general, fixed gear fisheries south of 36° N. latitude have a wider range of target species. A broader denominator was therefore necessary to effectively capture fishing effort in these calculations. Stratum estimated discard weight for all subsectors were then summed for each area and summed coast-wide.

Coast-wide landings, final discard estimates, and estimated fishing mortality are reported in Table 9 for 2014 LE and OA non-nearshore groundfish fixed gear. All mortality rates applied in this sector are reported in Table A-3. A 20% mortality rate is applied for discarded sablefish, as assumed by the GMT. We also applied SSC recommended discard mortality rate assumptions (previously made for stock assessment purposes) for longnose skate (50%) and spiny dogfish (50%) (PFMC 2012).

Nearshore Fixed Gear Sector

Fleet-wide discard estimates for the commercial nearshore fixed gear sector of the groundfish fishery were derived from WCGOP observer data, fish ticket landings data (Figure 1), and mortality rates provided by the GMT (Table A-4). For a description of the nearshore fixed gear sector, vessel selection, observer coverage, vessel waivers, and prior nearshore fixed gear sector reports, see:
http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/nearshore_gear.cfm

The WCGOP selects commercial nearshore vessels in California and Oregon for observer coverage based on state-issued nearshore permits or licenses. Although California and Oregon nearshore fisheries are sampled separately for observer coverage, fleet-wide discard estimates are provided for the areas north and south of the groundfish management line at 40° 10' N. latitude, in accordance with 2014 federal groundfish management specifications.

For species without swim bladders, we applied a discard mortality rate of 7% for all species (Albin and Karpov 1996). Additional mortality rates provided by the GMT differ for some species according to depth. In December 2013, the GMT provided revised depth-specific discard survival assumptions for some nearshore species (Table A-4). It was therefore necessary to generate discard estimates in each of the three depth intervals employed by the GMT (0-10, 11-20, > 20 fathoms). The percentage of catch for each species or complex by depth was calculated based on summarized observer data from 2003-2014 (Table 10). Using data from all previously observed years ensures that data is comparable across years and that proportions are available for all species landed in a given year.

Fleet landings of each nearshore species or complex in 2014 were then distributed among depth intervals using the percentages computed in the previous step. Finally, the total distributed landed weight of all nearshore groundfish species within each depth stratum was used to expand observed discard to the fleet-wide level (expansion factor).

Prior to the calculation of discard ratios in this sector, WCGOP observer data were stratified by area and depth (Table 11). Discard ratios were calculated by dividing the stratum discard weight of each species or complex by the retained weight of nearshore species. Observed discard ratios were multiplied by the allocated landed weight of all nearshore groundfish species within each depth stratum (Table 11). These fleet-wide level estimates of gross discard within each stratum were then multiplied by depth-specific discard mortality rates (provided by the GMT) to generate estimates of discard mortality in each stratum (Tables 12a, 12b). If provided, a species-specific discard mortality rate was applied in preference to a complex or group rate. Final discard estimates for each area were obtained by summing estimates of discard mortality across depth strata. Gross discard estimates, discard mortality rates, estimated discard mortality, and fishing mortality estimates in the 2014 nearshore fixed gear sectors north and south of 40° 10' N. latitude are reported in Tables 12a and 12b.

Estimated total fishing mortality in observed non-IFQ groundfish fisheries by sector is shown in Table 13.

Other Commercial Data Summaries

Landings of groundfish species from the WA tribal shore-based fisheries are summarized in Table 15. The WA tribal summary is based exclusively on fish ticket data. Discard estimates for WA tribal shore-based fisheries were not available. Tribal directed groundfish fisheries employ full retention requirements. In addition, both the Makah bottom trawl and midwater, targeting yellowtail, trawl sectors are monitored at a target tribal observation rate of 15%. In tribal management, discard mortality of fixed gear sablefish is accounted for by reducing the tribal allocation. For more information on discard and retention in tribal sablefish fisheries and Makah trawl observations, see Appendix B of the 2011-2012 groundfish harvest specifications (PFMC and NMFS 2012).

Groundfish species catch from the recreational fisheries are summarized in Table 15, based exclusively on data provided by the Washington Department of Fish and Wildlife (WDFW), the Oregon Department of Fish and Wildlife (ODFW), and the California Department of Fish and Wildlife (CDFW). State agencies provide catch weight (discarded + retained) estimates with PFMC-approved mortality rates applied to account for discard mortality. WDFW include only surface-release mortality rates for released rockfish (PFMC 2014b). ODFW and CDFW applied depth-dependent mortality rates (PFMC 2014b).

Research catch of groundfish species is summarized in Table 15, based on data provided by the NOAA West Coast Regional Office. Catch weight (discarded + retained) is summarized from reporting of scientific research permits that directly or indirectly caught groundfish off the U.S. west coast. Catch varies by research permit, including but not limited to: catch from permits with only retained catch, tagging study catch where all fish were released alive, and combined discarded and retained catch. Research catch is summarized for all gear types employed.

Landings of groundfish species from other non-groundfish fisheries operating under federal open access landing limits, which are mostly state-managed and incidentally caught groundfish, are also summarized in Table 15 as 'Incidental fisheries'. A more detailed breakdown of incidental landings by PacFIN gear group is provided in Table 14. Catch summaries of incidental fisheries are based exclusively on fish ticket data and therefore do not include any estimates of discards at-sea.

Bycatch estimation and summaries for several additional fish species observed by the WCGOP and A-SHOP are available in separate reports: Pacific halibut (Jannot et al. 2015), salmon species (Somers et al. 2015), green sturgeon

(Lee et al. 2015) and Pacific eulachon (Gustafson et al. 2015). Observed catch of protected fish species will be reported annually beginning in 2015 and is available on the WCGOP website.

Cumulative Mortality Estimation Methods

We calculated the cumulative mortality for each species in a sector as the sum of the total discard mortality (with mortality rate applied) and retained weight (100% mortality). To calculate the cumulative mortality across all sectors, we summed the estimated discard mortality and retained weight from all observed sectors, the retained weight from unobserved incidental fisheries (as described above), and the mortality estimates (with mortality rates applied) from research and recreation catch.

Results

Fishing mortality estimates for all groundfish combined were lower in 2014 relative to 2013 in the non-hake IFQ trawl, non-nearshore fixed gear, open access California halibut, shoreside hake, and Oregon recreational fisheries (Somers et al. 2013). All other sectors showed an increase in overall groundfish mortality relative to 2013 levels. A nearly equal proportion of groundfish species or complexes increased (51%) as those that decreased (49%) in estimated fishing mortality from 2013 to 2014.

The shore-based, non-hake IFQ bottom trawl fishery in 2014 showed the lowest numbers of vessels, trips, and tows since trawl rationalization in 2011(Table 1; Somers et al. 2015a). Only 0.5% of tows/sets in 2014 were unsampled by observers (e.g., rare occasions such as observer illness), although 100% of trips were observed. Non-hake targeted IFQ fishing with midwater trawl gear has increased since trawl rationalization in 2011, with the greatest numbers of vessels, trips, and tows yet observed (Tables 1, 3a; Somers et al. 2015a). This growing sub-sector continues to increase in both groundfish landings and discards (Tables 1, 3a). In 2014, longline gear effort in the IFQ sector was similar to that of 2013 (Table1; Somers et al. 2015a). Data from 32 sets failed quality control, but all trips were observed (Table 1). The number of vessels engaged in fishing using pot gear in the IFQ sector increased in 2014 (relative to 2013), as did the number of trips and tows and the amount of groundfish landed (Table 3a; Somers et al. 2015a,b). Although the number of hauls decreased slightly relative to 2013, the shore-based IFQ midwater trawl fishing targeting Pacific hake during 2014 increased in terms of vessels, trips, and hake landings compared to 2013 (Somers et al. 2015a,b). The hake landings in 2014 were the greatest observed since trawl rationalization. This increase resulted in greater groundfish landings and discards relative to 2013 (Table 3b; Somers et al. 2015a,b).

The At-Sea Hake fishery showed effort increases in the Catcher Processor and Mothership sectors in terms of both tows and hake landings, likely corresponding to quota increases. With 100% observer coverage in the at-sea fleet, nearly all hauls were sampled for species composition: only 0.1% of Catcher Processor tows and 1.4% of Mothership tows were unsampled. Groundfish discard decreased relative to 2013 in both of these sectors even as retained groundfish increased (Table 3b; Somers et al. 2015a,b).

Two elements which affect WCGOP discard estimates are the discard ratio and the expansion factor used to generate the fleet-wide estimates. Changes in expansion factors are tracked by reviewing the fleet-wide landing trends in each observed fishery. In state fisheries which are observed for incidental groundfish interactions, landings increased by 17% in the OA California halibut trawl fishery compared to 2013 (Table 4). Thus the expansion factor for discard estimation was higher in 2014 compared to 2013. Fleet-wide landings in the Washington pink shrimp fishery more than doubled in 2014 compared to 2013, while landings in the Oregon and California pink shrimp fisheries increased only slightly (Table 5). Relative to 2013 landings, the pot sector of the limited entry non-nearshore fixed gear fishery increased slightly in 2014, while the longline portion of the sector remained nearly the same as 2013 (Table 6). Open Access and Limited Entry, Non-Endorsed non-nearshore fixed gear landings

increased from 2013 to 2014 in all gears and area stratifications (Tables 7, 8a, 8b). Nearshore fixed gear landings increased slightly in 2014 in both Oregon and California, resulting in higher expansions factors for north and south of 40°10' N. latitude relative to 2013 (Table 11).

Fishing mortality estimates are evaluated in terms of 2014 ACL, ABC, and OFL harvest specifications from federal groundfish regulations (50 CFR 660 Subpart G, 78 FR 580). Of the eight PFMC-defined rebuilding or rebuilt groundfish species, darkblotched rockfish (5%), petrale sole (8%), and widow rockfish (50%) increased in ACL percentage from 2013 to 2014 (Figure 2). For all but one groundfish species or complexes, estimated fishing mortality did not exceed 2014 ACL, ABC, or OFL harvest goals (Table 16). Twenty-eight groundfish species or complexes (67%) had fishing mortality estimates which were less than 50% of 2014 ACL harvest goals (Table 16). Estimated fishing mortality of California scorpion fish (South of 34°27' N. lat.) exceeded 2014 OFL harvest goals by 3%; in 2013, estimated fishing mortality was 96% of its ACL (Table 16). The primary contribution of fishing mortality in both years is the California recreational fishery (112 mt in 2013, 123 mt in 2014), with the next highest contribution from the commercial nearshore fixed gear fishery (1.72 mt in 2013, 2.37 mt in 2014) (Table 15).

The estimated fishing mortality of three other groundfish species/complexes were 80% or greater of their ACLs: black rockfish, south of 46°16' N. latitude (86%); sablefish, north of 36° N. latitude) (88%); and petrale sole (91%). By estimated mortality weight, Pacific hake (30,620 mt) and sablefish (north of 36° N. latitude) (254 mt) showed the greatest increases between 2013 and 2014, while Dover sole (1515 mt) and arrowtooth flounder (666 mt) showed the greatest decreases. Previous to 2014, sablefish mortality north of 36° N. latitude had shown a decreasing trend. The increased fishing mortality in 2014 likely reflects an increase in the ACL. Coastwide, sablefish mortality remained at 69% of the set ABC. Pacific hake estimated fishing mortality comprised 84% of the U.S. total allowable catch (TAC).

Starry flounder (201%) and widow rockfish (50%) showed the greatest proportional increases in estimated fishing mortality between 2013 and 2014, reflecting low mortality estimates in 2013. The greatest proportional decrease in estimated fishing mortality between 2013 and 2014 occurred in the mixed thornyheads complex (40%) followed closely by cowcod rockfish, south of 40°10' N. latitude (39%).

Spiny dogfish continued to decrease slightly from 2013 to 2014, by 28 mt. Longnose skate estimated fishing mortality decreased by almost 80 mt in 2014. Lingcod fishing mortality decreased north of 40°10' N. latitude decreased by 137 mt and increased south of the management line by approximately 141 mt.

As with all point estimates, mortality values presented in Tables 15 and 16 should be considered with caution. It should be noted that multiple sources of uncertainty were not accounted for in this analysis and might influence mortality estimates. Sources of uncertainty include, but are not limited to: species composition sampling of landed catch, observed retained weights, and discard mortality rates. However, standard errors and coefficients of variation have been provided for observed discard ratios.

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Figures

Figure 1. PacFIN Fish Ticket Data Processing.

Fish ticket data processing for division into groundfish fishery sectors after retrieval of a full calendar year data set from the Pacific Coast Fisheries Information Network (PacFIN) database (query date 05-27-2015). Grey highlight indicates sectors for which federal observer data are available.

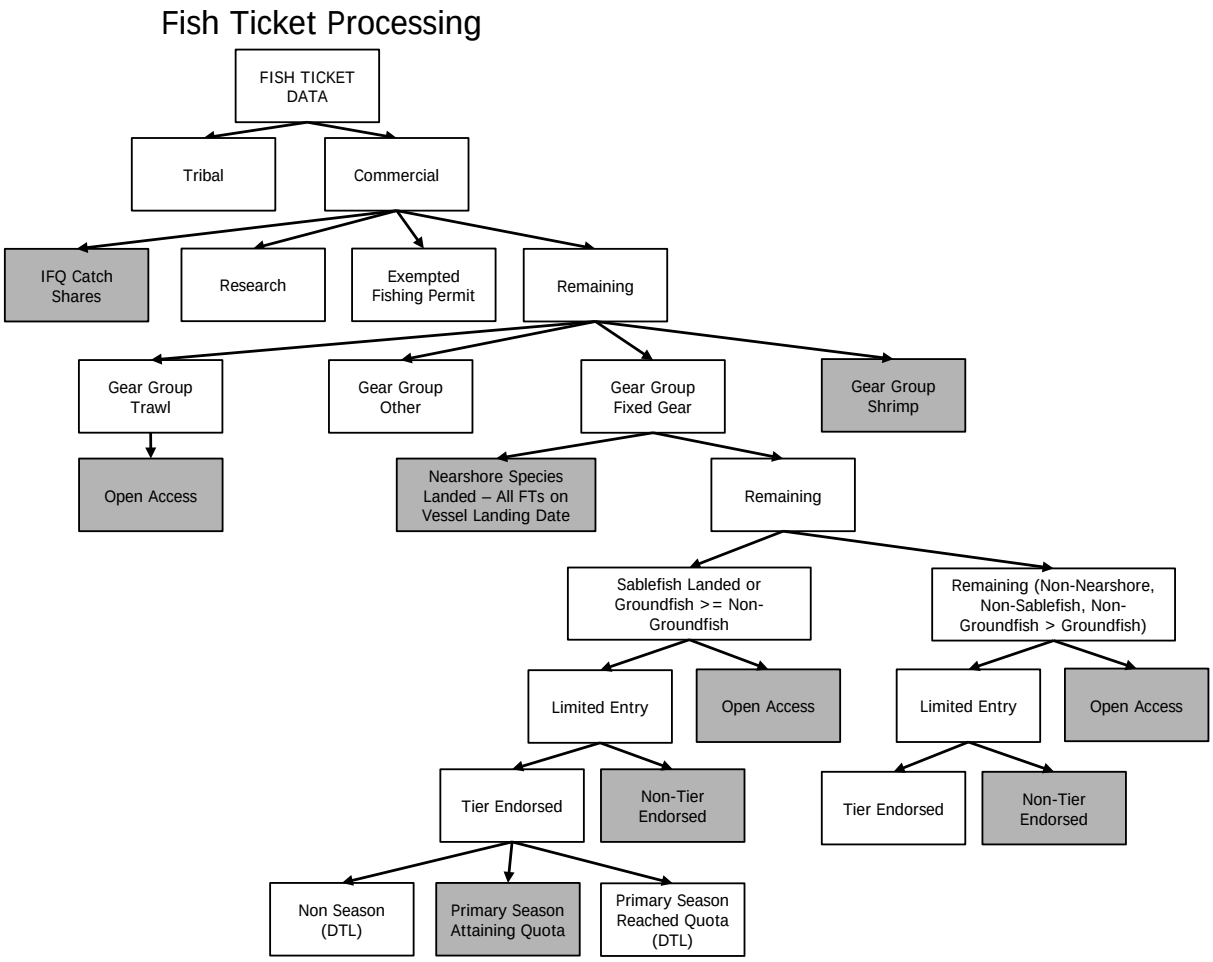
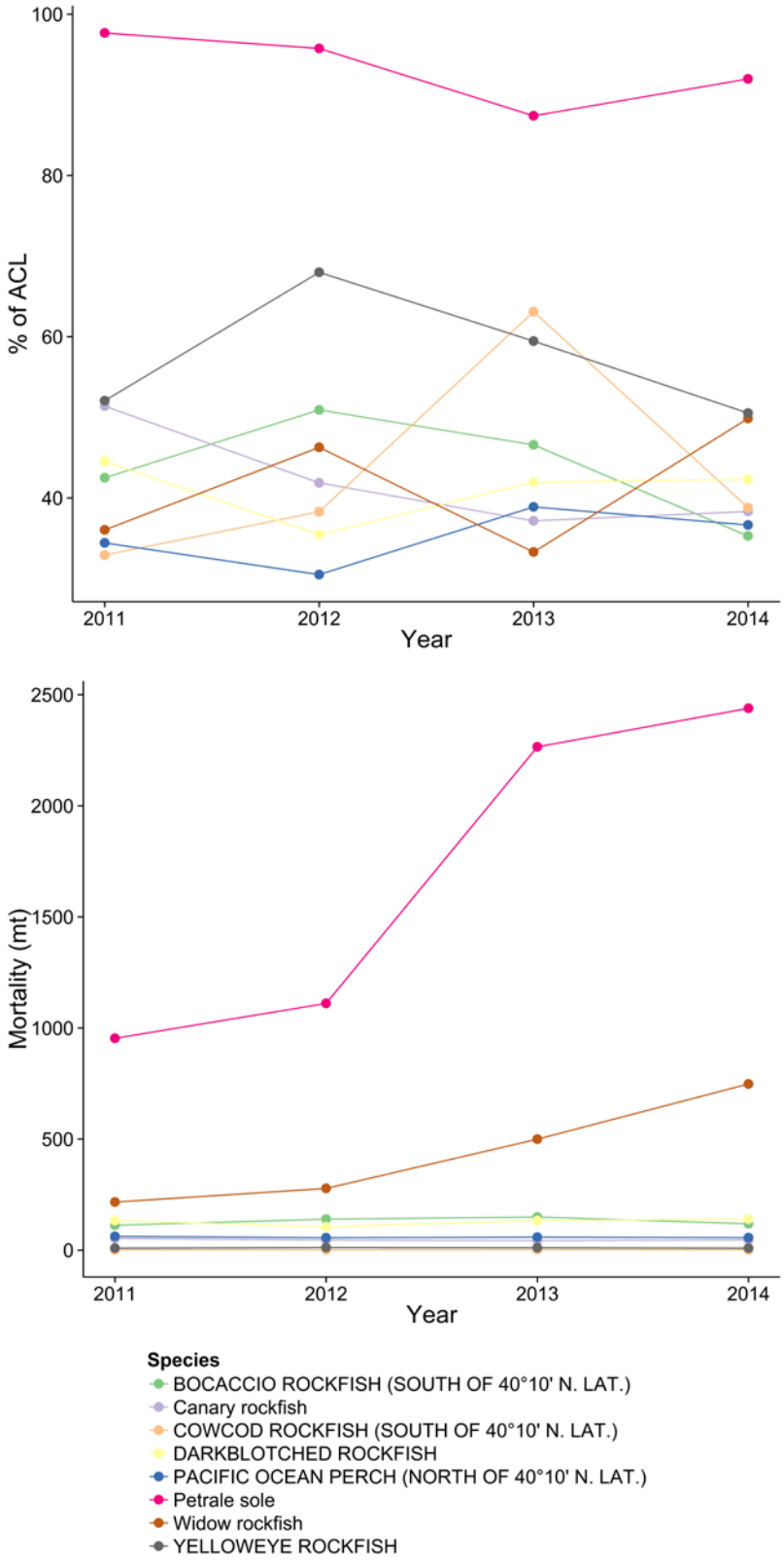


Figure 2. Mortality and ACL percentages 2011-2014 for rebuilding and rebuilt species.

Estimated mortality and percentage of ACL for the eight PFMC-defined rebuilding (in capitals) or rebuilt groundfish species. Only petrale sole and widow rockfish increased in ACL percentage from 2013 to 2014.



Tables

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

Table 1. IFQ Fishery Data Stratification.

Number of vessels, trips and hauls from WCGOP observer data for the 2014 IFQ fishery by gear, latitudinal management area, season and depth (fm). Data are combined as needed to ensure confidentiality requirements and a reasonable number of observations. Winter season is January-April and November-December and summer season is May-October.

							No. of hauls with unsampled categories									
			Depth (fm)	No. of vessels	No. of trips	No. of sampled hauls	IFQ Flatfish	IFQ Rockfish	IFQ Roundfish	IFQ Mixed	Non-IFQ Species	All discarded species	All species	Failed Data	No. unsampled hauls	% of hauls sampled
Trawl - Bottom + LE CA halibut	North of 40°10' N	Winter	0-125	8	38	288	--	--	--	1	4	--	1	--	1	99.7%
			126-250	42	296	984	--	--	--	5	24	2	2	--	4	99.6%
			> 250	42	350	1854	--	--	--	--	51	3	2	--	5	99.7%
		Summer	0-125	19	228	2060	--	--	--	25	51	2	1	18	21	99.0%
			126-250	23	128	445	--	--	--	--	6	1	--	4	5	98.9%
			> 250	26	151	679	--	--	--	--	4	--	--	--	--	100.0%
	South of 40°10' N	Winter	0-125	7	55	306	--	2	--	--	1	1	--	--	1	99.7%
			126-250	10	63	127	--	1	--	--	4	--	--	--	--	100.0%
			> 250	11	96	387	1	--	1	--	17	1	--	--	1	99.7%
		Summer	0-125	10	100	455	--	--	--	--	1	3	--	--	3	99.3%
			126-250	11	70	187	--	--	--	--	1	1	--	--	1	99.5%
			> 250	10	111	474	--	--	--	--	12	7	--	--	7	98.5%
Trawl - Midwater	North of 40°10' N	Winter	All depths	6	15	60	--	--	--	--	--	--	--	--	--	100.0%
		Summer	All depths	5	19	65	--	--	--	--	--	--	--	--	--	100.0%
Hook-and-Line	Coastwide	Annual	All depths	4	17	146	--	--	--	--	--	--	--	32	32	82.0%
Pot	North of 40°10' N	Winter	All depths	3	10	72	--	--	--	--	--	--	--	--	--	100.0%
		Summer	All depths	6	51	547	--	--	--	--	--	--	--	--	--	100.0%
	South of 40°10' N	Winter	All depths	5	14	163	--	--	--	--	7	--	--	--	--	100.0%
		Summer	All depths	7	38	464	--	--	--	--	2	--	--	--	--	100.0%
Shoreside Hake	North of 40°10' N	Winter	All depths	16	42	80	--	--	--	--	2	--	--	--	--	100.0%
		Summer	All depths	23	913	1601	--	--	--	--	5	1	--	--	1	99.9%

Table 2a. IFQ Discard Ratios, Bottom Trawl, North of 40°10' N.

Values used to calculate the expanded weight of groundfish species from each WCGOP unsampled catch category in the 2014 IFQ fishery using bottom trawl gear north of 40°10' N latitude. Expansion factors for each season and depth strata are shown in the top row. Discard ratios for each species are presented by season and depth strata in the rest of the table. Winter season is January-April and November-December and summer season is May-October. Only strata with unsampled discard weight are shown. Unsampled catch weight is assigned to the following categories: IFQ flatfish species (IFQFF), IFQ rockfish species (IFQRF) IFQ roundfish species (IFQRD), IFQ mixed species (IFQM), non-IFQ species (NIFQ), all discarded species (IFQ & non-IFQ), all species (IFQ & non-IFQ), and all failed data. See text for a list of species included in each unsampled category. All rebuilding species are capitalized.

	IFQ - Bottom Trawl (North of 40°10' N Lat.)																		
	IFQM			NIFQ						All Discarded Species				All Species				Failed Data	
Area (40°10' N. Lat.)	North			North						North				North				North	
Season	Summer	Winter		Summer			Winter			Summer		Winter		Summer	Winter			Summer	
Depth (fm)	0-125	0-125	126-250	0-125	126-250	>250	0-125	126-250	>250	0-125	126-250	126-250	>250	0-125	0-125	126-250	>250	0-125	126-250
Expansion Factor (mt)	10.4976	0.0680	1.1278	7.5755	0.1855	0.0621	0.0885	0.8303	2.4814	0.4415	0.2313	11.1131	0.1633	0.6124	0.0227	4.3187	0.4536	43.6867	13.3994
Groundfish species																			
Arrowtooth Flounder	0.3407	0.4210	0.5667	--	--	--	--	--	--	0.1777	0.4421	0.2608	0.2759	0.1011	0.0186	0.1205	0.1104	0.0522	0.0614
Black Rockfish (North of 46°16' N. lat.)	--	--	--	0.0003	--	--	0.0044	--	--	0.0001	--	--	--	0.0001	0.0012	0.0000	0.0000	0.0000	--
Black Rockfish (South of 46°16' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0000	0.0000	0.0000	--	--
Cabezon (Oregon)	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	0.0000	--	--	--	0.0000	--
Canary Rockfish	0.0000	0.0008	--	--	--	--	--	--	--	0.0000	--	--	--	0.0011	0.0007	0.0000	0.0000	0.0000	--
DARKBLOTCHED ROCKFISH	0.0150	0.0029	0.0050	--	--	--	--	--	--	0.0078	0.0006	0.0023	0.0001	0.0023	0.0009	0.0174	0.0023	0.0023	0.0001
Dover Sole	0.0145	0.0028	0.0015	--	--	--	--	--	--	0.0076	0.0004	0.0007	0.0055	0.1536	0.0164	0.2744	0.5062	0.0022	0.0001
English Sole	0.0717	0.1825	0.0000	--	--	--	--	--	--	0.0374	0.0003	0.0000	0.0000	0.0385	0.0650	0.0020	0.0006	0.0110	0.0000
Lingcod (North of 40°10' N. lat.)	0.0361	0.0106	0.0006	--	--	--	--	--	--	0.0188	0.0008	0.0003	0.0000	0.0443	0.0250	0.0092	0.0005	0.0055	0.0001
Longnose Skate	--	--	--	0.0778	0.1982	0.1019	0.0277	0.0819	0.0590	0.0371	0.0629	0.0440	0.0278	0.0593	0.0368	0.0480	0.0368	0.0109	0.0087
Longspine Thornyhead (North of 34°27' N. lat.)	--	--	0.0049	--	--	--	--	--	--	--	0.0015	0.0023	0.0395	0.0002	0.0006	0.0041	0.0738	--	0.0002
Minor nearshore rockfish (North of 40°10' N. lat.)																			
Blue Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	--	--
Brown Rockfish	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--	0.0000	--	--	--	0.0000	--
Copper Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	--	--
Quillback Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0000	0.0000	0.0000	--	--
Minor shelf rockfish (North of 40°10' N. lat.)																			
Bocaccio Rockfish	0.0000	0.0004	--	--	--	--	--	--	--	0.0000	--	--	--	0.0002	0.0001	0.0000	0.0000	0.0000	--
Chilipepper Rockfish	0.0003	0.0001	0.0029	--	--	--	--	--	--	0.0001	--	0.0013	--	0.0006	0.0003	0.0001	0.0000	0.0000	--
Cowcod Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	0.0000	0.0000	--	--
Freckled Rockfish	0.0000	--	--	--	--	--	--	--	--	0.0000	--	--	--	0.0000	--	--	--	0.0000	--
Greenspotted Rockfish	--	--	0.0000	--	--	--	--	--	--	--	0.0000	0.0000	--	0.0000	0.0000	0.0000	--	--	0.0000
Greenstriped Rockfish	0.0107	0.0075	0.0004	--	--	--	--	--	--	0.0056	0.0010	0.0002	0.0000	0.0035	0.0041	0.0001	0.0001	0.0016	0.0001
Halfbanded Rockfish	0.0001	0.0001	--	--	--	--	--	--	--	0.0001	--	--	--	0.0000	0.0000	--	--	0.0000	--
Pygmy Rockfish	--	--	0.0000	--	--	--	--	--	--	--	--	0.0000	0.0000	--	--	0.0000	0.0000	--	--
Redstripe Rockfish	0.0002	--	0.0009	--	--	--	--	--	--	0.0001	--	0.0004	0.0000	0.0003	0.0003	0.0001	0.0000	0.0000	--
Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0019	0.0042	0.0000	--	--	--
Rosethorn Rockfish	0.0002	--	0.0032	--	--	--	--	--	--	0.0001	0.0016	0.0015	0.0001	0.0001	0.0002	0.0002	0.0000	0.0000	0.0002
Rosy Rockfish	--	--	0.0000	--	--	--	--	--	--	--	--	0.0000	--	--	--	0.0000	--	--	--
Shelf Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0000	0.0000	0.0000	--	--
Silvergray Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0001	0.0000	0.0000	--	--
Stripetail Rockfish	0.0127	0.0191	0.0001	--	--	--	--	--	--	0.0066	0.0000	0.0001	--	0.0016	0.0008	0.0000	0.0000	0.0019	0.0000
Minor slope rockfish (North of 40°10' N. lat.)																			
Aurora Rockfish	0.0027	--	0.0074	--	--	--	--	--	--	0.0014	0.0103	0.0034	0.0016	0.0006	0.0002	0.0013	0.0011	0.0004	0.0014
Bank Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0002	0.0004	0.0002	--	--
Blackgill Rockfish	--	--	0.0001	--	--	--	--	--	--	--	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0005	--	0.0000
Redbanded Rockfish	0.0002	0.0000	0.0008	--	--	--	--	--	--	0.0001	0.0004	0.0004	0.0000	0.0002	0.0002	0.0004	0.0002	0.0000	0.0001
Rockfish Unid	--	0.0001	0.0003	--	--	--	--	--	--	--	--	0.0001	--	0.0003	0.0001	0.0144	0.0028	--	--
Rougheye Rockfish	0.0002	0.0000	0.0000	--	--	--	--	--	--	0.0001	0.0000	0.0000	0.0000	0.0015	0.0011	0.0021	0.0016	0.0000	0.0000
Sharpchin Rockfish	0.0001	0.0002	0.0093	--	--	--	--	--	--	0.0001	0.0214	0.0043	0.0000	0.0007	0.0005	0.0015	0.0003	0.0000	0.0030
Shortraker Rockfish	0.0000	--	--	--	--	--	--	--	--	0.0000	--	--	--	0.0011	0.0009	0.0015	0.0010	0.0000	--
Slope Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	0.0004	0.0002	--	--
Splitnose Rockfish	0.0004	0.0001	0.0765	--	--	--	--	--	--	0.0002	0.0165	0.0352	0.0028	0.0003	0.0002	0.0062	0.0013	0.0001	0.0023
Yellowmouth Rockfish	0.0000	--	--	--	--	--	--	--	--	0.0000	--	--	--	0.0000	0.0003	0.0007	0.0003	0.0000	--
Mixed thornyheads																			
Shortspine/Longspine Thornyhead	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	0.0004	0.0025	--	--

Table 2a (continued).

	IFQ - Bottom Trawl (North of 40°10' N Lat.)																		
	IFQM			NIFQ						All Discarded Species				All Species				Failed Data	
Area (40°10' N. Lat.)	North			North						North				North				North	
Season	Summer	Winter		Summer			Winter			Summer		Winter		Summer	Winter			Summer	
Depth (fm)	0-125	0-125	126-250	0-125	126-250	>250	0-125	126-250	>250	0-125	126-250	126-250	>250	0-125	0-125	126-250	>250	0-125	126-250
Expansion Factor (mt)	10.4976	0.0680	1.1278	7.5755	0.1855	0.0621	0.0885	0.8303	2.4814	0.4415	0.2313	11.1131	0.1633	0.6124	0.0227	4.3187	0.4536	43.6867	13.3994
Other flatfish																			
Butter Sole	0.0007	0.0173	--	--	--	--	--	--	--	0.0004	--	--	--	0.0001	0.0007	0.0000	--	0.0001	--
Curlfin Turbot	0.0019	0.0002	--	--	--	--	--	--	--	0.0010	0.0000	--	--	0.0005	0.0001	0.0000	0.0000	0.0003	0.0000
Flatfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0000	--	--
Flathead Sole	0.0183	0.0076	--	--	--	--	--	--	--	0.0095	0.0001	--	0.0000	0.0045	0.0015	0.0000	0.0000	0.0028	0.0000
Pacific Sanddab	0.2067	0.1267	0.0001	--	--	--	--	--	--	0.1078	0.0004	0.0000	0.0000	0.0607	0.0768	0.0000	0.0000	0.0317	0.0001
Rex Sole	0.0769	0.0490	0.0016	--	--	--	--	--	--	0.0401	0.0024	0.0008	0.0002	0.0446	0.0336	0.0174	0.0136	0.0118	0.0003
Rock Sole	0.0005	0.0001	--	--	--	--	--	--	--	0.0003	--	--	--	0.0002	0.0002	0.0000	0.0000	0.0001	--
Sanddab Unid	0.0002	--	--	--	--	--	--	--	--	0.0001	--	--	--	0.0017	0.0008	0.0003	0.0000	0.0000	--
Sand Sole	0.0011	0.0024	--	--	--	--	--	--	--	0.0006	--	--	--	0.0019	0.0200	0.0000	0.0000	0.0002	--
Other groundfish																			
Big Skate	--	--	--	0.1213	0.0024	0.0001	0.3758	0.0001	0.0003	0.0579	0.0008	0.0000	0.0001	0.0309	0.0992	0.0000	0.0000	0.0170	0.0001
California Skate	--	--	--	0.0017	0.000767	--	0.00017	2.19E-05	--	0.0008	0.000243	1.18E-05	--	0.0002	1.79E-05	1.18E-06	--	0.0002	3.38E-05
Kelp Greenling	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0095	0.0000	0.0000	0.0003	0.0011	--	--
Pacific Flatnose	--	--	--	0.0001	--	--	0.0000	--	--	0.0001	--	--	--	0.0000	0.0000	--	--	0.0000	--
Pacific Grenadier	--	--	--	--	0.0001	0.0008	--	0.0000	0.0024	--	0.0000	0.0000	0.0011	--	--	0.0000	0.0001	--	0.0000
Roundfish Unid	--	--	--	--	--	--	--	--	--	--	0.0003	0.0004	0.0236	--	--	0.0000	0.0029	--	0.0000
Skate Unid	--	--	--	--	--	--	0.0001	--	--	--	--	--	--	--	0.0000	--	--	--	--
Soupfin Shark	--	--	--	--	--	--	--	--	--	--	0.0015	0.0004	0.0002	0.0761	0.0970	0.0039	0.0043	--	0.0002
Spotted Ratfish	--	--	--	0.0008	--	--	0.0042	--	--	0.0004	--	--	--	0.0001	0.0004	--	--	0.0001	--
Pacific Cod	--	--	--	0.0941	0.1073	0.0255	0.0693	0.0395	0.0087	0.0449	0.0340	0.0212	0.0041	0.0100	0.0077	0.0022	0.0004	0.0132	0.0047
Pacific Hake	0.0010	0.0003	0.0000	--	--	--	--	--	--	0.0005	--	0.0000	--	0.0402	0.0137	0.0002	0.0000	0.0002	--
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	0.0707	0.0023	0.1824	--	--	--	--	--	--	0.0369	0.1453	0.0839	0.0623	0.0102	0.0001	0.0112	0.0061	0.0108	0.0202
Petrale Sole	0.0001	--	0.0064	--	--	--	--	--	--	0.0001	0.0002	0.0029	0.0002	0.0002	0.0007	0.0053	0.0007	0.0000	0.0000
Sablefish (North of 36° N. lat.)	0.0434	0.0274	0.0054	--	--	--	--	--	--	0.0226	0.0001	0.0025	0.0034	0.1658	0.0910	0.3258	0.0295	0.0067	0.0000
Shortbelly Rockfish	0.0202	0.0056	0.0036	--	--	--	--	--	--	0.0105	0.0006	0.0017	0.0013	0.0125	0.0020	0.0421	0.1005	0.0031	0.0001
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	0.0000	--	--	--	0.0000	--	0.0000	--	0.0000	--	0.0000	0.0000	0.0000	0.0000	0.0000	--
Spiny Dogfish	0.0009	0.0002	0.0209	--	--	--	--	--	--	0.0005	0.0112	0.0096	0.0033	0.0019	0.0021	0.0238	0.0513	0.0001	0.0016
Starry Flounder	--	--	--	0.2624	0.1574	0.0109	0.1688	0.6547	0.1037	0.1253	0.0499	0.3520	0.0489	0.0280	0.0177	0.0380	0.0042	0.0368	0.0069
Widow Rockfish	0.0011	0.0291	--	--	--	--	--	--	--	0.0006	--	--	--	0.0030	0.0067	0.0000	0.0000	0.0002	--
YELLOWEYE ROCKFISH	--	--	0.0001	--	--	--	--	--	--	--	0.0000	0.0000	--	0.0029	0.0522	0.0034	0.0000	--	0.0000
Yellowtail Rockfish (North of 40°10' N. lat.)	0.0000	--	--	--	--	--	--	--	--	0.0000	--	--	--	0.0000	0.0000	--	0.0000	0.0000	--
Non-groundfish species	0.0001	--	--	--	--	--	--	--	--	0.0001	0.0000	--	--	0.0371	0.2559	0.0027	0.0000	0.0000	0.0000
Dungeness Crab																			
Non-FMP flatfish	--	--	--	0.2249	0.0041	0.0001	0.2556	0.0002	0.0000	0.1074	0.0013	0.0001	0.0000	0.0238	0.0268	0.0000	0.0000	0.0315	0.0002
Deepsea Sole																			
Hornyhead Turbot	--	--	--	0.0001	0.0042	0.0318	--	0.0009	0.0233	0.0000	0.0013	0.0005	0.0110	0.0000	--	0.0000	0.0009	0.0000	0.0002
Slender Sole	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0001	--	--	--
Non-FMP skate	--	--	--	0.0733	0.0034	0.0007	0.0097	0.0036	0.0011	0.0350	0.0011	0.0019	0.0005	0.0078	0.0010	0.0002	0.0000	0.0103	0.0002
Aleutian Skate																			
Black Skate	--	--	--	--	0.0072	0.0033	0.0001	0.0013	0.0032	--	0.0023	0.0007	0.0015	--	0.0000	0.0001	0.0001	--	0.0003
Deepsea Skate	--	--	--	0.0000	0.0024	0.0372	0.0000	0.0011	0.0530	0.0000	0.0008	0.0006	0.0250	0.0000	0.0000	0.0001	0.0021	0.0000	0.0001
Pacific Electric Ray	--	--	--	--	--	--	--	--	--	--	0.0001	--	0.0010	--	--	--	0.0001	--	0.0000
Roughshoulder/Broad Skate	--	--	--	--	--	--	--	--	--	0.0011	0.0006	0.0001	--	0.0003	0.0001	0.0000	--	0.0003	0.0001
Sandpaper Skate	--	--	--	0.0203	0.0885	0.0422	0.0203	0.0532	0.0401	0.0097	0.0281	0.0286	0.0189	0.0021	0.0021	0.0029	0.0016	0.0028	0.0039
Starry Skate	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--	0.0000	--	--	--	0.0000	--
White Skate	--	--	--	--	--	--	--	--	--	--	0.0001	0.0000	0.0000	--	--	0.0000	0.0000	--	0.0000
Other non-groundfish																			
Greenling Unid	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--	0.0000	--	--	--	0.0000	--
Sculpin Unid	--	--	--	0.0035	0.0014	0.0000	0.0074	0.0002	0.0000	0.0017	0.0004	0.0001	0.0000	0.0004	0.0008	0.0000	0.0000	0.0005	0.0001

Table 2b. IFQ Discard Ratios, Bottom Trawl, South of 40°10' N; Pot; Shoreside Hake.

Values used to calculate the expanded weight of groundfish species from each WCGOP unsampled catch category in 2014 IFQ fisheries: bottom trawl gear south of 40˚10' N latitude, pot gear, shoreside hake. Expansion factors for each season and depth strata are shown in the top row. Discard ratios for each species are presented by season and depth strata in the rest of the table. Winter season is January-April and November-December and summer season is May-October. Only strata with unsampled discard weight are shown. Unsampled catch weight is assigned to the following categories: IFQ flatfish species (IFQFF), IFQ rockfish species (IFQRF) IFQ roundfish species (IFQRD), IFQ mixed species (IFQM), non-IFQ species (NIFQ), all discarded species (IFQ & non-IFQ), all species (IFQ & non-IFQ), and all failed data. See text for a list of species included in each unsampled category. All rebuilding species are capitalized.

	IFQ - Bottom Trawl (South of 40˚10' N Lat.)															IFQ - Line	IFQ - Pot		Shoreside Hake		
	IFQFF	IFQRF		IFQRD	NIFQ						All Discarded Species					Failed	NIFQ		NIFQ		All Discarded Species
Area (40°10' N. Lat.)	South	South		South	South						South					Coast	South		North		North
Season	Winter	Winter		Winter	Summer			Winter			Summer			Winter		All year	Summer	Winter	Summer	Winter	Summer
Depth (fm)	>250	0-125	126-250	>250	0-125	126-250	>250	0-125	126-250	>250	0-125	126-250	>250	0-125	>250	All depths	All depths	All depths	All depths	All depths	All depths
Expansion Factor (mt)	0.0340	0.0032	4.5360	0.0045	0.4536	0.0068	0.1058	0.0091	0.6945	0.4087	0.1237	0.2350	5.2504	0.0227	0.0227	9.8406	0.0009	0.0052	0.1905	0.0417	0.0454
Groundfish species																					
Arrowtooth Flounder	0.0342	--	--	--	--	--	--	--	--	--	0.0618	0.0822	0.0113	0.0448	0.0101	0.0224	--	--	--	--	--
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	--	0.0209	0.0000	--	--	--	--	--	--	--	0.0006	0.0000	--	0.0032	--	--	--	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)	--	0.9119	0.1272	--	--	--	--	--	--	--	0.1915	0.0156	0.0000	0.1411	--	--	--	--	--	--	--
COWCOD ROCKFISH (South of 40°10' N. lat.)	--	0.0000	--	--	--	--	--	--	--	--	0.0000	--	--	0.0000	--	--	--	--	--	--	--
DARKBLOTCHED ROCKFISH	--	0.0003	0.0008	--	--	--	--	--	--	--	0.0001	0.0005	--	0.0000	--	0.0000	--	--	--	--	--
Dover Sole	0.9642	--	--	--	--	--	--	--	--	--	0.0073	0.0205	0.3407	0.0042	0.2841	0.0001	--	--	--	--	--
English Sole	0.0000	--	--	--	--	--	--	--	--	--	0.0594	0.0038	0.0000	0.0457	0.0000	--	--	--	--	--	--
Lingcod (North of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0002	--	--	--	--	0.0001
Lingcod (South of 40°10' N. lat.)	--	--	--	0.0001	--	--	--	--	--	--	0.0191	0.0123	--	0.0097	0.0000	--	--	--	--	--	--
Longnose Skate	--	--	--	--	0.2047	0.3544	0.1957	0.1316	0.1832	0.1047	0.0738	0.1195	0.0937	0.0790	0.0524	0.0057	0.0017	0.0013	0.0015	--	0.0000
Longspine Thornyhead (North of 34°27' N. lat.)	--	0.0004	0.0011	--	--	--	--	--	--	--	0.0000	0.0003	0.0479	0.0001	0.0383	0.0023	--	--	--	--	--
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0013	0.0021	--	--	--	--
Minor nearshore rockfish (South of 40°10' N. lat.)																					
Brown Rockfish	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--	--	--	--	--	--	--	--
Olive Rockfish	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)																					
Greenstriped Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	--	--
Rosethorn Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)																					
Greenblotched Rockfish	--	--	0.0002	--	--	--	--	--	--	--	--	0.0001	--	--	--	--	--	--	--	--	--
Greenspotted Rockfish	--	0.0016	0.0001	--	--	--	--	--	--	--	0.0005	0.0000	--	0.0003	--	--	--	--	--	--	--
Greenstriped Rockfish	--	0.0207	0.0009	--	--	--	--	--	--	--	0.0067	0.0003	--	0.0032	--	--	--	--	--	--	--
Halfbanded Rockfish	--	0.0001	--	--	--	--	--	--	--	--	0.0001	--	--	0.0000	--	--	--	--	--	--	--
Rockfish Unid	--	--	0.0005	--	--	--	--	--	--	--	--	0.0002	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	--	--	0.0009	--	--	--	--	--	--	--	--	0.0002	--	--	--	--	--	--	--	--	--
Squarespot Rockfish	--	0.0001	--	--	--	--	--	--	--	--	0.0000	--	--	0.0000	--	--	--	--	--	--	--
Stripetail Rockfish	--	0.0407	0.0696	--	--	--	--	--	--	--	0.0132	0.0181	--	0.0063	--	--	--	--	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)																					
Redbanded Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0001	--	--	--	--	--
Rougheye Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0009	--	--	--	--	--
Shortraker Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0001	--	--	--	--	--
Shortraker/Rougheye Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0001	--	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)																					
Aurora Rockfish	--	--	0.0096	--	--	--	--	--	--	--	0.0000	0.0027	0.0024	--	0.0014	--	--	--	--	--	--
Bank Rockfish	--	--	0.0005	--	--	--	--	--	--	--	--	0.0004	0.0000	--	--	--	--	--	--	--	--
Blackgill Rockfish	--	--	0.0119	--	--	--	--	--	--	--	--	0.0048	--	--	0.0000	--	--	--	--	--	--
Redbanded Rockfish	--	0.0000	0.0014	--	--	--	--	--	--	--	0.0000	0.0002	--	0.0000	--	--	--	--	--	--	--
Sharpchin Rockfish	--	0.0001	--	--	--	--	--	--	--	--	0.0003	0.0000	--	0.0000	--	--	--	--	--	--	--

Table 2b (continued).

	IFQ - Bottom Trawl (South of 40˚10' N Lat.)															IFQ - Line	IFQ - Pot		Shoreside Hake		
	IFQFF	IFQRF		IFQRD	NIFQ						All Discarded Species					Failed	NIFQ		NIFQ		All Discarded Species
Area (40°10' N. Lat.)	South	South		South	South						South					Coast	South		North		North
Season	Winter	Winter		Winter	Summer			Winter			Summer			Winter		All year	Summer	Winter	Summer	Winter	Summer
Depth (fm)	>250	0-125	126-250	>250	0-125	126-250	>250	0-125	126-250	>250	0-125	126-250	>250	0-125	>250	All depths	All depths	All depths	All depths	All depths	All depths
Expansion Factor (mt)	0.0340	0.0032	4.5360	0.0045	0.4536	0.0068	0.1058	0.0091	0.6945	0.4087	0.1237	0.2350	5.2504	0.0227	0.0227	9.8406	0.0009	0.0052	0.1905	0.0417	0.0454
Other flatfish																					
Curlfin Turbot	--	--	--	--	--	--	--	--	--	--	0.0010	0.0000	--	0.0006	--	--	--	--	--	--	--
Flatfish Unid	0.0001	--	--	--	--	--	--	--	--	--	0.0000	--	0.0003	--	0.0000	--	--	--	--	--	--
Pacific Sanddab	0.0000	--	--	--	--	--	--	--	--	--	0.1095	0.0003	--	0.0439	0.0000	--	--	--	--	--	--
Rex Sole	0.0009	--	--	--	--	--	--	--	--	--	0.0050	0.0051	0.0001	0.0095	0.0003	--	--	--	--	--	--
Rock Sole	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	--	--	--	--	--	--	--
Other groundfish																					
Big Skate	--	--	--	--	0.0264	0.0044	0.0004	0.0032	0.0002	0.0031	0.0095	0.0015	0.0002	0.0019	0.0016	0.0007	--	--	--	--	--
California Skate	--	--	--	--	0.0020	--	--	0.0006	0.0004	--	0.0007	--	--	0.0004	--	--	--	--	--	--	--
Grenadier Unid	--	--	--	--	--	--	--	--	--	--	--	--	0.0002	--	0.0104	--	--	--	--	--	--
Kelp Greenling	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--	--	--	--	--	--	--	--
Pacific Flatnose	--	--	--	--	--	0.0000	0.0006	--	0.0000	0.0031	--	0.0000	0.0003	--	0.0015	0.0001	0.0070	0.0115	--	--	--
Pacific Grenadier	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0404	--	0.0438	0.0027	--	--	--	--	--
Skate Unid	--	--	--	--	--	--	--	--	--	--	0.0001	0.0008	0.0005	0.0002	0.0004	--	--	--	--	--	--
Soupfin Shark	--	--	--	--	0.0045	0.0007	--	0.0058	0.0018	--	0.0016	0.0002	--	0.0035	--	--	--	--	0.0093	--	0.0002
Spotted Ratfish	--	--	--	--	0.2792	0.1299	0.0034	0.2602	0.1379	0.0053	0.1006	0.0438	0.0016	0.1561	0.0026	0.0004	0.0004	--	--	--	--
Pacific Hake	--	--	--	0.9809	--	--	--	--	--	--	0.1278	0.2527	0.0367	0.0348	0.0505	0.0007	--	--	--	--	0.9697
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	--	--
Petrale Sole	0.0006	--	--	--	--	--	--	--	--	--	0.0072	0.0002	0.0000	0.0018	0.0002	0.0001	--	--	--	--	--
Sablefish (North of 36° N. lat.)	--	--	--	0.0174	--	--	--	--	--	--	0.0238	0.0116	0.0003	0.0470	0.0009	0.0278	--	--	--	--	0.0000
Sablefish (South of 36° N. lat.)	--	--	--	0.0017	--	--	--	--	--	--	--	0.0141	0.0023	--	0.0001	0.0013	--	--	--	--	--
Shortbelly Rockfish	--	--	--	--	0.1355	0.0146	--	0.0353	0.0164	--	0.0488	0.0049	--	0.0212	--	--	--	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	0.0103	--	--	--	--	--	--	--	--	0.0029	0.0021	--	0.0018	0.0011	--	--	--	--	--
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0002	--	--	--	--	--
Spiny Dogfish	--	--	--	--	0.0791	0.0192	0.0004	0.4908	0.3994	0.0055	0.0285	0.0065	0.0002	0.2945	0.0027	0.3427	0.0100	--	0.0097	--	0.0003
Splitnose Rockfish (South of 40°10' N. lat.)	--	0.0001	0.7649	--	--	--	--	--	--	--	0.0004	0.2094	0.0000	0.0000	0.0000	--	--	--	--	--	--
Widow Rockfish	--	0.0023	0.0000	--	--	--	--	--	--	--	0.0004	0.0000	--	0.0004	--	--	--	--	--	--	--
Yellowtail Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0001	--	--	--	--	--
Nongroundfish species																					
Dungeness Crab	--	--	--	--	0.1619	0.0015	0.0001	0.0128	0.0016	--	0.0584	0.0005	0.0000	0.0077	--	--	0.0004	--	--	--	--
Non-FMP flatfish																					
Deepsea Sole	--	--	--	--	--	0.0002	0.0511	0.0001	0.0004	0.0617	--	0.0001	0.0244	0.0001	0.0309	--	0.0003	0.0022	--	--	--
Hornyhead Turbot	--	--	--	--	0.0010	--	--	--	--	--	0.0003	--	--	--	--	--	--	--	--	--	--
Slender Sole	--	--	--	--	0.0192	0.0027	0.0001	0.0056	0.0031	--	0.0069	0.0009	0.0000	0.0033	--	--	--	--	--	--	--
Non-FMP skate																					
Aleutian Skate	--	--	--	--	--	--	0.0002	--	--	0.0006	--	--	0.0001	--	0.0003	0.0003	--	--	--	--	--
Black Skate	--	--	--	--	0.0003	--	0.0183	0.0002	0.0020	0.0405	0.0001	--	0.0087	0.0001	0.0203	0.0013	0.0001	0.0013	--	--	--
Deepsea Skate	--	--	--	--	--	--	--	--	--	--	--	--	0.0002	--	0.0018	0.0001	--	--	--	--	--
Pacific Electric Ray	--	--	--	--	--	--	--	--	--	--	0.0038	0.0035	0.0004	0.0030	--	--	--	--	--	--	--
Sandpaper Skate	--	--	--	--	0.0080	0.0423	0.0152	0.0047	0.0475	0.0137	0.0029	0.0143	0.0073	0.0028	0.0068	0.0004	--	--	--	--	--
Starry Skate	--	--	--	--	0.0011	--	--	0.0000	0.0006	--	0.0004	--	--	0.0000	--	--	--	--	--	--	--
Other non-groundfish																					
Sculpin Unid	--	--	--	--	0.0003	0.0001	--	0.0004	0.0001	--	0.0001	0.0000	--	0.0002	--	--	--	--	--	--	--

Table 3a. Observed Sectors: Non-hake IFQ Fishing Mortality Estimates by Sector.

Landings (mt), estimated discard (mt), and fishing mortality estimate (mt) of groundfish species from non-hake IFQ and limited entry California halibut fisheries in 2014. Discard ratios (Tables 2a, 2b) were multiplied by expansion factors to generate estimated discard, sampled discard was expanded to the haul level and summed by sector, and landings were summarized from PacFIN. All rebuilding species are capitalized.

	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
Weight (mt)	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Groundfish species																
Arrowtooth Flounder	493.85	11.19	1,225.10	1,730.15	--	--	0.00	0.00	1.93	0.22	0.01	2.16	0.11	--	0.02	0.13
Black Rockfish (North of 46°16' N. lat.)	0.32	0.00	0.67	0.99	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Black Rockfish (South of 46°16' N. lat.)	--	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Bocaccio rockfish (South of 40°10' N. lat.)	0.32	0.00	8.23	8.55	--	--	--	--	--	--	--	--	--	--	--	--
Cabezon (Oregon)	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Canary Rockfish	0.04	0.00	6.20	6.24	--	--	1.65	1.65	--	--	0.00	0.00	--	--	0.00	0.00
Chilipepper Rockfish (South of 40°10' N. lat.)	37.64	0.61	273.37	311.63	--	--	--	--	--	--	--	--	--	--	--	--
COWCOD ROCKFISH (South of 40°10' N. lat.)	0.00	0.00	0.18	0.18	--	--	--	--	--	--	--	--	--	--	--	--
DARKBLOTCHED ROCKFISH	7.78	0.38	81.13	89.28	--	--	0.00	0.00	0.00	0.00	0.03	0.03	0.00	--	0.02	0.02
Dover Sole	124.59	3.61	6,324.69	6,452.89	--	--	0.00	0.00	0.01	0.00	0.10	0.10	0.16	--	0.53	0.69
English Sole	46.42	1.31	189.26	236.98	--	--	0.02	0.02	--	--	--	--	--	--	0.00	0.00
Lingcod (North of 40°10' N. lat.)	16.60	0.70	207.15	215.80	--	--	4.28	4.28	0.02	0.00	0.28	0.28	0.08	--	1.31	1.40
50% discard mortality (Trawl)‡	8.30	0.35														
7% discard mortality (Hook-and-Line)‡									0.00	0.00						
Lingcod (South of 40°10' N. lat.)	4.95	0.01	13.51	15.99	--	--	--	--	--	--	--	--	0.03	--	0.11	0.14
50% discard mortality (Trawl)‡	2.48	0.00														
7% discard mortality (Hook-and-Line)‡																
Longnose Skate	133.47	3.02	774.95	843.20	--	--	--	--	0.49	0.06	2.86	3.13	0.01	0.00	0.00	0.01
50% discard mortality (Trawl)‡	66.74	1.51														
50% discard mortality (Fixed Gear)‡									0.25	0.03						
Longspine Thornyhead (North of 34°27' N. lat.)	40.29	0.35	843.18	883.83	--	--	--	--	0.20	0.02	0.01	0.23	0.01	--	0.02	0.04
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	0.11	0.01	0.11	0.24	0.01	0.00	0.01	0.01
Minor nearshore rockfish (North of 40°10' N. lat.)																
Blue Rockfish	--	0.00	0.01	0.01	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Brown Rockfish	0.00	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Copper Rockfish	--	0.00	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Quillback Rockfish	--	0.00	0.17	0.17	--	--	--	--	--	--	--	--	--	--	--	--
Minor nearshore rockfish (South of 40°10' N. lat.)																
Brown Rockfish	0.00	0.00	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
China Rockfish	--	--	0.23	0.23	--	--	--	--	--	--	--	--	--	--	--	--
Olive Rockfish	0.00	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)																
Bocaccio Rockfish	0.02	0.00	0.88	0.90	--	--	0.11	0.11	--	--	--	--	0.00	--	--	0.00
Chilipepper Rockfish	0.58	0.02	2.88	3.48	--	--	0.01	0.01	--	--	--	--	--	--	--	--
Cowcod Rockfish	--	0.00	0.02	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Freckled Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Greenspotted Rockfish	0.01	0.00	0.02	0.03	--	--	--	--	--	--	0.00	0.00	--	--	--	--
Greenstriped Rockfish	5.15	0.19	11.80	17.15	--	--	0.00	0.00	0.00	0.00	--	0.00	--	--	--	--
Halfbanded Rockfish	0.06	0.00	--	0.06	--	--	--	--	--	--	--	--	--	--	--	--
Pygmy Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--

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

Table 3a (continued).

	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
Weight (mt)	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Redstripe Rockfish	0.22	0.01	1.80	2.02	--	--	0.14	0.14	--	--	--	--	--	--	--	--
Rockfish Unid	--	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	0.84	0.03	0.92	1.79	--	--	0.02	0.02	0.00	0.00	0.01	0.01	--	--	0.00	0.00
Rosy Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Shelf Rockfish Unid	--	0.00	0.09	0.09	--	--	0.00	0.00	--	--	0.00	0.00	--	--	0.00	0.00
Silvergray Rockfish	--	0.00	0.48	0.48	--	--	0.09	0.09	--	--	0.00	0.00	--	--	--	--
Stripetail Rockfish	6.05	0.22	0.51	6.79	--	--	--	--	--	--	--	--	--	--	--	--
Vermilion Rockfish	--	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)																
Greenblotched Rockfish	0.01	0.00	0.04	0.05	--	--	--	--	--	--	--	--	--	--	--	--
Greenspotted Rockfish	0.08	0.00	0.49	0.56	--	--	--	--	--	--	--	--	--	--	--	--
Greenstriped Rockfish	1.04	0.01	0.26	1.30	--	--	--	--	--	--	--	--	--	--	--	--
Halfbanded Rockfish	0.02	0.00	--	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Mexican Rockfish	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Pink Rockfish	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Rockfish Unid	0.03	0.00	--	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	0.05	0.00	0.04	0.10	--	--	--	--	--	--	--	--	0.00	--	--	0.00
Shelf Rockfish Unid	--	--	0.08	0.08	--	--	--	--	--	--	--	--	--	--	--	--
Squarespot Rockfish	0.00	0.00	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Starry Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Stripetail Rockfish	5.89	0.32	0.04	6.25	--	--	--	--	--	--	--	--	--	--	--	--
Vermilion Rockfish	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Yellowtail Rockfish	0.01	0.00	0.03	0.04	--	--	--	--	--	--	--	--	--	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)																
Aurora Rockfish	4.86	0.12	13.58	18.56	--	--	--	--	--	--	0.00	0.00	0.00	--	0.00	0.00
Bank Rockfish	--	0.00	2.46	2.46	--	--	--	--	--	--	--	--	--	--	--	--
Blackgill Rockfish	0.02	0.00	5.95	5.98	--	--	--	--	--	--	0.06	0.06	--	--	0.00	0.00
Redbanded Rockfish	0.29	0.01	4.20	4.49	--	--	--	--	0.00	0.00	1.17	1.18	0.00	--	0.03	0.04
Rockfish Unid	0.05	0.07	--	0.11	--	--	--	--	--	--	--	--	--	--	--	--
Rougheye Rockfish	0.09	0.01	33.88	33.99	--	--	0.00	0.00	0.08	0.01	2.69	2.78	0.00	--	0.09	0.09
Sharpchin Rockfish	4.34	0.11	9.43	13.88	--	--	0.00	0.00	--	--	0.00	0.00	--	--	--	--
Shortraker Rockfish	0.00	0.01	22.45	22.46	--	--	--	--	0.01	0.00	0.32	0.33	--	--	0.00	0.00
Shortraker/Rougheye Rockfish	--	--	--	--	--	--	--	--	0.01	0.00	--	0.01	0.00	--	--	0.00
Slope Rockfish Unid	--	0.00	2.90	2.90	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Splitnose Rockfish	15.53	0.55	17.66	33.73	--	--	0.01	0.01	--	--	--	--	--	--	--	--
Yellowmouth Rockfish	0.00	0.00	3.88	3.89	--	--	--	--	--	--	--	--	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)																
Aurora Rockfish	1.24	0.06	2.54	3.84	--	--	--	--	--	--	--	--	0.00	--	0.03	0.04
Bank Rockfish	0.06	0.00	52.92	52.97	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Blackgill Rockfish	0.84	0.05	34.04	34.93	--	--	--	--	--	--	--	--	0.10	--	3.34	3.44
Blackspotted Rockfish	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Ocean Perch	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Redbanded Rockfish	0.06	0.01	2.72	2.79	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 3a (continued).

	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
Weight (mt)	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Sharpchin Rockfish	0.03	0.00	0.00	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	1.38	1.38	--	--	--	--	--	--	--	--	--	--	--	--
Yellowmouth Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mixed thornyheads																
Shortspine/Longspine Thornyhead	0.22	0.00	0.01	0.23	--	--	--	--	--	--	--	--	--	--	--	--
Other flatfish																
Butter Sole	0.64	0.01	0.09	0.75	--	--	--	--	--	--	--	--	--	--	--	--
Curlfin Turbot	1.01	0.03	1.49	2.54	--	--	--	--	--	--	--	--	--	--	--	--
Flatfish Unid	0.07	0.00	0.05	0.12	--	--	--	--	--	--	--	--	--	--	--	--
Flathead Sole	8.34	0.32	10.60	19.27	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Pacific Sanddab	110.61	3.66	205.24	319.52	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Rex Sole	38.80	1.47	382.12	422.39	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Rock Sole	0.22	0.01	0.67	0.90	--	--	--	--	--	--	--	--	--	--	--	--
Sanddab Unid	0.08	0.01	47.01	47.09	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Sand Sole	0.55	0.02	18.32	18.89	--	--	--	--	--	--	--	--	--	--	--	--
Other groundfish																
Big Skate	69.82	1.76	38.88	74.67	--	--	--	--	0.06	0.01	--	0.07	--	--	--	--
50% discard mortality (Trawl)‡	34.91	0.88														
California Skate	0.84	0.03	--	0.87	--	--	--	--	--	--	--	--	--	--	--	--
Grenadier Unid	6.95	0.06	27.02	34.03	--	--	--	--	--	--	0.46	0.46	0.27	0.00	0.30	0.57
Kelp Greenling	0.05	0.00	0.00	0.06	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Flatnose	0.82	0.01	--	0.83	--	--	--	--	0.01	0.00	--	0.01	0.06	0.00	--	0.06
Pacific Grenadier	29.84	0.22	2.88	32.95	--	--	--	--	0.23	0.03	--	0.26	4.75	--	--	4.75
Roundfish Unid	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Skate Unid	0.97	0.08	329.48	330.53	--	--	0.01	0.01	--	--	0.14	0.14	--	--	0.00	0.00
Soupfin Shark	1.04	0.01	0.71	1.76	--	--	--	--	--	--	--	--	--	--	--	--
Spotted Ratfish	89.03	1.97	2.75	93.76	--	--	0.00	0.00	0.04	0.00	--	0.04	0.00	0.00	--	0.00
Pacific Cod	0.48	0.04	165.74	166.26	--	--	0.00	0.00	--	--	0.01	0.01	--	--	--	--
Pacific Hake	196.76	3.02	37.49	237.26	--	--	2.32	2.32	0.06	0.01	--	0.07	0.09	--	--	0.09
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	1.17	0.07	29.54	30.77	--	--	0.00	0.00	0.00	0.00	0.05	0.05	--	--	0.00	0.00
Petrale Sole	23.50	2.32	2,290.22	2,316.05	--	--	--	--	0.01	0.00	0.09	0.10	0.00	--	0.01	0.02
Sablefish (North of 36° N. lat.)	18.45	0.62	1,273.57	1,283.11	--	--	0.01	0.01	2.40	0.27	67.65	68.19	7.47	--	501.92	503.41
50% discard mortality (Trawl)‡	9.23	0.31														
20% discard mortality (Fixed Gear)‡									0.48	0.05			1.49			
Sablefish (South of 36° N. lat.)	2.11	0.02	5.60	6.66	--	--	--	--	0.11	0.01	15.10	15.12	2.69	--	176.17	176.71
50% discard mortality (Trawl)‡	1.05	0.01														
20% discard mortality (Fixed Gear)‡									0.02	0.00			0.54			
Shortbelly Rockfish	7.91	0.08	0.04	8.02	--	--	--	--	--	--	--	--	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	9.24	0.36	680.86	690.46	--	--	0.00	0.00	0.09	0.01	3.85	3.95	0.21	--	0.39	0.59
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	0.01	0.00	1.26	1.27	0.26	--	1.10	1.36

Table 3a (continued).

	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
Weight (mt)	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Spiny Dogfish	300.33	9.00	47.64	356.96	--	--	1.12	1.12	29.62	3.37	--	16.50	0.04	0.00	--	0.04
50% discard mortality (Line)‡									14.81	1.69						
Splitnose Rockfish (South of 40°10' N. lat.)	44.48	3.52	16.79	64.79	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Starry Flounder	1.04	0.02	13.65	14.70	--	--	--	--	--	--	--	--	--	--	--	--
Widow Rockfish	0.09	0.02	51.51	51.62	0.01	--	298.27	298.29	--	--	--	--	--	--	--	--
YELLOWEYE ROCKFISH	0.00	0.00	0.08	0.08	--	--	--	--	--	--	0.01	0.01	--	--	--	--
Yellowtail Rockfish (North of 40°10' N. lat.)	0.05	0.04	285.74	285.83	0.00	--	567.94	567.94	0.01	0.00	0.01	0.01	--	--	--	--
Non-groundfish species																
Dungeness Crab	112.09	3.25	0.03	115.37	--	--	--	--	--	--	--	--	0.38	0.00	--	0.38
Non-FMP flatfish																
Deepsea Sole	16.78	0.22	0.00	17.00	--	--	--	--	--	--	--	--	0.01	0.00	--	0.01
Hornyhead Turbot	0.04	0.00	--	0.04	--	--	--	--	--	--	--	--	--	--	--	--
Slender Sole	32.83	1.07	--	33.90	--	--	--	--	--	--	--	--	--	--	--	--
Non-FMP skate																
Aleutian Skate	1.51	0.02	--	1.53	--	--	--	--	0.03	0.00	--	0.03	--	--	--	--
Black Skate	18.61	0.19	--	18.80	--	--	--	--	0.11	0.01	--	0.13	0.00	0.00	--	0.00
Deepsea Skate	0.80	0.00	--	0.80	--	--	--	--	0.01	0.00	--	0.01	--	--	--	--
Pacific Electric Ray	2.32	0.02	--	2.34	--	--	--	--	--	--	--	--	--	--	--	--
Sandpaper Skate	39.60	0.91	--	40.51	--	--	--	--	0.04	0.00	--	0.04	--	--	--	--
Starry Skate	0.07	0.00	--	0.07	--	--	--	--	--	--	--	--	--	--	--	--
White Skate	0.06	0.00	--	0.06	--	--	--	--	--	--	--	--	--	--	--	--
Other non-groundfish																
Greenling Unid	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Sculpin Unid	1.91	0.05	--	1.97	--	--	--	--	--	--	--	--	--	--	--	--

Table 3b. Observed Sectors: Hake IFQ/Co-op Fishing Mortality Estimates by Sector.

Retained catch/landings (mt), discard (mt), and fishing mortality estimates (mt) of groundfish species from hake IFQ/Co-op sectors in 2014. In shoreside hake, discard ratios (Table 2b) were multiplied by expansion factors to generate estimated discard, sampled discard was expanded to the haul level and summed by sector, and landings were summarized from PacFIN. At-sea hake Co-op Program data was summarized from the A-SHOP. All rebuilding species are capitalized.

	IFQ - Shoreside Hake				At-sea Catcher-Processors			At-sea Mothership		
Weight (mt)	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Retained	Estimate	Sampled Discard	Retained	Estimate
Groundfish species										
Arrowtooth Flounder	0.05	--	6.28	6.32	0.36	8.44	8.80	0.17	1.76	1.93
Canary Rockfish	0.03	0.00	2.54	2.57	0.10	0.18	0.28	0.15	0.20	0.35
DARKBLOTCHED ROCKFISH	--	--	8.45	8.45	0.67	2.74	3.41	2.44	4.76	7.21
Dover Sole	--	--	0.12	0.12	0.01	0.85	0.87	0.00	0.05	0.05
English Sole	--	--	0.00	0.00	--	0.01	0.01	--	--	--
Lingcod (North of 40°10' N. lat.)	0.06	0.00	9.05	9.11	0.00	0.04	0.04	0.35	0.50	0.85
Longnose Skate	0.02	0.00	0.28	0.30	0.09	0.26	0.35	0.40	--	0.40
Longspine Thornyhead (North of 34°27' N. lat.)	--	--	0.03	0.03	--	0.00	0.00	0.00	0.00	0.00
Minor shelf rockfish (North of 40°10' N. lat.)										
Bocaccio Rockfish	--	--	0.46	0.46	0.01	--	0.01	0.06	0.01	0.07
Chilipepper Rockfish	0.00	0.00	0.05	0.05	0.00	0.00	0.00	--	--	--
Greenstriped Rockfish	--	--	0.11	0.11	--	--	--	--	--	--
Harlequin Rockfish	--	--	--	--	--	--	--	0.00	--	0.00
Redstripe Rockfish	0.02	0.00	0.33	0.35	0.00	0.03	0.04	0.03	0.01	0.04
Rockfish Unid	--	--	--	--	--	0.00	0.00	--	--	--
Rosethorn Rockfish	--	--	0.01	0.01	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	0.01	0.01	--	--	--	--	--	--
Silvergray Rockfish	--	--	0.33	0.33	0.00	0.01	0.02	0.01	0.06	0.07
Stripetail Rockfish	--	--	0.02	0.02	--	--	--	0.00	--	0.00
Minor slope rockfish (North of 40°10' N. lat.)										
Aurora Rockfish	--	--	0.20	0.20	0.00	0.08	0.08	0.00	--	0.00
Bank Rockfish	--	--	--	--	0.01	0.07	0.08	0.00	0.00	0.00
Blackgill Rockfish	--	--	0.06	0.06	--	0.09	0.09	0.00	--	0.00
Redbanded Rockfish	--	--	0.05	0.05	--	0.00	0.00	0.00	--	0.00
Rockfish Unid	--	--	--	--	--	0.00	0.00	--	--	--
Rougheye Rockfish	--	--	3.48	3.48	0.89	3.20	4.09	0.90	0.59	1.48
Sharpchin Rockfish	0.01	0.00	0.69	0.70	--	0.00	0.00	0.00	0.00	0.00
Shortraker Rockfish	--	--	0.66	0.66	--	--	--	0.01	--	0.01
Slope Rockfish Unid	--	--	0.06	0.06	--	--	--	--	--	--
Splitnose Rockfish	0.01	0.00	30.92	30.93	0.56	12.79	13.35	3.44	2.73	6.17
Yellowmouth Rockfish	--	--	0.00	0.00	0.00	--	0.00	--	0.00	0.00
Mixed thornyheads										
Shortspine/Longspine Thornyhead	--	--	--	--	--	2.56	2.56	--	--	--
Other flatfish										
Flatfish Unid	--	--	0.00	0.00	--	--	--	--	0.00	0.00
Flathead Sole	--	--	0.00	0.00	0.00	--	0.00	--	--	--
Pacific Sanddab	--	--	0.77	0.77	--	0.00	0.00	--	--	--
Rex Sole	--	--	0.31	0.31	0.49	7.11	7.60	0.05	0.54	0.59
Sanddab Unid	--	--	0.00	0.00	--	--	--	--	--	--
Other groundfish										
Big Skate	--	--	--	--	0.07	0.15	0.22	0.25	--	0.25
Grenadier Unid	--	--	--	--	0.07	0.28	0.35	0.32	0.05	0.37
Groundfish Unid	--	--	0.22	0.22	--	--	--	--	--	--
Pacific Electric Ray	--	--	--	--	--	0.00	0.00	--	--	--
Roundfish Unid	--	--	--	--	0.02	0.01	0.03	--	--	--
Skate Unid	--	--	0.51	0.51	--	0.04	0.04	--	--	--
Soupfin Shark	0.12	0.00	0.19	0.31	0.45	0.05	0.49	--	--	--
Spotted Ratfish	--	--	0.01	0.01	--	0.00	0.00	0.00	--	0.00
Pacific Cod	--	--	0.18	0.18	--	--	--	--	--	--
Pacific Hake	493.77	0.04	97,982.70	98,476.51	94.95	103,171.34	103,266.29	244.62	61,793.66	62,038.29
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	--	--	10.17	10.17	0.04	0.28	0.32	1.91	1.69	3.60
Petrale Sole	--	--	0.03	0.03	--	--	--	--	--	--
Sablefish (North of 36° N. lat.)	0.00	0.00	5.23	5.23	0.30	14.96	15.27	0.18	0.72	0.90
Shortbelly Rockfish	--	--	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	2.19	2.19	1.83	17.01	18.84	1.06	0.57	1.63
Spiny Dogfish	0.12	0.00	69.42	69.55	21.02	17.02	38.04	15.45	6.08	21.53
Widow Rockfish	4.19	0.00	300.17	304.36	12.50	4.05	16.55	13.72	25.91	39.63
YELLOWEYE ROCKFISH	--	--	0.00	0.00	--	--	--	--	--	--
Yellowtail Rockfish (North of 40°10' N. lat.)	--	--	309.47	309.47	0.01	0.01	0.02	23.66	18.28	41.94
Non-groundfish species										
Dungeness Crab	--	--	0.03	0.03	--	--	--	--	--	--
Non-FMP flatfish										
Slender Sole	--	--	--	--	0.00	0.01	0.01	0.00	0.00	0.00
Non-FMP skate										
Aleutian Skate	--	--	--	--	--	0.00	0.00	--	--	--
Sandpaper Skate	--	--	--	--	0.00	0.01	0.01	--	--	--

Table 4. OA California Halibut Trawl.

Observed discard ratios, standard error, estimated discard (mt), landings (mt), and fishing mortality estimates (mt) of groundfish species from federal open access participants in the state-licensed California halibut fishery in 2014 (only occurs south of 40°10' N latitude). Ratios are computed as the observed discard weight divided by the observed weight of retained California halibut (adjusted to fish tickets). Discard ratios were multiplied by fleet landings of California halibut to generate estimated discard. All rebuilding species are capitalized.

Open Access California Halibut Fishery South of 40°10' N Lat.	Observed vessels		Observed trips	Observed tows	Expansion factor: Fleet landings of California halibut (mt)	
	6		51	145	81	
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Total Estimate
Groundfish species						
Black Rockfish (South of 46°16' N. lat.)	--	--	--	--	0.00	0.00
California Scorpionfish (South of 34°27' N. lat.)	0.0004	0.0001	0.3090	0.03	0.00	0.03
Dover Sole	--	--	--	--	0.01	0.01
English Sole	0.0027	0.0006	0.2157	0.22	0.11	0.33
Lingcod (South of 40°10' N. lat.)	0.0000	0.0000	0.2572	0.00	0.05	0.05
50% discard mortality (Trawl)‡				0.00		
Minor nearshore rockfish (South of 40°10' N. lat.)						
Brown Rockfish	0.0000	0.0000	0.0599	0.00	0.01	0.02
Copper Rockfish	--	--	--	--	0.01	0.01
Minor shelf rockfish (South of 40°10' N. lat.)						
Rockfish Unid	0.0000	0.0000	0.0599	0.00	--	0.00
Other flatfish						
Curlfin Turbot	0.0064	0.0016	0.2537	0.52	0.21	0.73
Flatfish Unid	0.0003	0.0002	0.6908	0.02	0.73	0.75
Pacific Sanddab	0.0028	0.0008	0.2907	0.23	0.01	0.23
Rock Sole	--	--	--	--	0.04	0.04
Sanddab Unid	--	--	--	--	0.10	0.10
Sand Sole	0.0149	0.0054	0.3620	1.21	11.41	12.62
Other groundfish						
Big Skate	0.1869	0.0298	0.1596	15.22	--	7.61
50% discard mortality (Trawl)‡				7.61		
California Skate	0.0090	0.0035	0.3881	0.73	--	0.73
Leopard Shark	0.0043	0.0015	0.3464	0.35	0.26	0.61
Skate Unid	0.0048	0.0022	0.4633	0.39	0.48	0.87
Soupfin Shark	0.0005	0.0000	0.0599	0.04	0.19	0.23
Petrale Sole	--	--	--	--	0.10	0.10
Spiny Dogfish	0.0697	0.0273	0.3921	5.67	--	5.67
Starry Flounder	0.0016	0.0010	0.6185	0.13	5.72	5.85
Non-groundfish species						
California Halibut	0.0737	0.0083	0.1125	6.00	81.42	87.42
Dungeness Crab	3.1817	0.2781	0.0874	259.05	0.44	259.49
Non-FMP flatfish						
Deepsea Sole	--	--	--	--	0.11	0.11
Diamond Turbot	0.0058	0.0013	0.2325	0.47	0.01	0.48
Hornyhead Turbot	0.0010	0.0003	0.3021	0.08	0.73	0.81
Longfin Sanddab	0.0001	0.0000	0.3730	0.00	--	0.00
Speckled Sanddab	0.0024	0.0007	0.2719	0.20	--	0.20
Non-FMP skate						
Pacific Electric Ray	0.0110	0.0026	0.2321	0.90	--	0.90
Thornback Skate	0.0029	0.0006	0.2191	0.23	--	0.23
Other non-groundfish						
Brown Irish Lord Sculpin	0.0000	0.0000	0.1561	0.00	--	0.00
Sculpin Unid	0.0005	0.0001	0.2579	0.04	--	0.04

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

Table 5. Pink Shrimp Trawl.

Observed discard ratios, standard error, estimated discard (mt), landings (mt), and fishing mortality estimates (mt) of groundfish species from 2014 state pink shrimp fisheries. Ratios are computed as the observed discard weight divided by the observed weight of retained pink shrimp (adjusted to fish tickets). Discard ratios were multiplied by state fleet landings of pink shrimp to generate estimated discard. All rebuilding species are capitalized.

	Washington						Oregon						California					
Pink Shrimp Trawl Fishery	Observed vessels		Observed trips	Observed tows	Expansion factor: Fleet landings of pink shrimp (mt)		Observed vessels		Observed trips	Observed tows	Expansion factor: Fleet landings of pink shrimp (mt)		Observed vessels		Observed trips	Observed tows	Expansion factor: Fleet landings of pink shrimp (mt)	
	17		43	393	13,876		38		106	1424	23,551		11		26	311	3,845	
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Groundfish species																		
Arrowtooth Flounder	0.0001	0.0000	0.1529	1.45	--	1.45	0.0014	0.0001	0.1028	33.74	--	33.74	0.0013	0.0002	0.1323	5.14	0.09	5.23
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.09	0.09
California Scorpionfish (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.13	0.13
Canary Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.5119	0.07	--	0.07	--	--	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
DARKBLOTCHED ROCKFISH	0.0005	0.0001	0.1295	6.38	--	6.38	0.0005	0.0000	0.0642	12.89	--	12.89	0.0014	0.0004	0.2682	5.26	--	5.26
Dover Sole	0.0000	0.0000	0.6220	0.47	--	0.47	0.0001	0.0000	0.3007	1.55	--	1.55	0.0001	0.0000	0.6406	0.29	0.05	0.35
English Sole	0.0000	0.0000	0.0602	0.00	--	0.00	0.0000	0.0000	0.3608	0.05	--	0.05	0.0000	0.0000	0.1018	0.00	1.22	1.23
Lingcod (North of 40°10' N. lat.)	0.0000	0.0000	0.0602	0.18	--	0.18	0.0000	0.0000	0.3332	0.15	--	0.15	0.0000	0.0000	0.2671	0.03	--	0.03
Lingcod (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Longnose Skate	0.0000	0.0000	0.0602	0.00	--	0.00	0.0000	0.0000	0.3198	0.16	--	0.16	0.0001	0.0000	0.2087	0.35	--	0.35
Minor nearshore rockfish (North of 40°10' N. lat.)																		
Blue Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.0234	0.00	--	0.00	--	--	--	--	--	--
Minor nearshore rockfish (South of 40°10' N. lat.)																		
China Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Copper Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.11	0.11
Minor shelf rockfish (North of 40°10' N. lat.)																		
Bocaccio Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.3366	0.01	--	0.01	0.0000	0.0000	0.3841	0.02	--	0.02
Chilipepper Rockfish	--	--	--	--	--	--	0.0003	0.0001	0.1881	6.80	--	6.80	0.0001	0.0000	0.2544	0.48	--	0.48
Cowcod Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0000	0.0407	0.00	--	0.00
Greenspotted Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.4537	0.01	--	0.01	--	--	--	--	--	--
Greenstriped Rockfish	0.0000	0.0000	0.1338	0.43	--	0.43	0.0000	0.0000	0.1317	0.19	--	0.19	0.0000	0.0000	0.1987	0.16	--	0.16
Pygmy Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.3423	0.00	--	0.00	--	--	--	--	--	--
Rockfish Unid	0.0001	0.0000	0.2439	0.80	--	0.80	0.0002	0.0000	0.2304	4.47	--	4.47	0.0001	0.0001	0.6320	0.44	--	0.44
Rosy Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.0234	0.00	--	0.00	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Stripetail Rockfish	0.0000	0.0000	0.0602	0.00	--	0.00	0.0000	0.0000	0.1947	0.89	--	0.89	0.0002	0.0001	0.2813	0.73	--	0.73
Vermilion Rockfish	0.0000	0.0000	0.0602	0.02	--	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)																		
Shelf Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Vermilion Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Minor slope rockfish (North of 40°10' N. lat.)																		
Aurora Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.6839	0.01	--	0.01	--	--	--	--	--	--
Redbanded Rockfish	0.0000	0.0000	0.3705	0.03	--	0.03	0.0000	0.0000	0.2476	0.04	--	0.04	0.0000	0.0000	0.0407	0.00	--	0.00
Rockfish Unid	--	--	--	--	--	--	0.0000	0.0000	0.0234	0.02	--	0.02	--	--	--	--	--	--
Rougheye Rockfish	0.0000	0.0000	0.2628	0.01	--	0.01	0.0000	0.0000	0.4644	0.01	--	0.01	0.0000	0.0000	0.0407	0.00	--	0.00
Sharpchin Rockfish	0.0000	0.0000	0.4922	0.00	--	0.00	0.0000	0.0000	0.4304	0.01	--	0.01	--	--	--	--	--	--
Shortraker Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Splitnose Rockfish	0.0000	0.0000	0.3008	0.09	--	0.09	0.0000	0.0000	0.2128	0.62	--	0.62	0.0000	0.0000	0.0407	0.00	--	0.00

Table 5 (continued).

Pink Shrimp Trawl Fishery	Washington						Oregon						California					
	Observed vessels		Observed trips	Observed tows	Expansion factor: Fleet landings of pink shrimp (mt)		Observed vessels		Observed trips	Observed tows	Expansion factor: Fleet landings of pink shrimp (mt)		Observed vessels		Observed trips	Observed tows	Expansion factor: Fleet landings of pink shrimp (mt)	
	17		43	393	13,876		38		106	1424	23,551		11		26	311	3,845	
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Minor slope rockfish (South of 40°10' N. lat.)																		
Slope Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Other flatfish																		
Curlfin Turbot	--	--	--	--	--	--	0.0000	0.0000	0.0234	0.00	--	0.00	--	--	--	--	--	--
Flatfish Unid	--	--	--	--	--	--	0.0002	0.0000	0.1817	5.29	--	5.29	0.0009	0.0006	0.6246	3.57	16.22	19.79
Flathead Sole	0.0000	0.0000	0.1481	0.20	--	0.20	0.0001	0.0000	0.0952	1.90	--	1.90	0.0000	0.0000	0.1328	0.02	--	0.02
Pacific Sanddab	0.0002	0.0001	0.2865	2.97	--	2.97	0.0001	0.0000	0.2562	1.49	--	1.49	0.0004	0.0001	0.2046	1.37	--	1.37
Rex Sole	0.0003	0.0000	0.1604	3.97	--	3.97	0.0007	0.0000	0.0687	15.35	--	15.35	0.0006	0.0002	0.3512	2.41	0.07	2.48
Rock Sole	0.0000	0.0000	0.1638	0.66	--	0.66	0.0000	0.0000	0.0234	0.00	--	0.00	--	--	--	--	0.50	0.50
Sanddab Unid	--	--	--	--	--	--	0.0000	0.0000	0.1659	0.03	--	0.03	--	--	--	--	0.11	0.11
Sand Sole	0.0000	0.0000	0.1616	0.01	--	0.01	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Other groundfish																		
Big Skate	--	--	--	--	--	--	0.0000	0.0000	0.1711	0.04	--	0.04	--	--	--	--	--	--
California Skate	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	0.0000	0.0696	0.00	0.02	0.02
Leopard Shark	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Skate Unid	--	--	--	--	--	--	0.0000	0.0000	0.6817	0.05	--	0.05	--	--	--	--	7.64	7.64
Spotted Ratfish	0.0000	0.0000	0.6128	0.05	--	0.05	0.0000	0.0000	0.3725	0.02	--	0.02	0.0000	0.0000	0.1051	0.01	--	0.01
Pacific Cod	0.0000	0.0000	0.4133	0.14	--	0.14	0.0000	0.0000	0.0667	0.00	--	0.00	--	--	--	--	--	--
Pacific Hake	0.0000	0.0000	0.3494	0.01	--	0.01	0.0071	0.0012	0.1657	166.58	--	166.58	0.0160	0.0029	0.1808	61.68	0.03	61.71
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	0.0005	0.0001	0.1839	6.54	--	6.54	0.0001	0.0000	0.1408	3.42	--	3.42	0.0000	0.0000	0.2388	0.01	--	0.01
Petrale Sole	0.0001	0.0000	0.3195	1.32	0.00	1.32	0.0000	0.0000	0.1667	1.08	0.00	1.08	0.0000	0.0000	0.2789	0.01	0.28	0.29
Sablefish (North of 36° N. lat.)	--	--	--	--	--	--	0.0000	0.0000	0.5658	0.02	--	0.02	0.0001	0.0000	0.4623	0.29	--	0.29
Sablefish (South of 36° N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07	0.07
Shortbelly Rockfish	0.0000	0.0000	0.2104	0.31	--	0.31	0.0003	0.0000	0.1532	6.13	--	6.13	0.0006	0.0001	0.1720	2.42	--	2.42
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	--	--	--	0.0000	0.0000	0.2083	0.15	--	0.15	0.0000	0.0000	0.2982	0.00	--	0.00
Spiny Dogfish	0.0000	0.0000	0.0602	0.00	--	0.00	0.0000	0.0000	0.6976	0.02	--	0.02	0.0000	0.0000	0.6114	0.01	--	0.01
Widow Rockfish	0.0000	0.0000	0.5109	0.00	--	0.00	0.0000	0.0000	0.4037	0.01	0.00	0.01	0.0000	0.0000	0.0407	0.00	--	0.00
YELLOWEYE ROCKFISH	--	--	--	--	--	--	0.0000	0.0000	0.0234	0.00	--	0.00	--	--	--	--	--	--
Yellowtail Rockfish (North of 40°10' N. lat.)	0.0000	0.0000	0.8055	0.05	--	0.05	--	--	--	--	0.00	0.00	--	--	--	--	0.03	0.03
Non-groundfish species																		
California Halibut	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.70	5.70
Dungeness Crab	--	--	--	--	--	--	0.0000	0.0000	0.0234	0.00	--	0.00	0.0000	0.0000	0.2273	0.03	0.03	0.06
Non-FMP flatfish																		
Hornyhead Turbot	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.30	1.30
Slender Sole	0.0022	0.0003	0.1477	29.93	--	29.93	0.0039	0.0003	0.0876	91.87	--	91.87	0.0011	0.0002	0.1813	4.40	--	4.40
Speckled Sanddab	--	--	--	--	--	--	0.0000	0.0000	0.2510	0.02	--	0.02	--	--	--	--	--	--
Non-FMP skate																		
Sandpaper Skate	--	--	--	--	--	--	0.0000	0.0000	0.8318	0.03	--	0.03	0.0000	0.0000	0.0407	0.00	--	0.00
Other non-groundfish																		
California Sheephead	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Sculpin Unid	--	--	--	--	--	--	0.0000	0.0000	0.3640	0.20	--	0.20	0.0000	0.0000	0.3539	0.02	0.07	0.10

Table 6. LE Sablefish Primary Fixed Gear.

Observed discard ratios, standard error, estimated discard (mt), landings (mt), and fishing mortality estimates (mt) from the LE sablefish endorsed primary season (tier endorsed) fixed gear fleet in 2014. Ratios are computed as the observed discard weight divided by the observed weight of retained sablefish (adjusted to fish tickets). Discard ratios were multiplied by fleet landings of sablefish to generate discard estimates for each gear type; combined with other fixed gear sectors in Table 9. All rebuilding species are capitalized.

Limited Entry Sablefish Endorsed Primary Season	Longline						Pot					
	Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of sablefish (mt)		Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of sablefish (mt)	
	17		85	486	737		4		16	194	337	
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Groundfish species												
Arrowtooth Flounder	0.0250	0.0028	0.1123	18.45	0.94	19.39	0.0097	0.0019	0.1999	3.27	0.24	3.50
Canary Rockfish	0.0000	0.0000	0.1205	0.01	0.15	0.17	0.0001	0.0000	0.1273	0.03	--	0.03
Chilipepper Rockfish (South of 40°10' N. lat.)	0.0000	0.0000	0.8967	0.00	0.09	0.09	--	--	--	--	--	--
Cowcod Rockfish	0.0000	0.0000	0.0386	0.01	--	0.01	--	--	--	--	--	--
DARKBLOTCHED ROCKFISH	0.0007	0.0003	0.4199	0.53	1.61	2.14	0.0002	0.0002	0.9688	0.05	0.05	0.10
Dover Sole	0.0008	0.0001	0.1263	0.59	1.49	2.08	0.0022	0.0005	0.2360	0.75	0.05	0.80
Lingcod (North of 40°10' N. lat.)	0.0023	0.0007	0.3008	1.67	2.37	2.48	0.0072	0.0015	0.2053	2.44	1.10	3.54
7% discard mortality (Longline)‡				0.12								
Lingcod (South of 40°10' N. lat.)	0.0000	0.0000	0.9151	0.01	0.09	0.09	--	--	--	--	0.01	0.01
7% discard mortality (Longline)‡				0.00								
Longnose Skate	0.0461	0.0056	0.1210	34.00	16.28	33.28	--	--	--	--	--	--
50% discard mortality (Fixed Gear)‡				17.00								
Longspine Thornyhead (North of 34°27' N. lat.)	0.0000	0.0000	0.4817	0.01	0.27	0.28	0.0000	0.0000	0.1532	0.02	--	0.02
Minor shelf rockfish (North of 40°10' N. lat.)												
Chilipepper Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Greenspotted Rockfish	--	--	--	--	0.25	0.25	--	--	--	--	--	--
Greenstriped Rockfish	0.0003	0.0000	0.1521	0.21	0.00	0.22	0.0000	0.0000	0.0732	0.00	--	0.00
Halfbanded Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.0732	0.00	--	0.00
Redstripe Rockfish	0.0000	0.0000	0.9449	0.01	--	0.01	--	--	--	--	--	--
Rosethorn Rockfish	0.0002	0.0000	0.2091	0.16	0.02	0.18	0.0000	0.0000	0.4041	0.01	0.00	0.01
Rosy Rockfish	0.0000	0.0000	0.0386	0.00	--	0.00	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	--	0.29	0.29	--	--	--	--	0.10	0.10
Silvergray Rockfish	0.0001	0.0000	0.7857	0.04	0.46	0.50	--	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)												
Flag Rockfish	--	--	--	--	0.04	0.04	--	--	--	--	--	--
Greenblotched Rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	0.0000	0.0000	0.6520	0.00	--	0.00	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	--	0.01	0.01	--	--	--	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)												
Aurora Rockfish	0.0001	0.0001	0.4554	0.09	0.04	0.13	--	--	--	--	--	--
Blackgill Rockfish	0.0011	0.0006	0.5075	0.84	0.36	1.20	--	--	--	--	0.00	0.00
Blackspotted Rockfish	--	--	--	--	0.26	0.26	--	--	--	--	--	--
Redbanded Rockfish	0.0033	0.0009	0.2758	2.41	10.31	12.72	0.0001	0.0000	0.3486	0.02	0.06	0.08
Rougheye Rockfish	0.0138	0.0034	0.2451	10.18	16.05	26.23	--	--	--	--	0.06	0.06
Sharpchin Rockfish	--	--	--	--	0.01	0.01	0.0000	0.0000	0.3328	0.01	--	0.01
Shortraker Rockfish	0.0010	0.0004	0.3861	0.73	2.79	3.52	--	--	--	--	--	--
Shortraker/Rougheye Rockfish	0.0001	0.0000	0.1316	0.07	--	0.07	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	0.72	0.72	--	--	--	--	0.11	0.11
Splitnose Rockfish	0.0000	0.0000	0.7309	0.01	0.03	0.04	0.0000	0.0000	0.7144	0.00	--	0.00
Yellowmouth Rockfish	--	--	--	--	0.54	0.54	--	--	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)												
Aurora Rockfish	--	--	--	--	0.01	0.01	--	--	--	--	--	--
Bank Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Blackgill Rockfish	0.0119	0.0032	0.2649	8.79	4.72	13.51	--	--	--	--	0.41	0.41
Blackspotted Rockfish	--	--	--	--	0.21	0.21	--	--	--	--	--	--
Redbanded Rockfish	0.0000	0.0000	0.9818	0.01	0.32	0.34	--	--	--	--	--	--
Rougheye Rockfish	0.0000	0.0000	0.6809	0.02	2.12	2.14	--	--	--	--	--	--
Shortraker Rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	0.20	0.20	--	--	--	--	0.19	0.19

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

Table 6 (continued).

Limited Entry Sablefish Endorsed Primary Season	Longline						Pot					
	Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of sablefish (mt)		Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of sablefish (mt)	
	17		85	486	737		4		16	194	337	
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Mixed thornyheads												
Shortspine/Longspine Thornyhead	--	--	--	--	1.0324	1.03	--	--	--	--	--	--
Other flatfish												
Curlfin Turbot	--	--	--	--	--	--	0.0000	0.0000	0.0732	0.0014	--	0.00
Flathead Sole	--	--	--	--	--	--	0.0000	0.0000	0.0732	0.01	--	0.01
Other groundfish												
Big Skate	0.0042	0.0009	0.2180	3.06	--	3.06	--	--	--	--	--	--
Grenadier Unid	--	--	--	--	6.60	6.60	--	--	--	--	0.0680	0.07
Pacific Flatnose	0.0003	0.0001	0.1847	0.21	--	0.21	0.0001	0.0000	0.1708	0.02	--	0.02
Pacific Grenadier	0.0035	0.0011	0.3078	2.57	--	2.57	0.0063	0.0011	0.1714	2.13	--	2.13
Skate Unid	0.0000	0.0000	0.9979	0.02	8.31	8.33	--	--	--	--	--	--
Soupfin Shark	0.0015	0.0009	0.5962	1.09	--	1.09	--	--	--	--	--	--
Spotted Ratfish	0.0019	0.0003	0.1469	1.37	--	1.37	0.0000	0.0000	0.0732	0.00	--	0.00
Pacific Cod			0.3850						--			
Pacific Hake	0.0004	0.0001	0.3635	0.28	0.71	1.00	--	--	0.0732	--	--	--
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	0.0001	0.0000	0.9449	0.08	0.02	0.11	0.0001	0.0000	--	0.04	--	0.04
Petrale Sole	0.0000	0.0000	0.4846	0.00	0.15	0.15	--	--	0.8228	--	0.00	0.00
Sablefish (North of 36° N. lat.)	0.1558	0.0153	0.0984	114.80	712.70	735.66	0.2575	0.0502	0.1951	86.83	337.27	354.64
20% discard mortality (Fixed Gear)‡				22.96						17.37		
Sablefish (South of 36° N. lat.)	--	--	--	--	24.28	24.28	--	--	--	--	--	--
20% discard mortality (Fixed Gear)‡												
Shortspine Thornyhead (North of 34°27' N. lat.)	0.0033	0.0007	0.2039	2.43	16.95	19.38	0.0002	0.0001	0.3322	0.07	0.08	0.15
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	1.75	1.75	--	--	--	--	--	--
Spiny Dogfish	0.1915	0.0239	0.1250	141.13	13.97	84.54	0.0013	0.0002	0.1487	0.45	0.20	0.65
50% discard mortality (Hook and Line)‡				70.57								
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	--	--	0.01	0.01	--	--	--	--	--	--
Widow Rockfish	0.0000	0.0000	0.8967	0.0079	0.03	0.04	--	--	--	--	--	--
YELLOWEYE ROCKFISH	0.0006	0.0001	0.1888	0.45	--	0.45	0.0001	0.0000	0.2091	0.03	--	0.03
Yellowtail Rockfish (North of 40°10' N. lat.)	0.0004	0.0001	0.3534	0.30	0.21	0.50	--	--	--	--	--	--
Non-groundfish species												
Dungeness Crab	0.0000	0.0000	0.0386	0.0036	--	0.00	0.0025	0.0005	0.1944	0.8436	--	0.84
Non-FMP flatfish												
Deepsea Sole	--	--	--	--	--	--	0.0000	0.0000	0.3492	0.01	--	0.01
Non-FMP skate												
Aleutian Skate	0.0001	0.0001	0.3495	0.11	--	0.11	--	--	--	--	--	--
Black Skate	0.0011	0.0003	0.2791	0.83	--	0.83	--	--	--	--	--	--
Sandpaper Skate	0.0008	0.0001	0.1670	0.59	--	0.59	0.0000	0.0000	0.1284	0.01	--	0.01
Other non-groundfish												
Sculpin Unid	--	--	--	--	--	--	0.0000	0.0000	0.0732	0.00	--	0.00

Table 7. LE Non-Primary Fixed Gear.

Observed discard ratios, standard error, estimated discard (mt), landings (mt), and fishing mortality estimates (mt) from the LE non-endorsed fixed gear fleet in 2014. Ratios are computed as the observed discard weight divided by the observed weight of retained sablefish (north of 36° N lat.) or FMP groundfish (south of 36° N lat. and pot gear) (adjusted to fish tickets). The observed OA discard ratios were used for pot gear, as no pot was observed in this sector. Pot landings in this sector only occurred north of 36° N lat. Discard ratios were multiplied by fleet landings of sablefish or FMP groundfish to generate discard estimates for each gear type; combined with fixed gear sectors in Table 9. All rebuilding species are capitalized.

Limited Entry Non-Endorsed Fixed Gear	Longline - North of 36° N lat.						Longline - South of 36° N lat.						Pot - North of 36° N lat.					
	Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of sablefish (mt)		Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of groundfish (mt)		OA Observed (see Table 8b)			Expansion factor: Fleet landings of groundfish (mt)		
	4		9	9	123		14		68	145	564					4		
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Groundfish species																		
Arrowtooth Flounder	--	--	--	--	0.06	0.06	--	--	--	--	--	--	0.0038	0.0011	0.2982	0.02	--	0.02
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	--	--	--	--	0.00	0.00	--	--	--	--	1.70	1.70	--	--	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	--	0.00	0.00	--	--	--	--	0.00	0.00	--	--	--	--	--	--
DARKBLOTCHED ROCKFISH	--	--	--	--	0.45	0.45	--	--	--	--	0.23	0.23	--	--	--	--	--	--
Dover Sole	0.0019	0.0010	0.5298	0.23	0.29	0.52	0.0016	0.0003	0.1962	0.89	0.58	1.47	0.0013	0.0004	0.2976	0.01	0.00	0.01
Lingcod (North of 40°10' N. lat.)	--	--	--	--	0.33	0.33	--	--	--	--	--	--	0.0007	0.0001	0.1172	0.00	--	0.00
7% discard mortality (Longline)‡																		
Lingcod (South of 40°10' N. lat.)	0.0005	0.0002	0.3424	0.06	0.00	0.01	--	--	--	--	0.46	0.46	0.0006	0.0003	0.4534	0.00	--	0.00
7% discard mortality (Longline)‡				0.00														
Longnose Skate	0.0801	0.0373	0.4656	9.84	2.65	7.57	0.0217	0.0066	0.3055	12.27	0.78	6.92	--	--	--	--	--	--
50% discard mortality (Fixed Gear)‡				4.92						6.14								
Longspine Thornyhead (North of 34°27' N. lat.)	--	--	--	--	0.42	0.42	0.0070	0.0020	0.2865	3.97	1.77	5.74	--	--	--	--	--	--
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	0.0045	0.0009	0.2102	2.54	13.34	15.88	--	--	--	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)																		
Greenstriped Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	--	--	--	--	0.02	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	--	0.19	0.19	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)																		
Flag Rockfish	--	--	--	--	--	--	--	--	--	--	0.11	0.11	--	--	--	--	--	--
Freckled Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Greenblotched Rockfish	--	--	--	--	--	--	--	--	--	--	0.03	0.03	--	--	--	--	--	--
Greenspotted Rockfish	--	--	--	--	--	--	--	--	--	--	0.41	0.41	--	--	--	--	--	--
Greenstriped Rockfish	--	--	--	--	--	--	--	--	--	--	0.03	0.03	--	--	--	--	--	--
Mexican Rockfish	--	--	--	--	--	--	--	--	--	--	0.05	0.05	--	--	--	--	--	--
Pinkrose Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01	--	--	--	--	--	--
Rosethorn Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Rosy Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	0.23	0.23	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.27	0.27	--	--	--	--	--	--
Speckled Rockfish	--	--	--	--	--	--	--	--	--	--	0.04	0.04	--	--	--	--	--	--
Squarespot Rockfish	--	--	--	--	--	--	--	--	--	--	0.05	0.05	--	--	--	--	--	--
Starry Rockfish	--	--	--	--	--	--	--	--	--	--	0.52	0.52	--	--	--	--	--	--
Vermilion Rockfish	--	--	--	--	--	--	--	--	--	--	3.67	3.67	--	--	--	--	--	--
Yellowtail Rockfish	--	--	--	--	--	--	--	--	--	--	0.07	0.07	--	--	--	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)																		
Aurora Rockfish	--	--	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Blackgill Rockfish	--	--	--	--	0.02	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Blackspotted Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Redbanded Rockfish	--	--	--	--	1.19	1.19	--	--	--	--	--	--	0.0001	0.0001	0.7355	0.00	--	0.00
Rougheye Rockfish	--	--	--	--	1.05	1.05	--	--	--	--	--	--	--	--	--	--	--	--
Sharpchin Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Shortraker Rockfish	--	--	--	--	0.05	0.05	--	--	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	0.34	0.34	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Splitnose Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--

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

Table 7 (continued).

Limited Entry Non-Endorsed Fixed Gear	Longline - North of 36° N lat.						Longline - South of 36° N lat.						Pot - North of 36° N lat.					
	Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of sablefish (mt)		Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of groundfish (mt)		OA Observed (see Table 8b)			Expansion factor: Fleet landings of groundfish (mt)		
	4		9	9	123		14		68	145	564					4		
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Minor slope rockfish (South of 40°10' N. lat.)																		
Aurora Rockfish	--	--	--	--	0.03	0.03	--	--	--	--	0.13	0.13	0.0001	0.0000	0.2637	0.00	--	0.00
Bank Rockfish	--	--	--	--	--	--	--	--	--	--	0.23	0.23	--	--	--	--	--	--
Blackgill Rockfish	--	--	--	--	5.55	5.55	--	--	--	--	8.59	8.59	--	--	--	--	0.00	0.00
Blackspotted Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Redbanded Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	0.00	0.00	0.0004	0.0001	0.3402	0.00	0.00	0.00
Rougheye Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	0.06	0.06	--	--	--	--	0.23	0.23	--	--	--	--	--	--
Mixed thornyheads																		
Shortspine/Longspine Thornyhead	--	--	--	--	--	--	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Other flatfish																		
Flatfish Unid	--	--	--	--	--	--	--	--	--	--	0.05	0.05	--	--	--	--	--	--
Pacific Sanddab	--	--	--	--	--	--	--	--	--	--	2.27	2.27	--	--	--	--	--	--
Sanddab Unid	--	--	--	--	--	--	--	--	--	--	0.47	0.47	--	--	--	--	--	--
Other groundfish																		
Big Skate	--	--	--	--	--	--	0.0005	0.0001	0.2260	0.27	--	0.27	--	--	--	--	--	--
Grenadier Unid	--	--	--	--	1.64	1.64	0.0004	0.0003	0.8523	0.2145	14.57	14.79	0.0003	0.0000	0.1172	0.00	--	0.00
Pacific Flatnose	--	--	--	--	--	--	0.0021	0.0007	0.3216	1.21	--	1.21	--	--	--	--	--	--
Pacific Grenadier	0.0007	0.0002	0.3424	0.08	--	0.08	0.0617	0.0280	0.4538	34.81	--	34.81	0.0007	0.0002	0.2478	0.00	--	0.00
Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.86	0.86	--	--	--	--	--	--
Skate Unid	--	--	--	--	0.55	0.51	0.0002	0.0000	0.1491	0.09	0.46	0.55	--	--	--	--	--	--
Soupfin Shark	--	--	--	--	--	--	--	--	--	--	0.11	0.11	--	--	--	--	--	--
Spotted Ratfish	0.0009	0.0003	0.3424	0.11	--	0.11	0.0001	0.0000	0.3019	0.07	--	0.07	0.0001	0.0000	0.1172	0.00	--	0.00
Pacific Cod	--	--	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Hake	--	--	--	--	0.02	0.02	0.0003	0.0001	0.1698	0.20	0.1220	0.32	--	--	--	--	--	--
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	--	--	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Petrale Sole	--	--	--	--	0.05	0.05	--	--	--	--	0.00	0.00	--	--	--	--	0.00	0.00
Sablefish (North of 36° N. lat.)	0.1391	0.0475	0.3418	17.08	122.81	126.23	--	--	--	--	--	--	0.0883	0.0281	0.3178	0.36	4.00	4.07
20% discard mortality (Fixed Gear)‡				3.42												0.07		
Sablefish (South of 36° N. lat.)	--	--	--	--	--	--	0.0559	0.0175	0.3132	31.58	407.05	413.37	--	--	--	--	--	--
20% discard mortality (Fixed Gear)‡										6.32								
Shortspine Thornyhead (North of 34°27' N. lat.)	0.0041	0.0022	0.5442	0.50	7.63	8.14	0.0008	0.0003	0.3700	0.44	22.49	22.92	--	--	--	--	0.01	0.01
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	0.0169	0.0031	0.1826	9.57	82.22	91.78	--	--	--	--	--	--
Spiny Dogfish	0.0311	0.0189	0.6079	3.82	4.78	6.69	0.0006	0.0002	0.2731	0.32	0.03	0.20	0.0005	0.0001	0.2239	0.00	--	0.01
50% discard mortality (Longline)‡				1.91						0.16								
Splitnose rockfish (South of 40°10' N. lat.)	--	--	--	--	0.01	0.01	--	--	--	--	0.13	0.13	0.0000	0.0000	0.1172	0.00	--	0.00
Widow Rockfish	--	--	--	--	0.16	0.16	--	--	--	--	0.23	0.23	--	--	--	--	--	--
Yellowtail Rockfish (North of 40°10' N. lat.)	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Non-groundfish species																		
California Halibut	--	--	--	--	--	--	--	--	--	--	0.02	0.02	--	--	--	--	--	--
Dungeness Crab	--	--	--	--	--	--	--	--	--	--	--	--	0.0012	0.0008	0.6765	0.00	0.58	0.59
Non-FMP flatfish																		
Deepsea Sole	--	--	--	--	--	--	0.0001	0.0000	0.1433	0.04	--	0.04	--	--	--	--	--	--
Non-FMP skate																		
Black Skate	--	--	--	--	--	--	0.0216	0.0052	0.2386	12.21	--	12.21	--	--	--	--	--	--
Deepsea Skate	--	--	--	--	--	--	0.0018	0.0003	0.1741	1.02	--	1.02	--	--	--	--	--	--
Sandpaper Skate	0.0016	0.0006	0.3423	0.20	--	0.20	0.0002	0.0000	0.1417	0.09	--	0.09	--	--	--	--	--	--

Table 8a. OA Fixed Gear, Longline.

Observed discard ratios, standard error, estimated discard (mt), landings (mt), and fishing mortality estimates (mt) from the OA fixed gear pot fleet in 2014. Ratios are computed as the observed discard weight divided by the observed weight of retained sablefish or FMP groundfish (adjusted to fish tickets). Discard ratios were multiplied by fleet landings of sablefish or FMP groundfish to generate discard estimates; combined with fixed gear sectors in Table 9. All rebuilding species are capitalized.

Open Access Fixed Gear	Longline - North of 36° N lat.						Longline - South of 36° N lat.					
	Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of sablefish (mt)		Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of groundfish (mt)	
	16		23	31	120		5		5	7	54	
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Groundfish species												
Arrowtooth Flounder	0.0397	0.0171	0.4316	4.74	0.07	4.82	--	--	--	--	--	--
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	--	--	--	--	1.53	1.53	--	--	--	--	1.41	1.41
Canary Rockfish	0.0003	0.0000	0.1135	0.04	0.20	0.24	--	--	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	--	0.50	0.50	--	--	--	--	0.19	0.19
DARKBLOTCHED ROCKFISH	0.0164	0.0121	0.7384	1.96	0.19	2.15	--	--	--	--	--	--
Dover Sole	0.0014	0.0004	0.2703	0.17	0.10	0.27	--	--	--	--	--	--
Lingcod (North of 40°10' N. lat.)	0.0013	0.0001	0.1135	0.15	13.40	13.41	--	--	--	--	--	--
7% discard mortality (Longline)‡				0.01								
Lingcod (South of 40°10' N. lat.)	--	--	--	--	13.68	13.68	0.0040	0.0011	0.2691	0.21	9.75	9.77
7% discard mortality (Longline)‡										0.01		
Longnose Skate	0.0122	0.0048	0.3974	1.46	2.05	2.78	--	--	--	--	--	--
50% discard mortality (Fixed Gear)‡				0.73								
Longspine Thornyhead (North of 34°27' N. lat.)	0.0018	0.0008	0.4532	0.21	--	0.21	--	--	--	--	0.03	0.03
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	0.0007	0.0006	0.8508	0.04	0.43	0.46
Minor shelf rockfish (North of 40°10' N. lat.)												
Chilipepper Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Greenstriped Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Rosethorn Rockfish	0.0000	0.0000	0.1135	0.00	0.01	0.01	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	--	0.06	0.06	--	--	--	--	--	--
Vermilion Rockfish	--	--	--	--	0.02	0.02	--	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)												
Flag Rockfish	--	--	--	--	--	--	--	--	--	--	0.11	0.11
Greenblotched Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Greenspotted Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	0.67	0.67
Greenstriped Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Mexican Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Rosethorn Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rosy Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Shelf Rockfish Unid	--	--	--	--	0.02	0.02	--	--	--	--	0.33	0.33
Speckled Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	0.02	0.02
Squarespot Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Starry Rockfish	--	--	--	--	0.10	0.10	--	--	--	--	0.10	0.10
Vermilion Rockfish	--	--	--	--	1.96	1.96	--	--	--	--	8.75	8.75
Yellowtail Rockfish	--	--	--	--	3.57	3.57	--	--	--	--	0.43	0.43

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

Table 8a (continued).

Open Access Fixed Gear	Longline - North of 36° N lat.						Longline - South of 36° N lat.					
	Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of sablefish (mt)		Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of groundfish (mt)	
	16		23	31	120		5		5	7	54	
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Minor slope rockfish (North of 40°10' N. lat.)												
Aurora Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Blackgill Rockfish	--	--	--	--	0.02	0.02	--	--	--	--	--	--
Blackspotted Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Redbanded Rockfish	0.0010	0.0007	0.7100	0.12	0.48	0.61	--	--	--	--	--	--
Rougheye Rockfish	0.0005	0.0004	0.6762	0.07	0.76	0.82	--	--	--	--	--	--
Sharpchin Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Shortraker Rockfish	--	--	--	--	0.03	0.03	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	0.11	0.11	--	--	--	--	--	--
Splitnose Rockfish	0.0001	0.0000	0.1135	0.02	0.01	0.02	--	--	--	--	--	--
Yellowmouth Rockfish	--	--	--	--	0.01	0.01	--	--	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)												
Bank Rockfish	--	--	--	--	--	--	--	--	--	--	0.10	0.10
Blackgill Rockfish	0.0015	0.0009	0.6167	0.18	1.02	1.19	0.0020	0.0019	0.9393	0.10618	1.82	1.93
Slope Rockfish Unid	--	--	--	--	0.01	0.01	--	--	--	--	0.14	0.14
Mixed Thornyheads												
Shortspine/Longspine Thornyhead	0.0000	0.0000	0.1135	0.00	--	0.00	--	--	--	--	0.00	0.00
Other flatfish												
Flatfish Unid	--	--	--	--	0.00	0.00	--	--	--	--	0.00	0.00
Pacific Sanddab	--	--	--	--	0.04	0.04	--	--	--	--	0.82	0.82
Rock Sole	0.0002	0.0000	0.1135	0.02	--	0.02	--	--	--	--	0.01	0.01
Sanddab Unid	--	--	--	--	6.63	6.63	--	--	--	--	0.19	0.19
Sand Sole	--	--	--	--	0.00	0.00	--	--	--	--	0.00	0.00
Other groundfish												
Grenadier Unid	--	--	--	--	5.79	5.79	--	--	--	--	0.25	0.25
Leopard Shark	--	--	--	--	1.38	1.38	--	--	--	--	0.02	0.02
Pacific Flatnose	0.0002	0.0000	0.1135	0.03	--	0.03	0.0021	0.0006	0.2691	0.11	--	0.11
Pacific Grenadier	0.0575	0.0237	0.4111	6.88	--	6.88	--	--	--	--	--	--
Rockfish Unid	--	--	--	--	0.06	0.06	--	--	--	--	1.19	1.19
Skate Unid	--	--	--	--	0.29	0.29	--	--	--	--	0.01	0.01
Soupfin Shark	--	--	--	--	0.04	0.04	--	--	--	--	0.01	0.01
Spotted Ratfish	0.0023	0.0008	0.3624	0.28	--	0.28	--	--	--	--	--	--
Pacific Cod	--	--	--	--	0.06	0.06	--	--	--	--	--	--
Pacific Hake	0.0006	0.0002	0.3220	0.07	0.01	0.08	--	--	--	--	--	--
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	0.0006	0.0004	0.7441	0.07	0.01	0.08	--	--	--	--	--	--
Petrale Sole	--	--	--	--	0.03	0.03	--	--	--	--	--	--
Sablefish (North of 36° N. lat.)	0.2153	0.0709	0.3292	25.74	119.56	124.71	--	--	--	--	--	--
20% discard mortality (Fixed Gear)‡				5.15								
Sablefish (South of 36° N. lat.)	--	--	--	--	--	--	--	--	--	--	24.00	24.00
20% discard mortality (Fixed Gear)‡												
Shortspine Thornyhead (North of 34°27' N. lat.)	0.0135	0.0043	0.3170	1.61	0.08	1.69	--	--	--	--	0.17	0.17
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	0.0066	0.0030	0.4522	0.35	2.03	2.38
Spiny Dogfish	0.0047	0.0012	0.2617	0.56	0.17	0.45	--	--	--	--	--	--
50% discard mortality (Longline)‡				0.28								
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	--	--	0.04	0.04	--	--	--	--	0.24	0.24
Starry Flounder	--	--	--	--	0.13	0.13	--	--	--	--	0.01	0.01
Widow Rockfish	--	--	--	--	0.48	0.48	--	--	--	--	0.40	0.40
Yellowtail Rockfish (North of 40°10' N. lat.)	0.0004	0.0000	0.1135	0.05	0.00	0.06	--	--	--	--	--	--
Non-groundfish species												
California Halibut	--	--	--	--	0.63	0.63	--	--	--	--	0.23	0.23
Non-FMP skate												
Black Skate	0.0002	0.0000	0.1135	0.03	--	0.03	0.0439	0.0118	0.2691	2.35	--	2.35

Table 8b. OA Fixed Gear, Pot.

Observed discard ratios, standard error, estimated discard (mt), landings (mt), and fishing mortality estimates (mt) from the OA fixed gear pot fleet in 2014. Ratios are computed as the observed discard weight divided by the observed weight of retained sablefish or FMP groundfish (adjusted to fish tickets). Discard ratios were multiplied by fleet landings of sablefish or FMP groundfish to generate discard estimates; combined with fixed gear sectors in Table 9. All rebuilding species are capitalized.

Open Access Fixed Gear	Pot - North of 36° N lat.						Pot - South of 36° N lat.					
	Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of groundfish (mt)		Observed vessels		Observed trips	Observed sets	Expansion factor: Fleet landings of groundfish (mt)	
	18		30	43	139		3		11	20	9	
Weight (mt)	Discard Ratio	SE	CV	Discard	Landed	Estimate	Discard Ratio	SE	CV	Discard	Landed	Estimate
Groundfish species												
Arrowtooth Flounder	0.0038	0.0011	0.2982	0.52	0.00	0.53	--	--	--	--	--	--
Dover Sole	0.0013	0.0004	0.2976	0.19	0.05	0.24	0.0039	0.0011	0.2840	0.04	--	0.04
Lingcod (North of 40°10' N. lat.)	0.0007	0.0001	0.1172	0.10	0.05	0.15	--	--	--	--	--	--
Lingcod (South of 40°10' N. lat.)	0.0006	0.0003	0.4534	0.09	0.08	0.17	--	--	--	--	--	--
Longnose Skate	--	--	--	--	0.05	0.05	--	--	--	--	--	--
50% discard mortality (Fixed Gear)‡												
Minor nearshore rockfish (South of 40°10' N. lat.)												
Brown Rockfish	--	--	--	--	--	--	0.0019	0.0003	0.1412	0.02	--	0.02
Gopher Rockfish	--	--	--	--	--	--	0.0002	0.0000	0.1412	0.00	--	0.00
Minor shelf rockfish (South of 40°10' N. lat.)												
Greenblotched Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Greenspotted Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rosethorn Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rosy Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Yellowtail Rockfish	--	--	--	--	0.04	0.04	--	--	--	--	0.00	0.00
Minor slope rockfish (North of 40°10' N. lat.)												
Aurora Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Redbanded Rockfish	0.0001	0.0001	0.7355	0.01043	0.00	0.01	--	--	--	--	--	--
Rougheye Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	0.01	0.01	--	--	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)												
Aurora Rockfish	0.0001	0.0000	0.2637	0.01	--	0.01	--	--	--	--	--	--
Blackgill Rockfish	--	--	--	--	0.24	0.24	--	--	--	--	0.93	0.93
Redbanded Rockfish	0.0004	0.0001	0.3402	0.05	--	0.05	--	--	--	--	--	--
Mixed Thornyheads												
Shortspine/Longspine Thornyhead	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Other flatfish												
Sanddab Unid	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Other groundfish												
Grenadier Unid	0.0003	0.0000	0.1172	0.04	--	0.04	--	--	--	--	--	--
Pacific Grenadier	0.0007	0.0002	0.2478	0.10	--	0.10	--	--	--	--	--	--
Rockfish Unid	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Skate Unid	--	--	--	--	0.12	0.12	--	--	--	--	--	--
Soupfin Shark	--	--	--	--	0.05	0.05	--	--	--	--	--	--
Spotted Ratfish	0.0001	0.0000	0.1172	0.01	--	0.01	0.0012	0.0004	0.3517	0.01	--	0.01
Petrale Sole	--	--	--	--	0.02	0.02	--	--	--	--	--	--
Sablefish (North of 36° N. lat.)	0.0883	0.0281	0.3178	12.23	137.78	140.22	--		--	--	--	--
20% discard mortality (Fixed Gear)‡				2.45								
Sablefish (South of 36° N. lat.)	--		--	--	--	--	0.0442	0.0180	0.4084	0.41	8.34	8.42
20% discard mortality (Fixed Gear)‡										0.08		
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Spiny Dogfish	0.0005	0.0001	0.2239	0.07	--	0.07	--	--	--	--	--	--
Splitnose Rockfish (South of 40°10' N. lat.)	0.0000	0.0000	0.1172	0.00	0.00	0.01	--	--	--	--	--	--
YELLOWEYE ROCKFISH	--	--	--	--	0.00	0.00	--	--	--	--	--	--
Non-groundfish species												
Dungeness crab	0.0012	0.0008	0.6765	0.17	0.95	1.11	--	--	--	--	--	--
Other non-groundfish												
California Sheephead	--	--	--	--	--	--	0.0049	0.0007	0.1412	0.05	--	0.05

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

Table 9. LE and OA Fixed Gear Summary.

Estimated discard (mt), landings (mt), and fishing mortality estimate (mt) of groundfish species in the LE and OA non-nearshore fixed gear sectors in 2014. Discard ratios were multiplied by fleet landings of sablefish or FMP groundfish to generate estimated discard (Tables 6-8: LE sablefish endorsed primary season, LE non-endorsed, OA). All rebuilding species are capitalized.

	Limited Entry - Coastwide				Open Access - Coastwide				
Weight (mt)	Longline Discard	Pot Discard	Landed	LE Total	Longline Discard	Pot Discard	Landed	OA Total	**LE & OA Coastwide**
Groundfish species									
Arrowtooth Flounder	18.45	3.28	1.23	22.96	4.74	0.52	0.08	5.34	28.31
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	--	--	1.71	1.71	--	--	2.94	2.94	4.64
Canary Rockfish	0.01	0.03	0.15	0.19	0.04	--	0.20	0.24	0.43
Chilipepper Rockfish (South of 40°10' N. lat.)	0.00	--	0.09	0.09	--	--	0.69	0.69	0.78
Cowcod rockfish (South of 40°10' N. lat.)	0.01	--	--	0.01	--	--	--	--	0.01
DARKBLOTCHED ROCKFISH	0.53	0.05	2.34	2.92	1.96	--	0.19	2.15	5.07
Dover Sole	1.72	0.76	2.41	4.88	0.17	0.22	0.15	0.54	5.42
Lingcod (North of 40°10' N. lat.)	1.67	2.44	3.79	6.35	0.15	0.10	13.45	13.56	19.91
7% discard mortality (Longline)‡	0.12				0.01				
Lingcod (South of 40°10' N. lat.)	0.06	0.00	0.57	0.58	0.21	0.09	23.52	23.62	24.19
7% discard mortality (Longline)‡	0.00				0.01				
Longnose Skate	56.11	--	19.71	47.77	1.46	--	2.10	2.83	50.60
50% discard mortality (Fixed Gear)‡	28.06	--			0.73	--			
Longspine Thornyhead (North of 34°27' N. lat.)	3.98	0.02	2.46	6.45	0.21	--	0.03	0.24	6.69
Longspine Thornyhead (South of 34°27' N. lat.)	2.54	--	13.34	15.88	0.04	--	0.43	0.46	16.34
Minor nearshore rockfish (South of 40°10' N. lat.)									
Brown Rockfish	--	--	--	--	--	0.02	--	0.02	0.02
Gopher Rockfish	--	--	--	--	--	0.00	--	0.00	0.00
Minor shelf rockfish (North of 40°10' N. lat.)									
Chilipepper Rockfish	--	--	0.00	0.00	--	--	0.00	0.00	0.00
Greenspotted Rockfish	--	--	0.25	0.25	--	--	--	--	0.25
Greenstriped Rockfish	0.21	0.00	0.00	0.22	--	--	0.00	0.00	0.22
Halfbanded Rockfish	--	0.00	--	0.00	--	--	--	--	0.00
Redstripe Rockfish	0.01	--	--	0.01	--	--	--	--	0.01
Rosethorn Rockfish	0.16	0.01	0.04	0.21	0.00	--	0.01	0.01	0.23
Rosy Rockfish	0.00	--	--	0.00	--	--	--	--	0.00
Shelf Rockfish Unid	--	--	0.58	0.58	--	--	0.06	0.06	0.64
Silvergray Rockfish	0.04	--	0.46	0.50	--	--	--	--	0.50
Vermilion Rockfish	--	--	--	--	--	--	0.02	0.02	0.02
Minor shelf rockfish (South of 40°10' N. lat.)									
Flag Rockfish	--	--	0.14	0.14	--	--	0.11	0.11	0.26
Freckled Rockfish	--	--	0.00	0.00	--	--	--	--	0.00
Greenblotched Rockfish	--	--	0.03	0.03	--	--	0.00	0.00	0.03
Greenspotted Rockfish	--	--	0.41	0.41	--	--	0.67	0.67	1.08
Greenstriped Rockfish	--	--	0.03	0.03	--	--	0.01	0.01	0.04
Mexican Rockfish	--	--	0.05	0.05	--	--	0.01	0.01	0.06
Pinkrose Rockfish	--	--	0.01	0.01	--	--	--	--	0.01
Rosethorn Rockfish	0.00	--	0.00	0.00	--	--	0.00	0.00	0.00
Rosy Rockfish	--	--	0.23	0.23	--	--	0.01	0.01	0.24
Shelf Rockfish Unid	--	--	0.28	0.28	--	--	0.35	0.35	0.63
Speckled Rockfish	--	--	0.04	0.04	--	--	0.02	0.02	0.06
Squarespot Rockfish	--	--	0.05	0.05	--	--	0.01	0.01	0.06
Starry Rockfish	--	--	0.52	0.52	--	--	0.20	0.20	0.72
Vermilion Rockfish	--	--	3.67	3.67	--	--	10.71	10.71	14.38
Yellowtail Rockfish	--	--	0.07	0.07	--	--	4.04	4.04	4.11
Minor slope rockfish (North of 40°10' N. lat.)									
Aurora Rockfish	0.09	--	0.05	0.14	--	--	0.00	0.00	0.14
Blackgill Rockfish	0.84	--	0.38	1.23	--	--	0.02	0.02	1.25
Blackspotted Rockfish	--	--	0.26	0.26	--	--	0.00	0.00	0.26

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

Table 9 (continued).

Weight (mt)	Limited Entry - Coastwide				Open Access - Coastwide				LE & OA Coastwide
	Longline Discard	Pot Discard	Landed	LE Total	Longline Discard	Pot Discard	Landed	OA Total	
Redbanded Rockfish	2.41	0.02	11.56	13.99	0.12	0.01	0.48	0.62	14.61
Rougheye Rockfish	10.18	--	17.16	27.34	0.07	--	0.76	0.82	28.16
Sharpchin Rockfish	--	0.01	0.01	0.03	--	--	0.00	0.00	0.03
Shortraker Rockfish	0.73	--	2.84	3.57	--	--	0.03	0.03	3.60
Shortraker/Rougheye Rockfish	0.07	--	--	0.07	--	--	--	--	0.07
Slope Rockfish Unid	--	--	1.21	1.21	--	--	0.12	0.12	1.34
Splitnose Rockfish	0.01	0.00	0.04	0.05	0.02	--	0.01	0.02	0.07
Yellowmouth Rockfish	--	--	0.54	0.54	--	--	0.01	0.01	0.55
Minor slope rockfish (South of 40°10' N. lat.)									
Aurora Rockfish	--	0.00	0.17	0.17	--	0.01	--	0.01	0.18
Bank Rockfish	--	--	0.23	0.23	--	--	0.10	0.10	0.33
Blackgill Rockfish	8.79	--	19.28	28.06	0.28	--	4.01	4.29	32.35
Blackspotted Rockfish	--	--	0.21	0.21	--	--	--	--	0.21
Redbanded Rockfish	0.01	0.00	0.33	0.35	--	0.05	--	0.05	0.40
Rougheye Rockfish	0.02	--	2.12	2.15	--	--	--	--	2.15
Shortraker Rockfish	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	0.68	0.68	--	--	0.15	0.15	0.83
Mixed thornyheads									
Shortspine/Longspine Thornyhead	--	--	1.03	1.03	0.00	--	0.00	0.01	1.04
Other flatfish									
Curlfin Turbot	--	0.00	--	0.00	--	--	--	--	0.00
Flatfish Unid	--	--	0.05	0.05	--	--	0.00	0.00	0.05
Flathead Sole	--	0.01	--	0.01	--	--	--	--	0.01
Pacific Sanddab	--	--	2.27	2.27	--	--	0.86	0.86	3.12
Rock Sole	--	--	--	--	0.02	--	0.01	0.03	0.03
Sanddab Unid	--	--	0.47	0.47	--	--	6.83	6.83	7.30
Sand Sole	--	--	--	--	--	--	0.01	0.01	0.01
Other groundfish									
Big Skate	3.33	--	--	3.33	--	--	--	--	3.33
Deepsea Skate	1.02	--	--	1.02	--	--	--	--	1.02
Grenadier Unid	0.21	0.00	22.88	23.10	--	0.04	6.04	6.08	29.17
Leopard Shark	--	--	--	--	--	--	1.40	1.40	1.40
Pacific Flatnose	1.42	0.02	--	1.45	0.14	--	--	0.14	1.59
Pacific Grenadier	37.45	2.13	--	39.58	6.88	0.10	--	6.98	46.56
Rockfish Unid	--	--	0.86	0.86	--	--	1.25	1.25	2.11
Skate Unid	0.11	--	9.32	9.43	--	--	0.42	0.42	9.85
Soupfin Shark	1.09	--	0.11	1.20	--	--	0.10	0.10	1.30
Spotted Ratfish	1.55	0.00	--	1.55	0.28	0.02	--	0.29	1.85
Pacific Cod	0.28	--	0.74	1.02	--	--	0.06	0.06	1.09
Pacific Hake	0.28	0.04	0.16	0.48	0.07	--	0.01	0.08	0.56
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	0.00	--	0.16	0.17	0.07	--	0.01	0.08	0.24
Petrale Sole	0.11	0.00	0.22	0.33	--	--	0.05	0.05	0.38
Sablefish (North of 36° N. lat.)	131.88	87.19	1,176.77	1,220.58	25.74	12.23	257.34	264.93	1,485.52
20% discard mortality (Fixed Gear)‡	26.38	17.44			5.15	2.45			
Sablefish (South of 36° N. lat.)	31.58	--	431.33	437.64	--	0.41	32.33	32.42	470.06
20% discard mortality (Fixed Gear)‡	6.32	--				0.08			
Shortspine Thornyhead (North of 34°27' N. lat.)	3.37	0.07	47.17	50.61	1.61	--	0.25	1.86	52.47
Shortspine Thornyhead (South of 34°27' N. lat.)	9.57	--	83.97	93.54	0.35	--	2.04	2.39	95.93
Spiny Dogfish	145.27	0.45	18.99	92.08	0.56	0.07	0.17	0.52	92.60
50% discard mortality (Longline)‡	72.64				0.28				
Splitnose Rockfish (South of 40°10' N. lat.)	--	0.00	0.15	0.15	--	0.00	0.27	0.28	0.43
Starry Flounder	--	--	--	--	--	--	0.14	0.14	0.14
Widow Rockfish	0.01	--	0.42	0.43	--	--	0.88	0.88	1.31
YELLOWEYE ROCKFISH	0.45	0.03	--	0.48	--	--	0.00	0.00	0.48
Yellowtail Rockfish (North of 40°10' N. lat.)	0.30	--	0.21	0.51	0.05	--	0.00	0.06	0.56
Non-groundfish species									
California Halibut	--	--	0.02	0.02	--	--	0.86	0.86	0.88
Dungeness Crab	0.00	0.85	0.58	1.44	--	0.17	0.95	1.11	2.55
Non-FMP flatfish									
Deepsea Sole	0.04	0.01	--	0.04	--	--	--	--	0.04
Non-FMP skate									
Aleutian Skate	0.11	--	--	0.11	--	--	--	--	0.11
Black Skate	13.05	--	--	13.05	2.38	--	--	2.38	15.43
Sandpaper Skate	0.89	0.01	--	0.89	--	--	--	--	0.89
Other non-groundfish									
California Sheephead	--	--	--	--	--	0.05	--	0.05	0.05
Sculpin Unid	--	0.00	--	0.00	--	--	--	--	0.00

Table 10. Nearshore Fixed Gear: Partition Landings by Depth.

Commercial landings of nearshore species (mt) in Oregon and California during 2014, partitioned by depth interval and groundfish management area based on observed catch from 2003 to 2014. Data from both states were combined. The California state-permit framework, which groups nearshore rockfish into either shallow or deeper nearshore rockfish, is represented in the area south of 40° 10' N latitude. All rebuilding species are capitalized.

	2003-2014 Total observed landings (mt)	2003-2014 Percentage of observed catch by depth (fathoms)			2014 Fleet landings (mt)	2014 Fleet landings (mt) reallocated by depth (fathoms)		
		0 - 10	11 - 20	> 20		0 - 10	11 - 20	> 20
NORTH of 40° 10' N Lat.								
Nearshore Species - Commercial								
Black rockfish (South of 46°16' N. lat.)	151.25	45.4%	52.6%	2.0%	155.21	70.48	81.62	3.11
Cabezon (California)	2.43	41.1%	51.8%	7.1%	1.02	0.42	0.53	0.07
Cabezon (Oregon)	23.08	33.6%	64.3%	2.2%	15.38	5.17	9.88	0.33
Lingcod (North of 40°10' N. lat.)	31.84	32.0%	60.5%	7.4%	46.24	14.80	28.00	3.44
Minor nearshore rockfish (North of 40°10' N. lat.)								
Black and Yellow Rockfish	0.06	34.1%	65.9%	--	0.07	0.02	0.05	--
Blue Rockfish	16.42	21.6%	70.0%	8.4%	5.29	1.14	3.70	0.44
Brown Rockfish	0.28	8.8%	30.6%	60.6%	0.02	0.00	0.01	0.01
China Rockfish	6.44	31.7%	63.6%	4.7%	4.48	1.42	2.85	0.21
Copper Rockfish	1.47	13.2%	70.3%	16.5%	1.13	0.15	0.80	0.19
Gopher Rockfish	0.05	41.9%	56.8%	1.3%	0.03	0.01	0.02	0.00
Grass Rockfish	0.38	98.4%	0.9%	0.7%	0.16	0.16	0.00	0.00
Nearshore Rockfish Unid	2.21	28.1%	65.4%	6.4%	--	'--	'--	'--
Olive Rockfish	0.08	6.6%	80.9%	12.5%	0.01	0.00	0.01	0.00
Quillback Rockfish	2.45	8.6%	62.5%	28.9%	1.55	0.13	0.97	0.45
Other groundfish								
California Scorpionfish	0.00	100.0%	--	--	--	--	--	--
Kelp Greenling	15.89	48.5%	50.1%	1.5%	15.62	7.57	7.82	0.23
Rockfish Unid	0.06	--	48.0%	52.0%	--	--	--	--
Other nongroundfish								
Brown Irish Lord Sculpin	0.00	100.0%	--	--	--	--	--	--
Buffalo Sculpin	0.02	95.2%	4.8%	--	--	--	--	--
Greenling Unid	0.08	86.5%	13.5%	--	--	--	--	--
Red Irish Lord Sculpin	0.02	44.7%	55.3%	--	--	--	--	--
SOUTH of 40° 10' N Lat.								
Nearshore Species - Commercial								
Black Rockfish (South of 46°16' N. lat.)	1.80	52.9%	43.2%	3.9%	6.28	3.32	2.71	0.24
Cabezon (California)	6.26	91.4%	7.2%	1.4%	29.73	27.17	2.15	0.42
California Scorpionfish (South of 34°27' N. lat.)	0.56	2.8%	1.1%	96.1%	1.03	0.03	0.01	0.99
Deeper nearshore rockfish								
Blue Rockfish	1.16	41.6%	45.5%	12.9%	5.14	2.14	2.34	0.66
Brown Rockfish	9.96	25.7%	62.2%	12.1%	26.20	6.74	16.29	3.17
Copper Rockfish	0.72	12.6%	54.5%	32.9%	6.17	0.78	3.36	2.03
Nearshore Rockfish Unid	0.40	32.9%	31.5%	35.6%	0.08	0.03	0.03	0.03
Olive Rockfish	0.51	18.4%	58.0%	23.6%	0.77	0.14	0.45	0.18
Quillback Rockfish	0.15	--	42.9%	57.1%	0.24	--	0.10	0.14
Rockfish Unid	0.02	--	--	100.0%	--	--	--	--
Treefish Rockfish	0.24	34.6%	56.9%	8.5%	2.10	0.72	1.19	0.18
Lingcod (South of 40°10' N. lat.)	7.32	36.1%	54.1%	9.8%	32.40	11.69	17.53	3.18
Other groundfish								
California Scorpionfish	--	--	--	--	0.01	0.00	0.00	0.00
Kelp Greenling	0.88	62.8%	34.1%	3.1%	4.43	2.78	1.51	0.14
Rockfish Unid	0.13	25.5%	44.0%	30.5%	1.04	0.26	0.46	0.32
Other nongroundfish								
California Sheephead	14.73	65.6%	33.8%	0.6%	41.17	26.99	13.92	0.26
Shallow nearshore rockfish								
Black and Yellow Rockfish	1.66	91.0%	6.1%	2.9%	11.26	10.24	0.69	0.32
China Rockfish	0.63	27.3%	50.0%	22.7%	1.56	0.43	0.78	0.35
Gopher Rockfish	5.35	47.6%	42.6%	9.9%	25.70	12.23	10.94	2.53
Grass Rockfish	0.95	95.0%	4.5%	0.5%	10.67	10.13	0.48	0.06
Kelp Rockfish	0.15	63.5%	35.5%	1.0%	0.77	0.49	0.27	0.01
Nearshore Rockfish Unid	0.26	62.0%	29.3%	8.7%	0.00	0.00	0.00	0.00

Table 11. Nearshore Fixed Gear: Discard Ratios.

Observed discard ratios with standard error and nearshore species fleet landings (mt) from the commercial nearshore fixed gear fishery in 2014 by groundfish management area and depth (fathoms). Data from both Oregon and California were combined. The California state-permit framework is represented in the area south of 40° 10' N latitude. All rebuilding species are capitalized.

	North of 40° 10' N Lat.									South of 40° 10' N Lat.								
	0 - 10 fm			11 - 20 fm			> 20 fm			0 - 10 fm			11 - 20 fm			> 20 fm		
Nearshore Fixed Gear Fishery	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets
Observed	37	77	93	50	129	136	4	4	4	18	41	57	22	60	72	4	12	12
Expansion factor: Fleet landings of nearshore species (mt)	101			136			8			116			75			15		
	Discard Ratio	SE	CV	Discard Ratio	SE	CV	Discard Ratio	SE	CV	Discard Ratio	SE	CV	Discard Ratio	SE	CV	Discard Ratio	SE	CV
Groundfish species																		
Black Rockfish (South of 46°16' N. lat.)	0.0262	0.0055	0.2114	0.0191	0.0036	0.1863	0.0067	0.0066	0.9888	0.0152	0.0091	0.6009	0.0187	0.0077	0.4091	--	--	--
Cabezon (California)	0.0003	0.0002	0.5966	0.0001	0.0001	0.9020	--	--	--	0.0747	0.0295	0.3951	0.0104	0.0040	0.3824	--	--	--
Cabezon (Oregon)	0.0062	0.0021	0.3392	0.0022	0.0006	0.2559	--	--	--	--	--	--	--	--	--	--	--	--
California Scorpionfish (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	0.0001	0.0001	0.7309	--	--	--	1.2667	0.5264	0.4156
Canary Rockfish	0.0047	0.0012	0.2539	0.0105	0.0017	0.1603	0.0179	0.0114	0.6367	0.0018	0.0006	0.3371	0.0847	0.0208	0.2454	0.0092	0.0039	0.4213
Deeper nearshore rockfish																		
Blue Rockfish	--	--	--	--	--	--	--	--	--	0.0064	0.0025	0.3904	0.0193	0.0066	0.3402	--	--	--
Brown Rockfish	--	--	--	--	--	--	--	--	--	0.0181	0.0042	0.2323	0.0223	0.0072	0.3228	--	--	--
Calico Rockfish	--	--	--	--	--	--	--	--	--	0.0001	0.0000	0.1307	0.0002	0.0000	0.2618	--	--	--
Copper Rockfish	--	--	--	--	--	--	--	--	--	0.0012	0.0005	0.4298	0.0016	0.0006	0.3870	--	--	--
Olive Rockfish	--	--	--	--	--	--	--	--	--	0.0007	0.0003	0.4041	0.0059	0.0018	0.3003	0.0024	0.0017	0.6947
Treefish Rockfish	--	--	--	--	--	--	--	--	--	0.0079	0.0022	0.2804	0.0023	0.0011	0.4849	--	--	--
Lingcod (North of 40°10' N. lat.)	0.1121	0.0212	0.1889	0.1048	0.0162	0.1543	0.1278	0.0805	0.6295	--	--	--	--	--	--	--	--	--
Lingcod (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	0.0622	0.0211	0.3396	0.1075	0.0241	0.2243	0.2034	0.1096	0.5389
Minor nearshore rockfish (North of 40°10' N. lat.)																		
Blue Rockfish	0.0133	0.0037	0.2771	0.0254	0.0058	0.2263	0.0144	0.0108	0.7468	--	--	--	--	--	--	--	--	--
Brown Rockfish	--	--	--	0.0000	0.0000	0.0566	--	--	--	--	--	--	--	--	--	--	--	--
China Rockfish	0.0016	0.0005	0.3206	0.0017	0.0004	0.2573	--	--	--	--	--	--	--	--	--	--	--	--
Copper Rockfish	--	--	--	0.0001	0.0001	0.9014	--	--	--	--	--	--	--	--	--	--	--	--
Grass Rockfish	0.0002	0.0002	0.6316	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Quillback Rockfish	0.0003	0.0001	0.3540	0.0004	0.0002	0.5437	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)																		
Rosethorn Rockfish	--	--	--	0.0001	0.0000	0.0566	--	--	--	--	--	--	--	--	--	--	--	--
Vermilion Rockfish	--	--	--	0.0002	0.0002	0.7843	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)																		
Halfbanded Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0005	0.0002	0.3295
Rosy Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	0.0001	0.0001	0.9401	--	--	--
Vermilion Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	0.0008	0.0004	0.5214	--	--	--
Yellowtail Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	0.0009	0.0007	0.7529	--	--	--

Table 11 (continued).

	North of 40° 10' N Lat.									South of 40° 10' N Lat.								
	0 - 10 fm			11 - 20 fm			> 20 fm			0 - 10 fm			11 - 20 fm			> 20 fm		
Nearshore Fixed Gear Fishery	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets
Observed	37	77	93	50	129	136	4	4	4	18	41	57	22	60	72	4	12	12
Expansion factor: Fleet landings of nearshore species (mt)	101			136			8			116			75			15		
	Discard Ratio	SE	CV	Discard Ratio	SE	CV	Discard Ratio	SE	CV	Discard Ratio	SE	CV	Discard Ratio	SE	CV	Discard Ratio	SE	CV
Other flatfish																		
Butter Sole	--	--	--	0.0000	0.0000	0.0566	--	--	--	--	--	--	--	--	--	--	--	--
Flatfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0069	0.0023	0.3295
Pacific Sanddab	--	--	--	0.0000	0.0000	0.0566	--	--	--	--	--	--	0.0000	0.0000	0.7271	0.1420	0.0801	0.5642
Rock Sole	--	--	--	0.0004	0.0001	0.3231	--	--	--	--	--	--	--	--	--	--	--	--
Sand Sole	--	--	--	0.0000	0.0000	0.0566	--	--	--	--	--	--	--	--	--	--	--	--
Other groundfish																		
Big Skate	--	--	--	0.0002	0.0000	0.0566	--	--	--	--	--	--	--	--	--	--	--	--
California Scorpionfish	--	--	--	--	--	--	--	--	--	0.0002	0.0000	0.1307	--	--	--	--	--	--
California Skate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0148	0.0090	0.6101
Kelp Greenling	0.0438	0.0147	0.3360	0.0124	0.0061	0.4955	0.0098	0.0085	0.8672	0.0014	0.0006	0.4295	0.0046	0.0014	0.2964	--	--	--
Leopard Shark	--	--	--	--	--	--	--	--	--	--	--	--	0.0026	0.0021	0.8335	--	--	--
Soupfin Shark	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0183	0.0077	0.4216
Spotted Ratfish	--	--	--	0.0001	0.0000	0.0566	--	--	--	--	--	--	0.0014	0.0002	0.1284	--	--	--
Petrale Sole	--	--	--	--	--	--	--	--	--	--	--	--	0.0005	0.0002	0.4606	--	--	--
Shallow nearshore rockfish																		
Black and Yellow Rockfish	--	--	--	--	--	--	--	--	--	0.0064	0.0020	0.3092	0.0001	0.0001	0.6022	--	--	--
China Rockfish	--	--	--	--	--	--	--	--	--	0.0007	0.0003	0.4665	0.0050	0.0015	0.3009	--	--	--
Gopher Rockfish	--	--	--	--	--	--	--	--	--	0.0169	0.0044	0.2623	0.0205	0.0050	0.2442	0.0059	0.0025	0.4244
Grass Rockfish	--	--	--	--	--	--	--	--	--	0.0004	0.0002	0.6705	0.0002	0.0000	0.1284	--	--	--
Kelp Rockfish	--	--	--	--	--	--	--	--	--	0.0033	0.0014	0.4175	0.0004	0.0002	0.5070	--	--	--
Spiny Dogfish	--	--	--	--	--	--	--	--	--	--	--	--	0.0081	0.0035	0.4317	0.0310	0.0149	0.4797
Widow Rockfish	--	--	--	0.0001	0.0000	0.5293	--	--	--	--	--	--	0.0000	0.0000	0.1284	--	--	--
YELLOWEYE ROCKFISH	0.0017	0.0007	0.4085	0.0053	0.0016	0.2932	0.0584	0.0532	0.9111	--	--	--	0.0001	0.0000	0.1284	--	--	--
Yellowtail Rockfish (North of 40°10' N. lat.)	0.0024	0.0014	0.6022	0.0062	0.0013	0.2062	0.0002	0.0002	0.9305	--	--	--	--	--	--	--	--	--
Non-groundfish species																		
Dungeness Crab	--	--	--	0.0010	0.0002	0.1768	--	--	--	--	--	--	0.0004	0.0001	0.3410	--	--	--
Non-FMP skate																		
Starry Skate	--	--	--	--	--	--	--	--	--	--	--	--	0.0138	0.0054	0.3918	--	--	--
Other nongroundfish[1]																		
Brown Irish Lord Sculpin	0.0001	0.0000	0.0904	--	--	--	--	--	--	--	--	--	0.0001	0.0000	0.1916	--	--	--
Buffalo Sculpin	0.0008	0.0002	0.2425	0.0007	0.0001	0.1828	--	--	--	0.0003	0.0001	0.2819	0.0020	0.0005	0.2633	--	--	--
California Sheephead	--	--	--	--	--	--	--	--	--	0.2463	0.0600	0.2436	0.1558	0.0680	0.4366	--	--	--
Red Irish Lord Sculpin	0.0019	0.0004	0.2196	0.0015	0.0003	0.1900	--	--	--	--	--	--	0.0009	0.0002	0.2180	--	--	--
Sculpin Unid	0.0009	0.0004	0.4770	0.0004	0.0002	0.4311	--	--	--	0.0001	0.0000	0.1307	0.0024	0.0009	0.3955	--	--	--

[1] Some listed species are under state nearshore fixed gear management, but not included in the groundfish FMP.

Table 12a. Nearshore Fixed Gear: Fishing Mortality Estimates, North of 40° 10' N latitude.

Gross estimated discard (mt), discard mortality rates (provided by the Groundfish Management Team), estimated discard mortality (mt), fleet landings (mt), and fishing mortality estimates (mt) for the 2014 commercial nearshore fixed gear fishery north of 40° 10' N latitude. All rebuilding species are capitalized.

Nearshore Fixed Gear Fishery North of 40° 10' N lat.	Gross estimated discard (mt) by depth (fm)			Applied discard mortality rate ‡ by depth (fm)			Estimated discard mortality (mt) by depth (fm)			Estimated discard mortality (mt)	Fleet Landings (mt)	Estimated fishing mortality (mt)
	0-10	11-20	> 20	0-10	11-20	> 20	0-10	11-20	> 20			
Groundfish species												
Black Rockfish (South of 46°16' N. lat.)	2.66	2.61	0.06	23%	42%	90%	0.61	1.09	0.05	1.76	155.21	156.97
Cabezon (California)	0.03	0.02	--	7%	7%	--	0.00	0.00	--	0.00	1.02	1.02
Cabezon (Oregon)	0.63	0.30	--	7%	7%	--	0.04	0.02	--	0.07	15.38	15.44
Canary Rockfish	0.48	1.44	0.15	32%	54%	100%	0.15	0.78	0.15	1.08	--	1.08
Lingcod (North of 40°10' N. lat.)	11.37	14.28	1.09	7%	7%	7%	0.80	1.00	0.08	1.87	46.24	48.11
Longnose Skate	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Minor nearshore rockfish (North of 40°10' N. lat.)												
Black and Yellow Rockfish	--	--	--	--	--	--	--	--	--	--	0.07	0.07
Blue Rockfish	1.35	3.46	0.12	29%	49%	100%	0.39	1.70	0.12	2.21	5.29	7.50
Brown Rockfish	--	0.00	--	--	48%	--	--	0.00	--	0.00	0.02	0.02
China Rockfish	0.17	0.23	--	24%	48%	--	0.04	0.11	--	0.15	4.48	4.63
Copper Rockfish	--	0.02	--	--	48%	--	--	0.01	--	0.01	1.13	1.14
Gopher Rockfish	--	--	--	--	--	--	--	--	--	--	0.03	0.03
Grass Rockfish	0.02	--	--	24%	--	--	0.01	--	--	0.01	0.16	0.16
Olive Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Quillback Rockfish	0.03	0.06	--	24%	48%	--	0.01	0.03	--	0.03	1.55	1.58
Minor shelf rockfish (North of 40°10' N. lat.)												
Chilipepper Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Puget Sound Rockfish	--	0.00	--	--	100%	--	--	0.00	--	0.00	--	0.00
Rosethorn Rockfish	--	0.01	--	--	100%	--	--	0.01	--	0.01	--	0.01
Rosy Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Shelf Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Tiger Rockfish	--	--	--	--	--	--	--	--	--	--	0.30	0.30
Vermilion Rockfish	--	0.03	--	--	55%	--	--	0.02	--	0.02	2.56	2.58
Other flatfish												
Butter Sole	--	0.00	--	--	7%	--	--	0.00	--	0.00	--	0.00
Pacific Sanddab	--	0.00	--	--	7%	--	--	0.00	--	0.00	--	0.00
Rock Sole	--	0.05	--	--	7%	--	--	0.00	--	0.00	0.00	0.00
Sand Sole	--	0.00	--	--	7%	--	--	0.00	--	0.00	0.00	0.00
Other groundfish												
Big Skate	--	0.02	--	--	7%	--	--	0.00	--	0.00	--	0.00
Kelp Greenling	4.45	1.68	0.08	7%	7%	7%	0.31	0.12	0.01	0.44	15.62	16.05
Skate Unid	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Spotted Ratfish	--	0.01	--	--	7%	--	--	0.00	--	0.00	--	0.00
Starry Flounder	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Widow Rockfish	--	0.01	--	--	54%	--	--	0.00	--	0.00	0.03	0.04
YELLOWEYE ROCKFISH	0.17	0.72	0.50	32%	56%	100%	0.06	0.40	0.50	0.96	--	0.96
Yellowtail Rockfish (North of 40°10' N. lat.)	0.24	0.84	0.00	10%	30%	75%	0.02	0.25	0.00	0.28	1.23	1.51
Non-groundfish species												
Dungeness Crab	--	0.13	--	--	100%	--	--	0.13	--	0.13	1.82	1.96
Other nongroundfish[1]												
Brown Irish Lord Sculpin	0.01	--	--	100%	0%	0%	0.01	--	--	0.01	--	0.01
Buffalo Sculpin	0.08	0.10	--	100%	100%	0%	0.08	0.10	--	0.18	--	0.18
Red Irish Lord Sculpin	0.19	0.20	--	100%	100%	0%	0.19	0.20	--	0.39	--	0.39
Sculpin Unid	0.09	0.06	--	100%	100%	0%	0.09	0.06	--	0.15	0.00	0.15

‡Discard mortality rates provided by the Groundfish Management Team (GMT). A mortality rate is applied to each gross estimated discard weight by depth.

[1] Some listed species are under state nearshore fixed gear management, but not included in the groundfish FMP.

Table 12b. Nearshore Fixed Gear: Fishing Mortality Estimates, South of 40° 10' N latitude.

Gross estimated discard (mt), discard mortality rates (provided by the Groundfish Management Team), estimated discard mortality (mt), fleet landings (mt), and fishing mortality estimates (mt) for the 2014 commercial nearshore fixed gear fishery south of 40° 10' N latitude. The California state-permit framework is also represented. All rebuilding species are capitalized.

Nearshore Fixed Gear Fishery South of 40° 10' N lat	Gross estimated discard (mt) by depth (fm)			Discard mortality rate ‡ by depth (fm)			Estimated discard mortality (mt) by depth (fm)			Estimated discard mortality (mt)	Fleet Landings (mt)	Estimated fishing mortality (mt)
	0-10	11-20	> 20	0-10	11-20	> 20	0-10	11-20	> 20			
Groundfish species												
Arrowtooth Flounder	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Black Rockfish (South of 46°16' N. lat.)	1.76	1.41	--	23%	42%	--	0.41	0.59	--	1.00	6.28	7.28
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	1.23	1.23
Cabezon (California)	8.70	0.78	--	7%	7%	--	0.61	0.05	--	0.66	29.73	30.40
California Scorpionfish (South of 34°27' N. lat.)	0.01	--	19.25	7%	--	7%	0.00	--	1.35	1.35	1.03	2.37
Canary Rockfish	0.21	6.37	0.14	32%	54%	100%	0.07	3.44	0.14	3.65	--	3.65
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.15	0.15
COWCOD ROCKFISH (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.00	0.00
DARKBLOTCHED ROCKFISH	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Deeper nearshore rockfish												
Blue Rockfish	0.75	1.45	--	29%	49%	--	0.22	0.71	--	0.93	5.14	6.06
Brown Rockfish	2.10	1.68	--	23%	48%	--	0.48	0.81	--	1.29	26.20	27.49
Calico Rockfish	0.01	0.01	--	23%	48%	--	0.00	0.01	--	0.01	--	0.01
Copper Rockfish	0.14	0.12	--	23%	48%	--	0.03	0.06	--	0.09	6.17	6.25
Nearshore Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.08	0.08
Olive Rockfish	0.08	0.44	0.04	23%	48%	100%	0.02	0.21	0.04	0.27	0.77	1.04
Quillback Rockfish	--	--	--	--	--	--	--	--	--	--	0.24	0.24
Treefish Rockfish	0.92	0.17	--	23%	48%	--	0.21	0.08	--	0.29	2.10	2.39
Dover Sole	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Lingcod (South of 40°10' N. lat.)	7.24	8.08	3.09	7%	7%	7%	0.51	0.57	0.22	1.29	32.40	33.69
Longnose Skate	--	--	--	--	--	--	--	--	--	--	0.14	0.14
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.11	0.11
Minor shelf rockfish (South of 40°10' N. lat.)												
Flag Rockfish	--	--	--	--	--	--	--	--	--	--	0.06	0.06
Greenblotched Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Greenspotted Rockfish	--	--	--	--	--	--	--	--	--	--	0.12	0.12
Greenstriped Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Halfbanded Rockfish	--	--	0.01	--	--	100%	--	--	0.01	0.01	--	0.01
Honeycomb Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rosethorn Rockfish	--	--	--	--	--	--	--	--	--	--	0.06	0.06
Rosy Rockfish	--	0.01	--	--	100%	--	--	0.01	--	0.01	0.03	0.04
Shelf Rockfish Unid	--	--	--	--	--	--	--	--	--	--	1.27	1.27
Speckled Rockfish	--	--	--	--	--	--	--	--	--	--	0.16	0.16
Squarespot Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Starry Rockfish	--	--	--	--	--	--	--	--	--	--	0.08	0.08
Vermilion Rockfish	--	0.06	--	--	55%	--	--	0.03	--	0.03	10.06	10.10
Yellowtail Rockfish	--	0.07	--	--	30%	--	--	0.02	--	0.02	0.67	0.69
Minor slope rockfish (South of 40°10' N. lat.)												
Bank Rockfish	--	--	--	--	--	--	--	--	--	--	0.19	0.19
Blackgill Rockfish	--	--	--	--	--	--	--	--	--	--	0.79	0.79
Redbanded Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Slope Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.11	0.11
Other flatfish												
Butter Sole	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Flatfish Unid	--	--	0.10	--	--	7%	--	--	0.01	0.01	0.03	0.04
Pacific Sanddab	--	0.00	2.16	--	7%	7%	--	0.00	0.15	0.15	1.81	1.97
Rock Sole	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Sanddab Unid	--	--	--	--	--	--	--	--	--	--	0.10	0.10
Sand Sole	--	--	--	--	--	--	--	--	--	--	0.25	0.25
Other groundfish												
California Scorpionfish	0.02	--	--	7%	--	--	0.00	--	--	0.00	0.01	0.01
California Skate	--	--	0.22	--	--	7%	--	--	0.02	0.02	--	0.02
Grenadier Unid	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Kelp Greenling	0.16	0.35	--	7%	7%	--	0.01	0.02	--	0.04	4.43	4.46
Leopard Shark	--	0.19	--	--	7%	--	--	0.01	--	0.01	0.42	0.44
Rockfish Unid	--	--	--	--	--	--	--	--	--	--	1.04	1.04
Skate Unid	--	--	--	--	--	--	--	--	--	--	0.08	0.08

‡Discard mortality rates provided by the Groundfish Management Team (GMT). Each mortality rate is applied to each gross estimated discard weight by depth.

Table 12b (continued).

Nearshore Fixed Gear Fishery South of 40° 10' N lat	Gross estimated discard (mt) by depth (fm)			Discard mortality rate ‡ by depth (fm)			Estimated discard mortality (mt) by depth (fm)			Estimated discard mortality (mt)	Fleet Landings (mt)	Estimated fishing mortality (mt)
	0-10	11-20	> 20	0-10	11-20	> 20	0-10	11-20	> 20			
Soupfin Shark	--	--	0.28	--	--	100%	--	--	0.28	0.28	0.49	0.76
Spotted Ratfish	--	0.11	--	--	7%	--	--	0.01	--	0.01	0.00	0.01
Petrale Sole	--	0.04	--	--	7%	--	--	0.00	--	0.00	0.00	0.01
Sablefish (North of 36° N. lat.)	--	--	--	--	--	--	--	--	--	--	1.41	1.41
Sablefish (South of 36° N. lat.)	--	--	--	--	--	--	--	--	--	--	13.74	13.74
Shallow nearshore rockfish												
Black and Yellow Rockfish	0.75	0.01	--	25%	49%	--	0.19	0.00	--	0.19	11.26	11.45
China Rockfish	0.09	0.38	--	25%	49%	--	0.02	0.19	--	0.21	1.56	1.77
Gopher Rockfish	1.97	1.54	0.09	25%	49%	100%	0.49	0.76	0.09	1.34	25.70	27.04
Grass Rockfish	0.04	0.02	--	25%	49%	--	0.01	0.01	--	0.02	10.67	10.69
Kelp Rockfish	0.38	0.03	--	25%	49%	--	0.10	0.01	--	0.11	0.77	0.88
Nearshore Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.11	0.11
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	1.57	1.57
Spiny Dogfish	--	0.61	0.47	--	50%	50%	--	0.31	0.24	0.54	0.00	0.55
Starry Flounder	--	--	--	--	--	--	--	--	--	--	0.11	0.11
Widow Rockfish	--	0.00	--	--	54%	--	--	0.00	--	0.00	0.24	0.24
YELLOWEYE ROCKFISH	--	0.01	--	--	56%	--	--	0.00	--	0.00	0.00	0.01
Non-groundfish species												
California Halibut	--	--	--	--	--	--	--	--	--	--	1.01	1.01
Dungeness Crab	--	0.03	--	--	100%	--	--	0.03	--	0.03	1.68	1.71
Non-FMP skate												
Starry Skate	--	1.04	--	--	7%	--	--	0.07	--	0.07	--	0.07
Other nongroundfish[1]												
Brown Irish Lord Sculpin	--	0.01	--	--	100%	--	--	0.01	--	0.01	--	0.01
Buffalo Sculpin	0.03	0.15	--	100%	100%	--	0.03	0.15	--	0.18	--	0.18
California Sheephead	28.66	11.72	--	100%	100%	--	28.66	11.72	--	40.38	41.17	81.54
Red Irish Lord Sculpin	--	0.06	--	--	100%	--	--	0.06	--	0.06	--	0.06
Sculpin Unid	0.01	0.18	--	100%	100%	--	0.01	0.18	--	0.18	0.05	0.24

[1] Some listed species are under state nearshore fixed gear management, but not included in the groundfish FMP.

Table 13. Observed Sectors: Non-IFQ Fishing Mortality Estimates by Sector.

Estimated discard (mt), landings (mt), and estimated total fishing mortality (mt) of west coast groundfish species in non-IFQ 2014 fisheries/groundfish sectors observed by the WCGOP. All rebuilding species are capitalized.

	Open Access CA halibut			Pink shrimp			Non-nearshore fixed gear				Nearshore fixed gear		
Weight (mt)	Discard	Landed	Estimate	Discard	Landed	Estimate	Longline Discard	Pot Discard	Landed	Estimate	Discard	Landed	Estimate
Groundfish species													
Arrowtooth Flounder	--	--	--	40.33	0.09	40.42	23.19	3.80	1.31	28.31	--	0.00	0.00
Black Rockfish (South of 46°16' N. lat.)	--	0.00	0.00	--	--	--	--	--	--	--	2.75	161.50	164.25
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	--	--	--	--	0.09	0.09	--	--	4.64	4.64	--	1.23	1.23
Cabezon (California)	--	--	--	--	--	--	--	--	--	--	0.67	30.75	31.41
Cabezon (Oregon)	--	--	--	--	--	--	--	--	--	--	0.07	15.38	15.44
California Scorpionfish (South of 34°27' N. lat.)	0.03	0.00	0.03	--	0.13	0.13	--	--	--	--	1.35	1.03	2.37
Canary Rockfish	--	--	--	0.07	--	0.07	0.05	0.03	0.35	0.43	4.73	--	4.73
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	--	0.00	0.00	0.00	--	0.78	0.78	--	0.15	0.15
Cowcod Rockfish	--	--	--	--	--	--	0.01	--	--	0.01	--	0.00	0.00
DARKBLOTCHED ROCKFISH	--	--	--	24.53	--	24.53	2.49	0.05	2.53	5.07	--	0.02	0.02
Dover Sole	--	0.01	0.01	2.31	0.05	2.36	1.88	0.98	2.56	5.42	--	0.00	0.00
English Sole	0.22	0.11	0.33	0.06	1.22	1.28	--	--	--	--	--	--	--
Lingcod (North of 40°10' N. lat.)	--	--	--	0.35	--	0.35	1.83	2.54	17.24	19.91	1.87	46.24	48.11
50% discard mortality (Trawl)‡													
7% discard mortality (Longline)‡							0.13						
Lingcod (South of 40°10' N. lat.)	0.00	0.05	0.05	--	0.00	0.00	0.28	0.09	24.09	24.19	1.29	32.40	33.69
50% discard mortality (Trawl)‡	0.00												
7% discard mortality (Longline)‡							0.02						
Longnose Skate	--	--	--	0.51	--	0.51	57.57	--	21.81	50.60	--	0.19	0.19
50% discard mortality (Trawl)‡													
50% discard mortality (Fixed Gear)‡							28.79						
Longspine Thornyhead (North of 34°27' N. lat.)	--	--	--	--	--	--	4.19	0.02	2.49	6.69	--	--	--
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	2.58	--	13.76	16.34	--	0.11	0.11
Minor nearshore rockfish (North of 40°10' N. lat.)													
Black and Yellow Rockfish	--	--	--	--	--	--	--	--	--	--	--	0.07	0.07
Blue Rockfish	--	--	--	0.00	--	0.00	--	--	--	--	2.21	5.29	7.50
Brown Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.02	0.02
China Rockfish	--	--	--	--	--	--	--	--	--	--	0.15	4.48	4.63
Copper Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	1.13	1.14
Gopher Rockfish	--	--	--	--	--	--	--	--	--	--	--	0.03	0.03
Grass Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.16	0.16
Olive Rockfish	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Quillback Rockfish	--	--	--	--	--	--	--	--	--	--	0.03	1.55	1.58
Minor nearshore rockfish (South of 40°10' N. lat.)													
Black and Yellow Rockfish	--	--	--	--	--	--	--	--	--	--	0.19	11.26	11.45
Blue Rockfish	--	--	--	--	--	--	--	--	--	--	0.93	5.14	6.06
Brown Rockfish	0.00	0.01	0.02	--	--	--	--	0.02	--	0.02	1.29	26.20	27.49
Calico Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	--	0.01
China Rockfish	--	--	--	--	0.02	0.02	--	--	--	--	0.21	1.56	1.77
Copper Rockfish	--	0.01	0.01	--	0.11	0.11	--	--	--	--	0.09	6.17	6.25
Gopher Rockfish	--	--	--	--	--	--	--	0.00	--	0.00	1.34	25.70	27.04
Grass Rockfish	--	--	--	--	--	--	--	--	--	--	0.02	10.67	10.69
Kelp Rockfish	--	--	--	--	--	--	--	--	--	--	0.11	0.77	0.88
Nearshore Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	0.09	0.09
Olive Rockfish	--	--	--	--	--	--	--	--	--	--	0.27	0.77	1.04
Quillback Rockfish	--	--	--	--	--	--	--	--	--	--	--	0.24	0.24
Treefish Rockfish	--	--	--	--	--	--	--	--	--	--	0.29	2.10	2.39
Minor shelf rockfish (North of 40°10' N. lat.)													
Bocaccio Rockfish	--	--	--	0.03	--	0.03	--	--	--	--	--	--	--
Chilipepper Rockfish	--	--	--	7.28	--	7.28	--	--	0.00	0.00	--	0.00	0.00
Cowcod Rockfish	--	--	--	0.00	--	0.00	--	--	--	--	--	--	--
Greenspotted Rockfish	--	--	--	0.01	--	0.01	--	--	0.25	0.25	--	--	--
Greenstriped Rockfish	--	--	--	0.78	--	0.78	0.21	0.00	0.00	0.22	--	--	--
Halfbanded Rockfish	--	--	--	--	--	--	--	0.00	--	0.00	--	--	--
Pygmy Rockfish	--	--	--	0.00	--	0.00	--	--	--	--	--	--	--
Redstripe Rockfish	--	--	--	--	--	--	0.01	--	--	0.01	--	--	--
Rockfish Unid	--	--	--	5.71	--	5.71	--	--	--	--	--	--	--
Rosethorn Rockfish	--	--	--	--	--	--	0.17	0.01	0.06	0.23	0.01	--	0.01
Rosy Rockfish	--	--	--	0.00	--	0.00	0.00	--	--	0.00	--	0.00	0.00
Shelf Rockfish Unid	--	--	--	--	0.05	0.05	--	--	0.64	0.64	--	0.00	0.00
Silvergray Rockfish	--	--	--	--	--	--	0.04	--	0.46	0.50	--	--	--
Stripetail Rockfish	--	--	--	1.62	--	1.62	--	--	--	--	--	--	--

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

Table 13 (continued).

	Open Access CA halibut			Pink shrimp			Non-nearshore fixed gear				Nearshore fixed gear		
Weight (mt)	Discard	Landed	Estimate	Discard	Landed	Estimate	Longline Discard	Pot Discard	Landed	Estimate	Discard	Landed	Estimate
Tiger Rockfish	--	--	--	--	--	--	--	--	--	--	--	0.30	0.30
Vermilion Rockfish	--	--	--	0.02	--	0.02	--	--	0.02	0.02	0.02	2.56	2.58
Minor shelf rockfish (South of 40°10' N. lat.)													
Flag Rockfish	--	--	--	--	--	--	--	--	0.26	0.26	--	0.06	0.06
Freckled Rockfish	--	--	--	--	--	--	--	--	0.00	0.00	--	--	--
Greenblotched Rockfish	--	--	--	--	--	--	--	--	0.03	0.03	--	0.01	0.01
Greenspotted Rockfish	--	--	--	--	--	--	--	--	1.08	1.08	--	0.12	0.12
Greenstriped Rockfish	--	--	--	--	--	--	--	--	0.04	0.04	--	0.00	0.00
Halfbanded Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	--	0.01
Honeycomb Rockfish	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Mexican Rockfish	--	--	--	--	--	--	--	--	0.06	0.06	--	--	--
Pinkrose Rockfish	--	--	--	--	--	--	--	--	0.01	0.01	--	--	--
Rockfish Unid	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	--	--	--	--	--	--	0.00	--	0.00	0.00	--	0.06	0.06
Rosy Rockfish	--	--	--	--	--	--	--	--	0.24	0.24	0.01	0.03	0.04
Shelf Rockfish Unid	--	--	--	--	0.02	0.02	--	--	0.63	0.63	--	1.27	1.27
Speckled Rockfish	--	--	--	--	--	--	--	--	0.06	0.06	--	0.16	0.16
Squarespot Rockfish	--	--	--	--	--	--	--	--	0.06	0.06	--	0.01	0.01
Starry Rockfish	--	--	--	--	--	--	--	--	0.72	0.72	--	0.08	0.08
Vermilion Rockfish	--	--	--	--	0.00	0.00	--	--	14.38	14.38	0.03	10.06	10.10
Yellowtail Rockfish	--	--	--	--	--	--	--	--	4.11	4.11	0.02	0.67	0.69
Minor slope rockfish (North of 40°10' N. lat.)													
Aurora Rockfish	--	--	--	0.01	--	0.01	0.09	--	0.05	0.14	--	--	--
Blackgill Rockfish	--	--	--	--	--	--	0.84	--	0.41	1.25	--	--	--
Blackspotted Rockfish	--	--	--	--	--	--	--	--	0.26	0.26	--	--	--
Redbanded Rockfish	--	--	--	0.08	--	0.08	2.53	0.03	12.04	14.61	--	--	--
Rockfish Unid	--	--	--	0.02	--	0.02	--	--	--	--	--	--	--
Rougheye Rockfish	--	--	--	0.02	--	0.02	10.25	--	17.92	28.16	--	--	--
Sharpchin Rockfish	--	--	--	0.01	--	0.01	--	0.01	0.01	0.03	--	--	--
Shortraker Rockfish	--	--	--	--	--	--	0.73	--	2.87	3.60	--	--	--
Shortraker/Rougheye Rockfish	--	--	--	--	--	--	0.07	--	--	0.07	--	--	--
Slope Rockfish Unid	--	--	--	--	--	--	--	--	1.34	1.34	--	--	--
Splitnose Rockfish	--	--	--	0.72	--	0.72	0.03	0.00	0.04	0.07	--	--	--
Yellowmouth Rockfish	--	--	--	--	--	--	--	--	0.55	0.55	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)													
Aurora Rockfish	--	--	--	--	--	--	--	0.01	0.17	0.18	--	--	--
Bank Rockfish	--	--	--	--	--	--	--	--	0.33	0.33	--	0.19	0.19
Blackgill Rockfish	--	--	--	--	--	--	9.07	--	23.29	32.35	--	0.79	0.79
Blackspotted Rockfish	--	--	--	--	--	--	--	--	0.21	0.21	--	--	--
Redbanded Rockfish	--	--	--	--	--	--	0.01	0.05	0.33	0.40	--	0.00	0.00
Rougheye Rockfish	--	--	--	--	--	--	0.02	--	2.12	2.15	--	--	--
Shortraker Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	0.02	0.02	--	--	0.83	0.83	--	0.11	0.11
Mixed thornyheads													
Shortspine/Longspine Thornyhead	--	--	--	--	--	--	0.00	--	1.04	1.04	--	--	--
Other flatfish													
Butter Sole	--	--	--	--	--	--	--	--	--	--	0.00	0.02	0.02
Curlfin Turbot	0.52	0.21	0.73	0.00	--	0.00	--	0.00	--	0.00	--	--	--
Flatfish Unid	0.02	0.73	0.75	8.87	16.22	25.09	--	--	0.05	0.05	0.01	0.03	0.04
Flathead Sole	--	--	--	2.11	--	2.11	--	0.01	--	0.01	--	--	--
Pacific Sanddab	0.23	0.01	0.23	5.83	--	5.83	--	--	3.12	3.12	0.15	1.81	1.97
Rex Sole	--	--	--	21.72	0.07	21.79	--	--	--	--	--	--	--
Rock Sole	--	0.04	0.04	0.66	0.50	1.16	0.02	--	0.01	0.03	0.00	0.06	0.06
Sanddab Unid	--	0.10	0.10	0.03	0.11	0.14	--	--	7.30	7.30	--	0.10	0.10
Sand Sole	1.21	11.41	12.62	0.01	0.02	0.03	--	--	0.01	0.01	0.00	0.25	0.25
Other groundfish													
Big Skate	15.22	--	15.22	0.04	--	0.04	3.33	--	--	3.33	0.00	--	0.00
California Scorpionfish	--	--	--	--	--	--	--	--	--	--	0.00	0.01	0.01
California Skate	0.73	--	0.73	0.00	0.02	0.02	--	--	--	--	0.02	--	0.02
Deepsea Skate	--	--	--	--	--	--	1.02	--	--	1.02	--	--	--
Grenadier Unid	--	--	--	--	--	--	0.21	0.04	28.92	29.17	--	0.05	0.05
Kelp Greenling	--	--	--	--	--	--	--	--	--	--	0.47	20.05	20.52
Leopard Shark	0.35	0.26	0.61	--	0.00	0.00	--	--	1.40	1.40	0.01	0.42	0.44
Pacific Electric Ray	0.90	--	0.90	--	--	--	--	--	--	--	--	--	--
Pacific Flatnose	--	--	--	--	--	--	1.57	0.02	--	1.59	--	--	--
Pacific Grenadier	--	--	--	--	--	--	44.33	2.23	--	46.56	--	--	--
Rockfish Unid	--	--	--	--	--	--	--	--	2.11	2.11	--	1.04	1.04
Skate Unid	0.39	0.48	0.87	0.05	7.64	7.69	0.11	--	9.74	9.85	--	0.10	0.10
Soupfin Shark	0.04	0.19	0.23	--	--	--	1.09	--	0.21	1.30	0.28	0.49	0.76
Spotted Ratfish	--	--	--	0.07	--	0.07	1.82	0.02	--	1.85	0.01	0.00	0.01
Thornback Skate	0.23	--	0.23	--	--	--	--	--	--	--	--	--	--

Table 13 (continued).

	Open Access CA halibut			Pink shrimp			Non-nearshore fixed gear				Nearshore fixed gear		
Weight (mt)	Discard	Landed	Estimate	Discard	Landed	Estimate	Longline Discard	Pot Discard	Landed	Estimate	Discard	Landed	Estimate
Pacific Cod	--	--	--	0.15	--	0.15	0.28	--	0.80	1.09	--	--	--
Pacific Hake	--	--	--	228.27	0.03	228.30	0.35	0.04	0.17	0.56	--	--	--
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	--	--	--	9.97	--	9.97	0.07	--	0.17	0.24	--	--	--
Petrale Sole	--	0.10	0.10	2.42	0.28	2.70	0.11	0.00	0.27	0.38	0.00	0.00	0.01
Sablefish (North of 36° N. lat.)	--	--	--	0.31	--	0.31	157.63	99.42	1,434.11	1,485.52	--	1.41	1.41
50% discard mortality (Trawl)‡													
20% discard mortality (Fixed Gear)‡							31.53	19.88					
Sablefish (South of 36° N. lat.)	--	--	--	--	0.07	0.07	31.58	0.41	463.66	470.06	--	13.74	13.74
50% discard mortality (Trawl)‡													
20% discard mortality (Fixed Gear)‡							6.32	0.08					
Shortbelly Rockfish	--	--	--	8.86	--	8.86	--	--	--	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	0.16	--	0.16	4.98	0.07	47.42	52.47	--	0.11	0.11
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	9.92	--	86.01	95.93	--	1.57	1.57
Spiny Dogfish	5.67	--	5.67	0.03	--	0.03	145.84	0.52	19.15	92.60	0.54	0.00	0.55
50% discard mortality (Longline)‡							72.92						
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	0.00	0.43	0.43	--	--	--
Starry Flounder	0.13	5.72	5.85	--	--	--	--	--	0.14	0.14	--	0.11	0.11
Widow Rockfish	--	--	--	0.02	0.00	0.02	0.01	--	1.30	1.31	0.01	0.27	0.28
YELLOWEYE ROCKFISH	--	--	--	0.00	--	0.00	0.45	0.03	0.00	0.48	0.96	0.00	0.96
Yellowtail Rockfish (North of 40°10' N. lat.)	--	--	--	0.05	0.03	0.08	0.35	--	0.21	0.56	0.28	1.23	1.51
Non-groundfish species													
California Halibut	6.00	81.42	87.42	--	5.70	5.70	--	--	0.88	0.88	--	1.01	1.01
Dungeness Crab	259.05	0.44	259.49	0.03	0.03	0.07	0.00	1.01	1.53	2.55	0.17	3.51	3.67
Non-FMP flatfish													
Deepsea Sole	--	0.11	0.11	--	--	--	0.04	0.01	--	0.04	--	--	--
Diamond Turbot	0.47	0.01	0.48	--	--	--	--	--	--	--	--	--	--
Hornyhead Turbot	0.08	0.73	0.81	--	1.30	1.30	--	--	--	--	--	--	--
Longfin Sanddab	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--
Slender Sole	--	--	--	126.20	--	126.20	--	--	--	--	--	--	--
Speckled Sanddab	0.20	--	0.20	0.02	--	0.02	--	--	--	--	--	--	--
Non-FMP skate													
Aleutian Skate	--	--	--	--	--	--	0.11	--	--	0.11	--	--	--
Black Skate	--	--	--	--	--	--	15.43	--	--	15.43	--	--	--
Deepsea Skate	--	--	--	--	--	--	1.02	--	--	1.02	--	--	--
Sandpaper Skate	--	--	--	0.03	--	0.03	0.89	0.01	--	0.89	--	--	--
Starry Skate	--	--	--	--	--	--	--	--	--	--	0.07	--	0.07
Thornback Skate	0.23	--	0.23	--	--	--	--	--	--	--	--	--	--
Other non-groundfish													
Brown Irish Lord Sculpin	0.00	--	0.00	--	--	--	--	--	--	--	0.02	--	0.02
Buffalo Sculpin	--	--	--	--	--	--	--	--	--	--	0.36	--	0.36
California Sheephead	--	--	--	--	0.01	0.01	--	0.05	--	0.05	40.38	41.17	81.54
Pacific Electric Ray	0.90	--	0.90	--	--	--	--	--	--	--	--	--	--
Red Irish Lord Sculpin	--	--	--	--	--	--	--	--	--	--	0.46	--	0.46
Sculpin Unid	0.04	--	0.04	0.22	0.07	0.30	--	0.00	--	0.00	0.34	0.05	0.39

Table 14. Incidental Landings.

Incidental landings (mt) of groundfish from shoreside commercial fisheries by gear group and exempted fishing permits (EFP) in 2014. Gear groups are as follows: HKL (hook-and-lines), MSC (miscellaneous), NET (nets), POT (pots), TLS (troll), TWL (trawl), TWS (shrimp trawls). All rebuilding species are capitalized.

	Shoreside Commercial Landings (mt)							Incidental fisheries estimate
	Other Fisheries By Gear Group						EFP	
	HKL	MSC	NET	POT	TLS	TWL		
Groundfish species								
Arrowtooth Flounder	0.33	--	--	--	--	--	--	0.33
Black Rockfish (South of 46°16' N. lat.)	--	--	0.02	--	0.32	--	--	0.34
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	0.21	--	0.02	0.02	0.01	0.04	0.30	0.61
Cabezon (California)	--	0.00	0.05	--	0.21	--	--	0.25
California Scorpionfish (South of 34°27' N. lat.)	--	--	0.04	--	--	--	--	0.04
Canary Rockfish	0.01	--	--	--	--	--	0.02	0.03
Chilipepper Rockfish (South of 40°10' N. lat.)	0.00	--	0.00	--	--	0.23	0.01	0.24
Cowcod Rockfish	--	--	--	--	--	0.00	--	0.00
DARKBLOTCHED ROCKFISH	0.00	--	0.01	--	--	0.00	--	0.01
Dover Sole	0.04	--	--	--	--	2.04	--	2.08
English Sole	--	--	0.01	--	--	0.07	--	0.08
Lingcod (North of 40°10' N. lat.)	0.87	--	--	0.00	4.27	--	--	5.14
Lingcod (South of 40°10' N. lat.)	1.84	0.13	0.01	0.11	3.87	0.22	0.03	6.22
Longnose Skate	0.64	--	0.09	--	--	0.05	--	0.78
Longspine Thornyhead (North of 34°27' N. lat.)	--	--	--	--	0.01	0.34	--	0.35
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	0.01	--	0.01
Minor nearshore rockfish (North of 40°10' N. lat.)								
Blue Rockfish	--	--	--	--	0.04	--	--	0.04
Quillback Rockfish	--	--	--	--	0.00	--	--	0.00
Minor nearshore rockfish (South of 40°10' N. lat.)								
Black and Yellow Rockfish	--	0.05	--	--	0.01	--	--	0.06
Blue Rockfish	--	--	--	--	0.06	--	0.06	0.12
Brown Rockfish	--	--	0.00	--	0.02	--	--	0.02
China Rockfish	--	0.00	--	--	--	--	--	0.00
Copper Rockfish	--	0.01	--	--	0.00	0.10	--	0.11
Gopher Rockfish	--	0.00	--	--	--	--	--	0.00
Grass Rockfish	--	--	0.01	--	--	--	--	0.01
Nearshore Rockfish Unid	--	--	--	--	0.00	--	--	0.00
Olive Rockfish	--	--	--	--	0.00	--	0.01	0.01
Treefish Rockfish	--	--	0.08	--	--	--	--	0.08
Minor shelf rockfish (North of 40°10' N. lat.)								
Greenspotted Rockfish	0.01	--	--	--	--	--	--	0.01
Greenstriped Rockfish	0.00	--	--	--	--	--	--	0.00
Rosethorn Rockfish	0.00	--	--	--	--	--	--	0.00
Shelf Rockfish Unid	0.00	--	--	--	0.06	--	--	0.06
Silvergray Rockfish	0.03	--	--	--	--	--	--	0.03
Vermilion Rockfish	--	--	--	--	0.02	--	--	0.02
Minor shelf rockfish (South of 40°10' N. lat.)								
Flag Rockfish	0.00	--	--	--	--	--	--	0.00
Greenspotted Rockfish	0.04	--	--	0.01	--	--	--	0.05
Greenstriped Rockfish	--	--	--	--	--	--	0.00	0.00
Mexican Rockfish	--	--	--	--	--	0.00	--	0.00
Rosy Rockfish	--	--	--	--	--	--	0.00	0.00
Shelf Rockfish Unid	0.11	--	--	--	0.01	--	--	0.12
Speckled Rockfish	0.03	--	--	--	--	--	0.01	0.04
Starry Rockfish	0.02	--	--	0.01	--	--	--	0.03
Stripetail Rockfish	--	--	--	--	--	0.00	--	0.00
Vermilion Rockfish	0.43	0.02	0.04	0.14	0.21	0.03	0.00	0.88
Yellowtail Rockfish	0.28	--	0.01	0.02	0.19	--	2.77	3.28
Minor slope rockfish (North of 40°10' N. lat.)								
Blackgill Rockfish	0.02	--	--	--	--	--	--	0.02
Blackspotted Rockfish	0.00	--	--	--	--	--	--	0.00
Redbanded Rockfish	0.26	--	--	--	--	--	--	0.26

Table 14 (continued).

	Shoreside Commercial Landings (mt)							Incidental fisheries estimate
	Other Fisheries By Gear Group						EFP	
	HKL	MSC	NET	POT	TLS	TWL		
Rougheye Rockfish	0.35	--	--	--	--	--	--	0.35
Sharpchin Rockfish	0.00	--	--	--	--	--	--	0.00
Shortraker Rockfish	0.14	--	--	--	--	--	--	0.14
Slope Rockfish Unid	0.00	--	--	--	0.04	--	--	0.05
Splitnose Rockfish	0.00	--	--	--	--	--	--	0.00
Minor slope rockfish (South of 40°10' N. lat.)								
Aurora Rockfish	--	--	--	--	--	0.05	--	0.05
Bank Rockfish	--	--	4.36	--	--	0.43	--	4.79
Blackgill Rockfish	--	--	0.84	0.00	0.05	0.02	--	0.91
Redbanded Rockfish	--	--	0.00	--	--	0.00	--	0.01
Slope Rockfish Unid	0.07	--	--	--	0.01	--	--	0.08
Other flatfish								
Curlfin Turbot	--	--	--	--	--	0.10	--	0.10
Flatfish Unid	0.01	0.02	0.32	--	--	0.28	--	0.62
Pacific Sanddab	0.20	--	--	0.00	--	0.03	--	0.24
Rex Sole	--	--	--	--	--	0.00	--	0.00
Rock Sole	0.00	--	--	--	--	0.02	--	0.02
Sanddab Unid	0.03	--	--	--	1.10	--	--	1.13
Sand Sole	--	--	0.00	0.02	--	1.39	--	1.41
Other groundfish								
Grenadier Unid	--	--	--	--	1.82	--	--	1.82
Leopard Shark	0.02	--	0.55	0.02	--	--	--	0.59
Rockfish Unid	0.07	--	--	0.07	0.02	0.00	--	0.16
Skate Unid	0.45	--	0.88	--	--	0.24	--	1.56
Soupfin Shark	0.03	--	0.50	--	0.02	--	--	0.55
Pacific Cod	0.05	--	--	--	--	--	--	0.05
Pacific Hake	--	--	--	--	--	0.00	--	0.00
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	0.00	--	--	--	--	--	--	0.00
Petrale Sole	0.06	--	0.09	0.00	0.00	0.21	0.00	0.36
Sablefish (North of 36° N. lat.)	16.47	--	--	0.06	3.91	0.20	--	20.65
Sablefish (South of 36° N. lat.)	--	--	0.24	--	--	0.23	--	0.47
Shortbelly Rockfish	--	--	--	--	--	--	0.00	0.00
Shortspine Thornyhead (North of 34°27' N. lat.)	0.04	0.01	--	--	0.48	0.59	--	1.12
Shortspine Thornyhead (South of 34°27' N. lat.)	0.10	--	--	--	--	0.07	--	0.17
Spiny Dogfish	--	--	0.00	--	--	0.02	--	0.02
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	0.02	--	--	0.00	--	0.02
Starry Flounder	0.54	--	--	0.01	0.00	1.18	--	1.74
Widow Rockfish	0.01	--	0.03	--	0.05	0.00	0.44	0.53
YELLOWEYE ROCKFISH	0.34	--	--	--	--	--	0.01	0.35
Yellowtail Rockfish (North of 40°10' N. lat.)	0.02	--	--	--	3.19	--	--	3.20
Non-groundfish species								
California Halibut	66.96	0.02	18.11	0.25	1.92	1.10	--	88.36
Dungeness Crab	0.06	3.47	--	18,005.56	2.67	--	--	18,011.76
Non-FMP flatfish								
Deepsea Sole	--	--	--	--	--	0.00	--	0.00
Diamond Turbot	--	--	--	--	--	0.03	--	0.03
Hornyhead Turbot	--	--	0.04	--	--	0.10	--	0.13
Longfin Sanddab	0.00	--	--	--	--	--	--	0.00
Other non-groundfish								
California Sheephead	--	0.28	0.01	--	--	--	--	0.29
Sculpin Unid	0.00	0.00	--	--	--	0.52	--	0.52

Table 15. Fishing Mortality Estimates by Sector.

Estimated fishing mortality (mt) of west coast groundfish species and a subset of non-groundfish bycatch species in 2014 by sector or fishery. All rebuilding species are capitalized.

	Commercial fisheries															
	IFQ/Co-op Management															
Weight (mt)	Non-tribal at-sea hake	Non-tribal shoreside hake	Non-hake IFQ trawl	Non-hake IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	OA CA halibut	Pink shrimp	Incidental fisheries	WA tribal shoreside	WA tribal at-sea	Recreational fishing mortality WA	OR	CA	Research	Estimated fishing mortality
Groundfish species																
Arrowtooth Flounder	10.73	6.32	1,730.15	2.29	28.31	0.00	--	40.42	0.33	11.91	--	--	0.02	0.03	12.98	1,843.50
Black Rockfish (North of 46°16' N. lat.)	--	--	1.00	--	--	--	--	--	--	0.07	--	259.63	--	--	0.01	260.70
Black Rockfish (South of 46°16' N. lat.)	--	--	0.01	--	--	164.25	0.00	--	0.34	--	--	--	360.43	339.68	0.01	864.72
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	--	--	8.55	--	4.64	1.23	--	0.09	0.61	--	--	--	--	99.53	4.24	118.89
Cabezon (California)	--	--	--	--	--	31.41	--	--	0.25	--	--	--	--	50.81	--	82.48
Cabezon (Oregon)	--	--	0.01	--	--	15.44	--	--	--	--	--	--	11.50	--	0.01	26.95
California Scorpionfish (South of 34°27' N. lat.)	--	--	--	--	--	2.37	0.03	0.13	0.04	--	--	--	--	122.62	0.03	125.22
Canary Rockfish	0.63	2.57	7.90	0.01	0.43	4.73	--	0.07	0.03	5.97	--	0.93	3.03	15.60	3.71	45.60
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	311.63	--	0.78	0.15	--	0.00	0.24	--	--	--	--	10.59	10.86	334.25
COWCOD ROCKFISH (South of 40°10' N. lat.)	--	--	0.18	--	0.01	0.00	--	--	0.00	--	--	--	--	0.75	0.22	1.16
DARKBLOTCHED ROCKFISH	10.62	8.45	89.28	0.05	5.07	0.02	--	24.53	0.01	0.07	--	--	--	--	1.50	139.59
Dover Sole	0.92	0.12	6,452.89	0.79	5.42	0.00	0.01	2.36	2.08	69.70	--	--	0.00	0.01	31.49	6,565.79
English Sole	0.01	0.00	237.00	0.00	--	--	0.33	1.28	0.08	61.70	--	--	0.00	0.00	5.50	305.92
Lingcod (North of 40°10' N. lat.)	0.89	9.11	220.08	1.68	19.91	48.11	--	0.35	5.14	40.78	--	110.32	176.72	79.34	11.10	723.54
Lingcod (South of 40°10' N. lat.)	--	--	15.99	0.14	24.19	33.69	0.05	0.00	6.22	--	--	--	--	492.43	2.07	574.78
Longnose Skate	0.75	0.30	843.21	3.14	50.60	0.19	--	0.51	0.78	3.25	--	--	--	--	7.98	910.71
Longspine Thornyhead (North of 34°27' N. lat.)	0.00	0.03	883.83	0.26	6.69	--	--	--	0.35	1.03	--	--	--	--	11.08	903.28
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	0.25	16.34	0.11	--	--	0.01	--	--	--	--	--	0.85	17.56
Minor nearshore rockfish (North of 40°10' N. lat.)																
Black and Yellow Rockfish	--	--	--	--	--	0.07	--	--	--	--	--	--	0.02	0.02	--	0.11
Blue Rockfish	--	--	0.01	--	--	7.50	--	0.00	0.04	--	--	0.56	19.82	1.45	--	29.38
Brown Rockfish	--	--	0.01	--	--	0.02	--	--	--	--	--	--	0.10	0.85	--	0.98
China Rockfish	--	--	--	--	--	4.63	--	--	--	--	--	2.55	1.72	0.73	--	9.64
Copper Rockfish	--	--	0.00	--	--	1.14	--	--	--	--	--	1.71	4.17	1.72	--	8.74
Gopher Rockfish	--	--	--	--	--	0.03	--	--	--	--	--	--	--	0.11	--	0.14
Grass Rockfish	--	--	--	--	--	0.16	--	--	--	--	--	--	1.35	0.05	--	1.56
Olive Rockfish	--	--	--	--	--	0.01	--	--	--	--	--	--	0.02	0.22	--	0.24
Quillback Rockfish	--	--	0.17	--	--	1.58	--	--	0.00	--	--	1.46	3.50	1.66	0.03	8.40
Minor nearshore rockfish (South of 40°10' N. lat.)																
Black and Yellow Rockfish	--	--	--	--	--	11.45	--	--	0.06	--	--	--	--	9.76	--	21.26
Blue Rockfish	--	--	--	--	--	6.06	--	--	0.12	--	--	--	--	132.59	0.05	138.83

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

Table 15 (continued).

	Commercial fisheries															
	IFQ/Co-op Management															
Weight (mt)	Non-tribal at-sea hake	Non-tribal shoreside hake	Non-hake IFQ trawl	Non-hake IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	OA CA halibut	Pink shrimp	Incidental fisheries	WA tribal shoreside	WA tribal at-sea	Recreational fishing mortality WA	OR	CA	Research	Estimated fishing mortality
Brown Rockfish	--	--	0.00	--	0.02	27.49	0.02	--	0.02	--	--	--	--	119.61	0.04	147.20
Calico Rockfish	--	--	--	--	--	0.01	--	--	--	--	--	--	--	0.40	0.00	0.41
China Rockfish	--	--	0.23	--	--	1.77	--	0.02	0.00	--	--	--	--	9.59	0.00	11.60
Copper Rockfish	--	--	--	--	--	6.25	0.01	0.11	0.11	--	--	--	--	100.61	0.10	107.19
Gopher Rockfish	--	--	--	--	0.00	27.04	--	--	0.00	--	--	--	--	55.32	0.00	82.37
Grass Rockfish	--	--	--	--	--	10.69	--	--	0.01	--	--	--	--	12.27	--	22.97
Kelp Rockfish	--	--	--	--	--	0.88	--	--	--	--	--	--	--	17.59	--	18.47
Nearshore Rockfish Unid	--	--	--	--	--	0.09	--	--	0.00	--	--	--	--	--	--	0.09
Olive Rockfish	--	--	0.01	--	--	1.04	--	--	0.01	--	--	--	--	31.51	0.06	32.63
Quillback Rockfish	--	--	--	--	--	0.24	--	--	--	--	--	--	--	1.05	--	1.29
Treefish Rockfish	--	--	--	--	--	2.39	--	--	0.08	--	--	--	--	9.49	--	11.96
Minor shelf rockfish (North of 40°10' N. lat.)																
Bocaccio Rockfish	0.08	0.46	1.01	0.00	--	--	--	0.03	--	0.68	--	2.58	0.09	--	0.02	4.95
Chilipepper Rockfish	0.00	0.05	3.48	--	0.00	0.00	--	7.28	--	--	--	--	--	10.59	0.72	22.13
Cowcod Rockfish	--	--	0.02	--	--	--	--	0.00	--	--	--	--	--	--	--	0.02
Freckled Rockfish	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--	0.00
Greenspotted Rockfish	--	--	0.03	0.00	0.25	--	--	0.01	0.01	0.38	--	--	0.01	--	0.08	0.77
Greenstriped Rockfish	--	0.11	17.15	0.00	0.22	--	--	0.78	0.00	0.05	--	--	0.00	--	2.37	20.68
Halfbanded Rockfish	--	--	0.06	--	0.00	--	--	--	--	--	--	--	--	--	--	0.07
Harlequin Rockfish	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00
Pygmy Rockfish	--	--	0.00	--	--	--	--	0.00	--	--	--	--	--	--	0.25	0.26
Redstripe Rockfish	0.08	0.35	2.16	--	0.01	--	--	--	--	0.00	--	--	0.01	--	1.47	4.08
Rockfish Unid	0.00	--	0.00	--	--	--	--	5.71	--	--	--	--	--	--	--	5.71
Rosethorn Rockfish	--	0.01	1.81	0.01	0.23	0.01	--	--	0.00	0.58	--	--	0.02	--	0.41	3.08
Rosy Rockfish	--	--	0.00	--	0.00	0.00	--	0.00	--	--	--	--	--	0.01	--	0.01
Shelf Rockfish Unid	--	0.01	0.09	0.00	0.64	0.00	--	0.05	0.06	4.84	--	--	--	--	--	5.70
Silvergray Rockfish	0.09	0.33	0.57	0.00	0.50	--	--	--	0.03	0.53	--	--	1.10	--	0.03	3.18
Stripetail Rockfish	0.00	0.02	6.79	--	--	--	--	1.62	--	0.00	--	--	--	--	2.33	10.76
Tiger Rockfish	--	--	--	--	--	0.30	--	--	--	--	--	0.16	0.88	0.22	0.00	1.57
Vermilion Rockfish	--	--	0.00	--	0.02	2.58	--	0.02	0.02	--	--	0.87	3.73	3.46	0.00	10.70
Minor shelf rockfish (South of 40°10' N. lat.)																
Bronzespotted Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Flag Rockfish	--	--	0.00	--	0.26	0.06	--	--	0.00	--	--	--	--	14.17	0.01	14.50
Freckled Rockfish	--	--	--	--	0.00	--	--	--	--	--	--	--	--	--	--	0.00

Table 15 (continued).

	Commercial fisheries															
	IFQ/Co-op Management															
Weight (mt)	Non-tribal at-sea hake	Non-tribal shoreside hake	Non-hake IFQ trawl	Non-hake IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	OA CA halibut	Pink shrimp	Incidental fisheries	WA tribal shoreside	WA tribal at-sea	Recreational fishing mortality WA	OR	CA	Research	Estimated fishing mortality
Greenblotched Rockfish	--	--	0.05	--	0.03	0.01	--	--	--	--	--	--	--	0.13	0.09	0.31
Greenspotted Rockfish	--	--	0.56	--	1.08	0.12	--	--	0.05	--	--	--	--	9.79	0.49	12.10
Greenstriped Rockfish	--	--	1.30	--	0.04	0.00	--	--	0.00	--	--	--	--	0.97	0.28	2.59
Halfbanded Rockfish	--	--	0.02	--	--	0.01	--	--	--	--	--	--	--	4.70	0.65	5.38
Honeycomb Rockfish	--	--	--	--	--	0.00	--	--	--	--	--	--	--	5.62	0.00	5.63
Mexican Rockfish	--	--	0.01	--	0.06	--	--	--	0.00	--	--	--	--	--	0.01	0.09
Pink Rockfish	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Pinkrose Rockfish	--	--	--	--	0.01	--	--	--	--	--	--	--	--	--	0.00	0.01
Redstripe Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rockfish Unid	--	--	0.03	--	--	--	0.00	--	--	--	--	--	--	--	--	0.03
Rosethorn Rockfish	--	--	0.10	0.00	0.00	0.06	--	--	--	--	--	--	--	0.02	0.09	0.28
Rosy Rockfish	--	--	--	--	0.24	0.04	--	--	0.00	--	--	--	--	4.56	0.04	4.89
Shelf Rockfish Unid	--	--	0.08	--	0.63	1.27	--	0.02	0.12	--	--	--	--	--	--	2.11
Speckled Rockfish	--	--	--	--	0.06	0.16	--	--	0.04	--	--	--	--	9.45	0.23	9.94
Squarespot Rockfish	--	--	0.00	--	0.06	0.01	--	--	--	--	--	--	--	22.37	0.05	22.50
Starry Rockfish	--	--	--	--	0.72	0.08	--	--	0.03	--	--	--	--	14.61	0.08	15.52
Stripetail Rockfish	--	--	6.25	--	--	--	--	--	0.00	--	--	--	--	--	1.27	7.51
Swordspine Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01	0.02
Tiger Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.09	--	0.09
Vermilion Rockfish	--	--	0.01	--	14.38	10.10	--	0.00	0.88	--	--	--	--	202.34	2.86	230.57
Yellowtail Rockfish	--	--	0.04	--	4.11	0.69	--	--	3.28	--	--	--	--	59.52	0.37	67.99
Minor slope rockfish (North of 40°10' N. lat.)																
Aurora Rockfish	0.08	0.20	18.56	0.01	0.14	--	--	0.01	--	0.00	--	--	--	--	0.14	19.14
Bank Rockfish	0.09	--	2.46	--	--	--	--	--	--	0.00	--	--	--	--	0.01	2.56
Blackgill Rockfish	0.10	0.06	5.98	0.06	1.25	--	--	--	0.02	0.04	--	--	--	--	--	7.49
Blackspotted Rockfish	--	--	--	--	0.26	--	--	--	0.00	0.04	--	--	--	--	--	0.31
Redbanded Rockfish	0.01	0.05	4.49	1.21	14.61	--	--	0.08	0.26	7.73	--	--	0.00	--	0.26	28.70
Rockfish Unid	0.00	--	0.11	--	--	--	--	0.02	--	--	--	--	--	--	--	0.14
Rougheye Rockfish	5.58	3.48	33.99	2.87	28.16	--	--	0.02	0.35	14.99	--	--	--	--	0.08	89.52
Sharpchin Rockfish	0.00	0.70	13.88	0.00	0.03	--	--	0.01	0.00	0.04	--	--	--	--	7.58	22.24
Shortraker Rockfish	0.01	0.66	22.46	0.33	3.60	--	--	--	0.14	1.41	--	--	--	--	0.02	28.63
Shortraker/Rougheye Rockfish	--	--	--	0.02	0.07	--	--	--	--	--	--	--	--	--	--	0.08
Slope Rockfish Unid	--	0.06	2.90	0.01	1.34	--	--	--	0.05	0.45	--	--	--	--	--	4.81
Splitnose Rockfish	19.52	30.93	33.74	--	0.07	--	--	0.72	0.00	0.06	--	--	--	--	1.43	86.47
Yellowmouth Rockfish	0.00	0.00	3.89	--	0.55	--	--	--	--	0.00	--	--	--	--	0.00	4.45

Table 15 (continued).

	Commercial fisheries															
	IFQ/Co-op Management															
Weight (mt)	Non-tribal at-sea hake	Non-tribal shoreside hake	Non-hake IFQ trawl	Non-hake IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	OA CA halibut	Pink shrimp	Incidental fisheries	WA tribal shoreside	WA tribal at-sea	Recreational fishing mortality WA	OR	CA	Research	Estimated fishing mortality
Minor slope rockfish (South of 40°10' N. lat.)																
Aurora Rockfish	--	--	3.84	0.04	0.18	--	--	--	0.05	--	--	--	--	--	0.30	4.41
Bank Rockfish	--	--	52.97	0.00	0.33	0.19	--	--	4.79	--	--	--	--	0.56	0.74	59.58
Blackgill Rockfish	--	--	34.93	3.44	32.35	0.79	--	--	0.91	--	--	--	--	--	0.36	72.79
Blackspotted Rockfish	--	--	0.01	--	0.21	--	--	--	--	--	--	--	--	--	--	0.22
Pacific Ocean Perch	--	--	0.03	--	--	--	--	--	--	--	--	--	--	--	0.00	0.03
Redbanded Rockfish	--	--	2.79	0.00	0.40	0.00	--	--	0.01	--	--	--	--	--	0.05	3.25
Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rougheye Rockfish	--	--	--	--	2.15	--	--	--	--	--	--	--	--	--	0.02	2.16
Sharpchin Rockfish	--	--	0.03	--	--	--	--	--	--	--	--	--	--	--	0.02	0.05
Shortraker Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	0.03
Slope Rockfish Unid	--	--	1.38	--	0.83	0.11	--	0.02	0.08	--	--	--	--	--	--	2.42
Yellowmouth Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mixed thornyheads																
Shortspine/Longspine Thornyhead	2.56	--	0.23	--	1.04	--	--	--	--	--	--	--	--	--	0.03	3.85
Other flatfish																
Butter Sole	--	--	0.75	--	--	0.02	--	--	--	0.00	--	--	0.01	--	0.01	0.79
Curlfin Turbot	--	--	2.54	--	0.00	--	0.73	0.00	0.10	--	--	--	--	--	0.21	3.58
Flatfish Unid	0.00	0.00	0.12	--	0.05	0.04	0.75	25.09	0.62	2.45	--	11.03	0.00	--	0.00	40.15
Flathead Sole	0.00	0.00	19.27	--	0.01	--	--	2.11	--	--	--	--	--	--	0.30	21.69
Pacific Sanddab	0.00	0.77	319.52	--	3.12	1.97	0.23	5.83	0.24	--	--	--	0.10	107.33	12.47	451.58
Rex Sole	8.19	0.31	422.39	--	--	--	--	21.79	0.00	25.28	--	--	--	--	8.69	486.66
Rock Sole	--	--	0.90	--	0.03	0.06	0.04	1.16	0.02	5.63	--	--	0.00	0.77	0.15	8.75
Sand Sole	--	--	18.89	--	0.01	0.25	12.62	0.03	1.41	--	--	--	0.23	0.52	0.02	33.97
Sanddab Unid	--	0.00	47.09	--	7.30	0.10	0.10	0.14	1.13	2.76	--	--	--	--	--	58.63
Other groundfish																
Big Skate	0.47	--	74.67	0.07	3.33	0.00	7.61	0.04	--	--	--	--	--	--	2.76	88.96
Cabezon	--	--	--	--	--	--	--	--	--	--	--	4.16	--	50.81	0.01	54.98
California Scorpionfish	--	--	--	--	--	0.01	--	--	--	--	--	--	--	122.62	--	122.63
California Skate	--	--	0.87	--	--	0.02	0.73	0.02	--	--	--	--	--	--	0.29	1.93
Grenadier Unid	0.73	--	33.98	1.03	29.17	0.05	--	--	1.82	--	--	--	--	--	--	66.78
Groundfish Unid	--	0.22	--	--	--	--	--	--	--	--	--	--	--	--	6.26	6.49
Kelp Greenling	--	--	0.06	--	--	20.52	--	--	--	--	--	2.05	18.74	12.56	0.02	53.95
Leopard Shark	--	--	--	--	1.40	0.44	0.61	0.00	0.59	--	--	--	0.01	14.11	0.01	17.16
Pacific Flatnose	--	--	0.83	0.07	1.59	--	--	--	--	--	--	--	--	--	0.33	2.83
Pacific Grenadier	--	--	32.95	5.01	46.56	--	--	--	--	--	--	--	--	--	5.10	89.62
Rockfish Unid	--	--	--	--	2.11	1.04	--	--	0.16	--	--	--	0.04	--	0.05	3.39
Roundfish Unid	0.03	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--	0.03
Shark and Skate Unid	--	--	--	--	--	--	--	--	--	--	--	0.48	--	--	--	0.48
Skate Unid	0.04	0.51	330.54	0.14	9.85	0.10	0.87	7.69	1.56	60.83	--	--	--	--	--	412.13
Soupfin Shark	0.49	0.31	1.76	--	1.30	0.76	0.23	--	0.55	--	--	--	--	--	0.01	5.42
Spotted Ratfish	0.00	0.01	93.76	0.04	1.85	0.01	--	0.07	--	--	--	--	--	0.02	--	95.76

Table 15 (continued).

	Commercial fisheries															
	IFQ/Co-op Management															
Weight (mt)	Non-tribal at-sea hake	Non-tribal shoreside hake	Non-hake IFQ trawl	Non-hake IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	OA CA halibut	Pink shrimp	Incidental fisheries	WA tribal shoreside	WA tribal at-sea	Recreational fishing mortality WA	OR	CA	Research	Estimated fishing mortality
Pacific Cod	--	0.18	166.26	0.01	1.09	--	--	0.15	0.05	270.68	--	0.89	0.00	--	0.38	439.70
Pacific Hake	165,304.58	98,476.51	239.58	0.16	0.56	--	--	228.30	0.00	617.19	--	--	0.02	0.03	252.78	265,119.70
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	3.92	10.17	30.77	0.06	0.24	--	--	9.97	0.00	0.36	--	--	--	--	0.57	56.06
Petrale Sole	--	0.03	2,316.05	0.11	0.38	0.01	0.10	2.70	0.36	100.38	--	--	0.34	0.86	17.70	2,439.02
Sablefish (North of 36° N. lat.)	16.17	5.23	1,283.12	571.60	1,485.52	1.41	--	0.31	20.65	437.31	--	--	0.78	0.33	11.16	3,833.57
Sablefish (South of 36° N. lat.)	--	--	6.66	191.83	470.06	13.74	--	0.07	0.47	--	--	--	--	--	0.77	683.60
Shortbelly Rockfish	0.01	0.01	8.02	--	--	--	--	8.86	0.00	--	--	--	--	--	0.74	17.64
Shortspine Thornyhead (North of 34°27' N. lat.)	20.47	2.19	690.46	4.55	52.47	0.11	--	0.16	1.12	20.98	--	--	--	--	4.18	796.68
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	2.63	95.93	1.57	--	--	0.17	--	--	--	--	--	0.41	100.71
Spiny Dogfish	59.57	69.55	358.12	16.53	92.60	0.55	5.67	0.03	0.02	10.64	--	--	0.06	2.28	9.01	624.63
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	64.79	0.00	0.43	--	--	--	0.02	--	--	--	--	--	3.27	68.51
Starry Flounder	--	--	14.70	--	0.14	0.11	5.85	--	1.74	--	--	--	2.96	1.71	0.56	27.77
Widow Rockfish	56.18	304.36	349.90	--	1.31	0.28	--	0.02	0.53	13.95	--	--	1.93	16.38	3.03	747.86
YELLOWEYE ROCKFISH	--	0.00	0.08	0.01	0.48	0.96	--	0.00	0.35	0.38	--	2.84	2.63	1.06	0.31	9.09
Yellowtail Rockfish (North of 40°10' N. lat.)	41.96	309.47	853.77	0.01	0.56	1.51	--	0.08	3.20	198.50	--	33.80	11.65	0.39	5.92	1,460.82
Non-groundfish species																
California Halibut	--	--	--	--	0.88	1.01	87.42	5.70	88.36	--	--	--	--	116.05	--	299.43
California Sheephead	--	--	--	--	0.05	81.54	--	0.01	0.29	--	--	--	--	52.13	0.01	134.02
Dungeness Crab	--	0.03	115.37	0.38	2.55	3.67	259.49	0.07	18,011.76	902.80	--	--	--	--	0.00	19,296.13
Non-FMP flatfish																
Deepsea Sole	--	--	17.01	0.01	0.04	--	0.11	--	0.00	--	--	--	--	--	--	17.18
Diamond Turbot	--	--	--	--	--	--	0.48	--	0.03	--	--	--	--	0.02	--	0.53
Hornyhead Turbot	--	--	0.04	--	--	--	0.81	1.30	0.13	--	--	--	--	--	--	2.28
Longfin Sanddab	--	--	--	--	--	--	0.00	--	0.00	--	--	--	--	--	--	0.01
Slender Sole	0.01	--	33.90	--	--	--	--	126.20	--	--	--	--	--	--	0.05	160.16
Speckled Sanddab	--	--	--	--	--	--	0.20	0.02	--	--	--	--	--	0.02	--	0.24
Non-FMP skate																
Aleutian Skate	0.00	--	1.53	0.03	0.11	--	--	--	--	--	--	--	--	--	--	1.67
Black Skate	--	--	18.82	0.13	15.43	--	--	--	--	--	--	--	--	--	--	34.38
Deepsea Skate	--	--	0.80	0.01	1.02	--	--	--	--	--	--	--	--	--	--	1.83
Sandpaper Skate	0.01	--	40.53	0.04	0.89	--	--	0.03	--	--	--	--	--	--	0.02	41.52
Starry Skate	--	--	0.07	--	--	0.07	--	--	--	--	--	--	--	--	0.00	0.14
Thornback Skate	--	--	--	--	--	--	0.23	--	--	--	--	--	--	--	--	0.23
White Skate	--	--	0.06	--	--	--	--	--	--	--	--	--	--	--	--	0.06
Other non-groundfish																
Brown Irish Lord Sculpin	--	--	--	--	--	0.02	0.00	--	--	--	--	--	--	--	--	0.02
Buffalo Sculpin	--	--	--	--	--	0.36	--	--	--	--	--	--	--	--	--	0.36
Greenling Unid	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--	0.00
Pacific Electric Ray	0.00	--	2.34	--	--	--	0.90	--	--	--	--	--	--	--	--	3.25
Red Irish Lord Sculpin	--	--	--	--	--	0.46	--	--	--	--	--	--	--	--	--	0.46
Sculpin Unid	--	--	1.97	--	0.00	0.39	0.04	0.30	0.52	0.01	--	--	--	--	--	3.22

Table 16. Fishing Mortality Estimates Relative to Harvest Specifications.

Estimated fishing mortality (mt) of major west coast groundfish species in 2014 and corresponding management reference points (harvest specifications). Values which are 85% to 100% relative to a management reference point are highlighted in yellow; those greater than 100% are highlighted in red. All rebuilding species are capitalized.

	Estimated fishing mortality (mt)	Management reference points (harvest specifications)					
		ACL (mt)	Estimated mortality (% of ACL)	**ABC** (mt)	Estimated mortality (% of ABC)	**OFL** (mt)	Estimated mortality (% of OFL)
Arrowtooth flounder	**1,843**	5,758	32	5,758	32	6,912	27
Black rockfish (North of 46°16' N. lat.)	**261**	409	64	409	64	428	61
Black rockfish (South of 46°16' N. lat.)	**865**	1,000	86	1,115	78	1,166	74
BOCACCIO ROCKFISH (South of 40°10' N. lat.)	**119**	337	35	842	14	881	13
Cabezon (California)	**82**	158	52	158	52	165	50
Cabezon (Oregon)	**27**	47	57	47	57	49	55
California scorpionfish (South of 34°27' N. lat.)	**125**	117	107	117	107	122	103
Canary rockfish	**46**	119	38	709	6	741	6
Chilipepper rockfish (South of 40°10' N. lat.)	**334**	1,647	20	1,647	20	1,722	19
COWCOD ROCKFISH (South of 40°10' N. lat.)	**1**	3	39	9	13	12	10
DARKBLOTCHED ROCKFISH	**140**	330	42	529	26	553	25
Dover sole	**6,566**	25,000	26	74,352	9	77,774	8
English sole	**306**	5,646	5	5,646	5	5,906	5
Lingcod (North of 40°10' N. lat.)	**724**	2,878	25	2,878	25	3,162	23
Lingcod (South of 40°10' N. lat.)	**575**	1,063	54	1,063	54	1,276	45
Longnose skate	**911**	2,000	46	2,692	34	2,816	32
Minor rockfish (North of 40°10' N. lat.)	**447**	2,222	20	3,440	13	3,858	12
Nearshore	**59**	94	63	94	63	110	54
Shelf	**94**	968	10	1,932	5	2,195	4
Slope	**295**	1,160	25	1,414	21	1,553	19
Minor rockfish (South of 40°10' N. lat.)	**1,143**	2,326	49	3,243	35	2,559	45
Nearshore	**596**	990	60	1,001	60	1,160	51
Shelf	**402**	1,913	21	1,620	25	714	56
Slope	**145**	622	23	622	23	685	21
Other flatfish	**1,106**	4,884	23	6,982	16	10,060	11
Other groundfish[1]	**1,588**	4,697	34	4,697	34	6,802	23
Pacific cod	**440**	1,600	27	2,221	20	3,200	14
Pacific hake	**265,120**	2014 US TAC = 316,206 mt, 84% of US TAC					
PACIFIC OCEAN PERCH (North of 40°10' N. lat.)	**56**	153	37	801	7	838	7
Petrale sole	**2,439**	2,652	92	2,652	92	2,774	88
Sablefish (North of 36° N. lat.)	**3,834**	4,349	88	6,535	69	7,158	63
Sablefish (South of 36° N. lat.)	**684**	1,560	44				
Shortbelly rockfish	**18**	50	35	5,789	0	6,950	0
Splitnose rockfish (South of 40°10' N. lat.)	**69**	1,670	4	1,670	4	1,747	4
Starry flounder	**28**	1,528	2	1,528	2	1,834	2
Thornyheads							
Longspine Thornyhead (North of 34°27' N. lat.)	**903**	1,958	46	2,752	33	3,304	28
Longspine Thornyhead (South of 34°27' N. lat.)	**18**	347	5				
Shortspine Thornyhead (North of 34°27' N. lat.)	**797**	1,525	52	2,208	41	2,310	39
Shortspine Thornyhead (South of 34°27' N. lat.)	**101**	393	26				
Mixed thornyheads	**4**						
Widow rockfish	**748**	1,500	50	4,212	18	4,435	17
YELLOWEYE ROCKFISH	**9**	18	51	43	21	51	18
Yellowtail rockfish (North of 40°10' N. lat.)	**1,461**	4,382	33	4,382	33	4,584	32

[1]Includes the Other Groundfish category and Spiny dogfish from Table 15.

Appendix A

Table A-1. Species identification codes used in the Pacific Coast Fisheries Information Network (PacFIN) database and assigned to WCGOP observer data.

Columns on the far right specify which species were defined as groundfish, as identified in the Pacific Coast Groundfish Fishery Management Plan, as nearshore species, or as Individual Fishing Quota (IFQ) managed species or categories in 2014.

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
ART1	NOM. ARROWTOOTH FLOUNDER	Arrowtooth Flounder	Arrowtooth flounder	Arrowtooth flounder	Arrowtooth flounder	Arrowtooth flounder	X		X	
ARTH	ARROWTOOTH FLOUNDER	Arrowtooth Flounder	Arrowtooth flounder	Arrowtooth flounder	Arrowtooth flounder	Arrowtooth flounder	X		X	
CNR1	NOM. CANARY ROCKFISH	Canary Rockfish	Canary rockfish	Canary rockfish	Canary rockfish	Canary rockfish	X		X	
CNRY	CANARY ROCKFISH	Canary Rockfish	Canary rockfish	Canary rockfish	Canary rockfish	Canary rockfish	X		X	
RCK8	CANARY+VERMILION RCKFSH	Canary Rockfish	Canary rockfish	Canary rockfish	Canary rockfish	Canary rockfish	X		X	
DBR1	NOM. DARKBLOTCHED ROCKFISH	Darkblotched Rockfish	Darkblotched rockfish	Darkblotched rockfish	Darkblotched rockfish	Darkblotched rockfish	X		X	X
DBRK	DARKBLOTCHED ROCKFISH	Darkblotched Rockfish	Darkblotched rockfish	Darkblotched rockfish	Darkblotched rockfish	Darkblotched rockfish	X		X	X
DOVR	DOVER SOLE	Dover Sole	Dover sole	Dover sole	Dover sole	Dover sole	X		X	
DVR1	NOM. DOVER SOLE	Dover Sole	Dover sole	Dover sole	Dover sole	Dover sole	X		X	
EGL1	NOM. ENGLISH SOLE	English Sole	English sole	English sole	English sole	English sole	X		X	
EGLS	ENGLISH SOLE	English Sole	English sole	English sole	English sole	English sole	X		X	
LCD1	NOM. LINGCOD	Lingcod	Lingcod	Lingcod	Lingcod	Lingcod	X	X	X	
LCOD	LINGCOD	Lingcod	Lingcod	Lingcod	Lingcod	Lingcod	X	X	X	
LSP1	NOM. LONGSPINE THORNYHEAD	Longspine Thornyhead	Longspine thornyhead	Longspine thornyhead	Longspine thornyhead	Longspine thornyhead	X		X	
LSPN	LONGSPINE THORNYHEAD	Longspine Thornyhead	Longspine thornyhead	Longspine thornyhead	Longspine thornyhead	Longspine thornyhead	X		X	
ODSR	OTHER DEMERSAL RKFSH	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X	X	X	
OPLG	OTHER PELAGIC RKFSH	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X		X	
RCK4	UNSP. REDS RCKFSH	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X	X	X	
RCK5	UNSP. SMALL REDS RCKFSH	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X	X	X	
RCK6	UNSP. ROSEFISH RCKFSH	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X	X	X	
RRCK	REMAINING ROCKFISH	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X	X	X	
UDM1	UNSP. DEMERSAL-91	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X	X	X	
UDSR	UNSP. DEMERSAL RKFSH	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X	X	X	
UPLG	UNSP. PELAGIC RKFSH	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X		X	
USR1	UNSP. SLOPE-91	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X		X	
USR2	UNSP. SLOPE-93	Minor Rockfish	Other rockfish	Other rockfish	Other rockfish	Other rockfish	X		X	
BCAC	BOCACCIO	Minor Shelf Rockfish	Minor shelf rockfish	Bocaccio rockfish	Minor shelf rockfish	Bocaccio rockfish	X		X	X
BCC1	NOM. BOCACCIO	Minor Shelf Rockfish	Minor shelf rockfish	Bocaccio rockfish	Minor shelf rockfish	Bocaccio rockfish	X		X	X
BRNZ	BRONZESPOTTED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
BRZ1	NOM. BRONZESPOTTED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
CLP1	NOM. CHILIPEPPER	Minor Shelf Rockfish	Minor shelf rockfish	Chilipepper rockfish	Minor shelf rockfish	Chilipepper rockfish	X		X	
CLPR	CHILIPEPPER	Minor Shelf Rockfish	Minor shelf rockfish	Chilipepper rockfish	Minor shelf rockfish	Chilipepper rockfish	X		X	
CMEL	CHAMELEON ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
CML1	NOM. CHAMELEON ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
CWC1	NOM. COWCOD ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Cowcod rockfish	Minor shelf rockfish	Cowcod rockfish	X		X	X
CWCD	COWCOD ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Cowcod rockfish	Minor shelf rockfish	Cowcod rockfish	X		X	X

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
DARK	DARK ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
DUSK	DUSKY ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
DWRF	DWARF-RED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
FLAG	FLAG ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
FLG1	NOM. FLAG ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
FRCK	FRECKLED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
GBL1	NOM. GREENBLOTCHED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
GBLC	GREENBLOTCHED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
GSP1	NOM. GREENSPOTTED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
GSPT	GREENSPOTTED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
GSR1	NOM. GREENSTRIPED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
GSRK	GREENSTRIPED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
HBRK	HALFBANDED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
HLQN	HARLEQUIN ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
HNY1	NOM. HONEYCOMB ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
HNYC	HONEYCOMB ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
MXR1	NOM. MEXICAN ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
MXRF	MEXICAN ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
NRCK	NORTHERN ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
NSLF	NORTHERN SHELF ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
NUSF	NOR. UNSP. SHELF ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
ORCK	OTHER ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
PGMY	PYGMY ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
PNK1	NOM. PINK ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
PNKR	PINK ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
PRR1	NOM. PINKROSE ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
PRRK	PINKROSE ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
PUGT	PUGET SOUND ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
RCK1	BOCACCIO+CHILIPEPPER RCKFSH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
REDS	REDSTRIPE ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
ROS1	NOM. ROSY ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
ROSY	ROSY ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
RST1	NOM. ROSETHORN ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
RSTN	ROSETHORN ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SLGR	SILVERGREY ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SPK1	NOM. SPECKLED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SPKL	SPECKLED ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SQR1	NOM. SQUARESPOT	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SQRS	SQUARESPOT ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SSLF	SOUTHERN SHELF ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
STAR	STARRY ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
STL1	NOM. STRIPETAIL ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
STR1	NOM. STARRY ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
STRK	STRIPETAIL ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SUSF	SOU. UNSP. SHELF ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SWS1	NOM. SWORDSPINE ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
SWSP	SWORDSPINE ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
TGR1	NOM. TIGER ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
TIGR	TIGER ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
URCK	UNSP. ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
USLF	UNSP. SHELF ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
VRM1	NOM. VERMILLION ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
VRML	VERMILION ROCKFISH	Minor Shelf Rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	Minor shelf rockfish	X		X	
YTR1	NOM. YELLOWTAIL ROCKFISH	Minor Shelf Rockfish	Yellowtail rockfish	Minor shelf rockfish	Yellowtail rockfish	Minor shelf rockfish	X		X	
YTRK	YELLOWTAIL ROCKFISH	Minor Shelf Rockfish	Yellowtail rockfish	Minor shelf rockfish	Yellowtail rockfish	Minor shelf rockfish	X		X	
ARR1	NOM. AURORA ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
ARRA	AURORA ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
BANK	BANK ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
BGL1	NOM. BLACKGILL ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
BLGL	BLACKGILL ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
BNK1	NOM. BANK ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
BSPR	BLACKSPOTTED ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
NSLP	NORTHERN SLOPE ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
NUSP	NOR. UNSP. SLOPE ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
ORCK	OTHER ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
OSLR	OTHER SLOPE RKFSH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
POP1	GEN. SHELF/SLOPE RF	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
RBR1	NOM. ROUGHEYE + BLACKSPOTTED	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
RCK3	UNSP. DPWTR REDS RCKFSH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
RDB1	NOM. REDBANDED ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
RDBD	REDBANDED ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
REYE	ROUGHEYE ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
SHRP	SHARPCHIN ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
SNOS	SPLITNOSE ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Splitnose rockfish	Minor slope rockfish	Splitnose rockfish	X		X	
SNS1	NOM. SPLITNOSE ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Splitnose rockfish	Minor slope rockfish	Splitnose rockfish	X		X	
SRKR	SHORTRAKER ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
SSLP	SOUTHERN SLOPE ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
SUSP	SOU. UNSP. SLOPE ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
UDW1	SHORTRAKER+ROUGHEYE	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
URCK	UNSP. ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
URK1	SRKR+REYE+NRCK+SHRP	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
USLP	UNSP. SLOPE ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
USLR	UNSP. SLOPE RKFSH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
YMTH	YELLOWMOUTH ROCKFISH	Minor Slope Rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	Minor slope rockfish	X		X	
POP	PACIFIC OCEAN PERCH	Minor Slope Rockfish	Pacific Ocean Perch	Minor slope rockfish	Pacific Ocean Perch	Minor slope rockfish	X		X	X
POP2	NOMINAL POP	Minor Slope Rockfish	Pacific Ocean Perch	Minor slope rockfish	Pacific Ocean Perch	Minor slope rockfish	X		X	X
UPOP	UNSP. POP GROUP	Minor Slope Rockfish	Pacific Ocean Perch	Minor slope rockfish	Pacific Ocean Perch	Minor slope rockfish	X		X	X
THD1	NOM. THORNYHEADS	Mixed Thornyhead	Mixed thornyheads	Mixed thornyheads	Mixed thornyheads	Mixed thornyheads	X		X	
THDS	THORNYHEADS (MIXED)	Mixed Thornyhead	Mixed thornyheads	Mixed thornyheads	Mixed thornyheads	Mixed thornyheads	X		X	
BSOL	BUTTER SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
CSL1	NOM. CURLFIN SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
CSOL	CURLFIN SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
DFLT	UNSP. DEEP FLOUNDERS	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
FSOL	FLATHEAD SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
OFLT	OTHER FLATFISH	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
PDAB	PACIFIC SANDDAB	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
PDB1	NOM. PACIFIC SANDDAB	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
REX	REX SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
REX1	NOM. REX SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
RFLT	REMAINING FLATFISH	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
RSL1	NOM. ROCK SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
RSOL	ROCK SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
SFLT	UNSP. SHALLOW FLOUNDERS	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
SSO1	NOM. SAND SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
SSOL	SAND SOLE	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
UDAB	UNSP. SANDDABS	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
UDF1	UNSP. DEEP-91 FLOUNDERS	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
UDF2	UNSP. DEEP-95 FLOUNDERS	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
UFL1	FLOUNDERS (NO FSOL)	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
UFLT	UNSP. FLATFISH	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
USF1	UNSP. SHALLOW-91 FLOUNDERS	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
UTRB	UNSP. TURBOTS	Other Flatfish	Other flatfish	Other flatfish	Other flatfish	Other flatfish	X		X	
CBZ1	NOM. CABEZON	Other groundfish	Other groundfish	Other groundfish	Other groundfish	Other groundfish	X	X		
CBZN	CABEZON	Other groundfish	Other groundfish	Other groundfish	Other groundfish	Other groundfish	X	X		
GREN	PACIFIC GRENADIER	Other groundfish	Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
OSKT	OTHER SKATES	Other groundfish	Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
USKT	UNSP. SKATE	Other groundfish	Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
PCOD	PACIFIC COD	Pacific Cod	Pacific cod	Pacific cod	Pacific cod	Pacific cod	X		X	
PWHT	PACIFIC WHITING	Pacific Hake	Pacific hake	Pacific hake	Pacific hake	Pacific hake	X		X	
PHLB	PACIFIC HALIBUT	Pacific Halibut	Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish			X	
PTR1	NOM. PETRALE SOLE	Petrale Sole	Petrale sole	Petrale sole	Petrale sole	Petrale sole	X		X	
PTRL	PETRALE SOLE	Petrale Sole	Petrale sole	Petrale sole	Petrale sole	Petrale sole	X		X	
SABL	SABLEFISH	Sablefish	Sablefish	Sablefish	Sablefish	Sablefish	X		X	
SSP1	NOM. SHORTSPINE THORNYHEAD	Shortspine Thornyhead	Shortspine thornyhead	Shortspine thornyhead	Shortspine thornyhead	Shortspine thornyhead	X		X	
SSPN	SHORTSPINE THORNYHEAD	Shortspine Thornyhead	Shortspine thornyhead	Shortspine thornyhead	Shortspine thornyhead	Shortspine thornyhead	X		X	
SFL1	NOM. STARRY FLOUNDER	Starry Flounder	Starry flounder	Starry flounder	Starry flounder	Starry flounder	X		X	
STRY	STARRY FLOUNDER	Starry Flounder	Starry flounder	Starry flounder	Starry flounder	Starry flounder	X		X	
WDOW	WIDOW ROCKFISH	Widow Rockfish	Widow rockfish	Widow rockfish	Widow rockfish	Widow rockfish	X		X	
WDW1	NOM. WIDOW ROCKFISH	Widow Rockfish	Widow rockfish	Widow rockfish	Widow rockfish	Widow rockfish	X		X	
YEY1	NOM. YELLOWEYE ROCKFISH	Yelloweye Rockfish	Yelloweye rockfish	Yelloweye rockfish	Yelloweye rockfish	Yelloweye rockfish	X		X	X
YEYE	YELLOWEYE ROCKFISH	Yelloweye Rockfish	Yelloweye rockfish	Yelloweye rockfish	Yelloweye rockfish	Yelloweye rockfish	X		X	X
BLCK	BLACK ROCKFISH		Black rockfish	Black rockfish	Black rockfish	Black rockfish	X	X		
BLK1	NOM. BLACK ROCKFISH		Black rockfish	Black rockfish	Black rockfish	Black rockfish	X	X		
RCK9	BLACK+BLUE ROCKFISH		Black rockfish	Black rockfish	Black rockfish	Black rockfish	X	X		
CHL1	NOM. CALIFORNIA HALIBUT		California halibut	California halibut	California halibut	California halibut				
CHLB	CALIFORNIA HALIBUT		California halibut	California halibut	California halibut	California halibut				
DCRB	DUNGENESS CRAB		Dungeness crab	Dungeness crab	Dungeness crab	Dungeness crab				
EULC	EULACHON		Eulachon	Eulachon	Eulachon	Eulachon				
LSKT	LONGNOSE SKATE		Longnose skate	Longnose skate	Longnose skate	Longnose skate	X			
BLU1	NOM. BLUE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
BLUR	BLUE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
BRW1	NOM. BROWN ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
BRWN	BROWN ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
BYEL	BLACK-AND-YELLOW ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
BYL1	NOM. BLACK-AND-YELLOW ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
CHN1	NOM. CHINA ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
CHNA	CHINA ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
CLC1	NOM. CALICO ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
CLCO	CALICO ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
COP1	NOM. COPPER ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
COPP	COPPER ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
GPH1	NOM. GOPHER ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
GPHR	GOPHER ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
GRAS	GRASS ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
GRS1	NOM. GRASS ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
KLP1	NOM. KELP ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
KLPR	KELP ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
NSHR	NORTHERN NEAR-SHORE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	X	X		
NUSR	NOR. UNSP. NEAR-SHORE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	X	X		
OLV1	NOM. OLIVE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
OLVE	OLIVE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
QLB1	NOM. QUILLBACK ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
QLBK	QUILLBACK ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
RCK2	UNSP. BOLINA RCKFSH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
RCK7	UNSP. GOPHER RCKFSH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
SSHR	SOUTHERN NEAR-SHORE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
SSHR	SOUTHERN NEAR-SHORE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
SSRD	Deep So. Near-shore RF		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
SSRS	Shallow So. Near-shore RF		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
TRE1	NOM. TREEFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
TREE	TREEFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
UDNR	UNSP. DEEP NEAR-SHORE RF		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
USHR	UNSP. NEAR-SHORE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Deeper nearshore rockfish	X	X		
USHR	UNSP. NEAR-SHORE ROCKFISH		Minor nearshore rockfish	Minor nearshore rockfish	Minor nearshore rockfish	Shallow nearshore rockfish	X	X		
APLC	ALASKA PLAICE		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
BMO1	NOM. BIGMOUTH SOLE		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
BMOL	BIGMOUTH SOLE		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
CTRB	C-O SOLE		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
DSOL	DEEPSEA SOLE		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
DTRB	DIAMOND TURBOT		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
FNTS	FANTAIL SOLE		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
GTRB	GREENLAND TURBOT		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
HTRB	HORNYHEAD TURBOT		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
KMKA	KAMCHATKA FLOUNDER		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
LDAB	LONGFIN SANDDAB		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
LDB1	NOM. LONGFIN SANDDAB		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
SDB1	NOM. SPECKLED SANDDAB		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
SLNS	SLENDER SOLE		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
SSDB	SPECKLED SANDDAB		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
STRB	SPOTTED TURBOT		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				
YSOL	YELLOWFIN SOLE		Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish	Non-FMP flatfish				

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
AKSK	ALASKA SKATE		Non-FMP skate	Non-FMP skate	Non-FMP skate	Non-FMP skate				
ASKT	ALEUTIAN SKATE		Non-FMP skate	Non-FMP skate	Non-FMP skate	Non-FMP skate				
BLSK	BLACK SKATE		Non-FMP skate	Non-FMP skate	Non-FMP skate	Non-FMP skate				
SPSK	SANDPAPER SKATE		Non-FMP skate	Non-FMP skate	Non-FMP skate	Non-FMP skate				
SSKT	STARRY SKATE		Non-FMP skate	Non-FMP skate	Non-FMP skate	Non-FMP skate				
BSKT	BIG SKATE		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
CSKT	CALIFORNIA SKATE		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
GRDR	UNSP. GRENADIERS		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
KGL1	NOM. KELP GREENLING		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X	X		
KLPG	KELP GREENLING		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X	X		
LSRK	LEOPARD SHARK		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
OGRN	OTHER GROUNDFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
ORND	OTHER ROUNDFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
PFNS	PACIFIC FLATNOSE		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
RATF	SPOTTED RATFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
RGRN	REMAINING GROUNDFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
RRND	REMAINING ROUNDFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
SCOR	CALIFORNIA SCORPIONFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X	X		
SCR1	NOM. CALIF. SCORPIONFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X	X		
SSRK	SOUPFIN SHARK		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
UGRN	UNSP. GROUNDFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
URND	UNSP. ROUNDFISH		Other groundfish	Other groundfish	Other groundfish	Other groundfish	X			
ALBC	ALBACORE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
AMCK	ATKA MACKEREL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
ASRK	PACIFIC ANGEL SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BABL	BLACK ABALONE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BCLM	BUTTER CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BHAG	BLACK HAGFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BISC	BROWN IRISH LORD		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish		X		
BKCR	BLUE KING CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BLPT	BLACK EELPOUT		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BMCK	BULLET MACKEREL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BMRL	BLUE MARLIN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BMSL	BLUE OR BAY MUSSEL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BSCL	BUFFALO SCULPIN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish		X		
BSJK	BLACK SKIPJACK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BSRK	BLUE SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BSRM	UNSP. BAIT SHRIMP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
BTCR	BAIRDI TANNER CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BTNA	BLUEFIN TUNA		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
BTRY	BAT RAY		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CEEL	SPOTTED CUSK-EEL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CHNK	CHINOOK SALMON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CHUM	CHUM SALMON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CKLE	BASKET COCKLE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CMCK	CHUB MACKEREL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CMSL	CALIFORNIA MUSSEL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
COHO	COHO SALMON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CPLN	CAPELIN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CSLK	CALIFORNIA SLICKHEAD		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CSRK	BROWN CAT SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
CUDA	PACIFIC BARRACUDA		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
DRDO	DORADO		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
EELS	UNSPECIFIED EELS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
ESTR	EASTERN OYSTER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
ETNA	BIGEYE TUNA		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
EURO	EUROPEAN OYSTER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GABL	GREEN ABALONE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GBAS	GIANT SEA BASS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GCLM	GAPER CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GDUK	GEODUCK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GGRD	GIANT GRENADIER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GKCR	GOLDEN KING CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GPRW	GOLDEN PRAWN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GSQD	GIANT SQUID		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GSRM	GHOST SHRIMP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
GSTG	GREEN STURGEON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
HCLM	HORSE CLAMS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
ISRK	BIGEYE THRESHER SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
JCLM	CALIFORNIA JACKKNIFE CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
JMCK	JACK MACKEREL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
KFSH	GIANT KELPFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
KSTR	KUMAMOTO OYSTER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
LCLM	NATIVE LITTLENECK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
LOBS	CALIF. SPINY LOBSTER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
LSTR	OLYMPIA OYSTER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
LUVR	LOUVAR		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MACL	MUD CLAMS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MAKO	SHORTFIN MAKO SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MCLM	MANILA CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MEEL	MONKEYFACE EEL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MISC	MISC. FISH/ANIMALS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MOLA	COMMON MOLA		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MRLN	STRIPED MARLIN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MSC2	MISCELLANEOUS FISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MSHP	PLAINFIN MIDSHIPMAN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MSQD	MARKET SQUID		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
MSRM	MUD SHRIMP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
NANC	NORTHERN ANCHOVY		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OABL	OTHER ABALONE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OANC	OTHER ANCHOVY		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OBAS	OTHER BASS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OCLM	OTHER CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OCRB	OTHER CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OCRK	OTHER CROAKER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OCTP	UNSP. OCTOPUS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OECH	OTHER ECHINODERM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OMSK	OTHER MOLLUSKS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OSCL	OTHER SCALLOP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OSRK	OTHER SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OSRM	OTHER SHRIMP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OSTR	OTHER OYSTER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OTNA	OTHER TUNA		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OURC	OTHER SEA URCHINS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
OWFS	OCEAN WHITEFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PABL	PINK ABALONE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PBNT	PACIFIC BONITO		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PBTR	PACIFIC BUTTERFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PCLM	PISMO CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PHAG	PACIFIC HAGFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PHRG	PACIFIC HERRING		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PINK	PINK SALMON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PLCK	WALLEYE POLLOCK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
POMF	PACIFIC POMFRET		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
PRCL	PURPLE CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PROW	PROWFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PSDN	PACIFIC SARDINE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PSHP	PINK SHRIMP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PSRK	PELAGIC THRESHER SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
PSTR	PACIFIC OYSTER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
QCLM	NORTHERN QUAHOG CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
QFSH	QUEENFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RABL	RED ABALONE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RCKG	ROCK GREENLING		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RCLM	RAZOR CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RCRB	ROCK CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RGL1	NOM. ROCK GREENLING		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RHRG	ROUND HERRING		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RKCR	RED KING CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RPRW	RIDGEBACK PRAWN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RSCL	RED IRISH LORD		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish		X		
RSRM	GRASS SHRIMP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RURC	RED SEA URCHIN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
RZCL	ROSY RAZOR CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SAIL	SAILFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SARY	PACIFIC SAURY		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SCLM	SOFT-SHELLED CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SCLP	UNSP. SCULPIN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SHAD	UNSPECIFIED SHAD		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SHP1	NOM. CALIFORNIA SHEEPHEAD		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish		X		
SHPD	CALIFORNIA SHEEPHEAD		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish		X		
SKCR	SCARLET KING CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SKIL	SKILFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SMLT	UNSP. SMELT		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SOCK	SOCKEYE SALMON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SPRW	SPOTTED PRAWN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SQID	UNSP. SQUID		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SRFP	SURFPERCH SPP.		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SRMP	__ALL SHRIMP & PRAWNS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SSCL	SHARPNOSE SCULPIN		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SSPF	SHORTBILL SPEARFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
STLH	STEELHEAD		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				

Table A-1 (continued).

PacFIN Species ID	PacFIN Common Name	IFQ Grouping	Limited Entry/Non-nearshore Species Group		Nearshore Fixed Gear Species Group		FMP Species	Nearshore Species	IFQ Species	Rebuilding Species
			North of 40° 10' latitude	South of 40° 10' latitude	North of 40° 10' latitude	South of 40° 10' latitude				
STNA	SKIPJACK TUNA		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SWRD	SWORDFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
TCOD	PACIFIC TOMCOD		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
TSRK	COMMON THRESHER SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UABL	UNSPECIFIED ABALONE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UCLM	UNSPECIFIED CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UCRB	UNSPECIFIED CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UECH	UNSPECIFIED ECHINODERM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UGLG	UNSP. GREENLING		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish		X		
UHAG	UNSPECIFIED HAGFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UHLB	UNSPECIFIED HALIBUT		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UJEL	UNSP. JELLYFISH		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UKCR	UNSP. KING CRAB		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UMCK	UNSP. MACKEREL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UMSK	UNSPECIFIED MOLLUSKS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
USCL	UNSPECIFIED SCALLOP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
USCU	UNSP. SEA CUCUMBERS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
USMN	UNSP. SALMON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
USRK	UNSP. SHARK		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
USRM	UNSP. OCEAN SHRIMP		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
USTG	UNSP. STURGEON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
USTR	UNSPECIFIED OYSTER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UTNA	UNSPECIFIED TUNA		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
UURC	UNSP. SEA URCHINS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
VCLM	VARNISH CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
WABL	WHITE ABALONE		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
WBAS	WHITE SEABASS		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
WCLM	WASHINGTON CLAM		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
WCRK	WHITE CROAKER		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
WEEL	WOLF EEL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
WHOO	WAHOO		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
WSTG	WHITE STURGEON		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
YLTL	YELLOWTAIL		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
YTNA	YELLOWFIN TUNA		Other nongroundfish	Other nongroundfish	Other nongroundfish	Other nongroundfish				
SBL1	NOM. SHORTBELLY ROCKFISH		Shortbelly rockfish	Shortbelly rockfish	Shortbelly rockfish	Shortbelly rockfish	X			
SBLY	SHORTBELLY ROCKFISH		Shortbelly rockfish	Shortbelly rockfish	Shortbelly rockfish	Shortbelly rockfish	X			
DSRK	SPINY DOGFISH		Spiny dogfish	Spiny dogfish	Spiny dogfish	Spiny dogfish	X			
OTCR	OPILIO TANNER CRAB		Tanner crab	Tanner crab	Tanner crab	Tanner crab				
UTCR	UNSP. TANNER CRAB		Tanner crab	Tanner crab	Tanner crab	Tanner crab				

Table A-2. Species belonging to each WCGOP unsampled IFQ catch category.

The IFQM catch category includes all 2014 IFQ species and the NIFQ category includes all fish species except 2014 IFQ species.

IFQFF	IFQRF	IFQRD
Arrowtooth Flounder	Aurora Rockfish	Lingcod
Butter Sole	Bank Rockfish	Pacific Cod
Curlfin Turbot	Blackgill Rockfish	Pacific Hake
Dover Sole	Bocaccio Rockfish	Sablefish
English Sole	Canary Rockfish	
Flatfish Unid	Chilipepper Rockfish	
Flathead Sole	Cowcod Rockfish	
Pacific Halibut	Darkblotched Rockfish	
Pacific Sanddab	Flag Rockfish	
Petrale Sole	Greenspotted Rockfish	
Rex Sole	Greenstriped Rockfish	
Rock Sole	Halfbanded Rockfish	
Sand Sole	Harlequin Rockfish	
Sanddab Unid	Longspine Thornyhead	
Starry Flounder	Pacific Ocean Perch	
	Pygmy Rockfish	
	Redbanded Rockfish	
	Redstripe Rockfish	
	Rockfish Unid	
	Rosethorn Rockfish	
	Rosy Rockfish	
	Rougheye Rockfish	
	Sharpchin Rockfish	
	Shortraker Rockfish	
	Shortspine Thornyhead	
	Silvergray Rockfish	
	Splitnose Rockfish	
	Spotted Rockfish Unid	
	Squarespot Rockfish	
	Starry Rockfish	
	Stripetail Rockfish	
	Widow Rockfish	
	Yelloweye Rockfish	
	Yellowmouth Rockfish	
	Yellowtail Rockfish	

Table A-3. Mortality rates applied in bottom trawl and fixed gear fisheries.

Species without a rate listed were assumed to have 100% mortality rate. Rates are provided by the Groundfish Mortality Team (GMT).

Species	Fishery	Gear	Discard Mortality Rate
Big Skate	California Halibut	Trawl	50%
	IFQ Bottom Trawl	Trawl	50%
	LE Bottom Trawl	Trawl	50%
Lingcod	California Halibut	Trawl	50%
	IFQ Bottom Trawl	Trawl	50%
	IFQ Fixed Gear	Line	7%
	LE Bottom Trawl	Trawl	50%
	Non-Nearshore Fixed Gear	Line	7%
Longnose Skate	California Halibut	Trawl	50%
	IFQ Bottom Trawl	Trawl	50%
	IFQ Fixed Gear	Line and Pot	50%
	LE Bottom Trawl	Trawl	50%
	Non-Nearshore Fixed Gear	Line and Pot	50%
Sablefish	California Halibut	Trawl	50%
	IFQ Bottom Trawl	Trawl	50%
	IFQ Fixed Gear	Line and Pot	20%
	LE Bottom Trawl	Trawl	50%
	Non-Nearshore Fixed Gear	Line and Pot	20%
Spiny Dogfish Shark	IFQ Fixed Gear	Line	50%
	Non-Nearshore Fixed Gear	Line	50%

Table A-4. Depth-dependent mortality rates applied in the Nearshore Fixed Gear fishery.

Species without a rate listed were assumed to have 100% mortality rate. Rates are provided by the Groundfish Mortality Team (GMT).

Nearshore Grouping	Species	Depth (fm)	Discard Mortality Rate
Black rockfish (North of 46°16' N. lat.)	Black Rockfish	0 - 10	0.23
Black rockfish (North of 46°16' N. lat.)	Black Rockfish	11 - 20	0.42
Black rockfish (North of 46°16' N. lat.)	Black Rockfish	> 20	0.9
Black rockfish (South of 46°16' N. lat.)	Black Rockfish	0 - 10	0.23
Black rockfish (South of 46°16' N. lat.)	Black Rockfish	11 - 20	0.42
Black rockfish (South of 46°16' N. lat.)	Black Rockfish	> 20	0.9
Bocaccio rockfish (South of 40°10' N. lat.)	Bocaccio Rockfish	0 - 10	0.3
Bocaccio rockfish (South of 40°10' N. lat.)	Bocaccio Rockfish	11 - 20	0.51
Bocaccio rockfish (South of 40°10' N. lat.)	Bocaccio Rockfish	> 20	1
Cabezon (California)	Cabezon	0 - 10	0.07
Cabezon (California)	Cabezon	11 - 20	0.07
Cabezon (California)	Cabezon	> 20	0.07
Cabezon (Oregon)	Cabezon	0 - 10	0.07
Cabezon (Oregon)	Cabezon	11 - 20	0.07
Cabezon (Oregon)	Cabezon	> 20	0.07
Cabezon (Washington)	Cabezon	0 - 10	0.07
Cabezon (Washington)	Cabezon	11 - 20	0.07
Cabezon (Washington)	Cabezon	> 20	0.07
California halibut	California Halibut	0 - 10	0.07
California halibut	California Halibut	11 - 20	0.07
California halibut	California Halibut	> 20	0.07
California scorpionfish (North of 34°27' N. lat.)	California Scorpionfish	0 - 10	0.07
California scorpionfish (North of 34°27' N. lat.)	California Scorpionfish	11 - 20	0.07
California scorpionfish (North of 34°27' N. lat.)	California Scorpionfish	> 20	0.07
California scorpionfish (South of 34°27' N. lat.)	California Scorpionfish	0 - 10	0.07
California scorpionfish (South of 34°27' N. lat.)	California Scorpionfish	11 - 20	0.07
California scorpionfish (South of 34°27' N. lat.)	California Scorpionfish	> 20	0.07
Canary rockfish	Canary Rockfish	0 - 10	0.32
Canary rockfish	Canary Rockfish	11 - 20	0.54
Canary rockfish	Canary Rockfish	> 20	1
Cowcod rockfish (South of 40°10' N. lat.)	Cowcod	0 - 10	1
Cowcod rockfish (South of 40°10' N. lat.)	Cowcod	11 - 20	1
Cowcod rockfish (South of 40°10' N. lat.)	Cowcod	> 20	1
Darkblotched rockfish	Darkblotched Rockfish	0 - 10	1
Darkblotched rockfish	Darkblotched Rockfish	11 - 20	1
Darkblotched rockfish	Darkblotched Rockfish	> 20	1
Deeper nearshore rockfish	Blue Rockfish	0 - 10	0.29
Deeper nearshore rockfish	Blue Rockfish	11 - 20	0.49
Deeper nearshore rockfish	Blue Rockfish	> 20	1
Deeper nearshore rockfish	Brown Rockfish	0 - 10	0.23
Deeper nearshore rockfish	Brown Rockfish	11 - 20	0.48
Deeper nearshore rockfish	Brown Rockfish	> 20	1
Deeper nearshore rockfish	Calico Rockfish	0 - 10	0.23
Deeper nearshore rockfish	Calico Rockfish	11 - 20	0.48
Deeper nearshore rockfish	Calico Rockfish	> 20	1
Deeper nearshore rockfish	Copper Rockfish	0 - 10	0.23
Deeper nearshore rockfish	Copper Rockfish	11 - 20	0.48
Deeper nearshore rockfish	Copper Rockfish	> 20	1
Deeper nearshore rockfish	Olive Rockfish	0 - 10	0.23

Table A-4 (continued).

Nearshore Grouping	Species	Depth (fm)	Discard Mortality Rate
Deeper nearshore rockfish	Olive Rockfish	11 - 20	0.48
Deeper nearshore rockfish	Olive Rockfish	> 20	1
Deeper nearshore rockfish	Quillback Rockfish	0 - 10	0.23
Deeper nearshore rockfish	Quillback Rockfish	11 - 20	0.48
Deeper nearshore rockfish	Quillback Rockfish	> 20	1
Deeper nearshore rockfish	Treefish Rockfish	0 - 10	0.23
Deeper nearshore rockfish	Treefish Rockfish	11 - 20	0.48
Deeper nearshore rockfish	Treefish Rockfish	> 20	1
Dungeness crab	Dungeness Crab	0 - 10	1
Dungeness crab	Dungeness Crab	11 - 20	1
Dungeness crab	Dungeness Crab	> 20	1
Lingcod (North of 40°10' N. lat.)	Lingcod	0 - 10	0.07
Lingcod (North of 40°10' N. lat.)	Lingcod	11 - 20	0.07
Lingcod (North of 40°10' N. lat.)	Lingcod	> 20	0.07
Lingcod (South of 40°10' N. lat.)	Lingcod	0 - 10	0.07
Lingcod (South of 40°10' N. lat.)	Lingcod	11 - 20	0.07
Lingcod (South of 40°10' N. lat.)	Lingcod	> 20	0.07
Longnose skate	Longnose Skate	0 - 10	0.5
Longnose skate	Longnose Skate	11 - 20	0.5
Longnose skate	Longnose Skate	> 20	0.5
Minor nearshore rockfish (North of 40°10' N. lat.)	Black and Yellow Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Black and Yellow Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Black and Yellow Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Blue Rockfish	0 - 10	0.29
Minor nearshore rockfish (North of 40°10' N. lat.)	Blue Rockfish	11 - 20	0.49
Minor nearshore rockfish (North of 40°10' N. lat.)	Blue Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Brown Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Brown Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Brown Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Calico Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Calico Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Calico Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	China Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	China Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	China Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Copper Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Copper Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Copper Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Gopher Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Gopher Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Gopher Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Grass Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Grass Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Grass Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Kelp Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Kelp Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Kelp Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Olive Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Olive Rockfish	11 - 20	0.48

Table A-4 (continued).

Nearshore Grouping	Species	Depth (fm)	Discard Mortality Rate
Minor nearshore rockfish (North of 40°10' N. lat.)	Olive Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Quillback Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Quillback Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Quillback Rockfish	> 20	1
Minor nearshore rockfish (North of 40°10' N. lat.)	Treefish Rockfish	0 - 10	0.24
Minor nearshore rockfish (North of 40°10' N. lat.)	Treefish Rockfish	11 - 20	0.48
Minor nearshore rockfish (North of 40°10' N. lat.)	Treefish Rockfish	> 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Bocaccio Rockfish	0 - 10	0.3
Minor shelf rockfish (North of 40°10' N. lat.)	Bocaccio Rockfish	11 - 20	0.51
Minor shelf rockfish (North of 40°10' N. lat.)	Bocaccio Rockfish	> 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Cowcod	0 - 10	1
Minor shelf rockfish (North of 40°10' N. lat.)	Cowcod	11 - 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Cowcod	> 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Greenspotted Rockfish	0 - 10	1
Minor shelf rockfish (North of 40°10' N. lat.)	Greenspotted Rockfish	11 - 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Greenspotted Rockfish	> 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Shelf Rockfish Unid	0 - 10	1
Minor shelf rockfish (North of 40°10' N. lat.)	Shelf Rockfish Unid	11 - 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Shelf Rockfish Unid	> 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Tiger Rockfish	0 - 10	0.1
Minor shelf rockfish (North of 40°10' N. lat.)	Tiger Rockfish	11 - 20	0.5
Minor shelf rockfish (North of 40°10' N. lat.)	Tiger Rockfish	> 20	1
Minor shelf rockfish (North of 40°10' N. lat.)	Vermilion Rockfish	0 - 10	0.1
Minor shelf rockfish (North of 40°10' N. lat.)	Vermilion Rockfish	11 - 20	0.55
Minor shelf rockfish (North of 40°10' N. lat.)	Vermilion Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Flag Rockfish	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Flag Rockfish	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Flag Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenblotched Rockfish	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenblotched Rockfish	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenblotched Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenspotted Rockfish	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenspotted Rockfish	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenspotted Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenstriped Rockfish	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenstriped Rockfish	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Greenstriped Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rockfish Unid	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rockfish Unid	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rockfish Unid	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rosethorn Rockfish	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rosethorn Rockfish	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rosethorn Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rosy Rockfish	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rosy Rockfish	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Rosy Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Shelf Rockfish Unid	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Shelf Rockfish Unid	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Shelf Rockfish Unid	> 20	1

Table A-4 (continued).

Nearshore Grouping	Species	Depth (fm)	Discard Mortality Rate
Minor shelf rockfish (South of 40°10' N. lat.)	Speckled Rockfish	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Speckled Rockfish	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Speckled Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Starry Rockfish	0 - 10	1
Minor shelf rockfish (South of 40°10' N. lat.)	Starry Rockfish	11 - 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Starry Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Tiger Rockfish	0 - 10	0.1
Minor shelf rockfish (South of 40°10' N. lat.)	Tiger Rockfish	11 - 20	0.5
Minor shelf rockfish (South of 40°10' N. lat.)	Tiger Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Vermilion Rockfish	0 - 10	0.1
Minor shelf rockfish (South of 40°10' N. lat.)	Vermilion Rockfish	11 - 20	0.55
Minor shelf rockfish (South of 40°10' N. lat.)	Vermilion Rockfish	> 20	1
Minor shelf rockfish (South of 40°10' N. lat.)	Yellowtail Rockfish	0 - 10	0.1
Minor shelf rockfish (South of 40°10' N. lat.)	Yellowtail Rockfish	11 - 20	0.3
Minor shelf rockfish (South of 40°10' N. lat.)	Yellowtail Rockfish	> 20	0.75
Minor slope rockfish (South of 40°10' N. lat.)	Redbanded Rockfish	0 - 10	1
Minor slope rockfish (South of 40°10' N. lat.)	Redbanded Rockfish	11 - 20	1
Minor slope rockfish (South of 40°10' N. lat.)	Redbanded Rockfish	> 20	1
Non-FMP flatfish	Bigmouth Sole	0 - 10	0.07
Non-FMP flatfish	Bigmouth Sole	11 - 20	0.07
Non-FMP flatfish	Bigmouth Sole	> 20	0.07
Non-FMP flatfish	Diamond Turbot	0 - 10	0.07
Non-FMP flatfish	Diamond Turbot	11 - 20	0.07
Non-FMP flatfish	Diamond Turbot	> 20	0.07
Non-FMP flatfish	Longfin Sanddab	0 - 10	0.07
Non-FMP flatfish	Longfin Sanddab	11 - 20	0.07
Non-FMP flatfish	Longfin Sanddab	> 20	0.07
Non-FMP flatfish	Slender Sole	0 - 10	0.07
Non-FMP flatfish	Slender Sole	11 - 20	0.07
Non-FMP flatfish	Slender Sole	> 20	0.07
Non-FMP skate	Round Stingray	0 - 10	0.07
Non-FMP skate	Round Stingray	11 - 20	0.07
Non-FMP skate	Round Stingray	> 20	0.07
Non-FMP skate	Starry Skate	0 - 10	0.07
Non-FMP skate	Starry Skate	11 - 20	0.07
Non-FMP skate	Starry Skate	> 20	0.07
Non-FMP skate	Thornback Skate	0 - 10	0.07
Non-FMP skate	Thornback Skate	11 - 20	0.07
Non-FMP skate	Thornback Skate	> 20	0.07
Other flatfish	Butter Sole	0 - 10	0.07
Other flatfish	Butter Sole	11 - 20	0.07
Other flatfish	Butter Sole	> 20	0.07
Other flatfish	Flatfish Unid	0 - 10	0.07
Other flatfish	Flatfish Unid	11 - 20	0.07
Other flatfish	Flatfish Unid	> 20	0.07
Other flatfish	Pacific Sanddab	0 - 10	0.07
Other flatfish	Pacific Sanddab	11 - 20	0.07
Other flatfish	Pacific Sanddab	> 20	0.07
Other flatfish	Rock Sole	0 - 10	0.07

Table A-4 (continued).

Nearshore Grouping	Species	Depth (fm)	Discard Mortality Rate
Other flatfish	Rock Sole	11 - 20	0.07
Other flatfish	Rock Sole	> 20	0.07
Other flatfish	Sand Sole	0 - 10	0.07
Other flatfish	Sand Sole	11 - 20	0.07
Other flatfish	Sand Sole	> 20	0.07
Other flatfish	Sanddab Unid	0 - 10	0.07
Other flatfish	Sanddab Unid	11 - 20	0.07
Other flatfish	Sanddab Unid	> 20	0.07
Other groundfish	Big Skate	0 - 10	0.07
Other groundfish	Big Skate	11 - 20	0.07
Other groundfish	Big Skate	> 20	0.07
Other groundfish	California Scorpionfish	0 - 10	0.07
Other groundfish	California Scorpionfish	11 - 20	0.07
Other groundfish	California Scorpionfish	> 20	0.07
Other groundfish	California Skate	0 - 10	0.07
Other groundfish	California Skate	11 - 20	0.07
Other groundfish	California Skate	> 20	0.07
Other groundfish	Kelp Greenling	0 - 10	0.07
Other groundfish	Kelp Greenling	11 - 20	0.07
Other groundfish	Kelp Greenling	> 20	0.07
Other groundfish	Leopard Shark	0 - 10	0.07
Other groundfish	Leopard Shark	11 - 20	0.07
Other groundfish	Leopard Shark	> 20	0.07
Other groundfish	Skate Unid	0 - 10	0.07
Other groundfish	Skate Unid	11 - 20	0.07
Other groundfish	Skate Unid	> 20	0.07
Other groundfish	Spotted Ratfish	0 - 10	0.07
Other groundfish	Spotted Ratfish	11 - 20	0.07
Other groundfish	Spotted Ratfish	> 20	0.07
Other nongroundfish	Bat Ray	0 - 10	0.07
Other nongroundfish	Bat Ray	11 - 20	0.07
Other nongroundfish	Bat Ray	> 20	0.07
Other nongroundfish	Brown Box Crab	0 - 10	1
Other nongroundfish	Brown Box Crab	11 - 20	1
Other nongroundfish	Brown Box Crab	> 20	1
Other nongroundfish	Brown Smoothhound Shark	0 - 10	0.07
Other nongroundfish	Brown Smoothhound Shark	11 - 20	0.07
Other nongroundfish	Brown Smoothhound Shark	> 20	0.07
Other nongroundfish	Buffalo Sculpin	0 - 10	1
Other nongroundfish	Buffalo Sculpin	11 - 20	1
Other nongroundfish	Buffalo Sculpin	> 20	1
Other nongroundfish	Decorator/Spider Unid Crab	0 - 10	1
Other nongroundfish	Decorator/Spider Unid Crab	11 - 20	1
Other nongroundfish	Decorator/Spider Unid Crab	> 20	1
Other nongroundfish	Filetail Cat Shark	0 - 10	0.07
Other nongroundfish	Filetail Cat Shark	11 - 20	0.07
Other nongroundfish	Filetail Cat Shark	> 20	0.07
Other nongroundfish	Gray Smoothhound Shark	0 - 10	0.07
Other nongroundfish	Gray Smoothhound Shark	11 - 20	0.07
Other nongroundfish	Gray Smoothhound Shark	> 20	0.07
Other nongroundfish	Greenling Unid	0 - 10	0.07
Other nongroundfish	Greenling Unid	11 - 20	0.07

Table A-4 (continued).

Nearshore Grouping	Species	Depth (fm)	Discard Mortality Rate
Other nongroundfish	Greenling Unid	> 20	0.07
Other nongroundfish	Hagfish Unid	0 - 10	1
Other nongroundfish	Hagfish Unid	11 - 20	1
Other nongroundfish	Hagfish Unid	> 20	1
Other nongroundfish	Jack Smelt	0 - 10	1
Other nongroundfish	Jack Smelt	11 - 20	1
Other nongroundfish	Jack Smelt	> 20	1
Other nongroundfish	Jackmackerel	0 - 10	1
Other nongroundfish	Jackmackerel	11 - 20	1
Other nongroundfish	Jackmackerel	> 20	1
Other nongroundfish	King (Chinook) Salmon	0 - 10	1
Other nongroundfish	King (Chinook) Salmon	11 - 20	1
Other nongroundfish	King (Chinook) Salmon	> 20	1
Other nongroundfish	Mixed Fish	0 - 10	1
Other nongroundfish	Mixed Fish	11 - 20	1
Other nongroundfish	Mixed Fish	> 20	1
Other nongroundfish	Mixed Species	0 - 10	1
Other nongroundfish	Mixed Species	11 - 20	1
Other nongroundfish	Mixed Species	> 20	1
Other nongroundfish	Octopus Unid	0 - 10	1
Other nongroundfish	Octopus Unid	11 - 20	1
Other nongroundfish	Octopus Unid	> 20	1
Other nongroundfish	Pacific Hagfish	0 - 10	1
Other nongroundfish	Pacific Hagfish	11 - 20	1
Other nongroundfish	Pacific Hagfish	> 20	1
Other nongroundfish	Pacific Halibut	0 - 10	1
Other nongroundfish	Pacific Halibut	11 - 20	1
Other nongroundfish	Pacific Halibut	> 20	1
Other nongroundfish	Pacific Mackerel	0 - 10	1
Other nongroundfish	Pacific Mackerel	11 - 20	1
Other nongroundfish	Pacific Mackerel	> 20	1
Other nongroundfish	Pacific Rock Crab	0 - 10	1
Other nongroundfish	Pacific Rock Crab	11 - 20	1
Other nongroundfish	Pacific Rock Crab	> 20	1
Other nongroundfish	Pacific Staghorn Sculpin	0 - 10	1
Other nongroundfish	Pacific Staghorn Sculpin	11 - 20	1
Other nongroundfish	Pacific Staghorn Sculpin	> 20	1
Other nongroundfish	Painted Greenling	0 - 10	0.07
Other nongroundfish	Painted Greenling	11 - 20	0.07
Other nongroundfish	Painted Greenling	> 20	0.07
Other nongroundfish	Red Irish Lord Sculpin	0 - 10	1
Other nongroundfish	Red Irish Lord Sculpin	11 - 20	1
Other nongroundfish	Red Irish Lord Sculpin	> 20	1
Other nongroundfish	Red Rock Crab	0 - 10	1
Other nongroundfish	Red Rock Crab	11 - 20	1
Other nongroundfish	Red Rock Crab	> 20	1
Other nongroundfish	Rock Greenling	0 - 10	0.07
Other nongroundfish	Rock Greenling	11 - 20	0.07
Other nongroundfish	Rock Greenling	> 20	0.07

Table A-4 (continued).

Nearshore Grouping	Species	Depth (fm)	Discard Mortality Rate
Other nongroundfish	Sculpin Unid	0 - 10	1
Other nongroundfish	Sculpin Unid	11 - 20	1
Other nongroundfish	Sculpin Unid	> 20	1
Other nongroundfish	Sea Cucumber Unid	0 - 10	1
Other nongroundfish	Sea Cucumber Unid	11 - 20	1
Other nongroundfish	Sea Cucumber Unid	> 20	1
Other nongroundfish	Shark Unid	0 - 10	0.07
Other nongroundfish	Shark Unid	11 - 20	0.07
Other nongroundfish	Shark Unid	> 20	0.07
Other nongroundfish	Sheep Crab	0 - 10	1
Other nongroundfish	Sheep Crab	11 - 20	1
Other nongroundfish	Sheep Crab	> 20	1
Other nongroundfish	Silver (Coho) Salmon	0 - 10	1
Other nongroundfish	Silver (Coho) Salmon	11 - 20	1
Other nongroundfish	Silver (Coho) Salmon	> 20	1
Other nongroundfish	Surfperch Unid	0 - 10	1
Other nongroundfish	Surfperch Unid	11 - 20	1
Other nongroundfish	Surfperch Unid	> 20	1
Other nongroundfish	Swell Shark	0 - 10	0.07
Other nongroundfish	Swell Shark	11 - 20	0.07
Other nongroundfish	Swell Shark	> 20	0.07
Other nongroundfish	White Croaker	0 - 10	1
Other nongroundfish	White Croaker	11 - 20	1
Other nongroundfish	White Croaker	> 20	1
Other nongroundfish	White Sea Bass	0 - 10	1
Other nongroundfish	White Sea Bass	11 - 20	1
Other nongroundfish	White Sea Bass	> 20	1
Other nongroundfish	Wolf-eel	0 - 10	1
Other nongroundfish	Wolf-eel	11 - 20	1
Other nongroundfish	Wolf-eel	> 20	1
Other nongroundfish	Yellow Rock Crab	0 - 10	1
Other nongroundfish	Yellow Rock Crab	11 - 20	1
Other nongroundfish	Yellow Rock Crab	> 20	1
Other rockfish	Rockfish Unid	0 - 10	1
Other rockfish	Rockfish Unid	11 - 20	1
Other rockfish	Rockfish Unid	> 20	1
Petrale sole	Petrale Sole	0 - 10	0.07
Petrale sole	Petrale Sole	11 - 20	0.07
Petrale sole	Petrale Sole	> 20	0.07
Sablefish (North of 36° N. lat.)	Sablefish	0 - 10	0.2
Sablefish (North of 36° N. lat.)	Sablefish	11 - 20	0.2
Sablefish (North of 36° N. lat.)	Sablefish	> 20	0.2
Sablefish (South of 36° N. lat.)	Sablefish	0 - 10	0.2
Sablefish (South of 36° N. lat.)	Sablefish	11 - 20	0.2
Sablefish (South of 36° N. lat.)	Sablefish	> 20	0.2
Shallow nearshore rockfish	Black and Yellow Rockfish	0 - 10	0.25
Shallow nearshore rockfish	Black and Yellow Rockfish	11 - 20	0.49
Shallow nearshore rockfish	Black and Yellow Rockfish	> 20	1
Shallow nearshore rockfish	China Rockfish	0 - 10	0.25

Table A-4 (continued).

Nearshore Grouping	Species	Depth (fm)	Discard Mortality Rate
Shallow nearshore rockfish	China Rockfish	11 - 20	0.49
Shallow nearshore rockfish	China Rockfish	> 20	1
Shallow nearshore rockfish	Gopher Rockfish	0 - 10	0.25
Shallow nearshore rockfish	Gopher Rockfish	11 - 20	0.49
Shallow nearshore rockfish	Gopher Rockfish	> 20	1
Shallow nearshore rockfish	Grass Rockfish	0 - 10	0.25
Shallow nearshore rockfish	Grass Rockfish	11 - 20	0.49
Shallow nearshore rockfish	Grass Rockfish	> 20	1
Shallow nearshore rockfish	Kelp Rockfish	0 - 10	0.25
Shallow nearshore rockfish	Kelp Rockfish	11 - 20	0.49
Shallow nearshore rockfish	Kelp Rockfish	> 20	1
Spiny dogfish	Spiny Dogfish	0 - 10	0.5
Spiny dogfish	Spiny Dogfish	11 - 20	0.5
Spiny dogfish	Spiny Dogfish	> 20	0.5
Starry flounder	Starry Flounder	0 - 10	0.07
Starry flounder	Starry Flounder	11 - 20	0.07
Starry flounder	Starry Flounder	> 20	0.07
Widow rockfish	Widow Rockfish	0 - 10	0.32
Widow rockfish	Widow Rockfish	11 - 20	0.54
Widow rockfish	Widow Rockfish	> 20	1
Yelloweye rockfish	Yelloweye Rockfish	0 - 10	0.32
Yelloweye rockfish	Yelloweye Rockfish	11 - 20	0.56
Yelloweye rockfish	Yelloweye Rockfish	> 20	1
Yellowtail Rockfish (North of 40°10' N. lat.)	Yellowtail Rockfish	0 - 10	0.1
Yellowtail Rockfish (North of 40°10' N. lat.)	Yellowtail Rockfish	11 - 20	0.3
Yellowtail Rockfish (North of 40°10' N. lat.)	Yellowtail Rockfish	> 20	0.75
Yellowtail Rockfish (South of 40°10' N. lat.)	Yellowtail Rockfish	0 - 10	0.1
Yellowtail Rockfish (South of 40°10' N. lat.)	Yellowtail Rockfish	11 - 20	0.3
Yellowtail Rockfish (South of 40°10' N. lat.)	Yellowtail Rockfish	> 20	0.75

Table A-5. Updates to analysis used in this report.

Year	Estimation Updates	Discard Rate Updates	Management Updates
2014	Failed data occurred and were estimated. CVs calculated. EFP displayed separately.	50% mortality rate applied to all Big Skate discard caught using trawl gear	Petrale sole, canary rockfish, widow rockfish declared rebuilt.
2013	Unsampled, unsorted (UNST) hauls occurred and were estimated.		Lingcod split at 40'10 deg. N.
2012		Longnose skate, spiny dogfish mortality rates applied.	
2011	IFQ estimations added.		IFQ management began. ACL, ABC, OFL harvest goals defined.

Table A-6. In-season adjustments to 2014 west coast groundfish fisheries.

Provided by Gretchen Hanshew and Kelly Ames of the GMT.

Date	Adjustment	Details	Link to Public Notice
April 8, 2014	Halibut retention in fixed gear fisheries	April 8, 2014, vessels authorized to participate in the sablefish primary fishery with longline gear, in the area North of Pt. Chehalis, WA, and with an International Pacific Halibut Commission license, may possess and land up to the following cumulative limits: 75 pounds dressed weight of halibut for every 1,000 pounds dressed weight of sablefish landed and up to 2 additional halibut in excess of the 75-pounds-per-1,000-pound ratio per landing. (April 9, 2014, 79 FR 19498)	http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs_sea_14_13_halibut_retention_primary_fishery.pdf
April 17, 2014	Trawl RCA	• Shoreward 100 fm (year-round) between 40° 10' N. lat. to 48° 10' N. lat., and; • Seaward 150 fm (year-round) north of 45° 46' N. lat. to 48° 10' N. lat.. • Seaward 200 fm between 40°10' N. lat. to 45° 46' N. lat. during periods 2-5, and modified 200 fm in periods 1 and 6 (i.e., status quo). (April 17, 2014, 79 FR 21639)	http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs_sea_14_15.pdf
May 13, 2014	Trawl RCA Correction	Three intended references to 45°46′ N. lat. as published in lines 2, 3, and 4 of table 1 (North) were not correctly specified. As published, Line 2 incorrectly specified 45°16′ N. lat., instead of the correct reference, 45°46′ N. lat.; and lines 3 and 4 incorrectly specified 45°10′ N. lat., instead of the correct reference, 45°46′ N. lat. As published, line 3 described the shoreward line, and line 4 described the seaward lines. (May 13, 2014, 79 FR 27196)	http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs-sea-14-18.pdf
July 25, 2015	Non-trawl Trip Limits	***Limited Entry Fixed Gear Fishery*** *North of 36°N. lat.* • Sablefish limits are increased from "950 lb/week, not to exceed 2,850 lb/ 2 months" to "1,000 lb/ week not to exceed 3,000 lb/ 2 months." Vessels fishing after July 25, 2014 may land up to 1,000 lb per week, and may	http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs-sea-14-20.pdf

Date	Adjustment	Details	Link to Public Notice
		land an additional 150 lb during Period 4 (or more if they did not land the entire old, lower limit already), as long as vessels do not to exceed the new, higher Period 4 limit of 3,000 lb. ***Open Access Fishery*** *North of 36°N. lat.* • Sablefish limits are increased from "300 lb/ day, or one landing per week of up to 800 lb, not to exceed 1,600 lb/ 2 months" to "350 lb/ day, or 1landing per week of up to 1,600 lb, not to exceed 3,200 lb/ 2 months. Vessels fishing after July 25, 2014 may land up to 1,600 lb per week, and may land an additional 1,600 lb during Period 4 (or more if they did not land the entire old, lower limit already), as long as vessels do not to exceed the new, higher Period 4 limit of 3,200lb. (July 25, 2014, 79 FR 43272)	
October 20, 2015	Trawl Area Closure	Vessels fishing in the Pacific whiting primary seasons for the Shorebased IFQ Program, Mothership (MS) Co-op Program, or Catcher/Processor (C/P) Co-op Programs shall not target Pacific whiting with midwater trawl gear in all waters shoreward of a boundary line approximating the 100 fm (183 m) depth contour as of 0800, local time, October 20, 2014. Coordinates for the 100-fm boundary line are available at §660.73.	http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs-sea-14-23.pdf
November 13, 2014	Transfer of Darkblotched to At-Sea Whiting Fishery	NMFS reapportioned 3.0 mt of darkblotched rockfish from the C/P sector to the MS sector as an automatic action. Also redistributed 3 mt of darkblotched rockfish from the ''off-the-top'' deductions that were made at the start of the 2013–2014 biennium, and giving that 3 mt to the C/P sector to accommodate potential bycatch of darkblotched rockfish as the C/P sector prosecutes the remainder of its 2014 Pacific whiting fishery. (November 12, 2014, 79 FR 67095)	http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs-sea-14-25.pdf

A complete list of NMFS Public Notices and a complete list of Federal Register Notices can be found at www.westcoast.fisheries.noaa.gov