

VESSEL MOVEMENT MONITORING INFORMATIONAL REPORT

Under the omnibus prioritization agenda item at the September 2014 Council meeting, a number of issues were aggregated with the ongoing vessel monitoring system (VMS) issue into a vessel movement monitoring (VMM) grouping, to be addressed as an enforcement agenda item at future meetings, as opposed to under a particular or multiple fishery management plans (FMPs). The Enforcement Consultants (EC) volunteered to lead an effort to develop a range of alternatives related to vessel transit monitoring and report back to the Council with a proposed process and timeline. This issue is not on the November 2014 Council meeting agenda, but the EC will take the opportunity at this meeting to work with advisory bodies to discuss this informational report, towards a goal of developing a range of alternatives that would be presented for Council consideration at its April 2014 meeting.

The EC is initially proposing the following schedule for moving ahead on this issue.

April 2015	Council adopts purpose and need statements and a range of alternatives for analysis
May-July 2015	National Environmental Policy Act (NEPA) scoping, National Marine Fisheries Service (NMFS) develops analysis.
September 2015	Council adopts final preferred alternative

The following topics are addressed in this informational report.

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Monitoring for Continuous Transit in the Groundfish Fishery

Previously: 39. Trawl and Non-Trawl - Increase VMS Ping Rates (Continuous Transit Enforcement)

Monitoring

Over the past year, both the National Oceanic and Atmospheric Administration Fisheries Office of Law Enforcement (OLE) and the EC have briefed and made comments and recommendations to this Council on the adverse ruling by Chief Administrative Law Judge Susan L. Biro in the administrative penalty case of the F/V Risa Lynn (NOAA Case. No. SW1002974). This Magnuson Act case involved a single charge of operating a vessel in a closed area for purposes other than continuous transit, as required by the West Coast Groundfish Fishery (WCGF) regulations.

This case was notable in that the issues for litigation were narrowed down to whether the vessel monitoring system (VMS) provided sufficient evidence of the vessel's activity. The administrative law judge (ALJ) determined that the hourly VMS position report evidence in the case was insufficient to prove that the vessel was not operating in "continuous transit" through the closed area, as required by regulation.

This case was notable in that the primary issue for litigation was whether the VMS provided sufficient evidence of the vessel's activity in the closed area. The ALJ determined that, inter alia, the hourly VMS position report evidence in the case was insufficient to prove that the vessel was not operating in continuous transit through the closed area as required by WCGF regulation. Additionally, the ALJ agreed with the assertion that under certain maritime conditions (e.g., wind, swell, current), it might be impossible for a vessel to comply with the WCGF regulatory definition of "continuous transiting" due to its requirement for vessels to stay on a "constant heading, along a continuous straight line course."

United States Coast Guard (USCG), OLE, and its state enforcement partners have a problem. We cannot enforce the continuous transit requirement using VMS with a 60-minute ping rate. What is needed to effectively enforce the continuous transit requirement is a data stream that demonstrates that the vessel has stopped or has reduced speed to such a point that, absent a plausible explanation, it can be concluded that the vessel has failed to maintain continuous transit.

Suggested remedies:

Increase the VMS ping rate. A cost analysis for existing West Coast-type approved VMS units has been completed (Attachment 1).

OR

Maintain the 60-minute ping rate with availability of additional data set:

Potential options for additional data sets.

1. VMS units, both typed approved and not approved, with capabilities to transmit additional positional reports via cell tower and/or WiFi—reduces transmission costs.

2. VMS units, both typed approved and not approved with capabilities for geo fencing coupled with automated ping rate increase.
3. Data loggers with capabilities to store and transmit positional reports and possibly sensory data via cell tower and/or WiFi.
4. Use existing vessel technology, i.e. chart plotter, e-log book, or other systems, with accompanying submission requirements. Key component consideration: independently obtained data not requiring human input.
5. EM systems technology. Example: EFP EM systems.
6. Other?

Continuous Transit Definition

To address the continuous transit definition GCES has developed a new definition which has been modified to address a highly migratory species (HMS) application for inclusion in the proposed Drift Gillnet Rule which just completed the public comment phase and is moving towards final adoption. The groundfish version of this draft definition is:

REVISED DEFINITION:

Continuous transiting or transit through means that a vessel crosses a groundfish conservation area or EFH conservation area on a heading as nearly as practicable to a direct route, consistent with navigational safety, while maintaining [expeditious] headway throughout the transit without loitering or unnecessary delay.

SUPPORTING PREAMBLE LANGUAGE:

NMFS is revising the current definition of “continuous transiting or transit through” in order to encompass a broader array of vessel activity that is akin to loitering within a closed area, whether that be by means of a source of power or by drifting with the prevailing water current or weather conditions. [Under this revised definition, visual, electronic, or other evidence of vessel activity should provide information on vessel speed and course sufficient to indicate expeditious transiting of a conservation area.]

This definition is an amalgam of some USCG regulations, SE fishery regulations, and lessons learned from the RISA LYNN litigation. Note, the preamble language is another way for NMFS to clarify the issue, should the matter be litigated again.

Fishery Declaration Enhancements (Gear Stowed, Testing Gear, and Changing an MS Fishery Declaration)

Previously: 43. Trawl IFQ (& MS & CP?) - Fishery Declaration Enhancements (With Gear Stowed and Testing Gear)

The Council is interested in evaluating changes to VMS declarations for transiting with gear stowed, and for trips testing trawl gear (no retention of any kind). As proposed, trips with these declarations would not require observer coverage.

Transiting with Gear Stowed

For clarification, it is currently lawful to transit state and Federal with gear stowed if the vessel does not engage in fishing while in transit. Definition of fishing per MSA: **Magnuson at 99-595, 101-627. See (15) Fishing means (D) any operation in support of . . . or preparation of.**

OLE and its state partners do not believe the mere act of transiting from one port to the next constitutes “operation in support . . . or preparation of.” Thus we do not believe the transiting issue needs further action.

Testing Gear

Alternatively, gear testing does fall under the definition of fishing and will require an additional declaration code (trawl gear testing) and changes to the observer regulations, exempting this activity from observer coverage.

For purposes of analysis, the EC seeks clarification that what is being discussed regarding “gear testing” is that gear tests means deployment of lawful trawl gear with an open cod end with no retention of any kind.

Changing an MS Fishery Declaration while at Sea

A third issue for analysis is to evaluate changes to the declaration process requirement to allow midwater trawl vessels to change their declaration at sea from “limited entry midwater trawl, Pacific whiting mothership sector (catcher vessel)” to “limited entry midwater trawl Pacific whiting shorebased IFQ.” The current regulation found at 660.13 (d)(1) requires the declaration report to be filed before the vessel leaves port. Additionally, 660.13(d)(5)(iv) restricts vessels using trawl gear to only declaring one of the trawl gear types listed in (d)(5)(iv)(A).

As reported by the GAP, this restriction does not allow catcher vessels who have completed their MS obligation to make a tow for Pacific whiting for delivery to a shoreside processor without first returning to port after their mothership obligation is completed, making the appropriate declaration change and then returning to the fishing ground to commence their shoreside IFQ Pacific whiting fishing activity. This current situation is described as inefficient and expensive.

Movement of Fishpot Gear Across Management Lines

Previously: 47. Trawl IFQ and LE Pot - Remove Certain Area-Management Restrictions

Both the Trawl Regulatory Review and Evaluation Committee (TRREC) and Gear Workshop Reports included recommendations relative to area management restrictions. It is the EC’s understanding that the Council’s action has restricted this issue to one item: allowing IFQ vessels using fixed gear to move gear across management lines without going to shore. Currently, that movement is considered to be fishing in two areas on the same trip.

This issue was first raised by an IFQ fixed gear pot fisherman who explained that, unlike trawl vessels or longline vessels who can stow all their gear on deck, pot gear vessels may have to make multiple trips to move their gear from one management area to the next. Unlike the LEP Fixed Gear fishery, where there are only two management area (North and South of Conception Point), within the IFQ fishery there are five management areas, and sablefish IFQ is split North and South of 36 degrees.

Current regulation requires fixed gear vessels to first return to port before deploying their gear in a different management area, thus requiring multiple trips to port by pot vessels, causing inefficiencies and increased fuel cost, much akin to the IFQ/MS declaration issue previously discussed. Also note that per regulation these trips are 100 percent observed, a point relevant for analysis of potential alternatives.

Questions pertaining to the development of alternatives.

Should the alternatives be limited to IFQ pot gear or be inclusive of all fixed gear, i.e. IFQ longline?

1. If movement is allowed from one management area to another without returning to port, should harvest and delivery from the original area be allowed?
 - a. Pot
 - b. Longline
2. If movement is allowed from one management area to another without retuning to port, should vessels be allowed to deploy “baited” gear in the new management area?
 - a. Pot
 - b. Longline
3. If baited gear deployment is allowed, should the vessel be allowed to harvest the gear prior to returning to port?
 - a. Pot
 - b. Longline
4. Does the IFQ split at 36 degrees change the analysis? If so how?

The EC would appreciate comment on these potential alternatives and any additional alternatives deemed appropriate for analysis.

Removal of Derelict Crab Pots in RCAs

Previously: 70. Trawl, Non-Trawl – Provide for Retrieval of Derelict Crab Pots in RCAs

Current regulations prohibit vessels from retrieving derelict crab pots in the RCAs and returning the gear to shore (Agenda Item B.1.c, Supplemental Aiello Open Comment, June 2013). The Council is considering regulation changes to allow for retrieval for derelict crab pots in the RCAs by using the VMS and declaration system to ensure compliance with regulations that prohibit groundfish fishing in the RCA.

Dungeness crab are a state-managed species on the West Coast. The current status of state regulations regarding the retrieval for derelict crab pots are provided in Table 1.

Alternatives to be developed, based upon analysis of state regulation concurrence vs non-concurrence.

Table 1. State and Federal regulations on retrieval of derelict Dungeness crab traps.

	<u>WA</u>	<u>OR</u>	<u>CA</u>	<u>Feds</u>
Can Pull Traps of Others (In Season/DCV)	No	Yes, 25 between Dec 1 and mid June, 50 from mid June till close of season	Yes (6 Max w/DCV Permit, > 6 w/waiver)	No
Can Pull Traps of Others (Out of Season/DCV)	Yes, unlimited during DGP	Yes, unlimited	Yes (unlimited)	No
Disposition of Crab	No Retention	No Retention, except during open season where crab can be retained.	No Retention	N/A
Retention of Trap	Finder Retain during DGP	No (bring to shore, ODFW/Owner notified. Except during DGP)	No (bring to shore, owner notified)	N/A
Disposition Of Trap	Finder Retain during DGP	Return to shore/owner. Except during DGP where finder can keep or sell pots.	Return to Shore	N/A
Can Pull Traps of Others (In Season/other than DCV)	No	Yes, except groundfish trip/vessels (prohibited gear)	No	No
Can Pull Traps of Others (Out of Season/other than DCV)	No	Yes, except groundfish trip/vessels (prohibited gear)	No	No
DCV - Dungeness Crab Vessel				
DGP- Derelict Gear Program				

Attachment 1: VMS Unit Cost and Capabilities Survey Results – August 2014

These are the results from a survey on VMS unit cost and capabilities sent to the following VMS Vendors:

- Boatracs
- CLS America – (has not yet responded to survey).
- Faria (FWI)
- Network Innovations (formerly GMPCS)
- SkyMate

Questions and Responses

1. VMS Unit Costs: What is the cost of each NOAA Fisheries Service Type-Approved VMS units that your company provides for West Coast (Northwest) commercial fishing vessels?

Boatracs: New FMCT/G which are reimbursable cost is \$3095.00, Refurbished FMCT/G are NOT reimbursable cost is \$1595.00

CLS America: The retail cost for our THORIUM unit is \$2399.00

Faria (FWI); Faria has two type approved systems:

KTW309 - \$3,195.00 – Iridium

KTW304 - \$3,295.00 – Iridium & GSM Cellular

Network Innovations (GMPCS):

Antenna replacement: SAILOR 6150 - \$1,523.00

See cable options below:

SAILOR GOLD PLUS - \$2,500.00

SAILOR 6150 mini-C Non-SOLAS Distress System

Package consisting of: -

SAILOR 3027D

Non Solas Distess Terminal - SAILOR 6194

THRANE 6194 Term. Ctrl. Unit -

Accessories kit - User/installation

Guide, Keyboard with trackball mouse, 3606XP Monitor.

Optional Antenna Cables Sold Separately:

406100-946 10M NMEA2K Mini Device Cable - \$56.95

406100-947 15M NMEA2K Mini Device Cable - \$87.10

406100-944 30M NMEA2K Mini Cable - \$170.85

406100-945 50m NMEA2K Mini Device Cable - \$288.10

SkyMate: SkyMate 250 MSRP is \$3,100.00

2. Communication costs for each unit: What is the **monthly** communication cost using type approved satellite communication of each VMS unit at the following position reporting rate?

Interval	Boatrac	CLS America	Faria (FWI)	Network Innovations	Skymate a/
15 min	\$34.95 additional \$0.07 per poll	\$75.00	\$70.45	\$172.80	\$84.60
20 min	\$34.95 additional \$0.07 per poll	\$60.00	\$59.95	\$129.60	\$73.99
30 min	\$34.95 additional \$0.07 per poll	\$55.00	\$52.25	\$86.40	\$54.80
60 min	\$34.95	\$45.00	\$44.95	\$43.20	\$36.39
4 hours	\$34.95	\$45.00	\$34.95	\$10.80	\$21.99

a/ All communication costs based on a 30 day month.

http://www.skymate.com/user_groups/commercial_fishing.html#servicePlans

3. Reduced reporting rate: Which VMS units support “Reduced reporting rate” (reporting every 4 hours when a vessel is in port)?

- a. Describe the procedure for reduced reporting rate, to include how the VMS unit returns to normal reporting rate.

Boatrac: Both support reduced rates - Still reports once and hour with a largely reduced power draw. This can be adjusted over the air by Boatrac depending on the Regulations. By use of a “toggle switch” in line with an ignition wire. Switch to “Off” unit will appear to shut down, but will wake up and report at the specified interval. Switch to “On” unit returns to normal reporting rate.

CLS America: We do not support this.

FWI: A reduced reporting rate (port-at-rest) is rules based and applied when a vessel remains motionless for 10 or more minutes based on GPS position. Upon the Faria WatchDog 750VMS detecting movement (determined by GPS position) the system automatically switches back to the required in motion reporting rate.

Network Innovations: Zones can be used to reduce the reporting interval without on board interaction, as long as the right zones are downloaded in the terminal. The reporting will return to “normal” when the zone has been left.

In harbor requires for an IO pin to be activated manually on board (or could get wired to the ignition or similar). The minimum distance will then be used to reactivate the normal reporting interval. So if the minimum distance is set to 200m then the normal

reporting will start when the vessel has moved more than 200m. (To our knowledge, the NW Region cannot use the "In Harbor" option)

Skymate: Units can be configured to report at different intervals based on vessel movement. For instance at rest it can be set to report in 4 hour intervals, and in motion report hourly.

- b. When a reduced reporting rate is triggered, are the position reporting costs reduced?

Boatrac: No

CLS America: N/A

FWI: No, currently the vessel owner selects a data plan based on the required region reporting rate/number of Iridium bytes (i.e. 12,000 bytes/month for required one hour reporting) needed to achieve this reporting rate. We could offer a variable rate that has a lower fee but should bytes used exceed the plan the vessel owner would be billed for standard byte rate plus overage. Typically vessel owners consume unused iridium bytes sending text e-mail communications.

Network Innovations: Yes

Skymate: Yes

4. Data Logging: Which VMS units support "Data Logging" (saving position reports at an increased interval in non-volatile memory, such as position reports every 5 minutes)?

- a. Which type approved VMS units that support "Data Logging" can also send "Compressed Data Logs" over the satellite network at reduced communications costs?

Boatrac: All of the data we send is compressed

CLS America: We support this as a "backend" feature.

FWI: The FWI 750 VMS system can log up to 60,000 position reports at a frequency from once per second to once per hour and be sent OTA, We offer this feature with other International VMS authorities. The reports can be retrieved via our WSDL interface by Faria WatchDog or Vtrack or can be downloaded onto a USB memory device manually from the Faria WatchDog VTERM. During a recent discussion with Kelly Spaulding about data logging she was not sure if current VMS rules permit this feature.

Network Innovations: All Thrane Mini C terminals support logging. In the firmware from 1.05 and up the logging can also take any event that would cause a data report to be sent.

SkyMate: does not support data logging.

- b. What would the cost be for 1 compressed data log report per day of 96 position reports?

Boatrac: \$5.04

CLS America: We support this as a “backend” feature.

FWI: 1.632 or 1.7 cents for each 10 byte location update including speed, heading, lat. and lon. location, date, and time of day.

Network Innovations: The cost is pretty much the same if you want the same information logged. Logging is recommended to be used for additional “resolution” on the trail of the vessel. To be downloaded remote only when the interval reporting indicates a reason for looking closer at the vessels trail. Otherwise it should get downloaded while in harbor with a laptop connected for instance.

SkyMate: does not support data logging.

5. Geo-Fencing: Which VMS units support “Geo-Fencing” (the storing of GIS polygons in VMS unit memory)?

Boatrac: Our unit doesn’t support Geo-Fencing on the unit. We do support Geo-Fencing on the software side

CLS America: Not on the unit.

FWI: FWI VMS systems do not support GIS polygons. However we can field upgrade systems to support GIS polygons if/when required. We currently support this features for other VMS authorities, and can support on orders for new equipment/applications.

Network Innovations: All Mini C supports Geofences as mentioned.

SkyMate: The SkyMate 250 supports Geo-Fencing

6. How many “Geo-Fences” can each type-approved VMS unit store?

Boatrac: N/A

CLS America: N/A

FWI: A Modified FWI 750 VMS system can store up to 1,200 geo-fence zones.

Network Innovations: It depends on the number of positions in the zones created. Circle zones only holds one position and a little more information where a polygon includes up to 40 positions.

I will have to get back to you precisely how much flash is available for storing zones. In theory it can be 50 groups with 250 zones in each, but that would likely not be possible with all 40 point polygons.

SkyMate: SkyMate has tested up to 5 Geo-Fences stored in the SkyMate 250.

7. How many lat/lon coordinates can each geo-fence contain?

Boatrac: As many as needed

CLS America: N/A

FWI: A Modified FWI 750 can support geo-fence zones having more than 200 lat/lon points.

Network Innovations: A zone can hold from 1 to 40 points. Firmware 1.05 and up has polygons of up to 40 points, older firmware is a little more limited in the types of zones. Only 8-point polygons and only ones that “close in on themselves” not “free form” polygons as in the new firmware.

SkyMate: SkyMate has tested up to 5 lat/lon coordinates per polygon.

8. Which type-approved VMS units can change their internal programming (like position reporting rate) when the VMS unit determines that a vessel is within the “Geo-Fence”?

Boatrac: No response.

CLS America: No.

FWI: A Modified FWI 750 VMS system can assign rules to the various geo-fence zones such that the reporting frequency will change automatically when a vessel enters and/or exits the zone. We currently support this feature for other VMS authorities.

Network Innovations: All terminals with zones can do this. It is possible to specify per zone whether enter/ exit events are sent and whether the reporting interval differs from the normal reporting.

SkyMate: The current type approved unit can increase the reporting interval when detecting inside the Geo-Fence.

9. Which type-approved VMS units can send alerts to the vessel (and what kind of alerts) when the VMS units determines that a vessel has entered a “Geo-Fence”?

Boatrac: A message will be automatically sent to the unit. We also have 24 hour client care support if needed can contact them.

CLS America: No.

FWI: A modified FWI 750 VMS system can alert the vessel operator when entering a geo-fence zone with an audible alarm accompanied by “GEO-FENC” on the standard 2” user interface display or a more comprehensive message with more words and instructions on our approved VTERM touch screen display, We currently support this features for other VMS authorities.

Network Innovations: All Mini C terminals can send enter exit events, change reporting interval and change and IO pin based on whether the vessel is in a zone or not. We are not able to differentiate on the “OK” zones and the “No go” zones. So the IO pin will only be able to indicate in or outside zones.

SkyMate: Currently we do not send alerts to the vessel when inside a geo-fenced area.

10. Alternative communications channels: Which type-approved VMS units can send data via alternate communications channels?

a. Cellular connection.

Boatrac: No response.

CLS America: Yes.

FWI: Yes, the FWI P/N KTW304 supports GSM Cellular.

Network Innovations: N/A

SkyMate: N/A

b. Wi-Fi

Boatrac: No response.

CLS America: Yes.

FWI: Wi Fi is an optional add-on that could be included.

Network Innovations: N/A

SkyMate: N/A

11. What is the cost to send positional data via alternate communications methods?

a. Cellular connection.

Boatrac: No response.

CLS America: Depends on the owner's cellular data plan.

FWI: About one fifth the cost of a Satellite location update transmission or \$.00363

Network Innovations: N/A

SkyMate: N/A

b. Wi-Fi

Boatrac: No response.

CLS America: Free.

FWI: Comm cost would be free unless there is a connectivity charge at the local hot spot.

Network Innovations: N/A

SkyMate: N/A



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Informational Report 2
November 2014

**JOIN US FOR
FOOD, REFRESHMENTS, AND
CONVERSATION**

Sunday, November 16, 2014

6-8 p.m.

Hilton Orange County

3050 Bristol Street

Costa Mesa, CA

The Pew Charitable Trusts
111 S.W. Columbia Street Suite 200
Portland, OR 97201

For more information on
Pew's Pacific Ocean conservation campaign
www.pewtrusts.org/pacificfish

or contact Paul Shively
Pshively@pewtrusts.org
503-230-1222

The Pew Charitable Trusts makes every effort to comply with federal, state and local government ethics rules, including when hosting events. Please make sure that your participation is consistent with applicable ethics rules.



Pacific Fishery Management Council

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Dorothy M. Lowman, Chair | Donald O. McIsaac, Executive Director

October 21, 2014

Re: Pacific Fishery Management Council Request for Comments on Draft Fishery Management Plan Amendments Protecting Unfished and Unmanaged Forage Fish Species

Dear Reviewer,

In April 2013, the Council adopted a Pacific Coast Fishery Ecosystem Plan (FEP) for the U.S. Portion of the California Current Large Marine Ecosystem as a vehicle for bringing ecosystem-based principles into the Council decision-making process under its existing Fishery Management Plans (FMPs). At the same time, the Council adopted an Ecosystem Initiatives Appendix, which provides examples of how the Council could address issues that affect two or more Council FMPs or coordinate major Council policies across the FMPs to fulfill identified FEP needs.

The Council is nearing completion of the first designated initiative. Initiative 1 is intended to recognize the importance of forage fish to the marine ecosystem off of the U.S. West Coast, and to provide adequate protection for unfished and unmanaged forage fish. The Council is not pursuing a permanent moratorium on fishing for forage fish. Instead, the Council's objective is to prohibit the development of new directed fisheries on forage species that are not currently fished within federal waters (3-200 nm offshore) or managed by the Council, until the Council has had an adequate opportunity to assess the science relating to any proposed fishery and any potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

At its September 2014 meeting, the Council chose a preliminary preferred alternative, Alternative 2, which would amend all four of the Council's FMPs to bring unfished and unmanaged forage species into the Council's FMPs and to prohibit future directed commercial fisheries for those species from developing without scientific information on harvest sustainability and potential ecological effects of the fisheries. This multi-FMP amendment is known as Comprehensive Ecosystem-Based Amendment 1 (CEBA 1) and will include these FMP amendments: Amendment 15 to the Coastal Pelagic Species (CPS) FMP, Amendment 25 to the Pacific Coast Groundfish FMP, Amendment 3 to the Highly Migratory Species FMP, and Amendment 19 to the Pacific Coast Salmon FMP.

The following species and species groups are under Council consideration to become EC species shared (Shared EC Species) between all four of the Council's FMPs:

- Round herring (*Etrumeus teres*) and thread herring (*Opisthonema libertate* and *O. medirastre*)
- Mesopelagic fishes of the families *Myctophidae*, *Bathylagidae*, *Paralepididae*, and *Gonostomatidae*
- Pacific sand lance (*Ammodytes hexapterus*)
- Pacific saury (*Cololabis saira*)

- Silversides (family *Atherinopsidae*)
- Smelts of the family *Osmmeridae*
- Pelagic squids (families: *Cranchiidae*, *Gonatidae*, *Histioteuthidae*, *Octopoteuthidae*, *Ommastrephidae* (except Humboldt squid, *Dosidicus gigas*), *Onychoteuthidae*, and *Thysanoteuthidae*)

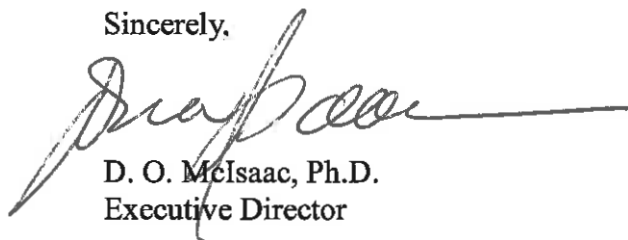
Enclosed for your review is the draft FMP amendment language and draft Council Operating Procedure (COP) 24, which the Council adopted for public review at its September 2014 meeting. Draft COP 24 is based on the Council's preliminary preferred alternative, which would allow the development of new fisheries for unfished species and is structured similarly to existing COPs associated with FMP fisheries. Should a U.S. citizen want to develop targeted fisheries for Shared EC Species at some future time, COP 24 would provide the Council and the public a framework for evaluating the potential impacts of such a fishery to existing fisheries, fishing communities, and the greater marine ecosystem.

The Council notes that jacksmelt (*Atherinopsis californiensis*) are an existing EC species in the CPS FMP. Jacksmelt are also a member of the silversides family (*Atherinopsidae*), a family proposed for inclusion as Shared EC Species in all four FMPs. In an effort to avoid duplication and in response to comments at the September Council meeting, the enclosed draft FMP language for CPS removes jacksmelt from the existing EC species list in recognition of their inclusion in the Shared EC Species list as a silverside. However, the Council has also heard recommendations to leave jacksmelt under both categories and is seeking additional input on the matter.

Comments can be mailed, faxed, or emailed to pfmc.comments@noaa.gov. The Council is scheduled to take final action and adopt a final preferred alternative for this initiative at its March 2015 meeting in Vancouver, Washington. Comments received by 11:59 p.m. on February 9th, 2015 will be included in the March 2015 Briefing Book. Comments received by 11:59 p.m. on March 2, 2015 will be distributed at the March Council meeting and oral comments will also be received at the meeting. Please see the Council's web page for complete public comment guidelines.

Should you have any questions regarding the Council's Comprehensive Ecosystem-Based Amendment, please contact Mr. Mike Burner at the Council office.

Sincerely,



D. O. McIsaac, Ph.D.
Executive Director

MDB:csp

Cc Council Members
Ecosystem Workgroup
Ecosystem Advisory Subpanel
Mr. Chuck Tracy
Mr. Mike Burner

Draft FMP Amendment Language and Draft Council Operating Procedure 24

Comprehensive Ecosystem-Based Amendment 1 (CEBA 1) includes the following fishery management plan (FMP) amendments: Amendment 15 to the CPS FMP, Amendment 25 to the Groundfish FMP, Amendment 3 to the HMS FMP, and Amendment 19 to the Salmon FMP. This section provides draft amendment language for each of the Council’s four FMPs, plus draft Council Operating Procedure (COP) 24 on exempted fishing permits (EFPs) for Shared Ecosystem Component (EC) Species. While there are many similarities between the FMPs, each FMP is organized somewhat differently from the others, which means that different sections of the FMPs will need to be changed to implement CEBA 1 for each FMP. However, the ultimate effect of the amendments will be the same for all FMP species and fisheries. Draft amendment language, below, would: update each FMP’s list of FMP amendments, add the Shared EC Species as EC species to each FMP, and revise any relevant FMP discussion of ecosystem component species to explain the status of Shared EC Species and the process for evaluating any future fishery for those species through an EFP.

This draft FMP amendment document is divided into five sections: draft CPS FMP Amendment 15, draft Groundfish FMP Amendment 25, draft HMS FMP Amendment 3, draft Salmon FMP Amendment 19, and draft COP 24 –Protocol for Consideration of Exempted Fishing Permits for Shared Ecosystem Component Species. Each section excerpts those paragraphs of each FMP that would be amended by this action. Any text that is to be added to an FMP is shown underlined, like this. Any text that is to be removed from an FMP is shown struck out, ~~like this~~. A row of three asterisks (* * *) indicates FMP text that is not re-printed here because it will not be affected by this action. Text written in small capitals, LIKE THIS, provides navigation instructions on which FMP text will be amended, but will not itself appear in the amended FMP. For example, navigation instructions might be something like “THIRD PARAGRAPH UNDER SECTION 3.3.3 WOULD BE REVISED TO READ AS FOLLOWS,” with those instructions followed by the proposed revisions to FMP text.

Draft COP 24 is based on CEBA 1’s Purpose and Need (see September 2014 Ecosystem Workgroup Report at Agenda Item H.1.a.) and on the Council’s policy on the development of new fisheries for unfished species (Fishery Ecosystem Plan Appendix at A.1.1), and is structured similarly to existing COPs associated with FMP fisheries: COP 19, *Protocol for Consideration of Exempted Fishing Permits for Groundfish Fisheries*; COP 20, *Protocol for Consideration of Exempted Fishing Permits for Highly Migratory Species Fisheries*; and COP 23, *Protocol for Consideration of Exempted Fishing Permits for Coastal Pelagic Species Fisheries*. Should a U.S. citizen want to develop targeted fisheries for Shared EC Species at some future time, COP 24 would provide the Council and the public a framework for evaluating the potential impacts of such a fishery to existing fisheries, fishing communities, and the greater marine ecosystem.

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Draft CPS FMP – Amendment 15 Revisions to the FMP

Amendment 15 to the CPS FMP would amend these sections of the FMP:

- 1.1 *History of the Fishery Management Plan* updated to briefly describe Amendment 15
- 1.2 *Stocks in the Fishery Management Plan* amended to add Shared EC Species
- 1.4 *Ecosystem Component Species* amended to add prohibition language for Shared EC Species
- 2.2.8 *Exempted Fishing* updated to reference potential EFPs for Shared EC Species
- 5.1.7 *Incidental Catch Allowance for Shared EC Species*, new section to describe potential incidental allowances for Shared EC Species

Coastal Pelagic Species Fishery Management Plan

1.0 INTRODUCTION

1.1 History of the Fishery Management Plan

TO BE ADDED AFTER AMENDMENT 13 DESCRIPTION; AMENDMENT 14 DESCRIPTION TBD.

Amendment 15 was approved in 2015 and added a suite of lower trophic level species to the FMP's list of ecosystem component (EC) species. Consistent with the objectives of the Council's FMPs and its Fishery Ecosystem Plan, Amendment 15 prohibits future development of commercial fisheries for the suite of EC species shared between all four FMPs (Shared EC Species) until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

1.2 Stocks in the Fishery Management Plan

1.2.1 Fishery Management Unit

Table 1-1. Stocks managed under this FMP include:

Common Name	Scientific Name
Pacific sardine	<i>Sardinops sagax</i>
Pacific (chub) mackerel	<i>Scomber japonicus</i>
Northern anchovy	<i>Engraulis mordax</i>
Central and northern subpopulations	
Market squid	<i>Loligo opalescens</i>
Jack mackerel	<i>Trachurus symmetricus</i>
Krill or euphausiids	<i>All Species in West Coast EEZ</i>
Including these eight dominant species.	<i>Euphausia pacifica</i>
First two species are common and are	<i>Thysanoessa spinifera</i>
most likely to be targeted by fishing	<i>Nyctiphanes simplex</i>
	<i>Nematocelis difficilis</i>
	<i>T. gregaria</i>
	<i>E. recurva</i>
	<i>E. gibboides</i>
	<i>E. eximia</i>

Stocks may be added or removed from the management unit through the framework process described in Section 2.0.

1.2.2 Ecosystem Component Species

Table 1-2 EC species under the CPS FMP include:

Common Name	Scientific Name
Pacific herring	<i>Clupea pallasii</i>
Jacksmelt	<i>Atherinopsis californiensis</i>

Table 1-3 EC species shared between all four of the Council's FMPs, including the CPS FMP.

Common Name	Scientific Name
Round herring	<i>Etrumeus teres</i>
Thread herring	<i>Opisthonema libertate</i> , <i>O. medirastre</i>
Mesopelagic fishes	Families: <i>Myctophidae</i> , <i>Bathylagidae</i> , <i>Paralepididae</i> , and <i>Gonostomatidae</i>
Pacific sand lance	<i>Ammodytes hexapterus</i>
Pacific saury	<i>Cololabis saira</i>
Silversides	<i>Atherinopsidae</i>
Smelts	<i>Osmeridae</i>
Pelagic squids	Families: <i>Cranchiidae</i> , <i>Gonatidae</i> , <i>Histioteuthidae</i> , <i>Octopoteuthidae</i> , <i>Ommastrephidae</i> except Humboldt squid, <i>Onychoteuthidae</i> , and <i>Thysanoteuthidae</i>

1.4 Ecosystem Component Species

Several criteria should be met for a species to be included in the EC category (Section 660.310(d)(5)(i)). These are: 1) be a non-target stock/species; 2) not be subject to overfishing, approaching overfished, or overfished and not likely to become subject to overfishing or overfished in the absence of conservation and management measures; and, 3) not generally retained for sale or personal use, although "occasional" retention is not by itself a reason for excluding a species from the EC category. Identifying and including EC species in the an FMP is not mandatory but may be done for a variety of purposes: Data collection; For ecosystem considerations related to specification of OY for the associated fishery; As considerations in the development of conservation and management measures for the associated fishery; and/or to address other ecosystem issues.

A 2010 review of bycatch species in CPS fisheries confirmed that incidental catch and bycatch in CPS fisheries is dominated by other CPS and that bycatch/incidental catch of non-CPS is extremely low. However, jacksmelt and Pacific herring are infrequently caught with CPS gear and were therefore added to the FMP under Amendment 13 to ensure continued monitoring of incidental catch and bycatch of these species in CPS fisheries through sampling and logbook programs. This information will continue to be reported in the Stock Assessment and Fishery Evaluation (SAFE) report.

The Council intends to continue and expand its consideration of ecological factors when developing SDCs and management measures for CPS management unit species. These considerations are expected to evolve as improved information and modeling of ecological processes become available. These considerations will likely include predator- prey relationships and the overall status and role of forage species including these the two EC species in Table 1-2.

1.4.1 Shared Ecosystem Component Species

No directed commercial fisheries may begin for any Shared EC Species (Table 1-3) until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

2.0 FRAMEWORK MANAGEMENT

2.2.8 Exempted Fishing

"Exempted fishing" is defined to be fishing practices that are new to the fishery or not allowed under the FMP. Under this FMP, the NMFS Regional Administrator may authorize the targeted or incidental harvest of CPS for experimental or exploratory fishing that would otherwise be prohibited. The NMFS Regional Administrator may restrict the number of experimental permits by total catch, time, or area. The NMFS Regional Administrator may also require any level of industry-funded observer coverage for these experimental permits. EFP proposals targeting management unit species or CPS EC species will be subject to the protocol for EFPs for CPS Fisheries (Council Operating Procedure 23). EFP proposals targeting EC species shared between all four FMPs, including the CPS FMP, will be subject to the protocol for Shared EC Species (Council Operating Procedure 24). Exempted fisheries for euphausiids (krill) will not be considered.

5.0 BYCATCH, INCIDENTAL CATCH, AND ALLOCATION

NEW SECTION TO BE ADDED UNDER ALTERNATIVE 2 (*INCIDENTAL RETENTION ALLOWED*).

5.1.7 Incidental Catch Allowance for Shared EC Species

Shared EC Species could continue to be taken incidentally without violating Federal regulations, unless regulated or restricted for other purposes, such as with bycatch minimization regulations for eulachon recovery. The targeting of Shared EC Species is prohibited.

Draft Groundfish FMP – Amendment 25 Revisions to the FMP

Amendment 25 to the Groundfish FMP would amend these sections of the FMP:

- Section 1.1 *History of the FMP* updated to briefly describe Amendment 25
- Section 1.2 *How This Document is Organized* amended at the description of Chapter 3 of the FMP to add mention of EC species, in addition to the fishery management unit species already mentioned
- Section 2.2 *Operational Definition of Terms* amended to revise the definition of “Ecosystem Component Species” to include EC species that are shared between all four FMPs
- Section 3.1 *Species Managed by this Fishery Management Plan* amended to include Shared EC Species
- Section 4.4.4 *Ecosystem Component Stocks Without OFL Values* amended to add a paragraph on Shared EC Species
- Section 6.5.2.1 *Endangered Species Act Species* amended to add a sentence on eulachon
- Chapter 8 *Experimental Fisheries* amended to reference potential EFPs for Shared EC Species

Pacific Coast Groundfish Fishery Management Plan for the California, Oregon, and Washington Groundfish Fishery

* * *

1.1 History of the FMP

* * *

ADD A FINAL PARAGRAPH TO THIS SECTION THAT READS AS FOLLOWS:

Amendment 25 was approved in 2015 and added a suite of lower trophic level species to the FMP’s list of ecosystem component (EC) species. Consistent with the objectives of the Council’s FMPs and its Fishery Ecosystem Plan, Amendment 25 prohibits future development of directed commercial fisheries for the suite of EC species shared between all four FMPs until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

1.2 How This Document is Organized

* * *

REVISE THIRD BULLET DESCRIBING CHAPTER 3 TO READ AS FOLLOWS:

Chapter 3 specifies the geographic area covered by this plan and lists the plan’s Fishery Management Unit (FMU) species and Ecosystem Component (EC) species, including those EC species shared between all four of the Council’s FMPs.

* * *

2.2 Operational Definition of Terms

REVISE DEFINITION OF “ECOSYSTEM COMPONENT SPECIES” TO READ AS FOLLOWS:

Ecosystem Component Species are FMP species that are not actively managed in the fishery (i.e., no harvest specifications are specified for these species). Ecosystem component species are not targeted, are not

generally retained for sale or personal use, are not subject to overfishing, and are not overfished or approaching an overfished condition (see section 4.4.4 for more detail). This FMP includes both EC species that are specific to the Groundfish FMP and EC species that are shared between all four of the Council’s FMPs (referred to as “Shared EC Species”).

* * *

3.1 Species Managed by this Fishery Management Plan

* * *

INSERT NEW TABLE 3-3 AND EXPLANATORY TEXT TO READ AS FOLLOWS:

Table 3-3 lists EC species shared between all four of the Council’s FMPs, including the Groundfish FMP.

Table 3-3. Common and scientific names of EC species shared between all four of the Council’s FMPs.

Common Name	Scientific Name
Round herring	<i>Etrumeus teres</i>
Thread herring	<i>Opisthonema libertate</i> , <i>O. medirastre</i>
Mesopelagic fishes	Families: <i>Myctophidae</i> , <i>Bathylagidae</i> , <i>Paralepididae</i> , and <i>Gonostomatidae</i>
Pacific sand lance	<i>Ammodytes hexapterus</i>
Pacific saury	<i>Cololabis saira</i>
Silversides	<i>Atherinopsidae</i>
Smelts	<i>Osmeridae</i>
Pelagic squids	Families: <i>Cranchiidae</i> , <i>Gonidae</i> , <i>Histioteuthidae</i> , <i>Octopoteuthidae</i> , <i>Ommastrephidae</i> except Humboldt squid, <i>Onychoteuthidae</i> , and <i>Thysanoteuthidae</i>

No directed commercial fisheries may begin for any Shared EC Species until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

* * *

4.4.4 Ecosystem Component Stocks Without OFL Values

* * *

INSERT A NEW FINAL PARAGRAPH IN SECTION 4.4.4. TO READ AS FOLLOWS:

EC species include both those species exclusive to this FMP (Section 3.2) and those species shared between all four of the Council’s FMPs (Section 3.3). EC species shared between all four FMPs may not become the subject of directed commercial fisheries until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem. The Council may have additional data and analysis requirements for changing the species categorization of EC species that are shared between all four FMPs, beyond those requirements already applying to EC species specific to the Groundfish FMP.

* * *

6.5.2.1 Endangered Species Act Species

Marine species protected under the ESA that are not otherwise protected under either the MMPA or the MBTA (see below) include various salmon and sea turtle species, as well as eulachon. Threatened and endangered Pacific salmon runs are protected by a series of complex regulations affecting marine and terrestrial activities. In the west coast groundfish fisheries, management measures to reduce incidental salmon take have focused on the Pacific whiting fisheries, which have historically encountered more salmon than the non-whiting groundfish fisheries. Salmon bycatch reduction measures include marine protected areas (MPA) where Pacific whiting fishing is prohibited (See Section 6.8.7), and an at-sea observer program intended to track whiting and incidental species take inseason (See Section 6.4.1.1). Sea turtles are rare in areas where groundfish fisheries are prosecuted and no incidental take of sea turtles has been documented in any directed groundfish fishery. Eulachon sometimes occurs as incidental catch in the groundfish bottom trawl and at-sea whiting fisheries, and mortalities result from encounters with fishing gear. However, eulachon bycatch and bycatch mortality is low (or non-existent) in most years, and is monitored through the at-sea observer program.

* * *

Chapter 8 Experimental Fisheries

* * *

REVISE THE 4TH INTRODUCTORY PARAGRAPH OF CHAPTER 8 TO READ AS FOLLOWS:

EFP applicants may have their proposals reviewed through the Council process in accordance with Council Operating Procedure #19, Protocol for Consideration of EFPs for Groundfish Fisheries, which applies to EFP proposals targeting management unit species (Table 3-1) or Groundfish EC species (Table 3-2). EFP proposals targeting EC species shared between all four FMPs, including the Groundfish FMP, will be subject to the protocol for Shared EC Species, Council Operating Procedure #24. ~~This~~ These protocols includes requirements for EFP submission, proposal contents, review and approval, and progress reporting. The Council will give priority consideration to those EFP applications that: * * *

Draft HMS FMP – Amendment 3 Revisions to the FMP

Amendment 3 to the HMS FMP would amend these sections of the FMP:

- Section 1.1 *Purpose of This Document* updated to briefly describe Amendment 3
- Section 3.3 *Species Included in the FMP as Ecosystem Component Species* amended to include Shared EC Species
- Section 6.1.11 *Exempted Fishing Permits* amended to reference potential EFPs for Shared EC Species

Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species

* * *

1.1 Purpose of This Document

The FMP includes important species of tunas, billfish and sharks which are harvested by West Coast HMS fisheries. A complete list of species in the management unit is provided in Chapter 3. The FMP has been amended ~~one~~ three times. Amendment 1, approved in 2007, addresses overfishing of bigeye tuna, a management unit species. Amendment 1 also reorganized the FMP, which in its prior form was combined with the Final Environmental Impact Statement evaluating the effects of its implementation. The reorganized FMP is a more concise document containing those elements required by the Magnuson-Stevens Fishery Conservation and Management Act describing the management program. Amendment 2, approved in 2011, made FMP provisions (principally in Chapters 3-5) consistent with the revised National Standard 1 Guidelines (50 CFR 600.310) adopted pursuant to the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006. Amendment 3, adopted in 2015, added a suite of lower trophic level species to the FMP's list of ecosystem component (EC) species. Consistent with the objectives of the Council's FMPs and its Fishery Ecosystem Plan, Amendment 3 prohibits future development of directed commercial fisheries for the suite of EC species shared between all four FMPs ("Shared EC Species") until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

* * *

3.3 Species Included in the FMP as Ecosystem Component Species

* * *

HMS FMP EC species are:

Bigeye thresher shark, *Alopias superciliosus*
Common mola, *Mola mola*
Escolar, *Lepidocybium flavobrunneum*
Lancetfishes, *Alepisauridae*
Louvar, *Luvarus imperialis*
Pelagic sting ray, *Dasyatis violacea*
Pelagic thresher shark, *Alopias pelagicus*
Wahoo, *Acanthocybium solandri*

Bigeye and pelagic thresher sharks are landed by the drift gillnet fishery but in small amounts compared to common thresher and mako sharks. Originally included in the FMP as managed species, largely

because of concern that they have poor resilience to fishing, they were re-designated EC species under FMP Amendment 2, because of the low number caught in west coast commercial and recreational fisheries.

EC species shared between all four Council FMPs, including the HMS FMP are:

Round herring, *Etrumeus teres*

Thread herring, *Opisthonema libertate*, *O. medirastre*

Mesopelagic fishes of the families *Myctophidae*, *Bathylagidae*, *Paralepididae*, and *Gonostomatidae*

Pacific sand lance, *Ammodytes hexapterus*

Pacific saury, *Cololabis saira*

Silversides, *Atherinopsidae*

Smelts of the family *Osmeridae*

Pelagic squids (families: *Cranchiidae*, *Gonatidae*, *Histioteuthidae*, *Octopoteuthidae*, *Ommastrephidae* except Humboldt squid, *Onychoteuthidae*, and *Thysanoteuthidae*)

No directed commercial fisheries may begin for any Shared EC Species until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

* * *

6.1.11 Exempted Fishing Permits

* * *

FIRST PARAGRAPH UNDER SUBSECTION “ADDITIONAL FMP REQUIREMENTS FOR AN EXEMPTED FISHING PERMIT” WOULD BE REVISED TO READ AS FOLLOWS:

Additional FMP Requirements for an Exempted Fishing Permit. This FMP places additional requirements for authorizing an EFP for targeting HMS species, including EC species shared between all four Council FMPs. An EFP proposal will be required to follow a specific Council protocol and be reviewed by the Council prior to application to NMFS. EFP proposals targeting management unit species or HMS EC species will be subject to the protocol for EFPs for HMS Fisheries (Council Operating Procedure 20). EFP proposals targeting EC species shared between all four FMPs, including the HMS FMP, will be subject to the protocol for Shared EC Species (Council Operating Procedure #24). ~~The intent of the protocol is~~ protocols are intended to ensure the Council has adequate information on all aspects of the proposed fishery and has adequate time to consider, review and formulate recommendations. ~~This protocol~~ These protocols will be available from the Council. ~~It~~ They will require additional detailed information and analysis beyond those specifically required for a NMFS EFP. The protocols will specify timing for submissions and timing for Council review.

* * *

Draft Salmon FMP – Amendment 19 Revisions to the FMP

Amendment 19 to the Salmon FMP would amend these sections of the FMP:

- *Introduction, Table 1, and Section 1* updated to briefly describe Amendment 19
- *1.1 Stock Classification and Table 1-4* amended to include Shared EC Species in the FMP
- *1.4 Ecosystem Component Species* amended to add prohibition language for Shared EC Species
- *6.6.6 Experimental Fishing* updated to reference potential EFPs for Shared EC Species

Pacific Coast Salmon Fishery Management Plan for Commercial and Recreational Salmon Fisheries Off the Coasts of Washington, Oregon, and California

Introduction

The primary amendment issues since 1984 have included specific spawner escapement goals for Oregon coastal natural (OCN) coho and Klamath River fall Chinook (Amendments 7, 9, 11, 13, and 15), non-Indian harvest allocation (Amendments 7, 9, 10, and 14), inseason management criteria (Amendment 7), habitat and essential fish habitat (EFH) definition (Amendments 8, 14, and 18), safety (Amendment 8), status determination criteria (SDC) (Amendments 10, 14, 16, and 17), management objectives for stocks listed under the Endangered Species Act (ESA) (Amendments 12 and 14), bycatch reporting and priorities for avoiding bycatch (Amendment 14), selective fisheries (Amendment 14 and 17), stock classification (Amendment 16 and 17), annual catch limits (ACLs) and accountability measures (AMs) (Amendment 16), de minimis fishing provisions (Amendments 15 and 16). Amendment 19 was approved in 2015 and added a suite of lower trophic level species to the FMP's list of ecosystem component (EC) species. Consistent with the objectives of the Council's FMPs and its Fishery Ecosystem Plan, Amendment 19 prohibits future development of directed commercial fisheries for the suite of EC species shared between all four FMPs (Shared EC Species) until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

SECOND PAGE OF TABLE 1 AS FOLLOWS

DOCUMENT	CONTENT SUMMARY

Amendment 17 (Effective January 1, 2013)	1) Minor corrections from Amendment 16 and updating language to reflect current practices. 2) Approval of maximum fishing mortality threshold for Quillayute fall coho.
Amendment 18 (Effective date TBD)	Update to reflect new information on EFH, including criteria for impassable barriers; addition of HAPCs; adjustments to geographic extent of EFH; addition of non-fishing activities and conservation measures; minor typographical adjustments and clarifications.
Amendment 19 (Effective date TBD)	<u>Update to add a suite of lower trophic level species to the FMP's list of ecosystem EC species and to prohibit future development of commercial fisheries for the suite of EC species shared between all four FMPs (Shared EC Species) until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.</u>

1 What the Plan Covers

ADD A PARAGRAPH AT THE END OF THE SECTION AS FOLLOWS

The FMP also includes a suite of EC species that are shared between all four FMPs (Shared EC Species) and prohibits future development of directed commercial fisheries for those species until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

1.1 Stock Classification

ADD A PARAGRAPH AT THE END OF THE SECTION AS FOLLOWS

To the extent practicable, the Council has partitioned the coastwide aggregate of Chinook, coho, and pink salmon into various stock components and complexes with specific conservation objectives. A detailed listing of the individual stocks and stock complexes managed under this plan are provided in Tables 1-1, 1-2, and 1-3. Stocks designated as hatchery stocks rely on artificial production exclusively, while those designated as natural stocks have at least some component of the stock that relies on natural production, although hatchery production and naturally spawning hatchery fish may contribute to abundance and spawning escapement estimates. Table 1-4 lists the non-target Shared EC Species that are not in the fishery, for which future fishery development is prohibited until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

TABLE 1-4 WOULD BE ADDED TO SECTION 1 FOLLOWING TABLE 1-3

Table 1-4. Common and scientific names of EC species shared between all four of the Council's FMPs.

Common Name	Scientific Name
Round herring	<i>Etrumeus teres</i>
Thread herring	<i>Opisthonema libertate</i> , <i>O. medirastre</i>
Mesopelagic fishes	Families: <i>Myctophidae</i> , <i>Bathylagidae</i> , <i>Paralepididae</i> , and <i>Gonostomatidae</i>
Pacific sand lance	<i>Ammodytes hexapterus</i>
Pacific saury	<i>Cololabis saira</i>
Silversides	<i>Atherinopsidae</i>
Smelts	<i>Osmeridae</i>
Pelagic squids	Families: <i>Cranchiidae</i> , <i>Gonatidae</i> , <i>Histioteuthidae</i> , <i>Octopoteuthidae</i> , <i>Ommastrephidae</i> except Humboldt squid, <i>Onychoteuthidae</i> , and <i>Thysanoteuthidae</i>

6 Measures to Manage the Harvest

6.6.6 Experimental Fisheries

SECOND PARAGRAPH IN THIS SECTION AMENDED AS FOLLOWS

The Secretary may not allow any recommended experimental fishery unless he or she determines that the purpose, design, and administration of the experimental fishery are consistent with the goals and objectives of the Council's fishery management plan, the national standards of the MSA, and other applicable law. Each vessel that participates in an approved experimental fishery will be required to carry aboard the vessel the letter of approval, with specifications and qualifications (if any), issued and signed by the Regional Administrator of NMFS. EFP proposals targeting EC species shared between all four FMPs, including the Salmon FMP, will be subject to the protocol for Shared EC Species (Council Operating Procedure 24).

Draft Council Operating Procedure 24 – Protocol for Consideration of Exempted Fishing Permits for Shared Ecosystem Component Species

DEFINITION

An exempted fishing permit (EFP) is a one-year Federal permit, issued by the National Marine Fisheries Service (NMFS), which authorizes a party to engage in an activity that is otherwise prohibited by the Magnuson-Stevens Fishery Conservation and Management Act or other fishery regulations, for the purpose of collecting limited experimental data. The Pacific Fishery Management Council's (Council's) four fishery management plans allows for EFPs for Shared Ecosystem Component (Shared EC) species, consistent with Federal regulations at 50 CFR§600.475. EFPs can be issued to Federal or state agencies, marine fish commissions, or other entities, including individuals. An EFP applicant need not be the owner or operator of the vessel(s) for which the EFP is requested. The NMFS Regional Administrator may require any level of industry-funded observer coverage for these permits.

PURPOSE

This Council Operating Procedure (COP) provides a standard process for the Council, its advisory bodies, and the public to consider EFP proposals for Shared EC Species. The specific objectives of a proposed exempted fishing activity may vary. EFPs can be used to explore ways to develop stock surveys and assessments, explore the potential for a new non-tribal commercial fishery on Shared EC Species, or to evaluate current and proposed management measures. The scope of this COP is limited to EFP proposals for exempted commercial fisheries intended to target species identified in all four of the Council's FMPs as Shared EC Species.

PROTOCOL

A. Submission

1. The Council and its advisory bodies [Ecosystem Advisory Subpanel (EAS), Scientific and Statistical Committee (SSC), and any applicable FMP-specific advisory bodies] should review EFP proposals prior to issuance; the advisory bodies may provide comment on methodology and relevance to management data needs and make recommendations to the Council accordingly. The public may also comment on EFP proposals.
2. Completed applications for EFPs from individuals or non-government agencies for Council consideration must be received by the Council for review at least two weeks prior to the November Council meeting.
3. Applications for EFPs from Federal or state agencies must meet the briefing book deadline for the November Council meeting.

B. Proposal Contents

1. EFP proposals must contain sufficient information for the Council to determine:
 - a. There is adequate justification for an exemption to the regulations;
 - b. The potential impacts of the exempted activity have been adequately identified;
 - c. The exempted activity would be expected to provide information useful to management and use of Shared EC Species and other Council-managed resources.
2. Applicants must submit a completed application in writing that includes, but is not limited to, the following information:
 - a. Date of application;
 - b. Applicant's names, mailing addresses, and telephone numbers;

- c. A statement of the purpose and goals of the experiment for which an EFP is needed, including a general description of the arrangements for the disposition of all species harvested under the EFP;
- d. Valid justification explaining why issuance of an EFP is warranted;
- e. A statement of whether the proposed experimental fishing has broader significance than the applicant's individual goals;
- f. An expected total duration of the EFP (i.e., number of years proposed to conduct exempted fishing activities);
- g. Number of vessels covered under the EFP;
- h. A description of the species (target and incidental) to be harvested under the EFP and the amount(s) of such harvest necessary to conduct the experiment; this description should include harvest estimates of overfished species and protected species;
- i. A description of a mechanism, such as at-sea fishery monitoring, to ensure that the harvest limits for targeted and incidental species are not exceeded and are accurately accounted for;
- j. A description of the proposed data collection and analysis methodology;
- k. A description of how vessels will be chosen to participate in the EFP;
- l. For each vessel covered by the EFP, the approximate time(s) and place(s) fishing will take place, and the type, size, and amount of gear to be used;
- m. The signature of the applicant;
- n. The Council and/or its advisory bodies may request additional information necessary for their consideration.

C. Review and Approval

1. The EAS will review EFP proposals in November and make recommendations to the Council for action; the Council will consider those proposals for preliminary action. Final action on EFPs will occur at the March Council meeting. Only those EFP applications that were considered in November may be considered in March; EFP applications received after the November Council meeting for the following calendar year will not be considered.
2. EFP proposals must contain a mechanism, such as at-sea fishery monitoring, to ensure that the harvest limits for targeted and incidental species are not exceeded and are accurately accounted for. Also, EFP proposals must include a description of the proposed data collection and analysis methodology used to measure whether the EFP objectives will be met.
3. The Council will give priority consideration to those EFP applications that:
 - a. Emphasize resource conservation and management with a focus on evaluating the effects of harvesting Shared EC Species on the larger California Current Ecosystem;
 - b. Can assess the potential effects of a directed fishery for one or more Shared EC Species on:
 - i. Any Council-managed species;
 - ii. Species that are the prey of any: Council-managed species, marine mammal species, seabird species, sea turtle species, or other ESA-listed species;
 - iii. Habitat that is identified as essential fish habitat or otherwise protected within one of the Council's FMPs, critical habitat identified or protected under the Endangered Species Act, or habitat managed or protected by state or tribal fishery or habitat management programs;
 - iv. Species that are subject to state or tribal management within 0-3 miles offshore of Washington, Oregon, or California;
 - v. Species that migrate beyond the U.S. EEZ.
 - c. Encourage full retention of fishery mortalities;
 - d. Involve data collection on fisheries stocks and/or habitat;
 - e. Encourage innovative gear modifications and fishing strategies to reduce bycatch;
4. The EAS review will consider the following questions:
 - a. Is the application complete?

- b. Is the EFP proposal consistent with the goals and objectives of the Council's Fishery Ecosystem Plan and FMPs?
 - c. Does the EFP account for fishery mortalities, by species?
 - d. Can the harvest estimates of overfished species and/or protected species be accommodated?
 - e. Does the EFP meet one or more of the Council's priorities listed above?
 - f. Is the EFP proposal compatible with the Federal observer program effort?
 - g. What infrastructure is in place to monitor, process data, and administer the EFP?
 - h. How will achievement of the EFP objectives be measured?
 - i. If this EFP is a re-issue of a previously issued EFP, what are the benefits to the fisheries management process to continue an EFP that began the previous year?
 - j. If integrating data into management is proposed, what is the appropriate process?
 - k. What is the funding source for at-sea monitoring?
 - l. Has there been coordination with appropriate state and Federal enforcement management and science staff?
5. SSC Review:
- a. All EFP applications should first be evaluated by the EAS for consistency with the goals and objectives of the Fishery Ecosystem Plan and the Council's FMPs;
 - b. The SSC will evaluate the scientific merits of the application and will specifically evaluate the application's: (1) problem statement; (2) data collection methodology; (3) proposed analytical and statistical treatment of the data; and (4) the generality of the inferences that could be drawn from the study.

D. Other considerations

1. EFP candidates or participants may be denied future EFP permits under the following circumstances:
 - a. If the applicant/participant (fisher/processor) has violated past EFP provisions; or has been convicted of a crime related to commercial fishing regulations punishable by a maximum penalty range exceeding \$1,000 within the last three years;
 - b. Within the last three years assessed a civil penalty related to violations of commercial fishing regulations in an amount greater than \$5,000;
 - c. Has been convicted of any violation involving the falsification of fish receiving tickets including, but not limited to, mis-reporting or under-reporting of fisheries landings. Documented fish receiving tickets indicating mis-reporting or under-reporting of fisheries landings will not qualify for consideration when fish reporting documents are used as part of the qualifying criteria for EFPs.

E. Report Contents

1. The EFP applicant must present a preliminary report on the results of the EFP and the data collected (including catch data) to the EAS at the November Council meeting of the following year.
2. A final written report on the results of the EFP and the data collected must be presented to the EAS and the Council at the March Council meeting. Those EFPs containing data analysis that could benefit from a scientific review may be forwarded to the SSC for comment.
3. The final report should include:
 - a. A summary of the work completed;
 - b. An analysis of the data collected;
 - c. Conclusions and/or recommendations;
 - d. Timely presentation of results is required to determine whether future EFPs will be recommended.



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Estimated Discard and Catch of Groundfish Species in the 2013 US West Coast Fisheries



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Publication date: October 2014

This document should be cited as follows:

Somers¹, K.A., M. Bellman², J. Jannot², N. Riley², and J. McVeigh². 2014. Estimated discard and catch of groundfish species in the 2013 U.S. west coast fisheries. NOAA Fisheries, NWFSC Observer Program, 2725 Montlake Blvd E., Seattle, WA 98112.



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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 2013 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. Our primary findings include:

- Estimated fishing mortality for all groundfish species or complexes did not exceed 2013 ACL, ABC, or OFL harvest goals.
- Estimated fishing mortality of one species or complex was above 90% of ACL: California scorpionfish – south of 34°27' N. latitude (96%).
- Twenty-eight groundfish species or complexes (68%) had fishing mortality estimates which were less than 50% of 2013 ACLs.
- Fishing mortality estimates for all groundfish combined were lower in 2013 relative to the prior year in the non-hake IFQ fixed gear, non-nearshore fixed gear, incidental fisheries, Washington tribal at-sea (where no fishing occurred), and Washington recreational sectors (Bellman et al. 2013). All other sectors showed an increase in overall groundfish mortality relative to 2012.
- An almost equal proportion of groundfish species or complexes showed an increase (49%) or decrease (51%) in estimated fishing mortality from 2012 to 2013.
- An almost equivalent proportion of rockfish species or complexes showed an increase (51%), as compared to a decrease, in estimated fishing mortality in 2013 relative to 2012, in contrast to the greater proportion (61%) of flatfish species which showed an increase in fishing mortality.

Summaries of 2013 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 whiting (hake) with midwater trawl gear

At-sea Whiting Co-op Programs*

Pacific whiting (hake) catcher-processor (C/P)

Pacific whiting (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 –

- Tribal (shoreside fisheries)
- Tribal at-sea Pacific whiting (hake)*
- Non-commercial –
 - Recreational (Washington/Oregon/California)
 - Research
- Other non-groundfish fisheries included with incidental catch of groundfish species:
 - Commercial -
 - OA shrimp trawl – Washington/Oregon/California*
 - OA bottom trawl
 - Other gear groups - not trawl, 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 2013 were retrieved from the PacFIN database (03-21-2014) 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, 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) Observer 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/whiting fishery, including: catcher-processor, mothership, mothership catcher-vessel, and tribal components.

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 require 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 (for more details see <http://www.nwfsc.noaa.gov/research/divisions/fram/observation/index.cfm>). 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

Detailed information on data collection methods employed in each observed fishery can be found in WCGOP manuals (NWFSC 2013b, NWFSC 2014; current manual: http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_collection/training.cfm; previous manuals available upon request).

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 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 Pacific hake (a.k.a. Pacific whiting, henceforth referred to as Pacific hake) fishery since 2001. Prior to 2001, observer coverage of the west coast at-sea Pacific 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 2013a; http://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_collection/manuals/ashop_manual_updated_91613.pdf). 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.

Each year, a certain portion of the ACL for groundfish species is harvested through research activities. In 2013, 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. For the first time in this report, the WCR applied depth-dependent mortality rates to research catch of canary rockfish, cowcod, and yelloweye rockfish (PFMC 2014a).

In addition to these data sources, mortality estimates were provided by the 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 mortality rates, which are assumptions regarding the survival of discarded catch, 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 PFMC 2014b). All trawl-related discard rates were only applied to estimates generated from bottom trawl gear (the gear from which research originated to inform the selected rates), and were thus not applied to estimates from midwater or pink shrimp trawl gear where assumptions of survivorship may vary greatly from bottom trawl gear.

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 directly 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, this approach was applied with slight modifications (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. Methods 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.

Measures of uncertainty are not provided within the context of the WCGOP sampling design, as they would be biased by post-stratification. However, standard errors consistent with Pikitch et al. (1998) are provided for observed discard ratios in the context of the post-stratified analysis. The standard errors are most likely an underestimate of the actual uncertainty, but are the sole measure we can provide at this time.

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). By using only the retained groundfish weight from fish tickets in discard ratio denominators, we prevent double-counting of retained weights. 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 (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-Pacific 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 Pacific hake.

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

- Mothership catcher vessels: Midwater trawl nets are used to target Pacific hake. Catcher vessels deliver unsorted catch to a mothership. The catch is sorted and processed aboard the mothership.
- Catcher-processors: Midwater trawl nets are used to target Pacific hake. Catch is 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.
- A limit of one (1) 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. 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. Tow targets are typically determined by the vessel captain.

Observer data from the IFQ fishery were stratified by sector, gear type, and management area as possible to maintain confidentiality (Table 1). If applicable and sample size permitted, 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 not sampled (unsampled). In some cases, tows or sets may have some portion of the discarded catch recorded in very broad or mixed (unsampled) categories (Appendix A, Table A-1). 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 2013 IFQ fishery are presented in Tables 2a & b. Discard ratios and expansion factors are presented by area, gear type, season and depth. Winter season is January-April and November-December and summer season is May-October. 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:

$$W_{p,s} = \sum_p x_{p,s} \times \frac{\sum_f w_{f,s}}{\sum_f x_{f,s}}$$

where, for each stratum:

s = stratum, which could include, area, depth, gear, and sector

p = unsampled haul

f = sampled haul

x = total weight of discarded catch

W = estimated discard weight of the species

w = sampled discard weight of the 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), and IFQ mixed species (IFQM) (Appendix A, Table A-1). IFQM included all 2013 IFQ managed species (see 78 FR 579 for a listing of IFQ species in 2013). NIFQ included all fish species encountered that were not designated as an IFQ species in 2013 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.

To obtain the estimated discard weight of a species (W) in hauls or sets with unsampled categories, 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 discard weight of all sampled species that are included within an unsampled category (NIFQ, IFQFF, IFQRF, IFQM) within a stratum. This denominator only includes fully sampled hauls (i.e. no unsampled categories) to determine appropriate ratios. Estimated discard weight of the species was summed across unsampled categories and then added to the discard weight of the species that was sampled in the hauls with unsampled categories:

$$W_{p,s} = \sum_y \left(\sum_p x_{p,y,s} \times \frac{\sum_f w_{f,s}}{\sum_f x_{f,y,s}} \right) + \sum_p w_{p,s}$$

where, for each stratum:

s = stratum, which could include, area, depth, gear, and sector

y = unsampled category (either NIFQ, IFQFF, IFQRF, or IFQM)

p = haul with unsampled catch category

f = sampled haul

x = weight of discarded catch

W = estimated discard weight of the species

w = sampled discard weight of the 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.

Coast-wide landings, sampled discard weight, estimated discard weight, and estimated fishing mortality in the 2013 shore-based non-hake IFQ sectors and the LE California halibut fishery are reported in Table 3a. 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 hook-and-line 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).

The 2013 Pacific hake fleet 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 Pacific 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 (discard and retained) in the at-sea Pacific 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 2013, 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 2013 Pacific 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) 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. The WCGOP randomly samples the OA California halibut fishery separately. Thus the two components (LE and OA) now have different sampling priorities, protocols, and selection design and therefore are analyzed separately.

Discard ratios were computed for the OA observed data using the retained weight of California halibut in the denominator. The fleet landed weight of California halibut was then used as a multiplier to expand observed discard ratios to the fleet (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.

Discard estimates were computed based on the following equation:

$$\hat{D}_s = \frac{\sum_t d_{st}}{\sum_t r_t} \times F$$

where:

s : species or species group

t : observed tows

d : observed discard weight of species s

r : observed retained weight of California halibut

F : weight of retained California halibut recorded on fish tickets for the fleet (expansion factor)

\hat{D}_s : discard estimate for species s

Table 4 presents estimated fishing mortalities of groundfish species caught in the 2013 OA California halibut trawl fishery. 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).

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 2013 individual state pink shrimp trawl fisheries.

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

$$\hat{D}_s = \frac{\sum_t d_{st}}{\sum_t r_t} \times F$$

where:

s : species or species group

t : observed tows

d : observed discard weight of species s

r : observed retained weight of pink shrimp

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

\hat{D}_s : discard estimate for species s

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 2011-2013 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 2013 (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 2013 LE and OA non-nearshore groundfish fixed gear. 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 (Appendix A, Table A-2). 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 provides coverage for the commercial nearshore fisheries in California and Oregon based on a selection process of state-issued nearshore permits/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 2013 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 (see Appendix A, Table A-2). 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 2003-2013 (Table 10). Using data from all previously observed years helps to ensure 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 2013 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 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-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 (Table 12a & b). 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 2013 nearshore fixed gear sectors north and south of 40° 10' N. latitude are reported in Tables 12a & b.

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, full retention is monitored by a target tribal observation rate of 15% for Makah trawl fisheries. Discard mortality of fixed gear sablefish is accounted for in tribal management by reducing the tribal allocation to account for discard mortality. 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 and do not use mortality rates for fish released with a descending device (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) was 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 was 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 were based exclusively on fish ticket data.

Bycatch estimation and summaries for several additional fish species observed by the WCGOP and A-SHOP are available in separate reports; Pacific halibut is provided in Jannot et al. 2014, salmon species are provided in Al-Humaidhi et al. 2012a, and green sturgeon and Pacific eulachon are provided in Al-Humaidhi et al. 2012b. Observed catch of protected fish species will be reported annually beginning in 2014 and will be available on the WCGOP website. Reports assessing the observed and estimated fleetwide catch of eulachon, green sturgeon, and salmon species will be available on the WCGOP website in 2015.

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 2013 relative to 2012 in the non-hake IFQ fixed gear, non-nearshore fixed gear, incidental fisheries, Washington tribal at-sea (where no fishing occurred in 2013), and Washington recreational sectors (Bellman et al. 2013). All other sectors showed an increase in overall groundfish mortality relative to 2012. Similar to 2012, when reviewed at a finer level, an almost equal proportion of groundfish species or complexes showed an increase (50%) or decrease (51%) in estimated fishing mortality from 2012 to 2013.

Relative to 2012, the shore-based IFQ fishery in 2013 demonstrated a minor increase in overall effort (+9% trips, +2% tows/sets), returning to effort levels similar to 2011 (Bellman et al. 2012, Table 1). Only 0.2% of tows/sets in

2013 were unsampled by observers (e.g., rare occasions such as observer illness), although 100% of trips continue to be observed. IFQ fishing with bottom trawl gear also increased slightly in 2013 (+16% trips, +11% tows), with a corresponding increase in both groundfish landings and discards (Tables 1, 3a). Non-hake targeted IFQ fishing with midwater trawl gear increased even further (+63% trips, +57% tows), resulting in a slight increase in both groundfish landings and discards in that subsector (Tables 1, 3a). In 2013, IFQ fishing with hook-and-line fixed gears continued to decrease from 2011 levels (compared to 2012, -40% trips, -69% sets), while fishing with pot gears also decreased relative to 2012 (-64% trips, -37% sets), with totals below 2011 levels (Table 1). A corresponding decrease in both overall groundfish landings and discard occurred in both hook-and-line and pot IFQ fishing (Table 3a). Shore-based IFQ midwater trawl fishing targeting Pacific hake during 2013 increased relative to 2012 (+33% trips, +10% sets), reaching effort levels greater than those of 2011 (Table 1). This increase resulted in greater groundfish landings and discards relative to 2012 (Table 3b).

The At-Sea Hake fishery showed effort increases in the Catcher Processor (+32% tows) and Mothership (+32% tows) sectors, 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 0.2% of Mothership tows were unsampled. Groundfish discard and landings showed corresponding increases in the Mothership sector, but the Catcher Processor sector showed a decrease in groundfish discard simultaneous with an increase in groundfish landings (Table 3b).

Two elements which affect WCGOP discard estimates are the discard ratio and the expansion factor used to generate the fleet-wide estimate. 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, landings increased by 19% in the OA California halibut trawl fishery compared to 2012 (Table 4). Thus the expansion factor for discard estimation was higher. Fleet-wide landings in the Washington and California pink shrimp fisheries increased relative to 2012, but Oregon's landings decreased slightly (Table 5). Relative to 2012 landings, all sectors of the groundfish non-IFQ, non-nearshore fixed gear fishery (LE and OA) demonstrated decreased landings in 2013 (Table 9). Nearshore fixed gear landings increased in both Oregon and California, resulting in higher expansions factors for north and south of 40°10' N. latitude relative to 2012 (Table 11).

Estimated fishing mortality for all groundfish species or complexes did not exceed 2013 ACL, ABC, or OFL harvest goals (Table 16). Fishing mortality estimates are evaluated in terms of 2013 ACL, ABC, and OFL harvest specifications from federal groundfish regulations (50 CFR 660 Subpart G, 78 FR 580). Twenty-seven groundfish species or complexes (64%) had fishing mortality estimates which were less than 50% of 2013 ACL harvest goals. In 2012, the estimated fishing mortality of four groundfish species/complexes were above 90% of their ACLs: cabezon – Oregon (98%), nearshore rockfish complex – north of 40°10' N. latitude (97%), petrale sole (96%), and California scorpionfish – south of 34°27' N. latitude (95%). The estimated fishing mortalities of the three of these groundfish species / complexes in 2013 were a considerably lower percentage of their ACLs: cabezon – Oregon (73%), nearshore rockfish complex – north of 40°10' N. latitude (80%), and petrale sole (87%). However, one species still had an estimated fishing mortality above 90% of its ACL in 2013: California scorpionfish – south of 34°27' N. latitude (96%). The primary contribution of fishing mortality is the California recreational fishery (112 mt), with the next highest contribution (1.72 mt) from are the commercial nearshore fixed gear fishery.

In addition to the nearshore rockfish complex – north of 40°10' N. latitude (80%) and petrale sole (87%), the estimated fishing mortality of two other groundfish species / complexes were 80% or greater of their ACL: Sablefish (North of 36° N. lat.) (89%) and Black rockfish (South of 46°16' N. lat.) (84%). Overall fishing mortality estimated for the nearshore rockfish complex north of 40°10' N. latitude in 2013 is attributed primarily to recreational fisheries and commercial nearshore fixed gear fishing. In 2013, the estimated fishing mortality of petrale

sole nearly doubled, but the ACL was similarly increased between 2012 and 2013, leading to a smaller percentage of ACL for the year. The majority of petrale sole are caught in the non-hake IFQ fishery with trawl gear, almost all of which are retained and landed. Non-hake IFQ trawl and non-nearshore fixed gear contributed almost equally to sablefish weight caught in the area north of 36° N. latitude, while the majority of black rockfish caught in the area south of 46°16' N. latitude is attributed to recreational fishing in Oregon and California.

An almost equivalent number of rockfish species or complexes showed an increase, as compared to a decrease, in estimated fishing mortality in 2013 relative to 2012, in contrast to the majority of flatfish species (61%) which showed an increase in fishing mortality. This differs from trends in the recent past, when flatfish species primarily showed decreasing estimated fishing mortality relative to prior years. .

For the past five years, sablefish mortality north of 36° N. latitude continues the trend of decreasing. However, due to a decrease in the ACL, this lower fishing mortality represents a greater percentage of the ACL (from 88% in 2012 to 89% in 2013). This is also the second year in a row when the mortality of sablefish south of 36° N. latitude has decreased, leading to a lower percentage of the ACL being caught (from 56% in 2012 to 43% in 2013).

The discard mortality rates for longnose skate and spiny dogfish that were applied in 2012 were again applied to 2013, making the data comparable. Spiny dogfish showed a large decrease in fishing mortality, with 178 mt less in 2013 than in 2012. Longnose skate showed a much smaller decrease of 2 mt. Following new management guidelines, lingcod was analyzed using catch north and south of 40°10' N. latitude rather than 42° N. latitude. Although the northern and southern areas are not comparable between 2012 and 2013, the overall fishing mortality increased by 226 mt in 2013.

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 have been provided for observed discard ratios.

Acknowledgements

The authors gratefully acknowledge the hard work and dedication of the observers and staff from the West Coast Groundfish and At-Sea Hake Observer Programs. Heather J. Reed (WDFW), Patrick P. Mirick (ODFW), and John Budrick (CDFW) provided recreational catch on behalf of Washington, Oregon, and California. Gretchen Hanshew provided summarized research catch from the NOAA WCR. Kelly Ames and John Devore provided discard mortality rates on behalf of the GMT (PFMC). Dr. Ian Taylor (NWFSC) facilitated communications with the GMT as a whole.

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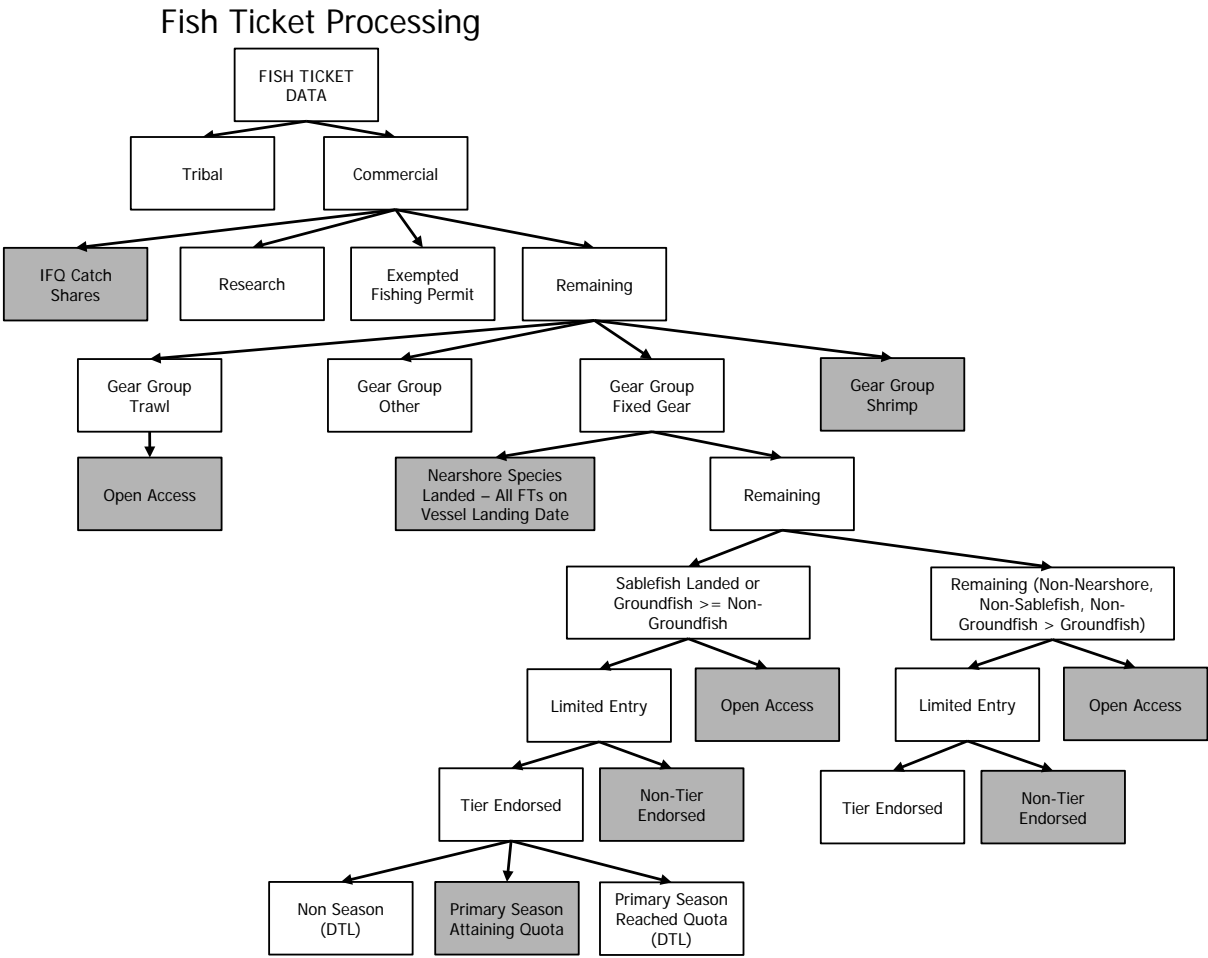
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Figures

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 03-21-2014). Grey highlight indicates sectors for which federal observer data are available.



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).

Table 1. IFQ Fishery Data Stratification.

Number of vessels, trips and hauls from WCGOP observer data for the 2013 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 Mixed	Non-IFQ Species	No. unsampled hauls	% of hauls sampled
Trawl - Bottom + LE CA halibut	North of 40°10' N	Winter	0-125	14	33	242	--	--	--	4	--	100.0%
			126-250	41	350	1596	--	--	4	38	4	99.8%
			> 250	43	405	2240	--	--	5	66	10	99.6%
		Summer	0-125	20	272	2273	4	--	14	85	6	99.7%
			126-250	28	166	682	--	--	2	28	1	99.9%
			> 250	30	238	1079	--	--	5	40	1	99.9%
	South of 40°10' N	Winter	0-125	7	27	166	--	--	--	--	--	100.0%
			126-250	10	65	137	--	--	--	2	--	100.0%
			> 250	11	84	354	--	--	--	22	--	100.0%
		Summer	0-125	9	125	548	--	--	--	5	1	99.8%
			126-250	9	81	198	--	--	--	4	1	99.5%
			> 250	12	129	555	--	--	2	36	--	100.0%
Trawl - Midwater	North of 40°10' N	Annual	All depths	4	13	36	--	--	--	--	--	100.0%
Hook-and-Line	Coastwide	Annual	All depths	4	18	153	--	--	--	--	--	100.0%
Pot	North of 40°10' N	Annual	All depths	7	52	667	--	--	--	3	--	100.0%
	South of 40°10' N	Annual	All depths	6	41	411	--	--	--	2	--	100.0%
Shoreside Hake	North of 40°10' N	Winter	All depths	10	24	66	--	--	--	1	--	100.0%
		Summer	All depths	25	922	1659	--	--	--	2	--	100.0%

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 2013 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 mixed species (IFQM), non-IFQ species (NIFQ), or all species (IFQ & non-IFQ). See text for a list of species included in each unsampled category.

IFQ - Bottom Trawl (North of 40°10' N Lat.)																
Area (40°10' N. Lat.)	IFQFF	IFQM					NIFQ						All Species			
	North	North					North						North			
	Season															
	Depth (fm)	Summer	Summer			Winter	Summer			Winter			Summer		Winter	
Expansion Factor (mt)	0-125	0-125	126-250	>250	126-250	>250	0-125	126-250	>250	0-125	126-250	>250	0-125	126-250	126-250	>250
	0.3447	2.2164	6.9400	0.4196	0.6350	1.4311	8.7546	2.0377	2.3890	0.2994	3.2517	4.0471	1.6015	0.0590	9.6389	0.2550
Groundfish species																
Arrowtooth Flounder	0.6270	0.5558	0.4008	0.1378	0.6054	0.4069	--	--	--	--	--	--	0.2772	0.2338	0.2936	0.0962
Black Rockfish (South of 46°16' N. lat.)	--	--	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--
Cabazon (Oregon)	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	--	--	--
Canary Rockfish	--	0.0001	0.0002	--	0.0000	--	--	--	--	--	--	--	0.0000	0.0001	0.0000	--
Darkblotched Rockfish	--	0.0044	0.0027	0.0005	0.0010	0.0003	--	--	--	--	--	--	0.0022	0.0016	0.0005	0.0001
Dover Sole	0.0196	0.0174	0.0141	0.1308	0.0057	0.0601	--	--	--	--	--	--	0.0087	0.0082	0.0028	0.0142
English Sole	0.0396	0.0351	0.0003	0.0026	0.0002	0.0000	--	--	--	--	--	--	0.0175	0.0002	0.0001	0.0000
Lingcod (North of 40°10' N. lat.)	--	0.0464	0.0012	0.0013	0.0004	0.0001	--	--	--	--	--	--	0.0232	0.0007	0.0002	0.0000
Longnose Skate	--	--	--	--	--	--	0.1315	0.1167	0.0394	0.0943	0.0613	0.0616	0.0659	0.0486	0.0316	0.0470
Longspine Thornyhead (North of 34°27' N. lat.)	--	0.0000	0.0016	0.2069	0.0024	0.0755	--	--	--	--	--	--	0.0000	0.0009	0.0012	0.0178
Minor nearshore rockfish (North of 40°10' N. lat.)																
Brown Rockfish	--	--	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--
Copper Rockfish	--	--	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--
Quillback Rockfish	--	--	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--
Rockfish Unid	--	--	--	--	--	--	0.0001	--	--	--	--	--	0.0000	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)																
Bocaccio Rockfish	--	0.0000	--	--	0.0000	--	--	--	--	--	--	--	0.0000	--	0.0000	--
Chilipepper Rockfish	--	0.0005	0.0002	--	0.0001	--	--	--	--	--	--	--	0.0003	0.0001	0.0000	--
Flag Rockfish	--	0.0000	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--
Greenspotted Rockfish	--	0.0000	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--
Greenstriped Rockfish	--	0.0063	0.0010	0.0002	0.0002	0.0000	--	--	--	--	--	--	0.0031	0.0006	0.0001	0.0000
Pinkrose Rockfish	--	--	--	--	0.0000	--	--	--	--	--	--	--	--	--	0.0000	--
Pygmy Rockfish	--	0.0000	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--
Redstripe Rockfish	--	0.0000	--	--	0.0000	--	--	--	--	--	--	--	0.0000	--	0.0000	--
Rockfish Unid	--	0.0000	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--
Rosethorn Rockfish	--	0.0001	0.0026	0.0008	0.0022	0.0007	--	--	--	--	--	--	0.0000	0.0015	0.0011	0.0002
Rosy Rockfish	--	--	0.0000	0.0000	0.0001	--	--	--	--	--	--	--	--	0.0000	0.0001	--
Silvergray Rockfish	--	--	--	--	0.0000	--	--	--	--	--	--	--	--	--	0.0000	--
Stripetail Rockfish	--	0.0068	--	--	0.0002	0.0000	--	--	--	--	--	--	0.0034	--	0.0001	0.0000
Minor slope rockfish (North of 40°10' N. lat.)																
Aurora Rockfish	--	0.0002	0.0112	0.0065	0.0080	0.0107	--	--	--	--	--	--	0.0001	0.0065	0.0039	0.0025
Bank Rockfish	--	--	--	--	0.0000	0.0000	--	--	--	--	--	--	--	--	0.0000	0.0000
Blackgill Rockfish	--	--	0.0001	0.0002	0.0000	0.0001	--	--	--	--	--	--	--	0.0000	0.0000	0.0000
Redbanded Rockfish	--	0.0002	0.0026	0.0001	0.0010	0.0003	--	--	--	--	--	--	0.0001	0.0015	0.0005	0.0001
Rockfish Unid	--	--	--	0.0000	0.0002	--	--	--	--	--	--	--	--	--	0.0001	--
Rougheye Rockfish	--	0.0000	0.0003	0.0001	0.0001	0.0000	--	--	--	--	--	--	0.0000	0.0002	0.0000	0.0000
Sharpchin Rockfish	--	0.0001	0.0139	0.0068	0.0096	0.0000	--	--	--	--	--	--	0.0001	0.0081	0.0047	0.0000
Shortraker Rockfish	--	0.0000	0.0001	0.0002	0.0000	0.0000	--	--	--	--	--	--	0.0000	0.0001	0.0000	0.0000
Splitnose Rockfish	--	0.0005	0.0378	0.0063	0.0589	0.0108	--	--	--	--	--	--	0.0003	0.0221	0.0286	0.0025
Yellowmouth Rockfish	--	0.0000	--	0.0000	0.0000	--	--	--	--	--	--	--	0.0000	--	0.0000	--
Mixed thornyheads																
Shortspine/Longspine Thornyhead	--	0.0001	0.0005	0.0002	--	0.0002	--	--	--	--	--	--	0.0000	0.0003	--	0.0000

Table 2a (continued).

IFQ - Bottom Trawl (North of 40°10' N Lat.)																
Area (40°10' N. Lat.) Season Depth (fm) Expansion Factor (mt)	IFQFF	IFQM					NIFQ						All Species			
	North	North					North						North			
	Summer	Summer			Winter		Summer			Winter			Summer		Winter	
	0-125	0-125	126-250	>250	126-250	>250	0-125	126-250	>250	0-125	126-250	>250	0-125	126-250	126-250	>250
	0.3447	2.2164	6.9400	0.4196	0.6350	1.4311	8.7546	2.0377	2.3890	0.2994	3.2517	4.0471	1.6015	0.0590	9.6389	0.2550
Other flatfish																
Butter Sole	0.0002	0.0002	--	0.0002	--	--	--	--	--	--	--	--	0.0001	--	--	--
Curlfin Turbot	0.0002	0.0002	--	--	--	--	--	--	--	--	--	--	0.0001	--	--	--
Flatfish Unid	--	--	--	--	0.0000	--	--	--	--	--	--	--	--	--	0.0000	--
Flathead Sole	0.0230	0.0204	0.0001	0.0000	--	--	--	0.0102	0.0001	--	0.0000	--	--	--	--	0.0000
Pacific Sanddab	0.1228	0.1088	0.0029	0.0023	0.0001	0.0000	--	--	--	--	--	--	0.0543	0.0017	0.0000	0.0000
Rex Sole	0.0538	0.0477	0.0068	0.0137	0.0028	0.0012	--	--	--	--	--	--	0.0238	0.0040	0.0014	0.0003
Rock Sole	0.0008	0.0007	--	--	--	--	--	--	--	--	--	--	0.0003	--	--	--
Sanddab Unid	0.0012	0.0010	--	--	0.0000	--	--	--	--	--	--	--	0.0005	--	0.0000	--
Sand Sole	0.0020	0.0018	--	--	--	--	--	--	--	--	--	--	0.0009	--	--	--
Other groundfish																
Big Skate	--	--	--	--	--	--	0.0593	0.0007	0.0013	0.0602	--	0.0001	0.0297	0.0003	--	0.0001
California Skate	--	--	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--
Kelp Greenling	--	--	--	--	--	--	0.0002	0.0000	0.0000	0.0002	--	0.0000	0.0001	0.0000	--	0.0000
Leopard Shark	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	0.0000
Pacific Flatnose	--	--	--	--	--	--	--	0.0001	0.0026	--	0.0000	0.0017	--	0.0000	0.0000	0.0013
Pacific Grenadier	--	--	--	--	--	--	--	0.0005	0.1006	--	0.0003	0.0326	--	0.0002	0.0002	0.0249
Roundfish Unid	--	--	--	--	--	--	--	0.0000	--	--	0.0000	0.0000	--	0.0000	0.0000	0.0000
Skate Unid	--	--	--	--	--	--	0.0000	0.0031	0.0007	--	0.0012	0.0004	0.0000	0.0013	0.0006	0.0003
Soupin Shark	--	--	--	--	--	--	0.0003	--	--	--	--	--	0.0001	--	--	--
Spotted Ratfish	--	--	--	--	--	--	0.1219	0.0719	0.0073	0.3013	0.0258	0.0081	0.0611	0.0300	0.0133	0.0062
Pacific Cod	--	0.0010	--	--	0.0000	--	--	--	--	--	--	--	0.0005	--	0.0000	--
Pacific Hake	--	0.0402	0.3987	0.4334	0.1622	0.3236	--	--	--	--	--	--	0.0201	0.2326	0.0787	0.0765
Pacific Ocean Perch (North of 40°10' N. lat.)	--	0.0004	0.0037	0.0004	0.0022	0.0004	--	--	--	--	--	--	0.0002	0.0022	0.0011	0.0001
Petrale Sole	0.0447	0.0396	0.0002	0.0002	0.0026	0.0028	--	--	--	--	--	--	0.0198	0.0001	0.0012	0.0007
Sablefish (North of 36° N. lat.)	--	0.0054	0.0011	0.0072	0.0018	0.0038	--	--	--	--	--	--	0.0027	0.0006	0.0009	0.0009
Shortbelly Rockfish	--	--	--	--	--	--	0.0000	0.0000	0.0000	--	0.0000	--	0.0000	0.0000	0.0000	--
Shortspine Thornyhead (North of 34°27' N. lat.)	--	0.0005	0.0111	0.0228	0.0120	0.0183	--	--	--	--	--	--	0.0003	0.0065	0.0058	0.0043
Spiny Dogfish	--	--	--	--	--	--	0.1038	0.2217	0.0073	0.1262	0.6954	0.1564	0.0520	0.0924	0.3581	0.1194
Starry Flounder	0.0006	0.0005	--	--	--	--	--	--	--	--	--	--	0.0003	--	--	--
Widow Rockfish	--	0.0000	0.0002	--	0.0001	--	--	--	--	--	--	--	0.0000	0.0001	0.0000	--
Yelloweye Rockfish	--	0.0000	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--
Yellowtail Rockfish (North of 40°10' N. lat.)	--	0.0000	0.0000	0.0000	0.0000	--	--	--	--	--	--	--	0.0000	0.0000	0.0000	--
Non-groundfish species																
Dungeness Crab	--	--	--	--	--	--	0.2432	0.0010	0.0021	0.2482	0.0005	0.0000	0.1219	0.0004	0.0002	0.0000
Non-FMP flatfish																
Deepsea Sole	--	--	--	--	--	--	0.0000	0.0035	0.0246	--	0.0007	0.0169	0.0000	0.0015	0.0003	0.0129
Longfin Sanddab	--	--	--	--	--	--	--	--	--	0.0002	--	--	--	--	--	--
Slender Sole	--	--	--	--	--	--	0.1196	0.0021	0.0006	0.0432	0.0024	0.0008	0.0599	0.0009	0.0012	0.0006
Non-FMP skate																
Aleutian Skate	--	--	--	--	--	--	0.0000	0.0043	0.0029	--	0.0007	0.0016	0.0000	0.0018	0.0003	0.0012
Black Skate	--	--	--	--	--	--	0.0001	0.0021	0.0305	--	0.0008	0.0263	0.0000	0.0009	0.0004	0.0201
Deepsea Skate	--	--	--	--	--	--	--	--	0.0001	--	--	0.0007	--	--	--	0.0005
Flathead Skate	--	--	--	--	--	--	0.0000	--	--	--	--	--	0.0000	--	--	--
Pacific Electric Ray	--	--	--	--	--	--	0.0013	0.0001	0.0001	0.0008	--	0.0000	0.0006	0.0000	--	0.0000
Roughshoulder/Broad Skate	--	--	--	--	--	--	--	--	0.0001	--	--	--	--	--	--	--
Sandpaper Skate	--	--	--	--	--	--	0.0231	0.0715	0.0189	0.0294	0.0435	0.0250	0.0116	0.0298	0.0224	0.0191
Starry Skate	--	--	--	--	--	--	0.0001	--	0.0000	0.0000	--	--	0.0001	--	--	--
White Skate	--	--	--	--	--	--	0.0000	--	0.0000	--	--	0.0002	0.0000	--	--	0.0000

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 2013 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 mixed species (IFQM), non-IFQ species (NIFQ), or all species (IFQ & non-IFQ). See text for a list of species included in each unsampled category.

		IFQ - Bottom Trawl (South of 40°10' N Lat.)						IFQ - Pot		Shoreside Hake		
		IFQM	NIFQ				All Species	NIFQ		NIFQ		
Area (40°10' N. Lat.)		South	South				South	North	South	North		
Season		Summer	Summer				Summer	All year	All year	Summer	Winter	
Depth (fm)		>250	0-125	126-250	>250	126-250	>250	0-125	All depths	All depths	All Depths	All Depths
Expansion Factor (mt)		0.0680	6.3458	0.0091	0.6754	0.0093	0.4280	0.0045	0.0106	0.0008	0.2722	0.0227
Groundfish species												
Arrowtooth Flounder		0.0132	--	--	--	--	--	0.0190	--	--	--	--
Bocaccio Rockfish (South of 40°10' N. lat.)		--	--	--	--	--	--	0.0000	--	--	--	--
Canary Rockfish		--	--	--	--	--	--	0.0001	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)		0.0002	--	--	--	--	--	0.2172	--	--	--	--
Cowcod Rockfish (South of 40°10' N. lat.)		--	--	--	--	--	--	0.0000	--	--	--	--
Darkblotched Rockfish		0.0000	--	--	--	--	--	0.0002	--	--	--	--
Dover Sole		0.7600	--	--	--	--	--	0.0135	--	--	--	--
English Sole		0.0006	--	--	--	--	--	0.0180	--	--	--	--
Lingcod (South of 40°10' N. lat.)		0.0001	--	--	--	--	--	0.0158	--	--	--	--
Longnose Skate		--	0.0687	0.1744	0.0631	0.2870	0.0585	0.0258	--	0.0005	--	--
Longspine Thornyhead (North of 34°27' N. lat.)		0.1275	--	--	--	--	--	0.0000	--	--	--	--
Minor nearshore rockfish (South of 40°10' N. lat.)												
Olive Rockfish		--	0.0000	--	--	--	--	0.0000	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)												
Greenspotted Rockfish		--	--	--	--	--	--	0.0011	--	--	--	--
Greenstriped Rockfish		0.0000	--	--	--	--	--	0.0064	--	--	--	--
Halfbanded Rockfish		--	--	--	--	--	--	0.0000	--	--	--	--
Pink Rockfish		--	--	--	--	--	--	0.0000	--	--	--	--
Rockfish Unid		--	--	--	--	--	--	0.0000	--	--	--	--
Rosethorn Rockfish		0.0000	--	--	--	--	--	--	--	--	--	--
Stripetail Rockfish		0.0000	--	--	--	--	--	0.0453	--	--	--	--
Tiger Rockfish		--	--	--	--	--	--	0.0000	--	--	--	--
Yellowtail Rockfish		--	--	--	--	--	--	0.0000	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)												
Aurora Rockfish		0.0029	--	--	--	--	--	0.0001	--	--	--	--
Bank Rockfish		0.0002	--	--	--	--	--	--	--	--	--	--
Blackgill Rockfish		0.0001	--	--	--	--	--	0.0000	--	--	--	--
Pacific Ocean Perch		0.0000	--	--	--	--	--	--	--	--	--	--
Redbanded Rockfish		0.0000	--	--	--	--	--	0.0006	--	--	--	--
Rougheye Rockfish		0.0000	--	--	--	--	--	--	--	--	--	--
Sharpchin Rockfish		--	--	--	--	--	--	0.0031	--	--	--	--
Spotted Rockfish Unid		0.0000	--	--	--	--	--	--	--	--	--	--
Mixed thornyheads												
Shortspine/Longspine Thornyhead		0.0000	--	--	--	--	--	--	--	--	--	--

Table 2b (continued).

		IFQ - Bottom Trawl (South of 40°10' N Lat.)						IFQ - Pot		Shoreside Hake		
Area (40°10' N. Lat.)		IFQM	NIFQ				All Species	NIFQ		NIFQ		
		South	South				South	North	South	North	North	
Season		Summer	Summer				Summer	Summer	Summer	Summer	Winter	
Depth (fm)		>250	0-125	126-250	>250	126-250	>250	0-125	>250	All Depths	All Depths	
Expansion Factor (mt)		0.0680	6.3458	0.0091	0.6754	0.0093	0.4280	0.0045	0.0106	0.0008	0.2722	0.0227
Other flatfish												
Curlfin Turbot		--	--	--	--	--	--	0.0009	--	--	--	--
Flatfish Unid		0.0000	--	--	--	--	--	--	--	--	--	--
Pacific Sanddab		--	--	--	--	--	--	0.0509	--	--	--	--
Rex Sole		0.0007	--	--	--	--	--	0.0042	--	--	--	--
Rock Sole		--	--	--	--	--	--	0.0002	--	--	--	--
Sanddab Unid		--	--	--	--	--	--	0.0000	--	--	--	--
Sand Sole		--	--	--	--	--	--	0.0001	--	--	--	--
Other groundfish												
Big Skate		--	0.0210	--	0.0000	--	0.0000	0.0079	--	0.0002	--	--
California Skate		--	0.0027	0.0007	--	0.0002	0.0000	0.0010	--	--	--	--
Leopard Shark		--	0.0008	--	--	--	--	0.0003	--	--	--	--
Pacific Flatnose		--	--	0.0000	0.0018	--	0.0036	--	0.0006	0.0084	--	--
Pacific Grenadier		--	--	0.0001	0.0600	0.0007	0.0978	--	0.0208	0.1249	--	--
Soupin Shark		--	--	--	--	--	--	--	--	--	0.0037	--
Spotted Ratfish		--	0.1711	0.1696	0.0068	0.1926	0.0100	0.0643	0.0001	--	--	--
Pacific Hake		0.0895	--	--	--	--	--	0.2086	--	--	--	--
Petrale Sole		0.0005	--	--	--	--	--	0.0031	--	--	--	--
Sablefish (North of 36° N. lat.)		0.0006	--	--	--	--	--	0.0078	--	--	--	--
Sablefish (South of 36° N. lat.)		0.0000	--	--	--	--	--	--	--	--	--	--
Shortbelly Rockfish		--	0.1395	0.0011	--	0.0007	--	0.0524	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)		0.0036	--	--	--	--	--	0.0002	--	--	--	--
Spiny Dogfish		--	0.0977	0.0226	0.0023	0.1068	0.0029	0.0367	0.0558	--	--	--
Splitnose Rockfish (South of 40°10' N. lat.)		0.0002	--	--	--	--	--	0.0003	--	--	--	--
Starry Flounder		--	--	--	--	--	--	0.0001	--	--	--	--
Skate Unid		--	--	0.0041	0.0002	0.0029	0.0004	--	--	--	--	--
Widow Rockfish		--	--	--	--	--	--	0.0076	--	--	--	--
Nongroundfish species												
California Halibut		--	0.0001	--	--	--	--	0.0000	--	--	--	--
Dungeness Crab		--	0.3735	0.0049	0.0001	0.0084	0.0000	0.1403	0.0306	--	--	--
Non-FMP flatfish												
Deepsea Sole		--	--	0.0007	0.0385	0.0004	0.0523	--	0.0009	--	--	--
Slender Sole		--	0.0038	0.0061	0.0000	0.0062	0.0000	0.0014	--	0.0000	--	--
Non-FMP skate												
Aleutian Skate		--	0.0001	--	0.0012	--	0.0004	0.0000	--	--	--	--
Black Skate		--	0.0001	0.0003	0.0156	--	0.0308	0.0000	0.0001	0.0007	--	--
Deepsea Skate		--	0.0001	--	0.0003	--	0.0012	0.0000	--	--	--	--
Pacific Electric Ray		--	0.0041	0.0122	0.0002	0.0005	--	0.0015	--	--	--	--
Sandpaper Skate		--	0.0017	0.0667	0.0052	0.1098	0.0038	0.0007	--	0.0015	--	--
Starry Skate		--	0.0002	--	--	--	--	0.0001	--	--	--	--
Thornback Skate		--	0.0000	--	--	--	--	0.0000	--	--	--	--

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 2013. Discard ratios (Table 2) 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.

Groundfish species	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Weight (mt)																
Arrowtooth Flounder	443.14	8.65	1,974.70	2,426.49	0.00	--	0.00	0.00	1.50	--	--	1.50	0.49	--	0.46	0.95
Black Rockfish (North of 46°16' N. lat.)	--	--	0.07	0.07	--	--	--	--	--	--	--	--	--	--	--	--
Black Rockfish (South of 46°16' N. lat.)	0.00	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Bocaccio rockfish (South of 40°10' N. lat.)	0.01	0.00	12.27	12.27	--	--	--	--	--	--	--	--	--	--	--	--
Cabezon (Oregon)	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Canary Rockfish	0.07	0.00	6.23	6.30	--	--	0.54	0.54	--	--	--	--	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)	73.62	0.00	319.25	392.88	--	--	--	--	--	--	--	--	--	--	--	--
Cowcod Rockfish (South of 40°10' N. lat.)	0.00	0.00	0.19	0.19	--	--	--	--	--	--	--	--	--	--	--	--
Darkblotched Rockfish	2.29	0.04	110.45	112.77	--	--	0.00	0.00	--	--	--	--	--	--	0.00	0.00
Dover Sole	103.53	0.91	7,849.29	7,953.72	--	--	--	--	0.02	--	0.09	0.11	0.07	--	1.27	1.34
English Sole	23.20	0.13	197.07	220.39	0.00	--	0.00	0.00	--	--	--	--	--	--	0.00	0.00
Lingcod (North of 40°10' N. lat.)	17.94	0.15	310.38	319.43	--	--	0.13	0.13	0.02	--	0.26	0.28	0.26	--	2.32	2.58
50% discard mortality (Trawl)‡	8.97	0.08														
7% discard mortality (Hook-and-Line)‡									0.00				0.02			
Lingcod (South of 40°10' N. lat.)	5.88	0.00	10.77	13.71	--	--	--	--	--	--	--	--	0.00	--	--	0.00
50% discard mortality (Trawl)‡	2.94	0.00														
7% discard mortality (Hook-and-Line)‡													0.00			
Longnose Skate	131.23	2.92	851.90	918.97	--	--	0.14	0.14	3.17	--	0.01	1.59	0.00	0.00	0.01	0.01
50% discard mortality (Trawl)‡	65.61	1.46														
50% discard mortality (Fixed Gear)‡									1.58				0.00	0.00		
Longspine Thornyhead (North of 34°27' N. lat.)	33.97	0.29	1,021.78	1,056.04	--	--	0.00	0.00	0.06	--	0.01	0.07	0.02	--	0.04	0.05
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	0.17	--	0.12	0.29	--	--	--	--
Minor nearshore rockfish (North of 40°10' N. lat.)																
Blue Rockfish	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Brown Rockfish	0.00	0.00	0.04	0.04	--	--	--	--	--	--	--	--	--	--	--	--
Copper Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Nearshore Rockfish Unid	--	--	0.04	0.04	--	--	--	--	--	--	--	--	--	--	--	--
Quillback Rockfish	0.01	0.00	0.09	0.10	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Rockfish Unid	0.02	0.00	--	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Minor nearshore rockfish (South of 40°10' N. lat.)																
Brown Rockfish	--	--	0.07	0.07	--	--	--	--	--	--	--	--	--	--	--	--
Olive Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)																
Bocaccio Rockfish	0.00	0.00	0.34	0.34	--	--	0.01	0.01	--	--	--	--	--	--	--	--
Chilipepper Rockfish	0.22	0.00	2.88	3.11	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Cowcod Rockfish	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Flag Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Green-spotted Rockfish	0.01	0.00	0.04	0.04	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Green-striped Rockfish	2.75	0.03	12.80	15.59	0.00	--	0.04	0.05	--	--	--	--	0.00	--	--	0.00
Pinkrose Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
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			
	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Weight (mt)																
Redstripe Rockfish	0.00	0.00	1.83	1.83	--	--	0.01	0.01	--	--	--	--	--	--	--	--
Rockfish Unid	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	0.86	0.03	1.50	2.39	0.00	--	0.00	0.00	--	--	0.00	0.00	0.00	--	--	0.00
Rosy Rockfish	0.03	0.00	--	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	0.52	0.52	--	--	--	--	--	--	0.01	0.01	--	--	0.00	0.00
Silvergray Rockfish	0.00	0.00	0.74	0.74	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Stripetail Rockfish	2.55	0.02	0.70	3.28	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Vermilion Rockfish	--	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)																
Greenblotched Rockfish	0.00	0.00	0.12	0.12	--	--	--	--	--	--	--	--	--	--	--	--
Greenspotted Rockfish	0.33	0.00	0.25	0.58	--	--	--	--	--	--	--	--	--	--	--	--
Greenstriped Rockfish	2.10	0.00	0.00	2.10	--	--	--	--	--	--	--	--	--	--	--	--
Halfbanded Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Mexican Rockfish	--	--	0.10	0.10	--	--	--	--	--	--	--	--	--	--	--	--
Pink Rockfish	0.00	0.00	0.07	0.07	--	--	--	--	--	--	--	--	--	--	--	--
Redstripe Rockfish	0.00	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Rockfish Unid	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	0.04	0.00	0.01	0.05	--	--	--	--	--	--	--	--	0.00	--	--	0.00
Rosy Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Shelf Rockfish Unid	--	0.00	0.18	0.18	--	--	--	--	--	--	--	--	--	--	--	--
Silvergray Rockfish	--	--	0.04	0.04	--	--	--	--	--	--	--	--	--	--	--	--
Stripetail Rockfish	15.31	0.00	0.91	16.22	--	--	--	--	--	--	--	--	--	--	--	--
Tiger Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Vermilion Rockfish	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Yellowtail Rockfish	0.00	0.00	0.39	0.40	--	--	--	--	--	--	--	--	--	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)																
Aurora Rockfish	4.25	0.14	17.08	21.47	--	--	0.00	0.00	--	--	--	--	0.00	--	0.00	0.00
Bank Rockfish	0.00	0.00	0.66	0.67	--	--	--	--	--	--	--	--	--	--	--	--
Blackgill Rockfish	0.04	0.00	6.23	6.27	--	--	--	--	--	--	0.07	0.07	--	--	0.02	0.02
Blackspotted Rockfish	--	--	0.12	0.12	--	--	--	--	--	--	0.00	0.00	--	--	--	--
Redbanded Rockfish	0.56	0.02	7.53	8.11	0.00	--	0.00	0.00	0.02	--	0.53	0.55	0.00	--	0.16	0.16
Rockfish Unid	0.05	0.00	--	0.05	--	--	--	--	--	--	--	--	--	--	--	--
Rougheye Rockfish	0.07	0.00	61.99	62.06	--	--	0.00	0.00	0.02	--	2.40	2.42	0.02	--	0.38	0.41
Sharpchin Rockfish	3.83	0.15	6.10	10.08	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Shortraker Rockfish	0.04	0.00	20.38	20.42	--	--	0.00	0.00	0.01	--	0.02	0.03	0.00	--	--	0.00
Shortraker/Rougheye Rockfish	--	--	--	--	--	--	--	--	0.06	--	--	0.06	--	--	--	--
Slope Rockfish Unid	--	0.00	3.54	3.54	--	--	--	--	--	--	1.32	1.32	--	--	0.14	0.14
Splitnose Rockfish	17.35	0.60	24.36	42.31	--	--	0.00	0.00	--	--	--	--	--	--	0.00	0.00
Yellowmouth Rockfish	0.00	0.00	5.52	5.52	--	--	--	--	--	--	0.02	0.02	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)																
Aurora Rockfish	2.87	0.00	6.04	8.91	--	--	--	--	--	--	--	--	0.05	--	0.24	0.29
Bank Rockfish	0.03	0.01	45.63	45.67	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Blackgill Rockfish	0.29	0.01	38.10	38.40	--	--	--	--	--	--	--	--	0.14	--	14.92	15.05
Pacific Ocean Perch	0.00	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Redbanded Rockfish	0.19	0.00	0.33	0.52	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rockfish Unid	--	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--

Table 3a (continued).

	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Weight (mt)																
Rougheye Rockfish	0.00	0.00	0.11	0.11	--	--	--	--	--	--	--	--	--	--	--	--
Sharpchin Rockfish	0.86	0.00	--	0.86	--	--	--	--	--	--	--	--	--	--	--	--
Shortraker Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	0.00	7.48	7.48	--	--	--	--	--	--	--	--	--	--	--	--
Spotted Rockfish Unid	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Mixed thornyheads																
Shortspine/Longspine Thornyhead	0.10	0.01	5.72	5.83	--	--	--	--	--	--	--	--	--	--	--	--
Other flatfish																
Butter Sole	0.16	0.00	0.06	0.22	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Curlfin Turbot	0.83	0.00	0.63	1.46	--	--	0.01	0.01	--	--	--	--	--	--	--	--
Flatfish Unid	0.10	0.00	0.86	0.96	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Flathead Sole	8.02	0.07	9.82	17.90	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Pacific Sanddab	66.23	0.39	139.66	206.28	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Rex Sole	25.51	0.24	466.63	492.38	0.00	--	0.00	0.00	--	--	--	--	0.00	--	0.00	0.00
Rock Sole	0.34	0.00	2.76	3.11	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Sanddab Unid	0.39	0.00	61.54	61.94	--	--	--	--	--	--	--	--	--	--	--	--
Sand Sole	0.71	0.01	12.74	13.46	--	--	--	--	0.02	--	--	0.02	--	--	--	--
Other groundfish																
Big Skate	29.51	0.72	20.21	50.44	--	--	--	--	0.01	--	--	0.01	0.00	0.00	--	0.00
California Skate	0.37	0.02	--	0.39	--	--	--	--	--	--	--	--	--	--	--	--
Grenadier Unid	--	0.00	51.09	51.09	--	--	--	--	--	--	0.03	0.03	--	--	0.09	0.09
Groundfish Unid	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Kelp Greenling	0.10	0.00	0.01	0.11	--	--	--	--	--	--	--	--	--	--	--	--
Leopard Shark	0.11	0.01	0.15	0.27	--	--	--	--	--	--	--	--	--	--	--	--
Mixed Species	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Flatnose	1.44	0.02	--	1.46	--	--	--	--	0.01	--	--	0.01	0.04	0.00	--	0.04
Pacific Grenadier	41.84	0.47	6.11	48.41	--	--	--	--	0.35	--	--	0.35	0.69	0.00	--	0.69
Roundfish Unid	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Southern Shark	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Spotted Ratfish	2.34	0.03	118.66	121.03	--	--	--	--	--	--	0.03	0.03	--	--	--	--
Rockfish Unid	0.10	0.00	0.21	0.32	--	--	--	--	--	--	--	--	--	--	--	--
Skate Unid	100.22	2.77	1.61	104.60	0.00	--	0.00	0.00	0.02	--	--	0.02	0.00	0.00	--	0.00
Pacific Cod	0.42	0.00	153.53	153.95	--	--	0.06	0.06	--	--	--	--	--	--	0.00	0.00
Pacific Hake	244.30	4.46	58.19	306.94	--	--	0.01	0.01	0.03	--	--	0.03	0.04	--	--	0.04
Pacific Ocean Perch (North of 40°10' N. lat.)	1.00	0.04	41.84	42.88	--	--	0.00	0.00	--	--	0.00	0.00	0.00	--	0.00	0.00
Petrale Sole	17.34	0.19	2,099.95	2,117.48	0.00	--	0.00	0.00	0.56	--	0.11	0.67	0.00	--	0.07	0.07
Sablefish (North of 36° N. lat.)	7.40	0.13	1,394.66	1,398.43	--	--	--	--	2.64	--	56.65	57.18	6.64	--	364.61	365.94
50% discard mortality (Trawl)‡	3.70	0.07														
20% discard mortality (Fixed Gear)‡									0.53				1.33			
Sablefish (South of 36° N. lat.)	0.00	0.00	6.14	6.15	--	--	--	--	0.14	--	16.20	16.23	2.04	--	64.15	64.56
50% discard mortality (Trawl)‡	0.00	0.00														
20% discard mortality (Fixed Gear)‡									0.03				0.41			
Shortbelly Rockfish	17.21	0.89	0.13	18.22	--	--	--	--	--	--	--	--	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	7.90	0.23	833.14	841.28	--	--	0.00	0.00	0.07	--	3.25	3.33	0.10	--	0.92	1.02
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	0.05	--	3.65	3.70	--	--	--	--

Table 3a (continued).

	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Weight (mt)																
Spiny Dogfish	272.75	8.51	8.65	289.91	0.01	--	0.00	0.01	22.08	--	--	11.04	0.65	0.00	0.00	0.65
50% discard mortality (Fixed Gear)‡									11.04							
Splitnose Rockfish (South of 40°10' N. lat.)	32.98	0.02	13.06	46.06	--	--	--	--	--	--	--	--	0.00	--	--	0.00
Starry Flounder	0.26	0.00	3.17	3.44	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Widow Rockfish	2.43	0.00	49.47	51.90	0.00	--	123.67	123.67	--	--	--	--	--	--	--	--
Yelloweye Rockfish	0.00	0.00	0.05	0.05	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Yellowtail Rockfish (North of 40°10' N. lat.)	0.01	0.00	213.96	213.97	--	--	84.68	84.68	--	--	0.00	0.00	--	--	--	--
Non-groundfish species																
California Halibut	0.01	0.00	18.51	18.52	--	--	--	--	--	--	--	--	--	--	--	--
Dungeness Crab	145.67	4.78	0.02	150.47	0.00	--	0.00	0.00	0.00	--	--	0.00	0.35	0.00	--	0.35
Non-FMP flatfish																
Deepsea Sole	17.91	0.19	0.21	18.31	--	--	--	--	--	--	--	--	0.01	0.00	--	0.01
Hornyhead Turbot	0.01	--	0.00	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Longfin Sanddab	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Slender Sole	47.50	1.21	--	48.71	0.00	--	--	0.00	--	--	--	--	0.00	0.00	--	0.00
Non-FMP skate																
Aleutian Skate	1.65	0.03	--	1.68	--	--	--	--	0.01	--	--	0.01	--	--	--	--
Black Skate	17.79	0.22	--	18.01	--	--	--	--	0.12	--	--	0.12	0.00	0.00	--	0.00
Deepsea Skate	0.36	0.00	--	0.36	--	--	--	--	--	--	--	--	--	--	--	--
Flathead Skate	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Electric Ray	1.37	0.04	--	1.41	--	--	--	--	--	--	--	--	--	--	--	--
Roughshoulder/Broad Skate	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Sandpaper Skate	40.66	0.91	--	41.57	--	--	--	--	0.02	--	--	0.02	0.01	0.00	--	0.01
Starry Skate	0.08	0.00	--	0.09	--	--	--	--	--	--	--	--	--	--	--	--
Thornback Skate	0.04	0.00	--	0.04	--	--	--	--	--	--	--	--	--	--	--	--
White Skate	0.07	0.00	--	0.07	--	--	--	--	--	--	--	--	--	--	--	--

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

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 2013. In shoreside hake, discard ratios (Table 2) 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 sector data was summarized from the A-SHOP.

Groundfish species	Weight (mt)	IFQ - Shoreside Hake				At-sea Catcher-Processors			At-sea Mothership		
		Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Retained	Estimate	Sampled Discard	Retained	Estimate
Arrowtooth Flounder	--	--	--	5.46	5.46	2.58	8.51	11.09	1.89	1.55	3.44
Black Rockfish (North of 46°16' N. lat.)	--	--	--	0.00	0.00	--	--	--	--	--	--
Canary Rockfish	0.00	--	--	3.35	3.36	0.12	0.06	0.18	0.31	0.17	0.48
Darkblotched Rockfish	0.00	--	--	3.25	3.25	0.74	1.35	2.08	2.94	1.30	4.24
Dover Sole	--	--	--	0.13	0.13	0.27	0.76	1.03	0.07	0.01	0.07
English Sole	--	--	--	0.03	0.03	--	0.01	0.01	0.00	0.00	0.00
Lingcod (North of 40°10' N. lat.)	--	--	--	8.43	8.43	--	0.15	0.15	0.89	0.47	1.36
Longnose Skate	--	--	--	0.10	0.10	0.03	0.04	0.08	0.17	0.03	0.20
Longspine Thornyhead (North of 34°27' N. lat.)	--	--	--	0.00	0.00	0.00	0.00	0.00	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)	--	--	--	0.51	0.51	0.09	0.14	0.23	0.12	0.05	0.17
Bocaccio Rockfish	--	--	--	0.01	0.01	--	--	--	0.00	--	0.00
Chillipepper Rockfish	--	--	--	0.21	0.21	0.00	--	0.00	0.00	0.00	0.00
Greenstriped Rockfish	--	--	--	--	--	--	--	--	0.00	--	0.00
Harlequin Rockfish	--	--	--	0.11	0.11	0.84	0.00	0.84	0.01	0.01	0.02
Redstripe Rockfish	--	--	--	--	--	--	--	--	--	--	--
Rockfish Unid	--	--	--	0.01	0.01	--	--	--	--	--	--
Rosethorn Rockfish	--	--	--	0.01	0.01	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	0.59	0.59	0.07	0.03	0.10	0.02	0.01	0.03
Silvergray Rockfish	--	--	--	--	--	0.00	--	0.00	0.00	0.00	0.00
Stripetail Rockfish	--	--	--	0.09	0.09	0.00	0.00	0.00	0.00	--	0.00
Minor slope rockfish (North of 40°10' N. lat.)	--	--	--	0.03	0.03	0.00	0.01	0.01	--	0.00	0.00
Aurora Rockfish	--	--	--	0.06	0.06	0.02	0.02	0.03	0.00	--	0.00
Bank Rockfish	--	--	--	0.08	0.08	--	0.01	0.01	--	--	--
Blackgill Rockfish	--	--	--	0.23	0.23	0.00	--	0.00	0.02	--	0.02
Redbanded Rockfish	--	--	--	0.59	0.59	0.01	--	0.01	--	0.01	0.01
Rougheye Rockfish	0.01	--	--	0.08	0.08	--	--	--	--	--	--
Sharpchin Rockfish	--	--	--	5.97	5.97	8.21	13.99	22.21	2.72	1.27	3.98
Shortraker Rockfish	--	--	--	0.08	0.08	0.00	--	0.00	--	--	--
Slope Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--
Splitnose Rockfish	--	--	--	0.01	0.01	--	--	--	--	--	--
Yellowmouth Rockfish	--	--	--	--	--	--	--	--	--	--	--
Mixed thornyheads	--	--	--	--	--	0.01	0.14	0.16	--	0.35	0.35
Shortspine/Longspine Thornyhead	--	--	--	--	--	--	--	--	--	--	--
Other flatfish	--	--	--	0.01	0.01	0.00	--	0.00	0.00	--	0.00
Flatfish Unid	--	--	--	0.00	0.00	--	0.00	0.00	0.00	--	0.00
Flathead Sole	--	--	--	0.07	0.07	--	0.00	0.00	0.00	--	0.00
Pacific Sanddab	--	--	--	0.39	0.39	2.28	8.72	11.00	0.56	0.54	1.10
Rex Sole	--	--	--	0.00	0.00	--	--	--	--	--	--
Sanddab Unid	--	--	--	--	--	--	--	--	--	--	--
Other groundfish	--	--	--	--	--	--	0.10	0.10	0.10	--	0.10
Big Skate	--	--	--	--	--	0.10	0.07	0.17	0.22	--	0.22
Grenadier Unid	--	--	--	0.16	0.16	--	--	--	--	--	--
Groundfish Unid	--	--	--	--	--	0.01	--	0.01	0.00	--	0.00
Pacific Electric Ray	--	--	--	--	--	0.00	0.00	0.00	--	--	--
Roundfish Unid	--	--	--	0.04	0.04	--	0.03	0.03	--	--	--
Southern Shark	0.03	0.00	--	0.00	0.00	--	--	--	0.23	--	0.23
Spotted Ratfish	--	--	--	0.19	0.19	--	--	--	--	--	--
Skate Unid	--	--	--	0.04	0.04	--	0.03	0.03	--	--	--
Pacific Cod	--	--	--	459.65	96,867.81	36.24	78,004.79	78,041.03	174.01	52,348.33	52,522.34
Pacific Hake	--	--	--	7.09	7.09	2.83	1.45	4.28	0.67	0.47	1.14
Pacific Ocean Perch (North of 40°10' N. lat.)	--	--	--	0.00	0.00	--	--	--	--	--	--
Petrale Sole	--	--	--	0.66	0.66	1.53	8.16	9.68	1.50	1.51	3.02
Sablefish (North of 36° N. lat.)	--	--	--	2.14	2.14	0.00	0.00	0.00	0.68	0.04	0.73
Shortbelly Rockfish	--	--	--	3.30	3.30	1.90	13.64	15.54	2.46	3.75	6.21
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	80.56	80.56	49.61	15.17	64.78	30.87	1.83	32.69
Spiny Dogfish	--	--	--	235.12	236.03	3.72	12.02	15.74	10.06	5.48	15.54
Widow Rockfish	0.91	--	--	420.46	420.61	22.04	56.41	78.45	189.07	1.85	190.92
Yellowtail Rockfish (North of 40°10' N. lat.)	0.16	--	--	--	--	--	--	--	--	--	--
Non-groundfish species	--	--	--	0.01	0.01	--	--	--	0.04	--	0.04
Dungeness Crab	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00
Non-FMP flatfish	--	--	--	--	--	--	--	--	--	--	--
Slender Sole	--	--	--	--	--	--	--	--	--	--	--
Non-FMP skate	--	--	--	--	--	--	--	--	--	--	--
Sandpaper Skate	--	--	--	--	--	0.00	0.01	0.01	0.00	--	0.00

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 2013 (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.

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)	
	5	29	81	69	
	Discard Ratio	SE	Discard	Landed	Total Estimate
Groundfish species					
Arrowtooth Flounder	--	--	--	0.01	0.01
Cabazon (California)	--	--	--	0.01	0.01
California Scorpionfish (South of 34°27' N. lat.)	--	--	--	0.00	0.00
Canary Rockfish	--	--	--	0.00	0.00
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	0.00	0.00
Dover Sole	0.0000	--	0.00	--	0.00
English Sole	0.0061	0.0446	0.42	0.14	0.56
Lingcod (South of 40°10' N. lat.)	0.0002	0.0121	0.01	0.02	0.03
50% discard mortality (Trawl) [‡]			0.01		
Longnose Skate	0.0062	--	0.42	--	0.21
50% discard mortality (Trawl) [‡]			0.21		
Minor nearshore rockfish (South of 40°10' N. lat.)					
Brown Rockfish	0.0004	0.0211	0.03	0.00	0.03
Copper Rockfish	--	--	--	0.01	0.01
Nearshore Rockfish Unid	--	--	--	0.00	0.00
Minor shelf rockfish (South of 40°10' N. lat.)					
Flag Rockfish	--	--	--	0.00	0.00
Starry Rockfish	--	--	--	0.00	0.00
Vermilion Rockfish	--	--	--	0.00	0.00
Other flatfish					
Butter Sole	--	--	--	0.04	0.04
Curlfin Turbot	0.0163	0.5161	1.12	0.01	1.14
Flatfish Unid	--	--	--	0.15	0.15
Pacific Sanddab	0.0154	0.1590	1.06	0.07	1.13
Rock Sole	0.0001	0.0113	0.01	0.13	0.14
Sanddab Unid	--	--	--	0.08	0.08
Sand Sole	0.0066	0.0450	0.45	7.79	8.24
Other groundfish					
Big Skate	0.6178	1.3660	42.52	--	42.52
California Skate	0.0799	2.7942	5.50	--	5.50
Kelp Greenling	0.0000	--	0.00	--	0.00
Leopard Shark	0.0186	0.6141	1.28	0.29	1.57
Southern Shark	--	--	--	0.09	0.09
Skate Unid	--	--	--	0.34	0.34
Pacific Cod	0.0001	0.0034	0.00	--	0.00
Pacific Hake	0.0000	--	0.00	--	0.00
Petrale Sole	--	--	--	0.41	0.41
Sablefish (North of 36° N. lat.)	0.0000	--	0.00	--	0.00
50% discard mortality (Trawl) [‡]			0.00		
Spiny Dogfish	0.0845	0.6630	5.81	--	5.81
Starry Flounder	0.0111	0.0374	0.76	2.66	3.42
Non-groundfish species					
California Halibut	0.0120	0.0295	0.82	68.82	69.64
Dungeness Crab	2.6431	5.3054	181.90	--	181.90
Non-FMP flatfish					
Diamond Turbot	--	--	--	0.00	0.00
Hornyhead Turbot	0.0002	0.0288	0.01	0.30	0.32
Non-FMP skate					
Pacific Electric Ray	0.0056	0.3412	0.39	--	0.39
Starry Skate	0.0003	0.0287	0.02	--	0.02
Thornback Skate	0.0183	0.5071	1.26	--	1.26

[‡]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 2013 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.

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)	
	13	29	384	6,183		46	107	1353	21,538		10	17	179	3,830	
	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate
Weight (mt)															
Groundfish species															
Arrowtooth Flounder	0.0002	0.0008	1.05	--	1.05	0.0008	0.0016	16.89	--	16.89	0.0002	0.0006	0.83	--	0.83
Bocaccio Rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Cabazon (California)	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01
California Scorpionfish (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	0.80	0.80
Canary Rockfish	--	--	--	--	--	0.0000	--	0.11	--	0.11	--	--	--	--	--
Darkblotched Rockfish	0.0001	0.0002	0.45	--	0.45	0.0001	0.0002	3.04	--	3.04	0.0000	0.0001	0.19	--	0.19
Dover Sole	0.0000	0.0025	0.22	0.15	0.36	0.0001	0.0016	2.38	--	2.38	0.0000	0.0002	0.03	0.11	0.14
English Sole	--	--	--	--	--	0.0000	0.0007	0.02	--	0.02	--	--	--	1.10	1.10
Lingcod (North of 40°10' N. lat.)	--	--	--	0.08	0.08	0.0000	0.0007	0.09	--	0.09	0.0000	0.0005	0.02	0.09	0.11
Lingcod (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Longnose Skate	0.0000	0.0017	0.10	0.88	0.97	0.0000	0.0012	0.08	--	0.08	0.0000	0.0005	0.10	--	0.10
Minor nearshore rockfish (North of 40°10' N. lat.)															
Gopher Rockfish	--	--	--	--	--	0.0000	--	0.00	--	0.00	--	--	--	--	--
Minor nearshore rockfish (South of 40°10' N. lat.)															
Copper Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.09	0.09
Nearshore Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Minor shelf rockfish (North of 40°10' N. lat.)															
Chillipepper Rockfish	--	--	--	--	--	0.0000	0.0002	0.23	--	0.23	0.0000	--	0.01	--	0.01
Greenstriped Rockfish	0.0000	0.0002	0.01	--	0.01	0.0000	0.0003	0.27	--	0.27	0.0000	0.0002	0.16	--	0.16
Halfbanded Rockfish	--	--	--	--	--	0.0000	0.0002	0.00	--	0.00	0.0000	--	0.00	--	0.00
Harlequin Rockfish	--	--	--	--	--	0.0000	--	0.00	--	0.00	--	--	--	--	--
Rockfish Unid	0.0000	0.0003	0.01	--	0.01	0.0000	0.0032	0.45	--	0.45	0.0000	0.0000	0.00	--	0.00
Stripetail Rockfish	--	--	--	--	--	0.0000	0.0003	0.28	--	0.28	0.0000	0.0004	0.02	--	0.02
Tiger Rockfish	--	--	--	--	--	--	--	--	--	--	0.0000	--	0.00	--	0.00
Vermilion Rockfish	--	--	--	--	--	0.0000	0.0000	0.00	--	0.00	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)															
Shelf Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Vermilion Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04	0.04
Minor slope rockfish (North of 40°10' N. lat.)															
Redbanded Rockfish	0.0000	0.0005	0.01	--	0.01	0.0000	0.0005	0.02	--	0.02	--	--	--	--	--
Sharpchin Rockfish	--	--	--	--	--	0.0000	0.0004	0.01	--	0.01	0.0000	--	0.05	--	0.05
Slope Rockfish Unid	--	--	--	0.35	0.35	--	--	--	--	--	--	--	--	--	--
Splitnose Rockfish	0.0000	0.0002	0.12	--	0.12	0.0000	0.0002	0.37	--	0.37	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Other flatfish															
Flatfish Unid	0.0000	0.0014	0.09	--	0.09	0.0001	0.0099	1.92	--	1.92	0.0004	0.0600	1.57	15.56	17.14

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)	
	13	29	384	6,183		46	107	1353	21,538		10	17	179	3,830	
	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate
Weight (mt)															
Flathead Sole	0.0001	0.0009	0.52	--	0.52	0.0000	0.0007	0.52	--	0.52	0.0000	0.0001	0.00	--	0.00
Pacific Sanddab	0.0000	0.0032	0.01	--	0.01	0.0001	0.0006	1.47	--	1.47	0.0006	0.0025	2.33	--	2.33
Rex Sole	0.0007	0.0017	4.44	--	4.44	0.0007	0.0014	14.84	--	14.84	0.0002	0.0007	0.65	2.01	2.66
Rock Sole	0.0000	--	0.00	--	0.00	0.0000	0.0025	0.11	--	0.11	--	--	--	0.48	0.48
Sanddab Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04	0.04
Sand Sole	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Other groundfish															
Big Skate	--	--	--	--	--	--	--	--	--	--	0.0000	--	0.00	--	0.00
Kelp Greenling	--	--	--	--	--	0.0000	--	0.00	--	0.00	--	--	--	--	--
Leopard Shark	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Rockfish Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	0.03
Skate Unid	--	--	--	--	--	--	--	--	--	--	--	--	--	4.02	4.02
Southern Shark	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04	0.04
Spotted Ratfish	0.0000	0.0001	0.00	--	0.00	0.0000	0.0276	0.26	--	0.26	--	--	--	--	--
Pacific Cod	--	--	--	--	--	--	--	--	--	--	0.0000	0.0000	0.00	--	0.00
Pacific Hake	0.0000	0.0003	0.04	--	0.04	0.0005	0.0070	10.41	--	10.41	0.0051	0.8311	19.41	--	19.41
Pacific Ocean Perch (North of 40°10' N. lat.)	0.0000	0.0004	0.07	--	0.07	0.0000	0.0002	0.16	--	0.16	0.0000	--	0.00	--	0.00
Petrale Sole	0.0001	0.0007	0.51	--	0.51	0.0000	0.0011	0.69	--	0.69	0.0000	0.0005	0.14	0.27	0.41
Sablefish (North of 36° N. lat.)	0.0000	0.0003	0.01	8.02	8.02	0.0000	0.0017	0.05	--	0.05	0.0000	--	0.00	--	0.00
Shortbelly Rockfish	--	--	--	--	--	0.0002	0.0025	3.49	--	3.49	--	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	0.17	0.17	0.0000	0.0005	0.08	--	0.08	--	--	--	--	--
Spiny Dogfish	--	--	--	--	--	0.0000	0.0002	0.00	--	0.00	0.0000	0.0004	0.02	0.01	0.03
Starry Flounder	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Yellowtail Rockfish (North of 40°10' N. lat.)	--	--	--	--	--	0.0000	0.0016	0.01	--	0.01	0.0000	0.0000	0.00	--	0.00
Non-groundfish species															
California Halibut	--	--	--	--	--	--	--	--	--	--	--	--	--	8.02	8.02
California Sheephead	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Dungeness Crab	0.0000	--	0.01	--	0.01	--	--	--	--	--	0.0000	--	0.00	0.03	0.03
Non-FMP flatfish															
Hornyhead Turbot	--	--	--	--	--	--	--	--	--	--	--	--	--	3.08	3.08
Slender Sole	0.0034	0.0036	21.15	--	21.15	0.0033	0.0026	71.03	--	71.03	0.0012	0.0022	4.58	--	4.58
Non-FMP skate															
Aleutian Skate	0.0000	--	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--
Sandpaper Skate	--	--	--	--	--	0.0000	0.0007	0.02	--	0.02	0.0000	0.0000	0.00	--	0.00

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 2013. 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.

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)	
	18	57	351	736		3	14	49	283	
	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate
Groundfish species										
Arrowtooth Flounder	0.0308	0.1954	22.68	2.82	25.49	0.0007	0.0064	0.18	0.14	0.33
Bocaccio Rockfish (South of 40°10' N. lat.)	--	--	--	0.06	0.06	--	--	--	--	--
Canary Rockfish	0.0001	0.0325	0.08	0.86	0.94	--	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--
Darkblotched Rockfish	0.0008	0.0145	0.58	2.44	3.02	0.0000	0.0008	0.01	0.03	0.04
Dover Sole	0.0010	0.0043	0.73	1.13	1.86	0.0012	0.0054	0.34	0.14	0.48
English Sole	--	--	--	0.02	0.02	--	--	--	--	--
Lingcod (North of 40°10' N. lat.)	0.0006	0.0151	0.46	4.52	4.55	0.0015	0.0403	0.42	1.27	1.69
7% discard mortality (Longline) [‡]			0.03							
Lingcod (South of 40°10' N. lat.)	--	--	--	0.15	0.15	0.0003	0.0164	0.08	0.09	0.17
7% discard mortality (Longline) [‡]										
Longnose Skate	0.0363	0.0597	26.68	19.10	32.44	0.0004	0.0135	0.12	--	0.06
50% discard mortality (Fixed Gear) [‡]			13.34					0.06		
Longspine Thornyhead (North of 34°27' N. lat.)	0.0005	0.0199	0.35	1.25	1.60	0.0000	0.0007	0.00	0.01	0.01
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	0.06	0.06	--	--	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)										
Bocaccio Rockfish	--	--	--	0.06	0.06	--	--	--	--	--
Chilipepper Rockfish	--	--	--	0.00	0.00	--	--	--	--	--
Cowcod Rockfish	0.0000	0.0109	0.03	--	0.03	--	--	--	--	--
Greenspotted Rockfish	--	--	--	0.00	0.00	--	--	--	--	--
Greenstriped Rockfish	0.0001	0.0405	0.11	0.20	0.31	--	--	--	--	--
Redstripe Rockfish	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	0.0006	0.0094	0.47	0.03	0.50	0.0001	0.0029	0.02	0.00	0.02
Rosy Rockfish	0.0000	0.0039	0.02	--	0.02	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	0.35	0.35	--	--	--	0.01	0.01
Silvergray Rockfish	0.0000	0.0396	0.02	0.35	0.37	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)										
Flag Rockfish	--	--	--	0.02	0.02	--	--	--	--	--
Rosethorn Rockfish	--	--	--	--	--	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	0.01	0.01	--	--	--	--	--
Stripetail Rockfish	--	--	--	0.00	0.00	--	--	--	--	--
Vermilion Rockfish	--	--	--	0.03	0.03	--	--	--	--	--
Yellowtail Rockfish	--	--	--	0.27	0.27	--	--	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)										
Aurora Rockfish	0.0000	0.0021	0.00	0.00	0.01	0.0000	0.0021	0.01	0.00	0.01
Bank Rockfish	--	--	--	0.27	0.27	--	--	--	--	--
Blackgill Rockfish	0.0020	0.0227	1.46	0.68	2.15	0.0007	0.0163	0.21	0.00	0.21
Blackspotted Rockfish	--	--	--	0.19	0.19	--	--	--	--	--
Redbanded Rockfish	0.0052	0.0265	3.81	7.92	11.74	0.0002	0.0040	0.06	0.06	0.12
Rougheye Rockfish	0.0172	0.0884	12.63	32.98	45.62	--	--	--	0.02	0.02
Sharpchin Rockfish	--	--	--	--	--	--	--	--	0.00	0.00
Shortraker Rockfish	0.0014	0.0388	1.04	1.74	2.78	--	--	--	--	--
Shortraker/Rougheye Rockfish	0.0077	0.4338	5.68	--	5.68	--	--	--	--	--
Slope Rockfish Unid	--	--	--	2.49	2.49	--	--	--	0.58	0.58
Splitnose Rockfish	0.0000	0.0088	0.01	0.03	0.05	--	--	--	0.00	0.00
Yellowmouth Rockfish	--	--	--	0.48	0.48	--	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)										
Aurora Rockfish	--	--	--	0.03	0.03	--	--	--	--	--
Blackgill Rockfish	0.0001	0.0186	0.10	1.87	1.98	0.0002	0.0047	0.05	0.49	0.55
Redbanded Rockfish	0.0000	0.0056	0.01	0.00	0.01	0.0000	0.0022	0.00	--	0.00
Slope Rockfish Unid	--	--	--	3.21	3.21	--	--	--	0.04	0.04
Other flatfish										
Rex Sole	0.0000	0.0004	0.00	0.15	0.15	--	--	--	--	--
Sanddab Unid	--	--	--	0.00	0.00	--	--	--	--	--
Other groundfish										
Big Skate	0.0001	0.0447	0.07	--	0.07	--	--	--	--	--

[‡]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)	
	18	57	351	736		3	14	49	283	
	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate
Weight (mt)										
Grenadier Unid	--	--	--	6.96	6.96	--	--	--	--	--
Pacific Flatnose	0.0004	0.0507	0.32	--	0.32	--	--	--	--	--
Pacific Grenadier	0.0369	0.7229	27.17	--	27.17	--	--	--	--	--
Skate Unid	--	--	--	5.67	5.67	--	--	--	--	--
Spotted Ratfish	0.0033	0.0358	2.46	0.00	2.46	0.0001	0.0052	0.03	--	0.03
Pacific Cod	0.0001	0.0581	0.09	1.34	1.43	--	--	--	--	--
Pacific Hake	0.0001	0.0183	0.04	0.00	0.05	--	--	--	--	--
Pacific Ocean Perch (North of 40°10' N. lat.)	0.0000	0.0061	0.03	0.19	0.22	--	--	--	--	--
Petrale Sole	0.0013	0.0650	0.98	0.13	1.11	--	--	--	0.00	0.00
Sablefish (North of 36° N. lat.)	0.2141	0.0948	157.58	706.18	737.69	0.4563	0.4040	129.18	283.13	308.97
20% discard mortality (Fixed Gear) [‡]			31.52					25.84		
Sablefish (South of 36° N. lat.)	--	--	--	29.82	29.82	--	--	--	--	--
20% discard mortality (Fixed Gear) [‡]										
Shortspine Thornyhead (North of 34°27' N. lat.)	0.0045	0.0081	3.34	15.82	19.15	0.0000	0.0010	0.01	0.05	0.05
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	1.67	1.67	--	--	--	--	--
Spiny Dogfish	0.1709	0.8082	125.77	21.15	84.03	0.0009	0.0300	0.26	--	0.26
50% discard mortality (Hook and Line) [‡]			62.88							
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	--	0.00	0.00	--	--	--	0.00	0.00
Widow Rockfish	--	--	--	0.44	0.44	--	--	--	--	--
Yelloweye Rockfish	0.0004	0.2022	0.27	--	0.27	--	--	--	--	--
Yellowtail Rockfish (North of 40°10' N. lat.)	0.0000	0.0325	0.03	0.22	0.25	--	--	--	--	--
Non-groundfish species										
Dungeness Crab	--	--	--	--	--	--	--	--	0.02	0.02
Non-FMP flatfish										
Deepsea Sole	--	--	--	--	--	0.0000	0.0010	0.01	--	0.01
Non-FMP skate										
Aleutian Skate	0.0002	0.1571	0.18	--	0.18	--	--	--	--	--
Black Skate	0.0012	0.0502	0.91	--	0.91	--	--	--	--	--
Sandpaper Skate	0.0006	0.0087	0.41	--	0.41	--	--	--	--	--

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

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 2013. 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). 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.

Limited Entry Non-Endorsed Fixed Gear	Longline - North of 36° N lat.					Longline - South of 36° N lat.					Pot - Coastwide				
	Expansion factor: Fleet landings of sablefish (mt)				Weight (mt)	Expansion factor: Fleet landings of groundfish (mt)				Weight (mt)	Expansion factor: Fleet landings of groundfish (mt)				Weight (mt)
	Observed vessels	Observed trips	Observed sets	Observed sets		Observed vessels	Observed trips	Observed sets	Observed sets		Observed vessels	Observed trips	Observed sets	Observed sets	
	4	12	12	140		18	112	236	620		15	15	15	15	
	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate
Groundfish species															
Arrowtooth Flounder	0.0017	0.0347	0.24	0.13	0.37	--	--	--	--	--	0.01	0.08	0.13	0.00	0.14
Bocaccio Rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	0.80	0.80	--	--	--	--	--
Cabazon (California)	--	--	--	--	--	--	--	--	--	--	0.00	0.01	0.00	--	0.00
Chilipepper Rockfish (South of 40°10' N. lat.)	0.0005	0.0144	0.07	--	0.07	--	--	--	0.16	0.16	--	--	--	--	--
Darkblotched Rockfish	--	--	--	0.54	0.54	--	--	--	--	--	0.0001	0.0027	0.00	--	0.00
Dover Sole	0.0109	0.0648	1.53	0.38	1.90	0.0017	0.0184	1.05	0.38	1.43	0.0010	0.0060	0.01	0.02	0.04
Lingcod (North of 40°10' N. lat.)	--	--	--	0.33	0.33	--	--	--	--	--	0.0011	0.0406	0.02	--	0.02
7% discard mortality (Longline)‡	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lingcod (South of 40°10' N. lat.)	--	--	--	0.06	0.06	--	--	--	0.10	0.10	--	--	--	--	--
7% discard mortality (Longline)‡	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Longnose Skate	0.0966	0.3426	13.51	5.13	11.88	0.0039	0.1334	2.41	2.18	3.39	--	--	--	0.01	0.01
50% discard mortality (Fixed Gear)‡	--	--	6.75	--	--	--	--	1.20	--	--	--	--	--	--	--
Longspine Thornyhead (North of 34°27' N. lat.)	0.0002	0.0034	0.02	0.62	0.64	0.0072	0.1441	4.48	1.43	5.92	--	--	--	--	--
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	0.0038	0.0029	2.38	14.39	16.76	--	--	--	--	--
Minor nearshore rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper Rockfish	--	--	--	--	--	--	--	--	--	--	0.0003	0.0102	0.00	--	0.00
Gopher Rockfish	--	--	--	--	--	--	--	--	--	--	0.0001	0.0034	0.00	--	0.00
Treefish Rockfish	--	--	--	--	--	--	--	--	--	--	0.0002	0.0074	0.00	--	0.00
Minor shelf rockfish (North of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bocaccio Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--
Chilipepper Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--
Greenspotted Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--
Greenstriped Rockfish	--	--	--	0.06	0.06	--	--	--	--	--	0.0001	0.0028	0.00	--	0.00
Redstripe Rockfish	--	--	--	--	--	--	--	--	--	--	0.0000	0.0008	0.00	--	0.00
Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.0000	0.0003	0.00	--	0.00
Rosethorn Rockfish	--	--	--	0.02	0.02	--	--	--	--	--	0.0000	0.0005	0.00	--	0.00
Shelf Rockfish Unid	--	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--
Silvergray Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flag Rockfish	--	--	--	--	--	--	--	--	0.01	0.01	--	--	--	--	--
Greenspotted Rockfish	--	--	--	--	--	--	--	--	0.11	0.11	--	--	--	--	--
Greenstriped Rockfish	--	--	--	--	--	--	--	--	0.01	0.01	--	--	--	--	--
Mexican Rockfish	--	--	--	--	--	--	--	--	0.02	0.02	--	--	--	--	--
Pinkrose Rockfish	--	--	--	--	--	--	--	--	0.04	0.04	--	--	--	--	--
Rosethorn Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rosy Rockfish	--	--	--	--	--	--	--	--	0.16	0.16	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	0.02	0.02	--	--	--	0.04	0.04	--	--	--	--	--
Speckled Rockfish	--	--	--	--	--	--	--	--	0.01	0.01	--	--	--	--	--
Squarespot Rockfish	--	--	--	--	--	--	--	--	0.05	0.05	--	--	--	--	--
Starry Rockfish	--	--	--	--	--	--	--	--	0.22	0.22	--	--	--	--	--
Vermilion Rockfish	--	--	--	0.00	0.00	--	--	--	1.14	1.14	--	--	--	--	--
Yellowtail Rockfish	--	--	--	0.00	0.00	--	--	--	0.07	0.07	--	--	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aurora Rockfish	--	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--
Bank Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--
Blackgill Rockfish	--	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--
Blackspotted Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--
Redbanded Rockfish	--	--	--	1.54	1.54	--	--	--	--	--	0.0004	0.0154	0.01	--	0.01
Rougheye Rockfish	--	--	--	3.66	3.66	--	--	--	--	--	--	--	--	--	--
Sharpchin Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	0.0000	0.0025	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 - Coastwide				
	Observed		Expansion factor:		Fleet landings of sablefish (mt)	Observed		Expansion factor:		Fleet landings of groundfish (mt)	OA Observed		Expansion factor:		Fleet landings of groundfish (mt)
	vessels	trips	sets	trips		sets	(see Table 8b)								
	4	12	12	140		18	112	236	620			15			
Weight (mt)	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate
Shortraker Rockfish	--	--	--	0.05	0.05	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	0.05	0.05	--	--	--	--	--	--	--	--	--	--
Splitnose Rockfish	--	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aurora Rockfish	--	--	--	0.02	0.02	0.0000	0.0051	0.02	0.07	0.08	--	--	--	--	--
Bank Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--
Blackgill Rockfish	0.0002	0.0038	0.03	3.84	3.87	0.0002	0.1004	0.15	6.47	6.62	--	--	--	0.12	0.12
Redbanded Rockfish	--	--	--	0.00	0.00	--	--	--	--	--	0.0008	0.0066	0.01	--	0.01
Slope Rockfish Unid	--	--	--	0.28	0.28	--	--	--	--	--	--	--	--	0.00	0.00
Mixed thornyheads	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortspine/Longspine Thornyhead	--	--	--	0.02	0.02	--	--	--	0.03	0.03	--	--	--	--	--
Other flatfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flatfish Unid	--	--	--	--	--	--	--	--	0.01	0.01	--	--	--	--	--
Pacific Sanddab	--	--	--	--	--	--	--	--	1.71	1.71	--	--	--	--	--
Sanddab Unid	--	--	--	--	--	--	--	--	0.08	0.08	--	--	--	--	--
Other groundfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Big Skate	--	--	--	0.02	0.02	0.0085	0.3103	5.25	--	5.25	--	--	--	--	--
California Skate	--	--	--	--	--	--	--	--	0.01	0.01	--	--	--	--	--
Grenadier Unid	--	--	--	5.58	5.58	--	--	--	24.53	24.53	--	--	--	0.00	0.00
Pacific Flatnose	--	--	--	--	--	0.0075	0.2264	4.63	--	4.63	--	--	--	--	--
Pacific Grenadier	--	--	--	--	--	0.2203	5.6150	136.56	--	136.56	0.0002	0.0073	0.00	--	0.00
Rockfish Unid	--	--	--	--	--	--	--	--	0.01	0.01	--	--	--	--	--
Skate Unid	--	--	--	0.32	0.32	0.0002	0.0290	0.10	0.56	0.66	--	--	--	--	--
Spotted Ratfish	0.0008	0.0100	0.12	--	0.12	0.0002	0.0407	0.11	--	0.11	--	--	--	--	--
Pacific Cod	--	--	--	0.15	0.15	--	--	--	--	--	--	--	--	--	--
Pacific Hake	--	--	--	0.02	0.02	0.0003	0.0160	0.18	--	0.18	--	--	--	--	--
Pacific Ocean Perch (North of 40°10' N. lat.)	--	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--
Petrale Sole	--	--	--	0.12	0.12	--	--	--	0.06	0.06	--	--	--	0.00	0.00
Sablefish (North of 36° N. lat.)	0.0624	0.0898	8.72	139.84	141.58	--	--	--	--	--	0.0953	0.1542	1.47	10.31	10.60
20% discard mortality (Fixed Gear)‡	--	--	1.74	--	--	--	--	--	--	--	--	--	0.29	--	--
Sablefish (South of 36° N. lat.)	--	--	--	--	--	0.0503	0.1532	31.19	445.01	451.25	--	--	--	4.94	4.94
20% discard mortality (Fixed Gear)‡	--	--	--	--	--	--	--	6.24	--	--	--	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	0.0025	0.0112	0.35	7.19	7.55	0.0007	0.0140	0.42	28.12	28.54	--	--	--	0.04	0.04
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	0.0178	0.0158	11.03	91.88	102.91	--	--	--	--	--
Spiny Dogfish	0.2029	2.6088	28.37	23.68	37.87	0.0037	1.0436	2.26	0.02	1.15	0.0006	0.0227	0.01	--	0.01
50% discard mortality (Longline)‡	--	--	14.18	--	--	--	--	1.13	--	--	--	--	--	--	--
Splitnose rockfish (South of 40°10' N. lat.)	--	--	--	0.00	0.00	--	--	--	0.01	0.01	--	--	--	--	--
Starry Flounder	--	--	--	--	--	--	--	--	0.00	0.00	--	--	--	--	--
Widow Rockfish	--	--	--	0.03	0.03	--	--	--	0.11	0.11	--	--	--	0.01	0.01
Yellowtail Rockfish (North of 40°10' N. lat.)	--	--	--	0.05	0.05	--	--	--	--	--	--	--	--	--	--
Non-groundfish species	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
California Halibut	--	--	--	0.02	0.02	--	--	--	0.02	0.02	--	--	--	--	--
California Sheephead	--	--	--	--	--	--	--	--	--	--	0.0082	0.7841	0.13	--	0.13
Dungeness Crab	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Non-FMP flatfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Deepsea Sole	--	--	--	--	--	0.0001	0.0143	0.05	--	0.05	0.0001	0.0041	0.00	--	0.00
Non-FMP skate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black Skate	--	--	--	--	--	0.0068	0.0886	4.20	--	4.20	--	--	--	--	--
Deepsea Skate	--	--	--	--	--	0.0003	0.0717	0.20	--	0.20	--	--	--	--	--
Sandpaper Skate	0.0003	0.0086	0.04	--	0.04	--	--	--	--	--	--	--	--	--	--

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 longline fleet in 2013. Ratios are computed as the observed discard weight divided by the observed weight of retained FMP groundfish (adjusted to fish tickets). Discard ratios were multiplied by fleet landings of FMP groundfish to generate discard estimates; combined with fixed gear sectors in Table 9.

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)	
	10	13	14	87		4	10	16	46	
	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate
Groundfish species										
Arrowtooth Flounder	0.0011	0.0172	0.10	0.12	0.22	--	--	--	--	--
Bocaccio Rockfish (South of 40°10' N. lat.)	--	--	--	0.68	0.68	0.0004	0.0269	0.02	1.35	1.37
Canary Rockfish	--	--	--	0.06	0.06	--	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	0.48	0.48	--	--	--	0.14	0.14
Darkblotched Rockfish	--	--	--	0.37	0.37	--	--	--	--	--
Dover Sole	0.0015	0.0321	0.13	0.23	0.36	0.0013	0.0471	0.06	0.00	0.06
English Sole	--	--	--	0.02	0.02	--	--	--	0.00	0.00
Lingcod (North of 40°10' N. lat.)	--	--	--	13.61	13.61	--	--	--	--	--
7% discard mortality (Longline)‡	--	--	--	--	--	--	--	--	--	--
Lingcod (South of 40°10' N. lat.)	--	--	--	6.97	6.97	--	--	--	2.22	2.22
7% discard mortality (Longline)‡	--	--	--	--	--	--	--	--	--	--
Longnose Skate	0.0062	0.0534	0.53	2.19	2.46	0.0306	1.1138	1.40	1.94	2.63
50% discard mortality (Fixed Gear)‡	--	--	0.27	--	--	--	--	0.70	--	--
Longspine Thornyhead (North of 34°27' N. lat.)	0.0050	0.2138	0.43	0.02	0.45	--	--	--	--	--
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	0.0055	0.0122	0.25	0.88	1.14
Minor nearshore rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--
Copper Rockfish	--	--	--	--	--	0.0018	0.1254	0.08	--	0.08
Minor shelf rockfish (North of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--
Bocaccio Rockfish	--	--	--	0.01	0.01	--	--	--	--	--
Greenstriped Rockfish	--	--	--	0.01	0.01	--	--	--	--	--
Rosethorn Rockfish	--	--	--	0.01	0.01	--	--	--	--	--
Shelf Rockfish Unid	--	--	--	0.01	0.01	--	--	--	--	--
Silvergray Rockfish	--	--	--	0.01	0.01	--	--	--	--	--
Tiger Rockfish	--	--	--	0.00	0.00	--	--	--	--	--
Vermilion Rockfish	--	--	--	0.03	0.03	--	--	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--
Flag Rockfish	--	--	--	--	--	0.0048	0.3314	0.22	0.18	0.41
Greenblotched Rockfish	--	--	--	--	--	--	--	--	0.05	0.05
Greenspotted Rockfish	--	--	--	0.01	0.01	0.0014	0.0985	0.07	1.29	1.36
Greenstriped Rockfish	--	--	--	--	--	--	--	--	0.04	0.04
Honeycomb Rockfish	--	--	--	--	--	--	--	--	0.02	0.02
Mexican Rockfish	--	--	--	--	--	--	--	--	0.01	0.01
Pink Rockfish	--	--	--	--	--	--	--	--	0.00	0.00
Pinkrose Rockfish	--	--	--	--	--	--	--	--	0.00	0.00
Rosethorn Rockfish	--	--	--	--	--	--	--	--	0.00	0.00
Rosy Rockfish	--	--	--	0.00	0.00	--	--	--	0.01	0.01
Shelf Rockfish Unid	--	--	--	0.06	0.06	--	--	--	0.04	0.04
Speckled Rockfish	--	--	--	--	--	0.0007	0.0448	0.03	0.12	0.15
Squarespot Rockfish	--	--	--	--	--	0.0001	0.0090	0.01	0.01	0.01
Starry Rockfish	--	--	--	0.00	0.00	0.0022	0.1523	0.10	0.36	0.46
Vermilion Rockfish	--	--	--	0.88	0.88	0.0262	1.7913	1.19	7.75	8.94
Yellowtail Rockfish	--	--	--	2.00	2.00	--	--	--	0.23	0.23
Minor slope rockfish (North of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--
Aurora Rockfish	0.0002	0.0080	0.02	0.00	0.02	--	--	--	--	--

*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)	
	10	13	14	87		4	10	16	46	
	Discard Ratio	SE	Discard	Landed	Estimate	Discard Ratio	SE	Discard	Landed	Estimate
Weight (mt)										
Bank Rockfish	--	--	--	0.00	0.00	--	--	--	--	--
Blackgill Rockfish	0.0001	0.0042	0.01	0.03	0.04	--	--	--	--	--
Blackspotted Rockfish	--	--	--	0.01	0.01	--	--	--	--	--
Redbanded Rockfish	0.0003	0.0046	0.02	0.48	0.50	--	--	--	--	--
Rougheye Rockfish	--	--	--	0.92	0.92	--	--	--	--	--
Sharpchin Rockfish	--	--	--	0.00	0.00	--	--	--	--	--
Shortraker Rockfish	0.0002	0.0071	0.02	0.03	0.05	--	--	--	--	--
Slope Rockfish Unid	--	--	--	0.03	0.03	--	--	--	--	--
Splitnose Rockfish	--	--	--	0.00	0.00	--	--	--	--	--
Yellowmouth Rockfish	--	--	--	0.00	0.00	--	--	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)										
Aurora Rockfish	--	--	--	--	--	--	--	--	0.00	0.00
Bank Rockfish	--	--	--	--	--	--	--	--	0.04	0.04
Blackgill Rockfish	0.0030	0.0576	0.26	0.59	0.85	--	--	--	2.68	2.68
Pacific Ocean Perch	--	--	--	--	--	--	--	--	0.00	0.00
Redbanded Rockfish	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	0.09	0.09	--	--	--	0.00	0.00
Other flatfish										
Butter Sole	--	--	--	0.00	0.00	--	--	--	--	--
Flatfish Unid	--	--	--	--	--	--	--	--	0.20	0.20
Pacific Sanddab	--	--	--	0.00	0.00	0.0003	0.0094	0.01	0.52	0.53
Rock Sole	--	--	--	0.11	0.11	--	--	--	0.02	0.02
Sanddab Unid	--	--	--	1.96	1.96	--	--	--	0.45	0.45
Sand Sole	--	--	--	--	--	--	--	--	0.00	0.00
Other groundfish										
Grenadier Unid	--	--	--	2.26	2.26	--	--	--	--	--
Leopard Shark	--	--	--	--	--	--	--	--	0.03	0.03
Pacific Flatnose	--	--	--	--	--	0.0197	0.2507	0.90	--	0.90
Pacific Grenadier	0.1171	1.6404	10.14	--	10.14	--	--	--	--	--
Rockfish Unid	--	--	--	--	--	--	--	--	0.53	0.53
Skate Unid	--	--	--	0.68	0.68	--	--	--	0.15	0.15
Southern Shark	--	--	--	--	--	--	--	--	0.07	0.07
Spotted Ratfish	0.0019	0.0268	0.17	--	0.17	--	--	--	--	--
Pacific Cod	--	--	--	0.35	0.35	--	--	--	--	--
Pacific Hake	0.0022	0.0651	0.19	0.00	0.20	--	--	--	--	--
Pacific Ocean Perch (North of 40°10' N. lat.)	--	--	--	0.01	0.01	--	--	--	--	--
Petrale Sole	--	--	--	0.37	0.37	--	--	--	0.01	0.01
Sablefish (North of 36° N. lat.)	0.3809	0.6010	32.97	86.57	93.16	--	--	--	--	--
20% discard mortality (Fixed Gear)‡			6.59							
Sablefish (South of 36° N. lat.)	--	--	--	--	--	0.0144	0.0502	0.66	21.65	21.78
20% discard mortality (Fixed Gear)‡								0.13		
Shortspine Thornyhead (North of 34°27' N. lat.)	0.0377	0.4139	3.26	0.13	3.40	--	--	--	--	--
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	0.0260	0.1146	1.19	2.55	3.73
Spiny Dogfish	0.0070	0.0881	0.60	1.32	1.62	--	--	--	--	--
50% discard mortality (Longline)‡			0.30							
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	--	0.00	0.00	--	--	--	0.02	0.02
Starry Flounder	--	--	--	0.24	0.24	--	--	--	0.01	0.01
Widow Rockfish	--	--	--	0.08	0.08	--	--	--	0.11	0.11
Yellowtail Rockfish (North of 40°10' N. lat.)	--	--	--	0.03	0.03	--	--	--	--	--
Non-groundfish species										
California Halibut	--	--	--	0.18	0.18	--	--	--	0.25	0.25
Non-FMP skate	--	--	--	--	--	--	--	--	--	--
Black Skate	--	--	--	--	--	0.1031	1.4396	4.71	--	4.71

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

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 2013. Ratios are computed as the observed discard weight divided by the observed weight of retained FMP groundfish (adjusted to fish tickets). Discard ratios were multiplied by fleet landings of FMP groundfish to generate discard estimates; combined with fixed gear sectors in Table 9.

Open Access Fixed Gear	Pot - Coastwide			North of 36° N lat.			South of 36° N lat.		
	Observed vessels	Observed trips	Observed sets	Expansion factor: Fleet landings of groundfish (mt)			Expansion factor: Fleet landings of groundfish (mt)		
	17	25	48	142			12		
	Discard Ratio		SE	Discard	Landed	Estimate	Discard	Landed	Estimate
Weight (mt)									
Groundfish species									
Arrowtooth Flounder		0.0087	0.0822	1.23	0.00	1.23	0.10	--	0.10
Cabazon (California)		0.0001	0.0069	0.01	--	0.01	0.00	--	0.00
Darkblotched Rockfish		0.0001	0.0027	0.02	--	0.02	0.00	--	0.00
Dover Sole		0.0010	0.0060	0.13	0.01	0.14	0.01	--	0.01
Lingcod (North of 40°10' N. lat.)		0.0011	0.0406	0.15	0.07	0.22	--	--	--
Lingcod (South of 40°10' N. lat.)		--	--	--	--	--	--	0.09	0.09
Longnose Skate		--	--	--	0.01	0.01	--	--	--
50% discard mortality (Fixed Gear)‡									
Longspine Thornyhead (North of 34°27' N. lat.)		--	--	--	0.08	0.08	--	--	--
Minor nearshore rockfish (South of 40°10' N. lat.)									
Copper Rockfish		0.0003	0.0102	0.04	--	0.04	0.00	--	0.00
Gopher Rockfish		0.0001	0.0034	0.01	--	0.01	0.00	--	0.00
Treefish Rockfish		0.0002	0.0074	0.03	--	0.03	0.00	--	0.00
Minor shelf rockfish (North of 40°10' N. lat.)									
Greenstriped Rockfish		0.0001	0.0028	0.01	--	0.01	--	--	--
Redstripe Rockfish		0.0000	0.0008	0.00	--	0.00	--	--	--
Rockfish Unid		0.0000	0.0003	0.00	--	0.00	--	--	--
Rosethorn Rockfish		0.0000	0.0005	0.00	--	0.00	--	--	--
Minor shelf rockfish (South of 40°10' N. lat.)									
Starry Rockfish		--	--	--	--	--	--	0.00	0.00
Swordspine Rockfish		--	--	--	--	--	--	0.00	0.00
Vermilion Rockfish		--	--	--	0.01	0.01	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)									
Redbanded Rockfish		0.0004	0.0154	0.05	0.01	0.06	--	--	--
Sharpchin Rockfish		0.0000	0.0025	0.01	--	0.01	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)									
Aurora Rockfish		--	--	--	0.00	0.00	--	0.01	0.01
Blackgill Rockfish		--	--	--	0.07	0.07	--	0.31	0.31
Redbanded Rockfish		0.0008	0.0066	0.11	--	0.11	0.01	--	0.01
Slope Rockfish Unid		--	--	--	--	--	--	0.00	0.00
Mixed thornyheads									
Shortspine/Longspine Thornyhead		--	--	--	--	--	--	0.00	0.00
Other flatfish									
Sanddab Unid		--	--	--	0.07	0.07	--	0.01	0.01
Other groundfish									
Grenadier Unid		--	--	--	0.02	0.02	--	--	--
Pacific Grenadier		0.0002	0.0073	0.03	--	0.03	0.00	--	0.00
Skate Unid		--	--	--	82.20	82.20	--	--	--
Pacific Hake		--	--	--	0.00	0.00	--	--	--
Sablefish (North of 36° N. lat.)		0.0953	0.1542	13.48	58.85	61.54	--	--	--
20% discard mortality (Fixed Gear)‡				2.70					
Sablefish (South of 36° N. lat.)		--	--	--	--	--	--	11.62	11.62
20% discard mortality (Fixed Gear)‡									
Shortspine Thornyhead (North of 34°27' N. lat.)		--	--	--	0.11	0.11	--	--	--
Shortspine Thornyhead (South of 34°27' N. lat.)		--	--	--	--	--	--	0.00	0.00
Spiny Dogfish		0.0006	0.0227	0.09	0.01	0.10	0.01	--	0.01
Non-groundfish species									
California Sheephead		0.0082	0.7841	1.16	--	1.16	0.10	--	0.10
Dungeness Crab		--	--	--	0.36	0.36	--	--	--
Non-FMP flatfish									
Deepsea Sole		0.0001	0.0041	0.02	--	0.02	0.00	--	0.00

‡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 2013. 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).

Groundfish species 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	
Groundfish species									
Arrowtooth Flounder	22.92	0.32	3.09	26.33	0.10	1.33	0.12	1.55	27.88
Bocaccio Rockfish (South of 40°10' N. lat.)	--	--	0.87	0.87	0.02	--	2.03	2.05	2.91
Cabazon (California)	--	0.00	--	0.00	--	0.01	--	0.01	0.01
Canary Rockfish	0.08	--	0.86	0.94	--	--	0.06	0.06	1.00
Chilipepper Rockfish (South of 40°10' N. lat.)	0.07	--	0.16	0.22	--	--	0.62	0.62	0.84
Darkblotched Rockfish	0.58	0.01	3.01	3.60	--	0.02	0.37	0.39	3.99
Dover Sole	3.30	0.35	2.06	5.71	0.19	0.15	0.24	0.58	6.29
English Sole	--	--	0.02	0.02	--	--	0.02	0.02	0.04
Lingcod (North of 40°10' N. lat.)	0.46	0.44	6.11	6.58	--	0.15	13.68	13.83	20.41
7% discard mortality (Longline)‡	0.03	--	--	--	--	--	--	--	--
Lingcod (South of 40°10' N. lat.)	--	0.08	0.40	0.48	--	--	9.28	9.28	9.76
7% discard mortality (Longline)‡	--	--	--	--	--	--	--	--	--
Longnose Skate	42.60	0.12	26.43	47.79	1.93	--	4.14	5.11	52.89
50% discard mortality (Fixed Gear)‡	21.30	0.06	--	--	0.97	--	--	--	--
Longspine Thornyhead (North of 34°27' N. lat.)	4.86	0.00	3.31	8.17	0.43	--	0.09	0.52	8.69
Longspine Thornyhead (South of 34°27' N. lat.)	2.38	--	14.44	16.82	0.25	--	0.88	1.14	17.96
Minor nearshore rockfish (South of 40°10' N. lat.)									
Copper Rockfish	--	0.00	--	0.00	0.08	0.04	--	0.13	0.13
Gopher Rockfish	--	0.00	--	0.00	--	0.01	--	0.01	0.02
Treefish Rockfish	--	0.00	--	0.00	--	0.03	--	0.03	0.03
Minor shelf rockfish (North of 40°10' N. lat.)									
Bocaccio Rockfish	--	--	0.06	0.06	--	--	0.01	0.01	0.07
Chilipepper Rockfish	--	--	0.00	0.00	--	--	--	--	0.00
Cowcod Rockfish	0.03	--	--	0.03	--	--	--	--	0.03
Greenspotted Rockfish	--	--	0.00	0.00	--	--	--	--	0.00
Greenstriped Rockfish	0.11	0.00	0.26	0.37	--	0.01	0.01	0.02	0.39
Redstripe Rockfish	--	0.00	--	0.00	--	0.00	--	0.00	0.00
Rockfish Unid	--	0.00	--	0.00	--	0.00	--	0.00	0.00
Rosethorn Rockfish	0.47	0.02	0.05	0.54	--	0.00	0.01	0.01	0.55
Rosy Rockfish	0.02	--	--	0.02	--	--	--	--	0.02
Shelf Rockfish Unid	--	--	0.37	0.37	--	--	0.01	0.01	0.38
Silvergray Rockfish	0.02	--	0.35	0.37	--	--	0.01	0.01	0.37
Tiger Rockfish	--	--	--	--	--	--	0.00	0.00	0.00
Vermilion Rockfish	--	--	--	--	--	--	0.03	0.03	0.03
Minor shelf rockfish (South of 40°10' N. lat.)									
Flag Rockfish	--	--	0.03	0.03	0.22	--	0.18	0.41	0.44
Greenblotched Rockfish	--	--	--	--	--	--	0.05	0.05	0.05
Greenspotted Rockfish	--	--	0.11	0.11	0.07	--	1.31	1.37	1.49
Greenstriped Rockfish	--	--	0.01	0.01	--	--	0.04	0.04	0.04
Honeycomb Rockfish	--	--	--	--	--	--	0.02	0.02	0.02
Mexican Rockfish	--	--	0.02	0.02	--	--	0.01	0.01	0.03
Pink Rockfish	--	--	--	--	--	--	0.00	0.00	0.00
Pinkrose Rockfish	--	--	0.04	0.04	--	--	0.00	0.00	0.05
Rosethorn Rockfish	--	--	--	--	--	--	0.00	0.00	0.00
Rosy Rockfish	--	--	0.16	0.16	--	--	0.01	0.01	0.17
Shelf Rockfish Unid	--	--	0.07	0.07	--	--	0.11	0.11	0.18
Speckled Rockfish	--	--	0.01	0.01	0.03	--	0.12	0.15	0.16
Squarespot Rockfish	--	--	0.05	0.05	0.01	--	0.01	0.01	0.06
Starry Rockfish	--	--	0.22	0.22	0.10	--	0.36	0.46	0.68
Stripetail Rockfish	--	--	0.00	0.00	--	--	--	--	0.00
Swordspine Rockfish	--	--	--	--	--	--	0.00	0.00	0.00
Vermilion Rockfish	--	--	1.18	1.18	1.19	--	8.63	9.83	11.01
Yellowtail Rockfish	--	--	0.34	0.34	--	--	2.23	2.23	2.57
Minor slope rockfish (North of 40°10' N. lat.)									
Aurora Rockfish	0.00	0.01	0.01	0.03	0.02	--	0.00	0.02	0.05
Bank Rockfish	--	--	0.27	0.27	--	--	0.00	0.00	0.28
Blackgill Rockfish	1.46	0.21	0.71	2.38	0.01	--	0.03	0.04	2.42
Blackspotted Rockfish	--	--	0.19	0.19	--	--	0.01	0.01	0.20

‡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	3.81	0.07	9.52	13.40	0.02	0.05	0.49	0.56	13.96
Rougheye Rockfish	12.63	--	36.66	49.30	--	--	0.92	0.92	50.22
Sharpchin Rockfish	--	0.00	0.00	0.00	--	0.01	0.00	0.01	0.01
Shortraker Rockfish	1.04	--	1.79	2.83	0.02	--	0.03	0.05	2.89
Shortraker/Rougheye Rockfish	5.68	--	--	5.68	--	--	--	--	5.68
Slope Rockfish Unid	--	--	3.12	3.12	--	--	0.03	0.03	3.15
Splitnose Rockfish	0.01	--	0.06	0.08	--	--	0.00	0.00	0.08
Yellowmouth Rockfish	--	--	0.48	0.48	--	--	0.00	0.00	0.48
Minor slope rockfish (South of 40°10' N. lat.)									
Aurora Rockfish	0.02	--	0.12	0.13	--	--	0.01	0.01	0.14
Bank Rockfish	--	--	0.00	0.00	--	--	0.04	0.04	0.04
Blackgill Rockfish	0.29	0.05	12.80	13.14	0.26	--	3.65	3.91	17.05
Pacific Ocean Perch	--	--	--	--	--	--	0.00	0.00	0.00
Redbanded Rockfish	0.01	0.02	0.00	0.03	--	0.12	--	0.12	0.15
Slope Rockfish Unid	--	--	3.53	3.53	--	--	0.10	0.10	3.63
Mixed thornyheads									
Shortspine/Longspine Thornyhead	--	--	0.05	0.05	--	--	0.00	0.00	0.05
Other flatfish									
Butter Sole	--	--	--	--	--	--	0.00	0.00	0.00
Flatfish Unid	--	--	0.01	0.01	--	--	0.20	0.20	0.21
Pacific Sanddab	--	--	1.71	1.71	0.01	--	0.52	0.54	2.25
Rex Sole	0.00	--	0.15	0.15	--	--	--	--	0.15
Rock Sole	--	--	--	--	--	--	0.13	0.13	0.13
Sanddab Unid	--	--	0.09	0.09	--	--	2.50	2.50	2.59
Sand Sole	--	--	--	--	--	--	0.00	0.00	0.00
Other groundfish									
Big Skate	5.32	--	0.02	5.34	--	--	--	--	5.34
California Skate	--	--	0.01	0.01	--	--	--	--	0.01
Grenadier Unid	--	--	37.07	37.07	--	--	2.29	2.29	39.36
Leopard Shark	--	--	--	--	--	--	0.03	0.03	0.03
Pacific Flatnose	4.95	--	--	4.95	0.90	--	--	0.90	5.85
Pacific Grenadier	163.73	0.00	--	163.74	10.14	0.03	--	10.17	173.90
Rockfish Unid	--	--	0.01	0.01	--	--	0.53	0.53	0.53
Skate Unid	0.10	--	6.55	6.65	--	--	83.02	83.02	89.67
Soupin Shark	--	--	--	--	--	--	0.07	0.07	0.07
Spotted Ratfish	2.69	0.03	0.00	2.72	0.17	--	--	0.17	2.89
Pacific Cod	0.09	--	1.49	1.58	--	--	0.35	0.35	1.93
Pacific Hake	0.22	--	0.02	0.25	0.19	--	0.00	0.20	0.44
Pacific Ocean Perch (North of 40°10' N. lat.)	0.03	--	0.22	0.25	--	--	0.01	0.01	0.26
Petrale Sole	0.98	--	0.32	1.30	--	--	0.38	0.38	1.68
Sablefish (North of 36° N. lat.)	166.30	130.66	1,139.45	1,198.84	32.97	13.48	145.41	154.70	1,353.55
20% discard mortality (Fixed Gear)‡	33.26	26.13	--	--	6.59	2.70	--	--	--
Sablefish (South of 36° N. lat.)	31.19	--	479.78	486.02	0.66	--	33.27	33.40	519.42
20% discard mortality (Fixed Gear)‡	6.24	--	--	--	0.13	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	4.11	0.01	51.22	55.33	3.26	--	0.24	3.50	58.84
Shortspine Thornyhead (South of 34°27' N. lat.)	11.03	--	93.55	104.58	1.19	--	2.55	3.74	108.31
Spiny Dogfish	156.40	0.26	44.85	123.31	0.60	0.09	1.33	1.72	125.04
50% discard mortality (Longline)‡	78.20	--	--	--	0.30	--	--	--	--
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	0.02	0.02	--	--	0.03	0.03	0.05
Starry Flounder	--	--	0.00	0.00	--	--	0.25	0.25	0.25
Widow Rockfish	--	--	0.59	0.59	--	--	0.19	0.19	0.78
Yelloweye Rockfish	0.27	--	--	0.27	--	--	--	--	0.27
Yellowtail Rockfish (North of 40°10' N. lat.)	0.03	--	0.28	0.30	--	--	0.03	0.03	0.33
Non-groundfish species									
California Halibut	--	--	0.04	0.04	--	--	0.43	0.43	0.47
California Sheephead	--	0.13	--	0.13	--	1.25	--	1.25	1.38
Dungeness Crab	--	--	0.04	0.04	--	--	0.36	0.36	0.40
Non-FMP flatfish									
Deepsea Sole	0.05	0.01	--	0.05	--	0.02	--	0.02	0.07
Non-FMP skate									
Aleutian Skate	0.18	--	--	0.18	--	--	--	--	0.18
Black Skate	5.11	--	--	5.11	4.71	--	--	4.71	9.82
Deepsea Skate	0.20	--	--	0.20	--	--	--	--	0.20
Sandpaper Skate	0.45	--	--	0.45	--	--	--	--	0.45

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

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

Commercial landings of nearshore species (mt) in Oregon and California during 2013, partitioned by depth interval and groundfish management area based on observed catch from 2003 to 2013. 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.

	2003-2013 Total observed landings (mt)	2003-2013 Percentage of observed catch by depth (fathoms)			2013 Fleet landings (mt)	2013 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	136.90	45.9%	52.0%	2.1%	133.84	61.47	69.60	2.78
Cabazon (California)	2.33	39.0%	53.6%	7.5%	0.95	0.37	0.51	0.07
Cabazon (Oregon)	22.00	33.1%	64.7%	2.2%	19.81	6.55	12.83	0.43
Lingcod (North of 40°10' N. lat.)	27.69	31.5%	60.5%	8.1%	48.85	15.37	29.53	3.95
Minor nearshore rockfish (North of 40°10' N. lat.)								
Black and Yellow Rockfish	0.06	35.3%	64.7%	0.0%	0.05	0.02	0.03	--
Blue Rockfish	15.44	22.1%	69.6%	8.3%	7.20	1.59	5.01	0.60
Brown Rockfish	0.28	8.8%	30.6%	60.6%	0.07	0.01	0.02	0.04
China Rockfish	6.15	31.6%	64.1%	4.3%	7.20	2.28	4.61	0.31
Copper Rockfish	1.41	12.6%	70.3%	17.0%	1.50	0.19	1.06	0.26
Gopher Rockfish	0.05	41.3%	57.2%	1.5%	0.05	0.02	0.03	0.00
Grass Rockfish	0.37	98.3%	1.0%	0.7%	0.26	0.26	0.00	0.00
Nearshore Rockfish Unid	2.21	28.2%	65.4%	6.4%	0.00	0.00	0.00	0.00
Olive Rockfish	0.07	4.6%	82.9%	12.5%	0.01	0.00	0.01	0.00
Quillback Rockfish	2.33	8.3%	61.4%	30.3%	2.59	0.22	1.59	0.78
Other groundfish								
Kelp Greenling	14.66	49.0%	49.5%	1.4%	22.58	11.07	11.19	0.32
Other nongroundfish								
Buffalo Sculpin	0.02	94.1%	5.9%	0.0%	--	--	--	--
Greenling Unid	0.08	86.5%	13.5%	0.0%	--	--	--	--
Red Irish Lord Sculpin	0.02	40.6%	59.4%	0.0%	--	--	--	--
SOUTH of 40° 10' N Lat.								
Nearshore Species - Commercial								
Black Rockfish (South of 46°16' N. lat.)	1.67	53.2%	42.9%	4.0%	7.61	4.05	3.26	0.30
Cabazon (California)	5.89	92.9%	5.6%	1.5%	27.86	25.89	1.56	0.42
California Scorpionfish (South of 34°27' N. lat.)	0.37	4.2%	1.6%	94.2%	1.72	0.07	0.03	1.62
Deeper nearshore rockfish								
Blue Rockfish	1.11	41.6%	45.4%	12.9%	3.32	1.38	1.51	0.43
Brown Rockfish	8.77	27.2%	59.2%	13.6%	27.92	7.58	16.53	3.81
Copper Rockfish	0.64	13.2%	50.1%	36.7%	6.14	0.81	3.08	2.25
Nearshore Rockfish Unid	0.38	29.3%	33.2%	37.5%	0.02	0.01	0.01	0.01
Olive Rockfish	0.48	19.5%	56.6%	23.9%	1.21	0.24	0.68	0.29
Quillback Rockfish	0.15	0.0%	42.9%	57.1%	0.18	--	0.08	0.10
Rockfish Unid	0.02	--	--	100.0%	--	--	--	--
Treefish Rockfish	0.21	37.1%	53.3%	9.7%	1.22	0.45	0.65	0.12
Lingcod (South of 40°10' N. lat.)	6.29	39.6%	49.0%	11.4%	25.23	10.00	12.35	2.88
Other groundfish								
California Scorpionfish	--	--	--	--	0.05	--	--	--
Kelp Greenling	0.76	69.1%	27.4%	3.5%	4.74	3.28	1.30	0.17
Other nongroundfish								
California Sheephead	12.28	69.5%	29.7%	0.7%	27.26	18.95	8.11	0.20
Shallow nearshore rockfish								
Black and Yellow Rockfish	1.50	93.5%	3.3%	3.2%	10.55	9.87	0.35	0.34
China Rockfish	0.60	26.1%	50.1%	23.7%	1.20	0.31	0.60	0.28
Gopher Rockfish	4.83	50.1%	38.9%	10.9%	22.99	11.53	8.95	2.51
Grass Rockfish	0.92	94.9%	4.6%	0.5%	12.42	11.78	0.57	0.07
Kelp Rockfish	0.13	61.7%	37.1%	1.2%	0.97	0.60	0.36	0.01
Nearshore Rockfish Unid	0.25	60.4%	30.7%	8.9%	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 2013 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.

Nearshore Fixed Gear Fishery	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		
	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets
	52	103	110	45	144	174	14	16	16	20	41	58	22	68	82	4	13	14
Observed	99			136			10			107			60			16		
Expansion factor:																		
Fleet landings of nearshore species (mt)																		
	Discard Ratio	SE		Discard Ratio	SE		Discard Ratio	SE		Discard Ratio	SE		Discard Ratio	SE		Discard Ratio	SE	
Groundfish species																		
Black Rockfish (South of 46°16' N. lat.)	0.0122	0.0162		0.0151	0.0278		0.0073	0.0832		0.0092	0.0343		0.0054	0.0475		0.0025	0.0666	
Cabazon (California)	0.0009	0.0440		--	--		--	--		0.0128	0.0880		0.0186	0.1444		--	--	
Cabazon (Oregon)	0.0050	0.0159		0.0026	0.0107		0.0005	0.0095		--	--		--	--		--	--	
California Scorpionfish (South of 34°27' N. lat.)	--	--		--	--		--	--		0.0002	0.0405		--	--		--	--	
Canary Rockfish	0.0081	0.0706		0.0158	0.0481		0.0290	0.1311		0.0018	0.0417		0.0916	0.3614		0.3650	2.8000	
Deeper nearshore rockfish																		
Blue Rockfish	--	--		--	--		--	--		0.0047	0.0407		0.0018	0.0123		0.0024	0.0212	
Brown Rockfish	--	--		--	--		--	--		0.0099	0.0275		0.0167	0.0642		0.0006	0.0084	
Calico Rockfish	--	--		--	--		--	--		0.0001	--		0.0003	0.0122		--	--	
Copper Rockfish	--	--		--	--		--	--		0.0013	0.0138		0.0008	0.0043		0.0004	0.0062	
Olive Rockfish	--	--		--	--		--	--		0.0001	0.0101		0.0041	0.0304		0.0047	0.0694	
Treefish Rockfish	--	--		--	--		--	--		0.0039	0.1234		0.0024	0.0825		--	--	
Lingcod (North of 40°10' N. lat.)	0.2723	0.3112		0.2825	0.2628		0.1798	0.3616		--	--		--	--		--	--	
Lingcod (South of 40°10' N. lat.)	--	--		--	--		--	--		0.0484	0.1561		0.1573	0.2547		0.2160	0.5278	
Minor nearshore rockfish (North of 40°10' N. lat.)																		
Blue Rockfish	0.0127	0.0287		0.0239	0.0368		0.0217	0.1293		--	--		--	--		--	--	
China Rockfish	0.0004	0.0040		0.0017	0.0066		0.0002	0.0034		--	--		--	--		--	--	
Copper Rockfish	0.0000	0.0025		--	--		--	--		--	--		--	--		--	--	
Olive Rockfish	0.0003	--		--	--		--	--		--	--		--	--		--	--	
Quillback Rockfish	0.0001	0.0069		0.0004	0.0053		0.0011	0.0091		--	--		--	--		--	--	
Minor shelf rockfish (North of 40°10' N. lat.)																		
Rockfish Unid	0.0014	0.2016		0.0001	0.0520		--	--		--	--		--	--		--	--	
Rosy Rockfish	--	--		--	--		0.0026	0.1314		--	--		--	--		--	--	
Tiger Rockfish	--	--		0.0001	0.0107		--	--		--	--		--	--		--	--	
Vermilion Rockfish	0.0003	0.0118		0.0009	0.0208		--	--		--	--		--	--		--	--	
Minor shelf rockfish (South of 40°10' N. lat.)																		
Greenstriped Rockfish	--	--		--	--		--	--		--	--		--	--		0.0015	0.0229	
Rosy Rockfish	--	--		--	--		--	--		--	--		0.0009	0.0364		0.0013	0.0273	
Squarespot Rockfish	--	--		--	--		--	--		--	--		--	--		0.0013	0.0180	
Starry Rockfish	--	--		--	--		--	--		--	--		0.0001	0.0315		--	--	
Vermilion Rockfish	--	--		--	--		--	--		0.0004	0.0070		0.0001	0.0021		--	--	
Yellowtail Rockfish	--	--		--	--		--	--		--	--		0.0004	0.0111		0.0012	0.0219	
Other flatfish																		
Butter Sole	--	--		0.0000	--		--	--		--	--		--	--		0.00083	--	

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		
	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets	Vessels	Trips	Sets
	52	103	110	45	144	174	14	16	16	20	41	58	22	68	82	4	13	14
Nearshore Fixed Gear Fishery	Observed																	
Expansion factor:	99			136			10			107			60			16		
Fleet landings of nearshore species (mt)	Discard Ratio			SE			Discard Ratio			SE			Discard Ratio			SE		
Pacific Sanddab	--	--	--	--	--	--	--	--	--	0.0000	--	--	0.0004	0.0397	--	0.0002	--	--
Sand Sole	0.0000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other groundfish	--	--	--	--	--	--	--	--	--	--	--	--	0.0026	--	--	--	--	--
Big Skate	--	--	--	--	--	--	--	--	--	--	--	--	0.0052	0.3386	--	--	--	--
California Skate	--	--	--	--	--	--	--	--	--	--	--	--	0.0061	0.0476	--	0.0024	0.1599	--
Kelp Greenling	0.0117	0.0254	--	0.0175	0.0327	--	0.0018	0.0124	--	0.0039	0.0264	--	0.0007	0.0874	--	--	--	--
Leopard Shark	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shallow nearshore rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black and Yellow Rockfish	--	--	--	--	--	--	--	--	--	0.0012	0.0192	--	0.0001	0.0152	--	--	--	--
China Rockfish	--	--	--	--	--	--	--	--	--	0.0024	0.0516	--	0.0047	0.0541	--	0.0678	0.6078	--
Gopher Rockfish	--	--	--	--	--	--	--	--	--	0.0185	0.0562	--	0.0242	0.0715	--	0.0679	0.4799	--
Grass Rockfish	--	--	--	--	--	--	--	--	--	0.0003	0.0329	--	0.0002	0.0971	--	--	--	--
Kelp Rockfish	--	--	--	--	--	--	--	--	--	0.0028	0.0756	--	0.0005	0.0129	--	--	--	--
Spiny Dogfish	--	--	--	--	--	--	--	--	--	0.0094	0.5801	--	0.0205	0.4351	--	--	--	--
Widow Rockfish	--	--	--	0.0001	0.0353	--	0.0011	0.0255	--	--	--	--	--	--	--	0.0004	0.0278	--
Yelloweye Rockfish	0.0077	0.2659	--	0.0206	0.1019	--	0.0804	0.5903	--	--	--	--	0.0030	0.1779	--	0.0018	--	--
Yellowtail Rockfish (North of 40°10' N. lat.)	0.0023	0.0288	--	0.0029	0.0138	--	0.0036	0.1293	--	--	--	--	--	--	--	--	--	--
Non-groundfish species																		
California Halibut	--	--	--	--	--	--	--	--	--	--	--	--	0.0000	--	--	--	--	--
Dungeness Crab	0.0002	0.0445	--	--	--	--	--	--	--	0.0003	--	--	0.0017	0.0714	--	--	--	--
Non-FMP skate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Starry Skate	--	--	--	--	--	--	--	--	--	0.0020	--	--	--	--	--	--	--	--
Other nongroundfish ¹	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Brown Irish Lord Sculpin	--	--	--	--	--	--	--	--	--	0.0001	--	--	0.0010	0.1103	--	0.0093	--	--
Buffalo Sculpin	0.0014	0.1301	--	0.0010	0.0507	--	0.0005	--	--	0.0024	0.0838	--	0.0056	0.1486	--	--	--	--
California Sheephead	--	--	--	--	--	--	--	--	--	0.2562	1.6028	--	0.4005	7.6961	--	--	--	--
Red Irish Lord Sculpin	0.0011	0.0097	--	0.0015	0.0305	--	0.0020	0.0352	--	--	--	--	0.0002	0.0431	--	--	--	--

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 2012 commercial nearshore fixed gear fishery north of 40° 10' N latitude.

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												
Arrowtooth Flounder	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Black Rockfish (South of 46°16' N. lat.)	1.21	2.06	0.07	23%	42%	90%	0.28	0.86	0.06	1.21	133.84	135.05
Cabezon (California)	0.09	--	--	7%	--	--	0.01	--	--	0.01	0.95	0.95
Cabezon (Oregon)	0.50	0.36	0.00	7%	7%	7%	0.03	0.02	0.00	0.06	19.81	19.87
Canary Rockfish	0.81	2.15	0.28	32%	54%	100%	0.26	1.16	0.28	1.70	0.00	1.70
Darkblotched Rockfish	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Lingcod (North of 40°10' N. lat.)	27.07	38.42	1.72	7%	7%	7%	1.89	2.69	0.12	4.70	48.85	53.55
Longnose Skate	--	--	--	--	--	--	--	--	--	--	0.06	0.06
Minor nearshore rockfish (North of 40°10' N. lat.)												
Black and Yellow Rockfish	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Blue Rockfish	1.26	3.25	0.21	29%	49%	100%	0.36	1.59	0.21	2.17	7.20	9.37
Brown Rockfish	--	--	--	--	--	--	--	--	--	--	0.07	0.07
China Rockfish	0.04	0.22	0.00	24%	48%	100%	0.01	0.11	0.00	0.12	7.20	7.32
Copper Rockfish	0.00	--	--	24%	--	--	0.00	--	--	0.00	1.50	1.50
Gopher Rockfish	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Grass Rockfish	--	--	--	--	--	--	--	--	--	--	0.26	0.26
Nearshore Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Olive Rockfish	0.03	--	--	24%	--	--	0.01	--	--	0.01	0.01	0.01
Quillback Rockfish	0.01	0.05	0.01	24%	48%	100%	0.00	0.03	0.01	0.04	2.59	2.63
Minor shelf rockfish (North of 40°10' N. lat.)												
Bocaccio Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rockfish Unid	0.14	0.02	--	100%	100%	--	0.14	0.02	--	0.16	--	0.16
Rosy Rockfish	--	--	0.03	--	--	100%	--	--	0.03	0.03	0.00	0.03
Shelf Rockfish Unid	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Tiger Rockfish	--	0.01	--	--	50%	--	--	0.01	--	0.01	0.63	0.63
Vermilion Rockfish	0.03	0.12	--	10%	55%	--	0.00	0.07	--	0.07	3.79	3.86
Minor slope rockfish (North of 40°10' N. lat.)												
Aurora Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Bank Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Blackgill Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Redbanded Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Rougheye Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Splitnose Rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Other flatfish												
Butter Sole	--	0.00	--	--	7%	--	--	0.00	--	0.00	--	0.00
Sand Sole	0.00	--	--	7%	--	--	0.00	--	--	0.00	--	0.00
Other groundfish												
Kelp Greenling	1.16	2.38	0.02	7%	7%	7%	0.08	0.17	0.00	0.25	22.58	22.83
Sablefish (North of 36° N. lat.)	--	--	--	--	--	--	--	--	--	--	0.55	0.55
Spiny Dogfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Starry Flounder	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Widow Rockfish	--	0.01	0.01	--	54%	100%	--	0.00	0.01	0.02	0.06	0.08
Yelloweye Rockfish	0.77	2.80	0.77	32%	56%	100%	0.25	1.57	0.77	2.58	--	2.58
Yellowtail Rockfish (North of 40°10' N. lat.)	0.23	0.39	0.03	100%	100%	100%	0.23	0.39	0.03	0.66	1.10	1.76
Non-groundfish species												
Dungeness Crab	0.02	--	--	100%	--	--	0.02	--	--	0.02	5.24	5.26
Other nongroundfish ¹												
Buffalo Sculpin	0.14	0.13	0.00	100%	100%	100%	0.14	0.13	0.00	0.28	--	0.28
Red Irish Lord Sculpin	0.11	0.20	0.02	100%	100%	100%	0.11	0.20	0.02	0.34	--	0.34

‡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 2012 commercial nearshore fixed gear fishery south of 40° 10' N latitude. The California state-permit framework is also represented.

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												
Black Rockfish (South of 46°16' N. lat.)	0.98	0.32	0.04	23%	42%	90%	0.23	0.14	0.04	0.40	7.61	8.01
Bocaccio Rockfish (South of 40°10' N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	0.96	0.96
Cabazon (California)	1.37	1.11	--	7%	7%	0%	0.10	0.08	--	0.17	27.86	28.03
California Scorpionfish (South of 34°27' N. lat.)	0.02	--	--	7%	0%	0%	0.00	--	--	0.00	1.72	1.72
Canary Rockfish	0.19	5.50	5.77	32%	54%	100%	0.06	2.97	5.77	8.80	--	8.80
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	0.11	0.11
Deeper nearshore rockfish												
Blue Rockfish	0.51	0.11	0.04	29%	49%	100%	0.15	0.05	0.04	0.24	3.32	3.56
Brown Rockfish	1.05	1.00	0.01	23%	48%	100%	0.24	0.48	0.01	0.73	27.92	28.65
Calico Rockfish	0.01	0.02	--	23%	48%	0%	0.00	0.01	--	0.01	--	0.01
Copper Rockfish	0.14	0.05	0.01	23%	48%	100%	0.03	0.02	0.01	0.06	6.14	6.20
Nearshore Rockfish Unid	--	--	--	0%	0%	0%	--	--	--	--	0.02	0.02
Olive Rockfish	0.02	0.25	0.07	23%	48%	100%	0.00	0.12	0.07	0.20	1.21	1.40
Quillback Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.18	0.18
Treefish Rockfish	0.42	0.15	--	23%	48%	0%	0.10	0.07	--	0.17	1.22	1.39
Dover Sole	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Lingcod (South of 40°10' N. lat.)	5.17	9.43	3.42	7%	7%	7%	0.36	0.66	0.24	1.26	25.23	26.49
Longnose Skate	--	--	--	0%	0%	0%	--	--	--	--	0.07	0.07
Longspine Thornyhead (North of 34°27' N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	0.11	0.11
Minor shelf rockfish (South of 40°10' N. lat.)												
Flag Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.05	0.05
Greenblotched Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.01	0.01
Greenspotted Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.10	0.10
Greenstriped Rockfish	--	--	0.02	0%	0%	100%	--	--	0.02	0.02	--	0.02
Honeycomb Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Rosethorn Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.03	0.03
Rosy Rockfish	--	0.06	0.02	0%	100%	100%	--	0.06	0.02	0.08	0.08	0.16
Shelf Rockfish Unid	--	--	--	0%	0%	0%	--	--	--	--	1.69	1.69
Speckled Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.07	0.07
Squarespot Rockfish	--	--	0.02	0%	0%	100%	--	--	0.02	0.02	0.00	0.02
Starry Rockfish	--	0.01	--	0%	100%	0%	--	0.01	--	0.01	0.13	0.14
Swordspine Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Vermilion Rockfish	0.04	0.01	--	10%	55%	0%	0.00	0.00	--	0.01	10.28	10.29
Yellowtail Rockfish	--	0.02	0.02	0%	30%	75%	--	0.01	0.01	0.02	0.69	0.71
Minor slope rockfish (South of 40°10' N. lat.)												
Aurora Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Bank Rockfish	--	--	--	0%	0%	0%	--	--	--	--	0.14	0.14
Blackgill Rockfish	--	--	--	0%	0%	0%	--	--	--	--	1.01	1.01
Slope Rockfish Unid	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Other flatfish												
Butter Sole	--	--	0.01	0%	0%	7%	--	--	0.00	0.00	--	0.00
Flatfish Unid	--	--	--	0%	0%	0%	--	--	--	--	0.02	0.02
Pacific Sanddab	0.00	0.02	0.00	7%	7%	7%	0.00	0.00	0.00	0.00	2.09	2.09
Rex Sole	--	--	--	0%	0%	0%	--	--	--	--	0.07	0.07
Rock Sole	--	--	--	0%	0%	0%	--	--	--	--	0.36	0.36
Sanddab Unid	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Sand Sole	--	--	--	0%	0%	0%	--	--	--	--	0.04	0.04
Other groundfish												
Big Skate	--	0.16	--	0%	7%	0%	--	0.01	--	0.01	0.04	0.05
California Scorpionfish	--	--	--	0%	0%	0%	--	--	--	--	0.05	0.05
California Skate	--	0.31	--	0%	7%	0%	--	0.02	--	0.02	0.00	0.02
Grenadier Unid	--	--	--	0%	0%	0%	--	--	--	--	0.09	0.09
Kelp Greenling	0.42	0.37	0.04	7%	7%	7%	0.03	0.03	0.00	0.06	4.74	4.80
Leopard Shark	--	0.04	--	0%	7%	0%	--	0.00	--	0.00	0.45	0.45

[‡]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			
Rockfish Unid	--	--	--	0%	0%	0%	--	--	--	--	0.47	0.47
Skate Unid	--	--	--	0%	0%	0%	--	--	--	--	0.02	0.02
Soupin Shark	--	--	--	0%	0%	0%	--	--	--	--	0.78	0.78
Sablefish (North of 36° N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	0.35	0.35
Sablefish (South of 36° N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	5.32	5.32
Shallow nearshore rockfish												
Black and Yellow Rockfish	0.12	0.01	--	25%	49%	0%	0.03	0.00	--	0.04	10.55	10.59
China Rockfish	0.26	0.28	1.07	25%	49%	100%	0.06	0.14	1.07	1.28	1.20	2.47
Gopher Rockfish	1.97	1.45	1.07	25%	49%	100%	0.49	0.71	1.07	2.28	22.99	25.27
Grass Rockfish	0.03	0.01	--	25%	49%	0%	0.01	0.01	--	0.01	12.42	12.43
Kelp Rockfish	0.30	0.03	--	25%	49%	0%	0.08	0.02	--	0.09	0.97	1.06
Nearshore Rockfish Unid	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	0.04	0.04
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	0.82	0.82
Spiny Dogfish	1.00	1.23	--	50%	50%	0%	0.50	0.61	--	1.11	0.05	1.17
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	--	0%	0%	0%	--	--	--	--	0.00	0.00
Starry Flounder	--	--	--	0%	0%	0%	--	--	--	--	0.10	0.10
Widow Rockfish	--	--	0.01	0%	0%	100%	--	--	0.01	0.01	0.04	0.05
Yelloweye Rockfish	--	0.18	0.03	0%	56%	100%	--	0.10	0.03	0.13	0.00	0.13
Non-groundfish species												
California Halibut	--	0.00	--	0%	7%	0%	--	0.00	--	0.00	0.81	0.81
Dungeness Crab	0.03	0.10	--	100%	100%	0%	0.03	0.10	--	0.13	0.89	1.02
Non-FMP skate												
Starry Skate	0.22	--	--	7%	0%	0%	0.02	--	--	0.02	--	0.02
Other nongroundfish ¹												
Brown Irish Lord Sculpin	0.01	0.06	0.15	100%	100%	100%	0.01	0.06	0.15	0.22	--	0.22
Buffalo Sculpin	0.26	0.34	--	100%	100%	0%	0.26	0.34	--	0.60	--	0.60
California Sheephead	27.37	24.02	--	100%	100%	0%	27.37	24.02	--	51.39	27.26	78.65
Red Irish Lord Sculpin	--	0.01	--	0%	100%	0%	--	0.01	--	0.01	--	0.01

[‡]Discard mortality rates provided by the Groundfish Management Team (GMT). Each 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 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 2013 fisheries/groundfish sectors observed by the WCGOP.

Groundfish species	Weight (mt)	Open Access CA halibut			Pink shrimp			Non-nearshore fixed gear				Nearshore fixed gear		
		Discard	Landed	Estimate	Discard	Landed	Estimate	Longline Discard	Pot Discard	Landed	Estimate	Discard	Landed	Estimate
Arrowtooth Flounder		--	0.01	0.01	18.77	--	18.77	23.01	1.65	3.22	27.88	--	0.01	0.01
Black Rockfish (South of 46°16' N. lat.)		--	--	--	--	--	--	--	--	--	--	1.60	141.46	143.06
Bocaccio Rockfish (South of 40°10' N. lat.)		--	--	--	--	0.00	0.00	0.02	--	2.89	2.91	--	0.96	0.96
Cabazon (California)		--	0.01	0.01	--	0.01	0.01	--	0.01	--	0.01	0.18	28.81	28.99
Cabazon (Oregon)		--	--	--	--	--	--	--	--	--	--	0.06	19.81	19.87
California Scorpionfish (South of 34°27' N. lat.)		--	0.00	0.00	--	0.80	0.80	--	--	--	--	0.00	1.72	1.72
Canary Rockfish		--	0.00	0.00	0.11	--	0.11	0.08	--	0.92	1.00	10.50	0.00	10.50
Chilipepper Rockfish (South of 40°10' N. lat.)		--	0.00	0.00	--	--	--	0.07	--	0.77	0.84	--	0.11	0.11
Darkblotched Rockfish		--	--	--	3.67	--	3.67	0.58	0.03	3.38	3.99	--	0.01	0.01
Dover Sole		0.00	--	0.00	2.62	0.25	2.88	3.49	0.50	2.30	6.29	--	0.00	0.00
English Sole		0.42	0.14	0.56	0.02	1.10	1.13	--	--	0.04	0.04	--	--	--
Lingcod (North of 40°10' N. lat.)		--	--	--	0.11	0.17	0.28	0.46	0.59	19.79	20.41	4.70	48.85	53.55
50% discard mortality (Trawl)‡														
7% discard mortality (Longline)‡								0.03						
Lingcod (South of 40°10' N. lat.)		0.01	0.02	0.03	--	0.01	0.01	--	0.08	9.67	9.76	1.26	25.23	26.49
50% discard mortality (Trawl)‡		0.01												
7% discard mortality (Longline)‡														
Longnose Skate		0.42	--	0.21	0.28	0.88	1.16	44.53	0.12	30.57	52.89	--	0.13	0.13
50% discard mortality (Trawl)‡		0.21												
50% discard mortality (Fixed Gear)‡								22.26	0.06					
Longspine Thornyhead (North of 34°27' N. lat.)		--	--	--	--	--	--	5.29	0.00	3.40	8.69	--	0.00	0.00
Longspine Thornyhead (South of 34°27' N. lat.)		--	--	--	--	--	--	2.63	--	15.33	17.96	--	0.11	0.11
Minor nearshore rockfish (North of 40°10' N. lat.)														
Black and Yellow Rockfish		--	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Blue Rockfish		--	--	--	--	--	--	--	--	--	--	2.17	7.20	9.37
Brown Rockfish		--	--	--	--	--	--	--	--	--	--	--	0.07	0.07
China Rockfish		--	--	--	--	--	--	--	--	--	--	0.12	7.20	7.32
Copper Rockfish		--	--	--	--	--	--	--	--	--	--	0.00	1.50	1.50
Gopher Rockfish		--	--	--	0.00	--	0.00	--	--	--	--	--	0.05	0.05
Grass Rockfish		--	--	--	--	--	--	--	--	--	--	--	0.26	0.26
Nearshore Rockfish Unid		--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Olive Rockfish		--	--	--	--	--	--	--	--	--	--	0.01	0.01	0.01
Quillback Rockfish		--	--	--	--	--	--	--	--	--	--	0.04	2.59	2.63
Minor nearshore rockfish (South of 40°10' N. lat.)														
Black and Yellow Rockfish		--	--	--	--	--	--	--	--	--	--	0.04	10.55	10.59
Blue Rockfish		--	--	--	--	--	--	--	--	--	--	0.24	3.32	3.56
Brown Rockfish		0.03	0.00	0.03	--	--	--	--	--	--	--	0.73	27.92	28.65
Calico Rockfish		--	--	--	--	--	--	--	--	--	--	0.01	--	0.01
China Rockfish		--	--	--	--	--	--	--	--	--	--	1.28	1.20	2.47
Copper Rockfish		--	0.01	0.01	--	0.09	0.09	0.08	0.05	--	0.13	0.06	6.14	6.20
Gopher Rockfish		--	--	--	--	--	--	--	0.02	--	0.02	2.28	22.99	25.27
Grass Rockfish		--	--	--	--	--	--	--	--	--	--	0.01	12.42	12.43
Kelp Rockfish		--	--	--	--	--	--	--	--	--	--	0.09	0.97	1.06
Nearshore Rockfish Unid		--	0.00	0.00	--	0.02	0.02	--	--	--	--	--	0.00	0.00
Nearshore Rockfish Unid		--	0.00	0.00	--	0.02	0.02	--	--	--	--	--	0.02	0.02
Olive Rockfish		--	--	--	--	--	--	--	--	--	--	0.20	1.21	1.40
Quillback Rockfish		--	--	--	--	--	--	--	--	--	--	--	0.18	0.18
Treefish Rockfish		--	--	--	--	--	--	--	0.03	--	0.03	0.17	1.22	1.39
Minor shelf rockfish (North of 40°10' N. lat.)														
Bocaccio Rockfish		--	--	--	--	--	--	--	--	0.07	0.07	--	0.00	0.00
Chilipepper Rockfish		--	--	--	0.23	--	0.23	--	--	0.00	0.00	--	--	--
Cowcod Rockfish		--	--	--	--	--	--	0.03	--	--	0.03	--	--	--
Greenspotted Rockfish		--	--	--	--	--	--	--	--	0.00	0.00	--	--	--
Greenstriped Rockfish		--	--	--	0.44	--	0.44	0.11	0.01	0.27	0.39	--	--	--
Halfbanded Rockfish		--	--	--	0.00	--	0.00	--	--	--	--	--	--	--
Harlequin Rockfish		--	--	--	0.00	--	0.00	--	--	--	--	--	--	--
Redstripe Rockfish		--	--	--	--	--	--	--	0.00	--	0.00	--	--	--
Rockfish Unid		--	--	--	0.47	--	0.47	--	0.00	--	0.00	0.16	--	0.16
Rosethorn Rockfish		--	--	--	--	--	--	0.47	0.02	0.06	0.55	--	--	--
Rosy Rockfish		--	--	--	--	--	--	0.02	--	--	0.02	0.03	0.00	0.03
Shelf Rockfish Unid		--	--	--	--	--	--	--	--	0.38	0.38	--	0.01	0.01
Silvergray Rockfish		--	--	--	--	--	--	0.02	--	0.35	0.37	--	--	--
Stripetail Rockfish		--	--	--	0.30	--	0.30	--	--	--	--	--	--	--

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

Table 13 (continued).

Weight (mt)	Open Access CA halibut			Pink shrimp			Non-nearshore fixed gear				Nearshore fixed gear		
	Discard	Landed	Estimate	Discard	Landed	Estimate	Longline Discard	Pot Discard	Landed	Estimate	Discard	Landed	Estimate
Tiger Rockfish	--	--	--	0.00	--	0.00	--	--	0.00	0.00	0.01	0.63	0.63
Vermilion Rockfish	--	--	--	0.00	--	0.00	--	--	0.03	0.03	0.07	3.79	3.86
Minor shelf rockfish (South of 40°10' N. lat.)													
Flag Rockfish	--	0.00	0.00	--	--	--	0.22	--	0.22	0.44	--	0.05	0.05
Greenblotched Rockfish	--	--	--	--	--	--	--	--	0.05	0.05	--	0.01	0.01
Greenspotted Rockfish	--	--	--	--	--	--	0.07	--	1.42	1.49	--	0.10	0.10
Greenstriped Rockfish	--	--	--	--	--	--	--	--	0.04	0.04	0.02	--	0.02
Honeycomb Rockfish	--	--	--	--	--	--	--	--	0.02	0.02	--	0.00	0.00
Mexican Rockfish	--	--	--	--	--	--	--	--	0.03	0.03	--	--	--
Pink Rockfish	--	--	--	--	--	--	--	--	0.00	0.00	--	--	--
Pinkrose Rockfish	--	--	--	--	--	--	--	--	0.05	0.05	--	--	--
Rosethorn Rockfish	--	--	--	--	--	--	--	--	0.00	0.00	--	0.03	0.03
Rosy Rockfish	--	--	--	--	--	--	--	--	0.17	0.17	0.08	0.08	0.16
Shelf Rockfish Unid	--	--	--	--	0.02	0.02	--	--	0.18	0.18	--	1.69	1.69
Speckled Rockfish	--	--	--	--	--	--	0.03	--	0.13	0.16	--	0.07	0.07
Squarespot Rockfish	--	--	--	--	--	--	0.01	--	0.06	0.06	0.02	0.00	0.02
Starry Rockfish	--	0.00	0.00	--	--	--	0.10	--	0.58	0.68	0.01	0.13	0.14
Stripetail Rockfish	--	--	--	--	--	--	--	--	0.00	0.00	--	--	--
Swordspine Rockfish	--	--	--	--	--	--	--	--	0.00	0.00	--	0.00	0.00
Vermilion Rockfish	--	0.00	0.00	--	0.04	0.04	1.19	--	9.81	11.01	0.01	10.28	10.29
Yellowtail Rockfish	--	--	--	--	--	--	--	--	2.57	2.57	0.02	0.69	0.71
Minor slope rockfish (North of 40°10' N. lat.)													
Aurora Rockfish	--	--	--	--	--	--	0.02	0.01	0.01	0.05	--	0.00	0.00
Bank Rockfish	--	--	--	--	--	--	--	--	0.28	0.28	--	0.00	0.00
Blackgill Rockfish	--	--	--	--	--	--	1.47	0.21	0.74	2.42	--	0.00	0.00
Blackspotted Rockfish	--	--	--	--	--	--	--	--	0.20	0.20	--	--	--
Redbanded Rockfish	--	--	--	0.03	--	0.03	3.84	0.12	10.00	13.96	--	0.00	0.00
Rougheye Rockfish	--	--	--	--	--	--	12.63	--	37.59	50.22	--	0.00	0.00
Sharpchin Rockfish	--	--	--	0.06	--	0.06	--	0.01	0.00	0.01	--	--	--
Shortraker Rockfish	--	--	--	--	--	--	1.06	--	1.82	2.89	--	--	--
Shortraker/Rougheye Rockfish	--	--	--	--	--	--	5.68	--	--	5.68	--	--	--
Slope Rockfish Unid	--	--	--	--	0.35	0.35	--	--	3.15	3.15	--	--	--
Splitnose Rockfish	--	--	--	0.49	--	0.49	0.01	--	0.06	0.08	--	0.00	0.00
Yellowmouth Rockfish	--	--	--	--	--	--	--	--	0.48	0.48	--	--	--
Minor slope rockfish (South of 40°10' N. lat.)													
Aurora Rockfish	--	--	--	--	--	--	0.02	--	0.13	0.14	--	0.00	0.00
Bank Rockfish	--	--	--	--	--	--	--	--	0.04	0.04	--	0.14	0.14
Blackgill Rockfish	--	--	--	--	--	--	0.55	0.05	16.45	17.05	--	1.01	1.01
Pacific Ocean Perch	--	--	--	--	--	--	--	--	0.00	0.00	--	--	--
Redbanded Rockfish	--	--	--	--	--	--	0.01	0.14	0.00	0.15	--	--	--
Rougheye Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	--	--	--	--	0.02	0.02	--	--	3.63	3.63	--	0.00	0.00
Mixed thornyheads													
Shortspine/Longspine Thornyhead	--	--	--	--	--	--	--	--	0.05	0.05	--	--	--
Other flatfish													
Butter Sole	--	0.04	0.04	--	--	--	--	--	0.00	0.00	0.00	--	0.00
Curfin Turbot	1.12	0.01	1.14	--	--	--	--	--	--	--	--	--	--
Flatfish Unid	--	0.15	0.15	3.58	15.56	19.15	--	--	0.21	0.21	--	0.02	0.02
Flathead Sole	--	--	--	1.04	--	1.04	--	--	--	--	--	--	--
Pacific Sanddab	1.06	0.07	1.13	3.82	--	3.82	0.01	--	2.24	2.25	0.00	2.09	2.09
Rex Sole	--	--	--	19.93	2.01	21.94	0.00	--	0.15	0.15	--	0.07	0.07
Rock Sole	0.01	0.13	0.14	0.11	0.48	0.59	--	--	0.13	0.13	--	0.36	0.36
Sanddab Unid	--	0.08	0.08	--	0.04	0.04	--	--	2.59	2.59	--	0.00	0.00
Sand Sole	0.45	7.79	8.24	--	0.02	0.02	--	--	0.00	0.00	0.00	0.04	0.04
Other groundfish													
Big Skate	42.52	--	42.52	0.00	--	0.00	5.32	--	0.02	5.34	0.01	0.04	0.05
California Scorpionfish	--	--	--	--	--	--	--	--	--	--	--	0.05	0.05
California Skate	5.50	--	5.50	--	--	--	--	--	0.01	0.01	0.02	0.00	0.02
Grenadier Unid	--	--	--	--	--	--	--	--	39.36	39.36	--	0.09	0.09
Kelp Greenling	0.00	--	0.00	0.00	--	0.00	--	--	--	--	0.31	27.33	27.63
Leopard Shark	1.28	0.29	1.57	--	0.01	0.01	--	--	0.03	0.03	0.00	0.45	0.45
Pacific Flatnose	--	--	--	--	--	--	5.85	--	--	5.85	--	--	--
Pacific Grenadier	--	--	--	--	--	--	173.87	0.03	--	173.90	--	--	--
Rockfish Unid	--	--	--	--	0.03	0.03	--	--	0.53	0.53	--	0.47	0.47
Skate Unid	--	0.34	0.34	--	4.02	4.02	0.10	--	89.57	89.67	--	0.02	0.02
Soupin Shark	--	0.09	0.09	--	0.04	0.04	--	--	0.07	0.07	--	0.78	0.78
Spotted Ratfish	--	--	--	0.27	--	0.27	2.85	0.03	0.00	2.89	--	--	--

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

Table 13 (continued).

Weight (mt)	Open Access CA halibut			Pink shrimp			Non-nearshore fixed gear				Nearshore fixed gear		
	Discard	Landed	Estimate	Discard	Landed	Estimate	Longline Discard	Pot Discard	Landed	Estimate	Discard	Landed	Estimate
Pacific Cod	0.00	--	0.00	0.00	--	0.00	0.09	--	1.84	1.93	--	--	--
Pacific Hake	0.00	--	0.00	29.86	--	29.86	0.42	--	0.03	0.44	--	--	--
Pacific Ocean Perch (North of 40°10' N. lat.)	--	--	--	0.24	--	0.24	0.03	--	0.23	0.26	--	--	--
Petrale Sole	--	0.41	0.41	1.33	0.27	1.61	0.98	--	0.70	1.68	--	--	--
Sablefish (North of 36° N. lat.)	0.00	--	0.00	0.06	8.02	8.08	199.27	144.14	1,284.87	1,353.55	--	0.90	0.90
50% discard mortality (Trawl)‡	0.00	--	--	--	--	--	--	--	--	--	--	--	--
20% discard mortality (Fixed Gear)‡	--	--	--	--	--	--	39.85	28.83	--	--	--	--	--
Sablefish (South of 36° N. lat.)	--	--	--	--	--	--	31.85	--	513.05	519.42	--	5.32	5.32
50% discard mortality (Trawl)‡	--	--	--	--	--	--	--	--	--	--	--	--	--
20% discard mortality (Fixed Gear)‡	--	--	--	--	--	--	6.37	--	--	--	--	--	--
Shortbelly Rockfish	--	--	--	3.49	--	3.49	--	--	--	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	--	0.08	0.17	0.25	7.37	0.01	51.46	58.84	--	0.04	0.04
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	12.22	--	96.10	108.31	--	0.82	0.82
Spiny Dogfish	5.81	--	5.81	0.02	0.01	0.03	157.00	0.36	46.18	125.04	1.11	0.06	1.17
50% discard mortality (Longline)‡	--	--	--	--	--	--	78.50	--	--	--	--	--	--
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	0.05	0.05	--	0.00	0.00
Starry Flounder	0.76	2.66	3.42	--	0.00	0.00	--	--	0.25	0.25	--	0.10	0.10
Widow Rockfish	--	--	--	--	--	--	--	--	0.78	0.78	0.02	0.11	0.13
Yelloweye Rockfish	--	--	--	--	--	--	0.27	--	--	0.27	2.71	0.00	2.71
Yellowtail Rockfish	--	--	--	0.01	--	0.01	0.03	--	0.30	0.33	0.66	1.10	1.76
Non-groundfish species													
California Halibut	0.82	68.82	69.64	--	8.02	8.02	--	--	0.47	0.47	0.00	0.81	0.81
Dungeness Crab	181.90	--	181.90	0.01	0.03	0.04	--	--	0.40	0.40	0.15	6.13	6.29
Non-FMP flatfish	--	--	--	--	--	--	--	--	--	--	--	--	--
Deepsea Sole	--	--	--	--	--	--	0.05	0.02	--	0.07	--	--	--
Diamond Turbot	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--
Hornyhead Turbot	0.01	0.30	0.32	--	3.08	3.08	--	--	--	--	--	--	--
Slender Sole	--	--	--	96.76	--	96.76	--	--	--	--	--	--	--
Non-FMP skate	--	--	--	--	--	--	--	--	--	--	--	--	--
Aleutian Skate	--	--	--	0.00	--	0.00	0.18	--	--	0.18	--	--	--
Black Skate	--	--	--	--	--	--	9.82	--	--	9.82	--	--	--
Deepsea Skate	--	--	--	--	--	--	0.20	--	--	0.20	--	--	--
Pacific Electric Ray	0.39	--	0.39	--	--	--	--	--	--	--	--	--	--
Sandpaper Skate	--	--	--	0.02	--	0.02	0.45	--	--	0.45	--	--	--
Starry Skate	0.02	--	0.02	--	--	--	--	--	--	--	0.02	--	0.02
Thornback Skate	1.26	--	1.26	--	--	--	--	--	--	--	--	--	--

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

Table 14. Incidental Landings.

Incidental landings (mt) of groundfish from shoreside commercial fisheries and exempted fishing permits in 2013 by gear group. Gear groups are as follows: HKL (hook-and-lines), MSC (miscellaneous), NET (nets), POT (pots), TLS (troll), TWL (trawl), TWS (shrimp trawls).

	Shoreside Commercial Landings (mt)							Incidental fisheries estimate
	Other Fisheries By Gear Group							
	HKL	MSC	NET	POT	TLS	TWL	TWS	
Groundfish species								
Arrowtooth Flounder	0.67	--	0.02	--	--	0.14	--	0.83
Black Rockfish (South of 46°16' N. lat.)	--	--	--	--	0.62	--	--	0.62
Bocaccio Rockfish (South of 40°10' N. lat.)	0.01	--	--	--	0.02	0.00	--	0.04
Cabazon (California)	--	0.01	0.00	--	0.00	--	--	0.01
California Scorpionfish (South of 34°27' N. lat.)	--	0.00	0.14	--	--	--	--	0.14
Canary Rockfish	--	--	--	--	0.11	0.10	--	0.21
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	--	--	0.00	--	--	0.00
Darkblotched Rockfish	0.00	--	0.01	--	--	0.46	--	0.48
Dover Sole	0.05	--	0.01	--	--	2.32	--	2.37
English Sole	--	--	0.02	--	--	0.19	--	0.21
Lingcod (North of 40°10' N. lat.)	1.43	--	--	0.10	1.74	0.31	--	3.58
Lingcod (South of 40°10' N. lat.)	0.63	0.02	0.03	0.04	0.65	0.01	--	1.38
Longnose Skate	2.06	--	0.10	--	--	0.73	--	2.89
Longspine Thornyhead (North of 34°27' N. lat.)	0.00	--	--	--	--	1.00	--	1.00
Minor nearshore rockfish (North of 40°10' N. lat.)								
Blue Rockfish	--	--	--	--	0.04	--	--	0.04
Quillback Rockfish	0.00	--	--	--	0.01	--	--	0.01
Minor nearshore rockfish (South of 40°10' N. lat.)								
Black and Yellow Rockfish	--	0.03	--	--	--	--	--	0.03
Blue Rockfish	--	--	0.00	--	0.01	--	--	0.01
Brown Rockfish	--	--	--	--	0.01	0.00	--	0.01
China Rockfish	--	0.00	--	--	--	--	--	0.00
Copper Rockfish	--	0.00	0.01	--	0.00	0.11	0.01	0.14
Gopher Rockfish	--	0.00	--	--	--	--	--	0.00
Grass Rockfish	--	--	0.00	--	0.02	--	--	0.02
Kelp Rockfish	--	0.00	--	--	--	--	--	0.00
Nearshore Rockfish Unid	--	--	--	--	0.01	0.00	--	0.01
Olive Rockfish	--	--	0.00	--	0.00	--	--	0.00
Minor shelf rockfish (North of 40°10' N. lat.)								
Chilipepper Rockfish	0.00	--	--	--	--	0.00	--	0.00
Greenspotted Rockfish	0.02	--	--	--	--	--	--	0.02
Greenstriped Rockfish	0.05	--	--	--	--	--	--	0.05
Rosethorn Rockfish	0.00	--	--	--	--	0.22	--	0.22
Shelf Rockfish Unid	--	--	--	--	0.02	--	--	0.02
Vermilion Rockfish	--	--	--	--	0.03	--	--	0.03
Minor shelf rockfish (South of 40°10' N. lat.)								
Flag Rockfish	--	--	--	--	--	0.00	--	0.00
Greenspotted Rockfish	0.00	--	--	--	--	--	--	0.00
Shelf Rockfish Unid	--	--	--	--	0.02	0.00	--	0.02
Starry Rockfish	0.00	--	--	--	--	0.00	--	0.00
Vermilion Rockfish	0.16	1.13	--	--	0.21	0.02	--	1.52
Yellowtail Rockfish	0.02	--	--	0.00	0.33	--	--	0.36
Minor slope rockfish (North of 40°10' N. lat.)								
Aurora Rockfish	0.00	--	--	--	--	0.09	--	0.09
Bank Rockfish	0.00	--	--	--	--	0.00	--	0.00
Blackgill Rockfish	0.01	--	--	--	--	0.08	--	0.09
Blackspotted Rockfish	0.00	--	--	--	--	--	--	0.00
Redbanded Rockfish	0.05	--	--	0.01	--	0.00	--	0.07

Table 14 (continued).

	Shoreside Commercial Landings (mt) Other Fisheries By Gear Group							Incidental fisheries estimate
	HKL	MSC	NET	POT	TLS	TWL	TWS	
Rougheye Rockfish	0.31	--	--	--	--	0.27	--	0.58
Sharpchin Rockfish	--	--	--	--	--	0.00	--	0.00
Shortraker Rockfish	0.01	--	--	--	--	0.11	--	0.12
Slope Rockfish Unid	0.01	--	0.04	--	0.00	--	--	0.05
Splitnose Rockfish	0.00	--	--	--	--	0.00	--	0.00
Yellowmouth Rockfish	0.00	--	--	--	--	--	--	0.00
Minor slope rockfish (South of 40°10' N. lat.)								
Bank Rockfish	--	--	8.11	--	--	--	--	8.11
Blackgill Rockfish	--	--	0.11	--	0.00	--	--	0.11
Redbanded Rockfish	--	--	0.01	--	--	--	--	0.01
Slope Rockfish Unid	--	--	--	--	0.02	--	--	0.02
Other flatfish								
Flatfish Unid	0.00	0.23	0.02	--	--	0.13	--	0.39
Pacific Sanddab	0.02	--	0.03	--	0.00	--	--	0.05
Rex Sole	--	--	0.01	--	--	0.94	--	0.95
Rock Sole	0.00	0.92	--	--	--	0.06	--	0.99
Sanddab Unid	0.10	--	0.02	0.00	0.49	0.01	--	0.62
Sand Sole	0.03	--	0.00	--	--	3.30	--	3.33
Other groundfish								
Kelp Greenling	--	0.00	--	--	0.01	--	--	0.01
Leopard Shark	0.02	--	0.19	--	--	--	--	0.21
Rockfish Unid	--	--	--	--	0.03	0.00	--	0.03
Skate Unid	0.25	--	1.53	--	--	0.35	--	2.13
Soupin Shark	0.02	--	0.18	--	0.01	0.01	--	0.23
Pacific Cod	0.01	--	0.03	--	--	0.02	--	0.06
Pacific Hake	--	--	0.01	--	--	--	--	0.01
Pacific Ocean Perch (North of 40°10' N. lat.)	0.00	--	--	--	--	0.26	--	0.27
Petrale Sole	0.04	--	0.15	--	--	0.52	--	0.71
Sablefish (North of 36° N. lat.)	11.33	--	2.39	--	0.33	0.75	--	14.79
Sablefish (South of 36° N. lat.)	--	--	0.04	--	0.22	--	--	0.27
Shortspine Thornyhead (North of 34°27' N. lat.)	0.05	--	0.01	--	0.02	0.64	--	0.72
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	--	--	0.02	--	--	0.02
Spiny Dogfish	0.16	--	0.03	--	0.28	--	--	0.47
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	0.02	--	--	--	--	0.02
Starry Flounder	0.10	--	0.00	0.00	--	0.92	--	1.02
Widow Rockfish	--	--	--	--	0.06	0.01	--	0.07
Yelloweye Rockfish	0.04	--	--	--	--	0.06	--	0.10
Yellowtail Rockfish (North of 40°10' N. lat.)	--	--	0.00	--	1.50	0.02	--	1.53
Non-groundfish species								
California Halibut	50.94	0.57	20.75	0.10	1.47	0.94	--	74.78
California Sheephead	--	0.04	0.09	0.02	--	--	--	--
Dungeness Crab	--	3.62	2.08	33,167.21	1.82	--	--	33,174.73
Non-FMP flatfish								
Diamond Turbot	--	--	--	--	--	0.01	--	0.01
Hornyhead Turbot	--	--	--	--	--	0.12	--	0.12
Longfin Sanddab	0.01	--	--	--	--	--	--	0.01

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 2013 by sector or fishery.

Weight (mt)	Commercial fisheries										WA tribal landings	WA tribal at-sea	Recreational fishing mortality			Research	Estimated fishing mortality
	IFQ/Coop Management																
	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			OR	CA			
Groundfish species																	
Arrowtooth Flounder	14.53	5.46	2,426.49	2.45	27.88	0.01	0.01	18.77	0.83	2.48	--	--	--	0.01	0.03	10.97	2,509.93
Black Rockfish (North of 46°16' N. lat.)	--	0.00	0.07	--	--	--	--	--	--	--	--	--	252.00	--	--	0.02	252.10
Black Rockfish (South of 46°16' N. lat.)	--	--	0.01	--	--	143.06	--	--	0.62	--	--	--	--	338.52	362.62	0.02	844.84
Bocaccio Rockfish (South of 40°10' N. lat.)	--	--	12.27	--	2.91	0.96	--	0.00	0.04	--	--	--	--	--	130.84	2.03	149.05
Cabazon (California)	--	--	--	--	0.01	28.99	0.01	0.01	0.01	--	--	--	--	--	39.27	--	68.31
Cabazon (Oregon)	--	--	0.00	--	--	19.87	--	--	--	--	--	--	--	14.40	--	0.00	34.27
California Scorpionfish (South of 34°27' N. lat.)	--	--	--	--	--	1.72	0.00	0.80	0.14	--	--	--	--	--	112.00	0.18	114.85
Canary Rockfish	0.66	3.36	6.84	--	1.00	10.50	0.00	0.11	0.21	3.40	--	--	0.62	3.20	12.52	0.70	43.11
Chilipepper Rockfish (South of 40°10' N. lat.)	--	--	392.88	--	0.84	0.11	0.00	--	0.00	--	--	--	--	--	7.26	2.99	404.08
Cowcod Rockfish (South of 40°10' N. lat.)	--	--	0.19	--	--	--	--	--	--	--	--	--	--	--	1.52	0.18	1.89
Darkblotched Rockfish	6.33	3.25	112.78	0.00	3.99	0.01	--	3.67	0.48	0.02	--	--	--	--	--	2.45	132.98
Dover Sole	1.10	0.13	7,953.72	1.44	6.29	0.00	0.00	2.88	2.37	91.54	--	--	--	0.01	--	21.42	8,080.91
English Sole	0.01	0.03	220.39	0.00	0.04	--	0.56	1.13	0.21	132.62	--	--	--	--	0.01	2.39	357.40
Lingcod (North of 40°10' N. lat.)	1.51	8.43	319.56	2.84	20.41	53.55	--	0.28	3.58	61.04	--	--	107.95	226.99	51.72	2.66	860.51
Lingcod (South of 40°10' N. lat.)	--	--	13.71	0.00	9.76	26.49	0.03	0.01	1.38	--	--	--	--	--	381.27	0.83	433.48
Longnose Skate	0.28	0.10	919.11	1.60	52.89	0.13	0.21	1.16	2.89	2.94	--	--	--	--	--	7.57	988.88
Longspine Thornyhead (North of 34°27' N. lat.)	0.00	0.00	1,056.04	0.12	8.69	0.00	--	--	1.00	0.16	--	--	--	--	--	10.52	1,076.54
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	-	0.29	17.96	0.11	--	--	--	--	--	--	--	--	--	0.40	18.76
Minor nearshore rockfish (North of 40°10' N. lat.)																	
Black and Yellow Rockfish	--	--	--	--	--	0.05	--	--	--	--	--	--	--	--	0.22	--	0.27
Blue Rockfish	--	--	0.00	--	--	9.37	--	--	0.04	--	--	--	0.80	23.96	2.33	0.01	36.51
Brown Rockfish	--	--	0.04	--	--	0.07	--	--	--	--	--	--	--	0.06	0.94	--	1.11
China Rockfish	--	--	--	--	--	7.32	--	--	--	--	--	--	3.10	3.74	1.23	--	15.39
Copper Rockfish	--	--	0.00	--	--	1.50	--	--	--	--	--	--	1.20	4.33	2.34	0.03	9.41
Gopher Rockfish	--	--	--	--	--	0.05	--	0.00	--	--	--	--	--	--	0.04	0.00	0.09
Grass Rockfish	--	--	--	--	--	0.26	--	--	--	--	--	--	--	0.01	0.21	--	0.48
Nearshore Rockfish Unid	--	--	0.04	--	--	0.00	--	--	--	0.00	--	--	--	--	--	--	0.04
Olive Rockfish	--	--	--	--	--	0.01	--	--	--	--	--	--	--	0.06	0.05	--	0.12
Quillback Rockfish	--	--	0.10	--	--	2.63	--	--	0.01	--	--	--	1.10	5.98	1.92	0.01	11.74
Rockfish Unid	--	--	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02
Minor nearshore rockfish (South of 40°10' N. lat.)																	
Black and Yellow Rockfish	--	--	--	--	--	10.59	--	--	0.03	--	--	--	--	--	5.58	--	16.20
Blue Rockfish	--	--	--	--	--	3.56	--	--	0.01	--	--	--	--	--	103.88	0.17	107.62

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).

Weight (mt)		Commercial fisheries										WA tribal landings	WA tribal at-sea	Recreational fishing mortality			Research	Estimated fishing mortality
		IFQ/Coop Management				Non- nearshore fixed gear	Nearshore fixed gear	OA CA halibut	Pink shrimp	Incidental fisheries	WA			WA	fishing mortality			
		Non-tribal at-sea hake	Non-tribal shoreside hake	Non-hake IFQ trawl	Non-hake IFQ fixed gear										WA	OR		
Brown Rockfish		--	--	0.07	--	--	28.65	0.03	--	0.01	--	--	--	--	80.72	0.03	109.52	
Calico Rockfish		--	--	--	--	--	0.01	--	--	--	--	--	--	--	0.93	0.00	0.95	
China Rockfish		--	--	--	--	--	2.47	--	--	0.00	--	--	--	--	8.81	0.01	11.29	
Copper Rockfish		--	--	--	--	0.13	6.20	0.01	0.09	0.14	--	--	--	--	96.49	0.13	103.18	
Gopher Rockfish		--	--	--	--	0.02	25.27	--	--	0.00	--	--	--	--	41.19	0.00	66.47	
Grass Rockfish		--	--	--	--	--	12.43	--	--	0.02	--	--	--	--	9.57	--	22.02	
Kelp Rockfish		--	--	--	--	--	1.06	--	--	0.00	--	--	--	--	19.17	--	20.23	
Nearshore Rockfish Unid		--	--	--	--	--	0.02	0.00	0.02	0.01	--	--	--	--	--	--	0.05	
Olive Rockfish		--	--	0.00	--	--	1.40	--	--	0.00	--	--	--	--	20.30	0.09	21.80	
Quillback Rockfish		--	--	--	--	--	0.18	--	--	--	--	--	--	--	0.95	0.01	1.14	
Treefish Rockfish		--	--	--	--	0.03	1.39	--	--	--	--	--	--	--	13.09	--	14.51	
Minor shelf rockfish (North of 40°10' N. lat.)																		
Bocaccio Rockfish		0.40	0.51	0.35	--	0.07	0.00	--	--	--	0.53	--	1.60	0.06	0.00	0.03	3.55	
Chilipepper Rockfish		0.00	0.01	3.11	--	0.00	--	--	0.23	0.00	--	--	--	--	--	1.57	4.93	
Cowcod Rockfish		--	--	0.00	--	0.03	--	--	--	--	--	--	--	--	--	--	0.03	
Flag Rockfish		--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01	
Green-spotted Rockfish		--	--	0.04	--	0.00	--	--	--	0.02	--	--	--	0.03	--	0.05	0.14	
Green-striped Rockfish		0.00	0.21	15.63	0.00	0.39	--	--	0.44	0.05	0.10	--	--	0.03	--	1.35	18.19	
Half-banded Rockfish		--	--	--	--	--	--	--	0.00	--	--	--	--	--	--	--	0.00	
Harlequin Rockfish		0.00	--	--	--	--	--	--	0.00	--	--	--	--	--	--	--	0.00	
Pinkrose Rockfish		--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--	0.00	
Pygmy Rockfish		--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	1.23	1.23	
Redstripe Rockfish		0.86	0.11	1.84	--	0.00	--	--	--	--	0.05	--	--	--	--	0.89	3.76	
Rockfish Unid		--	--	0.01	--	0.00	0.16	--	0.47	--	--	--	--	--	--	--	0.63	
Rosethorn Rockfish		--	0.01	2.39	0.00	0.55	--	--	--	0.22	0.24	--	--	0.05	--	0.47	3.94	
Rosy Rockfish		--	--	0.03	--	0.02	0.03	--	--	--	--	--	--	0.01	0.00	--	0.09	
Shelf Rockfish Unid		--	0.01	0.52	0.01	0.38	0.01	--	--	0.02	7.18	--	--	--	--	--	8.13	
Silvergray Rockfish		0.13	0.59	0.74	--	0.37	--	--	--	--	1.10	--	--	--	--	0.48	3.43	
Stripetail Rockfish		0.00	--	3.28	--	--	--	--	0.30	--	--	--	--	--	--	0.92	4.50	
Tiger Rockfish		--	--	--	--	0.00	0.63	--	0.00	--	--	--	0.20	1.50	0.25	0.01	2.59	
Vermilion Rockfish		--	--	0.00	--	0.03	3.86	--	0.00	0.03	--	--	1.20	6.64	2.66	0.00	14.42	
Minor shelf rockfish (South of 40°10' N. lat.)																		
Bronzespotted Rockfish		--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00	
Flag Rockfish		--	--	--	--	0.44	0.05	0.00	--	0.00	--	--	--	--	14.17	0.01	14.67	

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).

Weight (mt)		Commercial fisheries										WA tribal landings	WA tribal at-sea	Recreational fishing mortality			Research	Estimated fishing mortality
		IFQ/Coop Management																
		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			WA	WA	OR		
Greenblotched Rockfish	--	--	0.12	--	0.05	0.01	--	--	--	--	--	--	--	--	0.36	0.03	0.57	
Greenspotted Rockfish	--	--	0.58	--	1.49	0.10	--	--	0.00	--	--	--	--	--	11.09	0.29	13.56	
Greenstriped Rockfish	--	--	2.10	--	0.04	0.02	--	--	--	--	--	--	--	--	1.27	0.15	3.58	
Halfbanded Rockfish	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	3.25	3.40	6.66	
Honeycomb Rockfish	--	--	--	--	0.02	0.00	--	--	--	--	--	--	--	--	9.15	0.02	9.20	
Mexican Rockfish	--	--	0.10	--	0.03	--	--	--	--	--	--	--	--	--	--	0.01	0.14	
Pink Rockfish	--	--	0.07	--	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.07	
Pinkrose Rockfish	--	--	--	--	0.05	--	--	--	--	--	--	--	--	--	--	0.00	0.05	
Pygmy Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01	
Redstripe Rockfish	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--	0.14	0.14	
Rockfish Unid	--	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.01	
Rosethorn Rockfish	--	--	0.05	0.00	0.00	0.03	--	--	--	--	--	--	--	--	0.02	0.00	0.10	
Rosy Rockfish	--	--	0.00	--	0.17	0.16	--	--	--	--	--	--	--	--	5.54	0.03	5.90	
Shelf Rockfish Unid	--	--	0.18	--	0.18	1.69	--	0.02	0.02	--	--	--	--	--	--	--	2.09	
Silvergray Rockfish	--	--	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04	
Speckled Rockfish	--	--	--	--	0.16	0.07	--	--	--	--	--	--	--	--	15.51	0.18	15.92	
Squarespot Rockfish	--	--	--	--	0.06	0.02	--	--	--	--	--	--	--	--	16.56	0.52	17.17	
Starry Rockfish	--	--	--	--	0.68	0.14	0.00	--	0.00	--	--	--	--	--	23.98	0.07	24.87	
Stripetail Rockfish	--	--	16.22	--	0.00	--	--	--	--	--	--	--	--	--	--	1.68	17.90	
Swordspine Rockfish	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	0.01	0.01	0.02	
Tiger Rockfish	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	0.02	--	0.02	
Vermilion Rockfish	--	--	0.01	--	11.01	10.29	0.00	0.04	1.52	--	--	--	--	--	208.04	2.28	233.18	
Yellowtail Rockfish	--	--	0.40	--	2.57	0.71	--	--	0.36	--	--	--	--	--	55.28	1.13	60.45	
Minor slope rockfish (North of 40°10' N. lat.)																		
Aurora Rockfish	0.00	0.09	21.47	0.00	0.05	0.00	--	--	0.09	0.00	--	--	--	--	--	1.51	23.21	
Bank Rockfish	0.02	0.03	0.67	--	0.28	0.00	--	--	0.00	--	--	--	--	--	0.33	0.00	1.33	
Blackgill Rockfish	0.04	0.06	6.27	0.09	2.42	0.00	--	--	0.09	0.01	--	--	--	--	--	0.02	8.99	
Blackspotted Rockfish	--	--	0.12	0.00	0.20	--	--	--	0.00	0.00	--	--	--	--	--	--	0.33	
Redbanded Rockfish	0.01	0.08	8.11	0.71	13.96	0.00	--	0.03	0.07	9.37	--	--	--	--	--	0.19	32.53	
Rockfish Unid	--	--	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	0.05	
Rougheye Rockfish	17.81	2.85	62.06	2.83	50.22	0.00	--	--	0.58	17.42	--	--	--	--	--	--	153.78	
Rougheye/Blackspotted Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.56	0.56	
Sharpchin Rockfish	0.03	0.23	10.08	--	0.01	--	--	0.06	0.00	0.01	--	--	--	--	--	2.04	12.46	
Shortraker Rockfish	0.02	0.59	20.42	0.04	2.89	--	--	--	0.12	0.71	--	--	--	--	--	0.13	24.92	
Shortraker/Rougheye Rockfish	--	--	--	0.06	5.68	--	--	--	--	--	--	--	--	--	--	--	5.73	
Slope Rockfish Unid	--	0.08	3.54	1.46	3.15	--	--	0.35	0.05	0.26	--	--	--	--	--	--	8.90	
Splitnose Rockfish	26.19	5.97	42.31	0.00	0.08	0.00	--	0.49	0.00	0.02	--	--	--	--	--	1.57	76.63	
Yellowmouth Rockfish	0.00	0.08	5.52	0.02	0.48	--	--	--	0.00	0.00	--	--	--	--	--	0.12	6.23	

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).

Weight (mt)	Commercial fisheries										WA tribal landings	WA tribal at-sea	Recreational fishing mortality			Research	Estimated fishing mortality
	IFQ/Coop Management																
	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			OR	CA			
Minor slope rockfish (South of 40°10' N. lat.)																	
Aurora Rockfish	--	--	8.91	0.29	0.14	0.00	--	--	--	--	--	--	--	--	0.17	9.52	
Bank Rockfish	--	--	45.67	0.00	0.04	0.14	--	--	8.11	--	--	--	--	--	0.06	54.04	
Blackgill Rockfish	--	--	38.40	15.05	17.05	1.01	--	--	0.11	--	--	--	--	--	0.40	72.02	
Pacific Ocean Perch	--	--	0.01	--	0.00	--	--	--	--	--	--	--	--	--	--	0.01	
Redbanded Rockfish	--	--	0.52	0.00	0.15	--	--	--	0.01	--	--	--	--	--	0.01	0.69	
Rockfish Unid	--	--	0.00	-	--	--	--	--	--	--	--	--	--	--	--	0.00	
Rougheye Rockfish	--	--	0.11	--	--	--	--	--	--	--	--	--	--	--	--	0.11	
Sharpchin Rockfish	--	--	0.86	--	--	--	--	--	--	--	--	--	--	--	0.03	0.89	
Slope Rockfish Unid	--	--	7.48	--	3.63	0.00	--	0.02	0.02	--	--	--	--	--	--	11.15	
Spotted Rockfish Unid	--	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--	0.01	
Yellowmouth Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00	
Mixed thornyheads																	
Shortspine/Longspine Thornyhead	0.50	--	5.83	--	0.05	--	--	--	--	--	--	--	--	--	--	6.38	
Other flatfish																	
Butter Sole	--	--	0.22	--	0.00	0.00	0.04	--	--	--	--	--	0.01	--	0.01	0.28	
Curlfin Turbot	--	--	1.47	--	--	--	1.14	--	--	--	--	--	--	--	0.16	2.76	
Flatfish Unid	0.00	0.01	0.96	0.00	0.21	0.02	0.15	19.15	0.39	0.83	--	6.96	--	--	0.69	29.36	
Flathead Sole	0.00	0.00	17.90	--	--	--	--	1.04	--	--	--	--	--	--	0.12	19.07	
Pacific Sanddab	0.00	0.07	206.28	--	2.25	2.09	1.13	3.82	0.05	--	--	--	0.12	134.42	9.28	359.51	
Rex Sole	12.10	0.39	492.38	0.00	0.15	0.07	--	21.94	0.95	32.27	--	--	--	--	5.38	565.64	
Rock Sole	--	--	3.11	--	0.13	0.36	0.14	0.59	0.99	5.21	--	--	0.02	0.72	0.08	11.34	
Sand Sole	--	--	13.46	0.02	0.00	0.04	8.24	0.02	3.33	--	--	--	0.15	1.00	--	26.26	
Sanddab Unid	--	0.00	61.94	--	2.59	0.00	0.08	0.04	0.62	0.70	--	--	--	--	--	65.96	
Other groundfish																	
Big Skate	0.21	--	50.44	0.01	5.34	0.05	42.52	0.00	--	--	--	--	--	--	2.42	100.98	
Cabazon	--	--	--	--	--	--	--	--	--	--	--	6.00	--	--	--	6.00	
California Scorpionfish	--	--	--	--	--	0.05	--	--	--	--	--	--	--	--	--	0.05	
California Skate	--	--	0.39	--	0.01	0.02	5.50	--	--	--	--	--	--	--	0.30	6.22	
Grenadier Unid	0.39	--	51.09	0.12	39.36	0.09	--	--	--	--	--	--	--	--	3.15	94.20	
Groundfish Unid	--	0.16	0.03	--	--	--	--	--	--	--	--	--	--	--	3.70	3.88	
Kelp Greenling	--	--	0.11	--	--	27.63	0.00	0.00	0.01	--	--	2.60	26.22	13.66	0.01	70.25	
Leopard Shark	--	--	0.27	--	0.03	0.45	1.57	0.01	0.21	--	--	--	--	13.99	--	16.52	
Pacific Electric Ray	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	
Pacific Flatnose	--	--	1.46	0.05	5.85	--	--	--	--	--	--	--	--	--	--	7.35	
Pacific Grenadier	--	--	48.41	1.04	173.90	--	--	--	--	--	--	--	--	--	--	223.35	
Rockfish Unid	--	--	0.03	--	0.53	0.47	--	0.03	0.03	--	--	--	--	--	0.33	1.42	
Roundfish Unid	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--	0.01	
Skate Unid	--	0.19	121.02	0.03	89.67	0.02	0.34	4.02	2.13	64.15	--	--	--	--	0.00	281.58	
Soupin Shark	0.23	0.03	0.32	--	0.07	0.78	0.09	0.04	0.23	--	--	--	--	--	--	1.78	
Spotted Ratfish	0.00	0.00	104.60	0.02	2.89	--	--	0.27	--	--	--	--	--	0.02	--	107.80	

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).

Weight (mt)	Commercial fisheries										WA tribal landings	WA tribal at-sea	Recreational fishing mortality			Research	Estimated fishing mortality
	IFQ/Coop Management			Non-hake IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	OA CA halibut	Pink shrimp	Incidental fisheries	WA			OR	CA			
	Non-tribal at-sea hake	Non-tribal shoreside hake	Non-hake IFQ trawl														
Pacific Cod	0.03	0.04	154.02	0.00	1.93	--	0.00	0.00	0.06	233.98	--	0.50	0.02	--	0.30	390.88	
Pacific Hake	130,563.38	97,327.45	306.95	0.07	0.44	--	0.00	29.86	0.01	5,215.56	--	--	--	0.03	1,055.57	234,499.32	
Pacific Ocean Perch (North of 40°10' N. lat.)	5.41	7.09	42.89	0.01	0.26	--	--	0.24	0.27	0.03	--	--	--	--	2.14	58.33	
Petrale Sole	--	0.00	2,117.48	0.73	1.68	--	0.41	1.61	0.71	136.31	--	--	0.37	1.11	5.02	2,265.43	
Sablefish (North of 36° N. lat.)	12.70	0.66	1,398.43	423.12	1,353.55	0.90	0.00	8.08	14.79	349.16	--	--	0.83	0.05	17.35	3,579.61	
Sablefish (South of 36° N. lat.)	--	--	6.15	80.79	519.42	5.32	--	--	0.27	--	--	--	--	--	0.66	612.60	
Shortbelly Rockfish	0.73	2.14	18.22	--	--	--	--	3.49	--	0.02	--	--	--	--	0.50	25.09	
Shortspine Thornyhead (North of 34°27' N. lat.)	21.74	3.30	841.28	4.35	58.84	0.04	--	0.25	0.72	20.74	--	--	--	--	4.30	955.54	
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	-	3.70	108.31	0.82	--	--	0.02	--	--	--	--	--	0.20	113.06	
Spiny Dogfish	97.47	80.56	289.92	11.69	125.04	1.17	5.81	0.03	0.47	24.21	--	0.30	--	7.03	8.74	652.45	
Splitnose Rockfish (South of 40°10' N. lat.)	--	--	46.06	0.00	0.05	0.00	--	--	0.02	--	--	--	--	--	2.83	48.95	
Starry Flounder	--	--	3.44	--	0.25	0.10	3.42	0.00	1.02	--	--	--	0.01	0.93	0.05	9.22	
Widow Rockfish	31.28	236.03	175.57	--	0.78	0.13	--	--	0.07	28.43	--	--	1.11	17.84	8.15	499.39	
Yelloweye Rockfish	--	--	0.05	0.01	0.27	2.71	--	--	0.10	0.35	--	2.08	2.72	1.47	0.93	10.70	
Yellowtail Rockfish (North of 40°10' N. lat.)	269.38	420.61	298.66	0.00	0.33	1.76	--	0.01	1.53	391.50	--	19.90	15.24	0.64	4.07	1,423.63	
Non-groundfish species																	
California Halibut	--	--	18.52	--	0.47	0.81	69.64	8.02	74.78	--	--	--	0.02	--	--	172.26	
California Sheephead	--	--	--	--	1.38	78.65	--	0.01	0.15	--	--	--	--	61.28	--	141.47	
Dungeness Crab	0.04	0.01	150.47	0.36	0.40	6.29	181.90	0.04	33,174.73	1,555.98	--	--	--	--	0.00	35,070.21	
Non-FMP flatfish																	
Deepsea Sole	--	--	18.31	0.01	0.07	--	--	--	--	--	--	--	--	--	--	18.39	
Diamond Turbot	--	--	--	--	--	--	0.00	--	0.01	--	--	--	--	0.02	--	0.03	
Hornyhead Turbot	--	--	0.01	--	--	--	0.32	3.08	0.12	--	--	--	--	--	--	3.52	
Longfin Sanddab	--	--	0.01	--	--	--	--	--	0.01	--	--	--	--	--	--	0.01	
Slender Sole	0.00	--	48.71	0.00	--	--	--	96.76	--	--	--	--	--	--	--	145.48	
Speckled Sanddab	--	--	--	--	--	--	--	--	--	--	--	--	--	0.06	--	0.06	
Non-FMP skate																	
Aleutian Skate	--	--	1.68	0.01	0.18	--	--	0.00	--	--	--	--	--	--	--	1.87	
Black Skate	--	--	18.01	0.12	9.82	--	--	--	--	--	--	--	--	--	--	27.95	
Deepsea Skate	--	--	0.36	--	0.20	--	--	--	--	--	--	--	--	--	--	0.56	
Flathead Skate	--	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--	0.01	
Pacific Electric Ray	--	--	1.41	--	--	--	0.39	--	--	--	--	--	--	--	--	1.80	
Roughshoulder/Broad Skate	--	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--	0.01	
Sandpaper Skate	0.01	--	41.57	0.02	0.45	--	--	0.02	--	--	--	--	--	--	--	42.07	
Starry Skate	--	--	0.09	--	--	0.02	0.02	--	--	--	--	--	--	--	--	0.12	
Thornback Skate	--	--	0.04	--	--	--	1.26	--	--	--	--	--	--	--	--	1.30	
White Skate	--	--	0.07	--	--	--	--	--	--	--	--	--	--	--	--	0.07	

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 16. Fishing Mortality Estimates Relative to Harvest Specifications.

Estimated fishing mortality (mt) of major west coast groundfish species in 2013 and corresponding management reference points (harvest specifications). Values which are 90% or greater relative to a management reference point are highlighted.

	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	2,510	6,157	41%	6,157	41%	7,391	34%
Black rockfish (North of 46°16' N. lat.)	252	411	61%	411	61%	430	59%
Black rockfish (South of 46°16' N. lat.)	845	1,000	84%	1,108	76%	1,159	73%
Bocaccio rockfish (South of 40°10' N. lat.)	149	320	47%	845	18%	884	17%
Cabazon (California)	68	163	42%	163	42%	170	40%
Cabazon (Oregon)	34	47	73%	47	73%	49	70%
California scorpionfish (South of 34°27' N. lat.)	115	120	96%	120	96%	126	91%
Canary rockfish	43	116	37%	719	6%	752	6%
Chilipepper rockfish (South of 40°10' N. lat.)	404	1,690	24%	1,690	24%	1,768	23%
Cowcod rockfish (South of 40°10' N. lat.)	2	3	63%	9	21%	11	17%
Darkblotched rockfish	133	317	42%	517	26%	541	25%
Dover sole	8,081	25,000	32%	88,865	9%	92,955	9%
English sole	357	6,815	5%	6,815	5%	7,129	5%
Lingcod (North of 40°10' N. lat.)	861	3,036	28%	3,036	28%	3,334	26%
Lingcod (South of 40°10' N. lat.)	433	1,111	39%	1,111	39%	1,334	32%
Longnose skate	989	2,000	49%	2,774	36%	2,902	34%
Minor rockfish (North of 40°10' N. lat.)	500	4,524	11%	8,455	6%	9,704	5%
Nearshore	75	94	80%	94	80%	110	68%
Shelf	70	968	7%	1,920	4%	2,183	3%
Slope	355	1,160	31%	1,381	26%	1,518	23%
Minor rockfish (South of 40°10' N. lat.)	1,070	2,842	38%	4,918	22%	5,611	19%
Nearshore	495	990	50%	1,005	49%	1,164	43%
Shelf	426	714	60%	1,617	26%	1,910	22%
Slope	148	618	24%	618	24%	681	22%
Other flatfish	1,080	4,884	22%	6,982	15%	10,060	11%
Other groundfish ¹	1,286	4,717	27%	4,717	27%	6,832	19%
Pacific cod	391	1,600	24%	2,221	18%	3,200	12%
Pacific hake	234,499	2013 US TAC = 269,745 mt, % of US TAC = 87%					
Pacific Ocean Perch (North of 40°10' N. lat.)	58	150	39%	807	7%	844	7%
Petrale sole	2,265	2,592	87%	2,592	87%	2,711	84%
Sablefish (North of 36° N. lat.)	3,580	4,012	89%	6,045	69%	6,621	63%
Sablefish (South of 36° N. lat.)	613	1,439	43%				
Shortbelly rockfish	25	50	50%	5,789	0%	6,950	0%
Splitnose rockfish (South of 40°10' N. lat.)	49	1,610	3%	1,610	3%	1,684	3%
Starry flounder	9	1,520	1%	1,520	1%	1,825	1%
Thornyheads							
Longspine Thornyhead (North of 34°27' N. lat.)	1,077	2,009	54%	2,825	39%	3,391	32%
Longspine Thornyhead (South of 34°27' N. lat.)	19	356	5%				
Shortspine Thornyhead (North of 34°27' N. lat.)	956	1,540	62%	2,230	48%	2,333	46%
Shortspine Thornyhead (South of 34°27' N. lat.)	113	397	28%				
Mixed thornyheads	6						
Widow rockfish	499	1,500	33%	4,598	11%	4,841	10%
Yelloweye rockfish	11	18	59%	43	25%	51	21%
Yellowtail rockfish (North of 40°10' N. lat.)	1,424	4,378	33%	4,378	33%	4,579	31%

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

Appendix A

Table A-1. WCGOP unsampled catch categories and associated species used in IFQ fishery protocols.

IFQFF	IFQRF
Arrowtooth Flounder	Aurora Rockfish
Butter Sole	Bank Rockfish
Curlfin Turbot	Blackgill Rockfish
Dover Sole	Bocaccio Rockfish
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-2. Discard mortality rates used in the Nearshore Fixed Gear Fishery.

Any species or grouping not otherwise specified was assumed to have a discard mortality rate of 1.

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
Cabazon (California)	Cabazon	0 - 10	0.07
Cabazon (California)	Cabazon	11 - 20	0.07
Cabazon (California)	Cabazon	> 20	0.07
Cabazon (Oregon)	Cabazon	0 - 10	0.07
Cabazon (Oregon)	Cabazon	11 - 20	0.07
Cabazon (Oregon)	Cabazon	> 20	0.07
Cabazon (Washington)	Cabazon	0 - 10	0.07
Cabazon (Washington)	Cabazon	11 - 20	0.07
Cabazon (Washington)	Cabazon	> 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-2 (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-2 (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-2 (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-2 (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	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-2 (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-2 (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
Petrable sole	Petrable Sole	0 - 10	0.07
Petrable sole	Petrable Sole	11 - 20	0.07
Petrable sole	Petrable 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-2 (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 Shark	0 - 10	0.5
Spiny dogfish	Spiny Dogfish Shark	11 - 20	0.5
Spiny dogfish	Spiny Dogfish Shark	> 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
Unspecified skate	Skate Unid	0 - 10	0.07
Unspecified skate	Skate Unid	11 - 20	0.07
Unspecified skate	Skate Unid	> 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



NOAA FISHERIES
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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NEWS

Secretary of Commerce Appoints Four New Committee Members to NOAA's Marine Fisheries Advisory Committee

(October 20, 2014) Secretary of Commerce Penny Pritzker has announced the appointment of four new advisors to NOAA's Marine Fisheries Advisory Committee, bringing the group's membership to the full complement of 21. The Marine Fisheries Advisory Committee, or MAFAC, advises the Secretary of Commerce on all living marine resource matters that are the responsibility of the Department of Commerce.

The new members are:

Terri Lei Beideman of Forked River, New Jersey

Heather Brandon of Juneau, Alaska

Mike Okoniewski of Woodland, Washington

Peter Shelley of Marblehead, Massachusetts

Congratulations to our newly appointed nominees! To read more about our new members [click here](#).

Nominations sought for two new Task Forces of the Marine Fisheries Advisory Committee

Applications accepted through November 17, 2014.

(October 16, 2014) The Marine Fisheries Advisory Committee (MAFAC) is seeking nominations for two new task forces that are being established to support its advisory work for the Secretary of Commerce on all living marine resource matters that are the responsibility of the Department of Commerce. One task force will focus on **climate and marine resources issues** and the other on **aquaculture issues**.

For more information on MAFAC Task Forces and how to submit a nomination [click here](#).

Details on the ideal qualifications and potential work descriptions for the two new Task Forces can be found through these links:

[Climate and Marine Resources Task Force](#)

[Aquaculture Task Force](#)

For more information please contact: [Executive Director of MAFAC](#) or 301-427-8034.

Full nomination instructions and guidelines are detailed in the [Federal Register Notice](#).

The **Marine Fisheries Advisory Committee (MAFAC)** advises the Secretary of Commerce on all living marine resource matters that are the responsibility of the Department of Commerce. MAFAC members draw on their expertise and other appropriate sources, such as the National Marine Fisheries Service, to evaluate and recommend priorities and needed changes in national programs which includes the ongoing reauthorization of the Magnuson-Stevens, Endangered Species, and Marine Mammal Protection Acts. The members represent a wide spectrum of fisheries interests, environmental, academic, State, Tribal, consumer, and other related national interests.

The committee functions solely as an advisory body (complying fully with the Federal Advisory Committee Act) which reports to the Secretary.

For more information contact:
[Executive Director, MAFAC](#)

NATIONAL MARINE FISHERIES SERVICE

Ad-hoc Mid-Water Gear Bottom Contact Meeting

Monday evening November 17th, 7:00 PM, Laguna Beach 1-2 Room

The National Marine Fisheries Service (NMFS) is hosting an informational session on bottom contact in the mid-water trawl fishery. At the September 2014 Council Meeting, NMFS provided a Supplemental Report in response to March 2014 Council questions concerning the effectiveness, accuracy, and completeness of Pacific Coast Groundfish EFH. The report is available at the Council's September 2014 briefing book site:

http://www.pcouncil.org/wp-content/uploads/IR7_Sup_NMFS_EFH_EvalRpt_Sept2014BB.pdf

In that report, the Northwest and Southwest Fisheries Science Centers, and West Coast Region staff presented information that was requested by the Council to inform discussions surrounding competing proposals to modify groundfish EFH. In September, the report was presented to the Habitat Committee and Groundfish Advisory Sub Panel. The report included an analysis of data on whiting midwater trawl effort within and outside of groundfish EFH conservation areas for bottom contact. At the September Council meeting, interest was expressed by stakeholders in having further discussions on midwater trawl bottom contact. NMFS has scheduled an informational session on bottom contact in midwater trawls for Monday evening November 17th at 7:00 PM (Laguna Beach 1-2 Room).

NMFS has scheduled a second venue in Seattle for a similar informational session on December 17th at the Montlake Laboratory of the Northwest Fisheries Science Center in Seattle, Washington. For information, contact Waldo Wakefield, waldo.wakefield@noaa.gov.

November 2014



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
7600 Sand Point Way NE, Bldg. 1
Seattle, Washington 98115

November 4, 2014

Mr. Stanley M. Speaks, Regional Director
Northwest Regional Office
Bureau of Indian Affairs
911 NE 11th Avenue
Portland, Oregon 97232-4169

Ms. Amy Dutschke, Regional Director
Pacific Region
Bureau of Indian Affairs
2800 Cottage Way
Sacramento, California 95825

Dear Mr. Speaks and Ms. Dutschke:

The Pacific Fishery Management Council (PFMC) is one of eight Regional Fishery Management Councils authorized under the Magnuson-Stevens Fishery Conservation and Management Act (MSA, PL94-265). The PFMC is responsible for developing fishery management plans for species within the U.S. Exclusive Economic Zone (EEZ) off the coasts of California, Oregon, and Washington. The plans are submitted for review by the National Marine Fisheries Service (NMFS) and approved by the Secretary of the Department of Commerce (Secretary).

One seat on the PFMC is held exclusively by a representative of an Indian tribe from California, Oregon, Washington, or Idaho having federally recognized fishing rights on species affected by PFMC management plans. Representatives are appointed by the Secretary. The current tribal representative's term expires in early in 2015. That representative has served the maximum three terms and is not eligible under the statute for re-appointment.

Federal regulations at 50 CFR 600.215(b)(2) state that the Secretary will consult with the Bureau of Indian Affairs to determine which "tribes may submit nominations" of individuals for the tribal seat. Consistent with the MSA and these regulations, I request from you a list of qualifying tribes by November 30, 2014. On behalf of the Secretary, NMFS will notify these tribes of their opportunity to nominate individuals for appointment to the PFMC. It is our intent to allow the Secretary to consider nominations and select the representative prior to the PFMC's March 2015 meeting in order to ensure continuous representation of the tribes from Washington, Oregon, California, and Idaho on the PFMC.

Please contact Gary Sims (gary.sims@noaa.gov or 503.780.9779), Tribal Liaison, NMFS West Coast Region (WCR), if you have any questions or need further information. Please address your response to Gary at the above address. Thank you for your help.

Sincerely,

A handwritten signature in blue ink that reads "William W. Stelle, Jr.".

William W. Stelle, Jr.
Regional Administrator

cc: Gary Sims
Bob Turner, Assistant Regional Administrator for Sustainable Fisheries, NMFS WCR



NATIONAL MARINE FISHERIES SERVICE REPORT: RESPONSE TO COUNCIL'S QUESTIONS CONCERNING
THE EFFECTIVENESS, ACCURACY, AND COMPLETENESS OF PACIFIC COAST GROUND FISH EFH

At its March 2014 meeting, the Council requested that the Northwest and Southwest Fisheries Science Centers investigate the question of groundfish essential fish habitat (EFH) effectiveness, accuracy, and completeness, in the best way possible within the next five months, using existing staff resources, and to present their findings for consideration at the September 2014 Council meeting. Following the March 2014 meeting, environmental and industry representatives decided to work together to resolve diverging issues in competing proposals to modify groundfish EFH. Because of this effort, groundfish EFH was not on the Council's agenda for the September or November Council meetings. At the September 2014 Council Meeting, NMFS provided a Supplemental Report in response to March 2014 Council questions concerning Groundfish EFH. The report is available at the Council's September 2014 briefing book site:

http://www.pcouncil.org/wp-content/uploads/IR7_Sup_NMFS_EFH_EvalRpt_Sept2014BB.pdf

In that report, Northwest and Southwest Fisheries Science Center, and West Coast Region staff presented information that was requested by the Council to inform discussions surrounding proposals to modify groundfish EFH. In September, the report was presented to the Habitat Committee and Groundfish Advisory Sub Panel.

NMFS will continue a dialogue with stakeholders during the groundfish EFH Phase III process and update or expand the analysis in the NMFS Report as appropriate. For example, NMFS has scheduled two informational sessions on bottom contact in midwater trawls with the first session at this November Council meeting (See [Supplemental Informational Report 6](#)). For more information, contact Waldo Wakefield, waldo.wakefield@noaa.gov.

STATUS REPORT OF THE 2014 OCEAN SALMON FISHERIES OFF WASHINGTON, OREGON, and CALIFORNIA.Preliminary Data Through October 31, 2014.^{a/}

		Season	Effort		CHINOOK			COHO ^{b/}		
Fishery and Area	Dates	Days Fished	Catch	Quota	Percent	Catch	Quota	Percent		
COMMERCIAL										
Treaty Indian ^{c/}	5/1-6/30	479	29,529	31,250	94%		Non-Retention			
	7/1-9/15	526	31,971	32,954	97%	55,729	57,500	97%		
Non-Indian North of Cape Falcon ^{d/}	5/1-6/30	1,649	37,133	37,900	98%		Non-Retention			
	7/1-9/4 ^{e/}	1,045	16,909	19,000	92%	15,182	32,200	47%		
	9/5-9/16 ^{f/}	149	585			8,068	9,900	81%		
Cape Falcon - Humbug Mt.	4/1-8/29	8,001	159,661	None	NA		Non-Retention			
	9/3-10/31 ^{g/}	960	10,000	None	NA	3,255	5,300	61%		
Humbug Mt. - OR/CA Border	4/1-5/31	486	13,503	NA	NA		Non-Retention			
	6/15-6/30	82	1,329	1,500	89%		Non-Retention			
	7/1-7/31 ^{h/}	38	498	596	84%		Non-Retention			
	8/6-8/29 ^{i/}	70	402	580	69%		Non-Retention			
	9/12-9/27	20	52	500	10%		Non-Retention			
OR/CA Border - Humboldt S. Jetty	9/12-9/30	103	617	4,000	15%		Non-Retention			
Humboldt S. Jetty - Horse Mt.				Closed						
Horse Mt. - Pt. Arena	6/19-6/30, 7/15-8/29	3,798	76,893	None	NA		Non-Retention			
	9/1-30	80	487	None	NA		Non-Retention			
Pt. Arena - Pigeon Pt.	5/1-6/30, 7/15-8/29	5,218	69,500	None	NA		Non-Retention			
	9/1-30	1,129	10,515	None	NA		Non-Retention			
Pt. Reyes-Pt. San Pedro	10/1-3, 6-10 & 13-15	368	2,906	None	NA		Non-Retention			
Pigeon Pt. - U.S./Mexico Border	5/1-6/30, 7/15-8/13	1,583	8,052	None	NA		Non-Retention			
RECREATIONAL										
U.S./Canada Border - Queets River ^{j/}	5/16-17, 23-24, 5/31-6/13	1,326	327	9,000	23%		Non-Retention			
Queets River - Leadbetter Point ^{j/}	5/31-6/13	2,646	1,148				Non-Retention			
Leadbetter Point - Cape Falcon ^{j/}	5/31-6/13	1,001	611				Non-Retention			
U.S./Canada Border - Cape Alava	6/14-8/31	13,381	5,584	7,000	80%	4,152	19,220	22%		
	9/1-9/21 ^{k/}	1,761	48			1,550	1,600	97%		
Cape Alava-Queets River	6/14-8/31	3,686	1,350	2,350	61%	3,287	4,750	69%		
	9/1-9/21 ^{k/}	791	74			1,066	1,500	71%		
	9/27-10/12	455	152	50	304%	255	50	510%		
Queets River - Leadbetter Pt.	6/14-8/31	43,452	21,273	27,600	81%	41,363	68,380	60%		
	9/1-9/30 ^{k/}	7,747	991			13,435	13,750	98%		
Leadbetter Pt.-Cape Falcon	6/14-9/5	48,061	10,308	13,100	82%	63,936	92,400	69%		
	9/6-9/30 ^{k/}	7,663	443			11,406	13,100	87%		
Cape Falcon - Humbug Mt.	3/15-10/31	92,210	9,324	None	NA	Non-Retention except for periods listed				
Cape Falcon to OR/CA Border	6/21-8/10	Included Above or Below		NA	NA	48,530	80,000	61%		
Cape Falcon to Humbug Mt. ^{l/}	8/30-9/30	Included Above		NA	NA	34,003	35,000	97%		
Humbug Mt. - OR/CA Border (OR-KMZ)	5/10-9/7	12,411	5,687	None	NA	Included Above				
OR/CA Border - Horse Mt. (CA-KMZ)	5/10-9/7	20,612	15,693	None	NA	Non-Retention				
Horse Mt. - Pt. Arena (Ft. Bragg)	4/5-11/9	17,368	12,469	None	NA	Non-Retention				
Pt. Arena - Pigeon Pt. (San Francisco)	4/5-11/9	50,274	29,625	None	NA	Non-Retention				
Pigeon Pt. - U.S./Mexico Border (Monter)	4/5-10/5	27,226	13,902	None	NA	Non-Retention				
TOTALS TO DATE (through Oct. 31)	Effort			Chinook Catch			Coho Catch			
	2014	2013	2012	2014	2013	2012	2014	2013	2012	
TROLL										
Treaty Indian	1,005	1,298	1,140	61,500	51,705	56,019	55,729	47,717	37,461	
Washington Non-Indian	1,968	2,308	2,060	38,614	40,090	36,855	15,586	6,041	3,268	
Oregon	10,532	8,799	6,126	201,458	111,649	72,395	10,919	425	625	
California	12,279	17,258	14,522	168,970	297,409	215,585	0	0	0	
Total Troll	25,784	29,663	23,848	470,542	500,853	380,854	82,234	54,183	41,354	
RECREATIONAL										
Washington	119,679	80,014	77,659	40,001	28,916	33,729	123,698	46,140	31,434	
Oregon	116,912	86,332	67,362	17,319	30,395	18,788	99,285	14,580	16,079	
California	115,480	143,383	147,438	71,689	113,207	123,766	0	357	101	
Total Recreational	352,071	309,729	292,459	129,009	172,518	176,283	222,983	61,077	47,614	
PFFMC Total	377,855	339,392	316,307	599,551	673,371	557,137	305,217	115,260	88,968	

a/ Inseason estimates are preliminary.

b/ Generally, non-Indian coho fisheries prior to September are mark-selective and non-mark-selective fisheries occur in September, see the regulations for details.

c/ Effort is reported as landings. Chinook summer quota of 31,250 increased by rolling uncaught spring quota on an impact neutral basis by 1,704 fish.

d/ Numbers shown as Chinook quotas for non-Indian troll and rec. fisheries North of Falcon are guidelines not quotas; only the total Chinook allowable catch is a quota.

e/ 35,200 preseason coho quota minus 3,000 coho impact neutral roll-over to the recreational fisheries in the Columbia River and Westport areas.

f/ Remaining mark-selective coho quota of 19,489 converted to non-mark-selective quota of 9,900 on an impact neutral basis.

g/ A portion of remaining coho quota from the Cape Falcon to OR/CA border mark-selective rec. fishery rolled on an impact neutral basis to a non-selective troll quota of 5,3

h/ 500 preseason Chinook quota plus impact neutral roll-over from June of '96 in the Humbug Mt. to OR/CA border commercial troll fishery.

i/ 500 preseason Chinook quota plus impact neutral roll-over from July of '80 in the Humbug Mt. to OR/CA border commercial troll fishery.

j/ Mark-selective fishery for Chinook.

k/ Remaining mark-selective coho quota converted to non-mark-selective quota and adjusted by inseason trades on an impact neutral basis.

l/ 20,000 preseason quota plus 15,000 impact equivalent roll-over from the Cape Falcon to OR/CA border mark-selective recreational coho fishery.