



Vicky Okimura photo

2015 REPORT

Washington Coastal Commercial Groundfish Port Sampling

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Washington Department of Fish and Wildlife
Fish Program
Fish Management Division
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*Washington
Department of*
**FISH and
WILDLIFE**

2015 Report

Washington Coastal Commercial Groundfish Port Sampling Program

by

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Abstract

Washington Department of Fish and Wildlife (WDFW) supports groundfish stock assessments and management of fisheries through several interrelated groups that collect and process biological and catch data. The commercial components of these data are collected by the WDFW Commercial Groundfish Port Sampling Unit (Unit) from coastal ports: Westport, Ilwaco, Chinook, Bellingham, Blaine, Neah Bay and La Push. The Unit has two major objectives: (1) collect biological data and samples, such as sizes, otoliths, and gonads, from commercially landed groundfish in support of research and stock assessments; and (2) collect groundfish catch data via commercial fisheries logbooks, fish receiving tickets, and species composition sampling of mixed-species market categories, in support of fisheries monitoring and in-season management decision making. This report summarizes the Unit's activities and accomplishments through 2014 and includes a brief description of data collection methods.

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Introduction

Commercial exploitation of Washington's coastal groundfish resources dates back to the 1890s with the beginning of the longline fishery for sablefish and subsequent expansion to halibut, lingcod and Pacific cod. Trawling on the coast was pioneered around 1926 and slowly expanded through the 1930s. World War I and particularly World War II stimulated fishery development as new food sources were needed; this expansion was paired with technological advances such as the fathometer, improved radio communication and bigger engines (Hungskull, 1975). Further development of the trawl fishery slowed as the demand for soles, flounders and rockfishes was reduced due to peace-time markets being amply served by halibut and salmon fisheries. Gradual growth resumed in ensuing decades, accelerating rapidly in the late 1970s and early 1980s with the influx of more modern fishing vessels and gear.

In 1982, the US Secretary of Commerce approved the Pacific Coast Groundfish Fishery Management Plan (FMP). At that time, it was apparent conservation problems would occur unless landings were decreased to a long-term sustainable level. In response, the FMP built on state management by increasing catch monitoring and improving assessment of stock conditions. The FMP initiated the present period of employing progressively more stringent management measures to restrict effort and harvest through limited entry, trip limits, species specific landing prohibitions and fishing ground closures. Even with tighter controls, the groundfish fishery became and remains a vital component of the Washington economy (Figure 1).

Washington state policy and direction for fish species are established by the Washington Fish and Wildlife Commission (FWC or Commission). The Commission, comprised of nine citizen members, has legislated authority to establish the basic rules and regulations governing the time, place, manner, and methods used to harvest fish in Washington state waters (0-3 miles).

Washington coastal fisheries management is coordinated with the National Marine Fisheries Service (NMFS) through the Pacific Fishery Management Council (PFMC or Council). The Council, comprised of 14 voting representatives, governs the commercial and recreational fisheries in federal waters (3-200 miles) off Washington, Oregon, and California. In addition, Washington coastal tribes co-manage fisheries in federal waters with NMFS, and in state waters with the Washington Department of Fish and Wildlife (WDFW).

The Pacific Fishery Management Council manages fisheries for about 119 species of groundfish (also known as bottomfish), salmon, coastal pelagic species (sardines, anchovies, and mackerel), and highly migratory species (tunas, sharks, and swordfish). The Council develops and recommends annual fishing quotas and regulations designed to achieve optimum yield from a

fishery, and such management measures are implemented by NMFS. Management teams comprised of state and NMFS representatives prepare fishery management plans for PFMC, utilizing their respective fishery monitoring programs, and completed stock assessments and impact analyses. Timely and accurate fisheries data are essential to the completion of these assessments and the effective management of fisheries.

Management teams and research scientists obtain fisheries-dependent monitoring data from two data networks managed by the Pacific States Marine Fisheries Commission (PSMFC): the Pacific Fisheries Information Network (PacFIN) for commercial fisheries and the Recreational Fisheries Information Network (RecFIN) for recreational fisheries. These regional fisheries data networks are the products of a joint federal and state project focused on fisheries data collection and information management, providing fisheries data from Washington, Oregon, California, Alaska, and British Columbia. PSMFC is an interstate compact agency that helps resource agencies and the fishing industry sustainably manage valuable Pacific Ocean resources in five states: California, Oregon, Idaho, Alaska, and Washington.

Washington Department of Fish and Wildlife groundfish stock assessments and management of commercial and recreational fisheries are supported through several interrelated groups that collect and process biological and catch data. At the foundation of these groups is the Commercial Groundfish Port Sampling Unit (Unit) which collects raw catch and biological data from commercial fisheries and the Ocean Sampling Program which collects groundfish catch and biological data from recreational fisheries (charters and private vessels) at coastal ports (not reported here). Details on the systematic flow of commercial data through these groups are shown in Figure 2. This report summarizes the Unit's activities and accomplishments through 2014 and includes a brief description of biological and catch data collection methods. Detailed sampling protocols and age structure reading methods are not presented in this report. Sampling protocols are summarized in the Coastal Commercial Groundfish Port Sampling Program - Procedures Manual, and age structure reading methods are summarized in the Manual on Generalized Age Determination - Procedures for Groundfish (C.A.R.E., 2006). Detailed descriptions of WDFW commercial groundfish fisheries data processing procedures and activities are summarized in Tsou et al. (2015). Groundfish data collection methods prior to 1997 are described in Tagart (1997).

The Unit resides within the Fish Program, Fish Management Division - Marine Fish Science Group, and consists of three fulltime scientific technicians, or port samplers, respectively stationed at Montesano, Neah Bay, and Bellingham. Port samplers provide coverage of area ports, including Westport, Ilwaco, Chinook, Bellingham, Blaine, Neah Bay, and La Push (Figure 3). One lead technician, located at the regional office in Montesano, supervises the unit. The lead technician coordinates the collection and distribution of age structures among the states of

Washington, Oregon and California. Additional duties include managing a lab that processes age structures and entering biological data into the biological database system (BDS). The coastal marine fish science manager supervises the Unit as a whole.

The Unit has two major objectives: (1) collect biological data and samples, such as sizes, otoliths, and gonads, from commercially landed groundfish in support of research and stock assessments; and (2) collect groundfish catch data via commercial fisheries logbooks, fish receiving tickets, and species composition sampling of mixed-species market categories, in support of fisheries monitoring and in-season management decision making. Accomplishing these goals contribute to the achievement of WDFW's mission to preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities.

Fishery Description at Main Coastal Ports

Comprehensive management changes have resulted in significant changes in the Washington coastal trawl fishery over the last 20 years. Subject to more dynamic regulation with area closures, reductions in total allowable catch, reductions in trip-limits, establishment of permits, and gear changes, fishing efforts shifted to other fisheries and species with less restrictive regulations and the number of trawlers decreased. Many vessels participated in the NMFS Pacific Coast Groundfish Buyback Program, implemented in 2003, which allowed owners of non-hake groundfish trawlers to surrender their fishing permits and receive a payout. The groundfish trawl fishery was further affected by the implementation of the National Oceanic and Atmospheric Administration Fisheries (NOAA) trawl catch share program in 2011. The program consists of an individual fishing quota (IFQ) program for the shore-based trawl fleet and cooperative programs for the at-sea mothership and catcher/processor trawl fleets. This current management system for the west coast groundfish trawl fishery divides the total amount of an overall allowable catch or quota into shares controlled by individual fishermen or groups of fishermen (cooperatives). Shares can be harvested at the fishermen's discretion, ideally more efficiently and at more profitable marketing times.

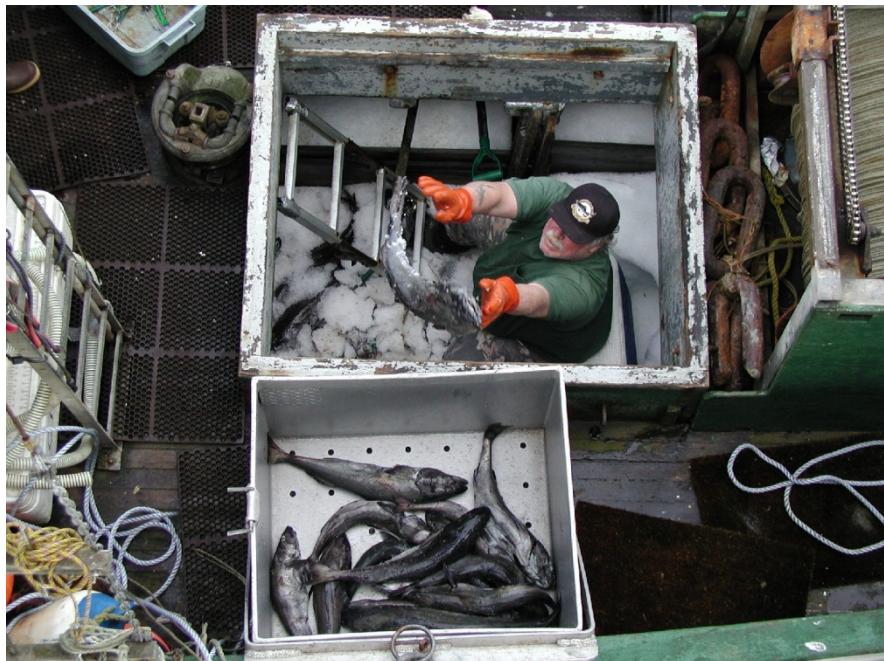
Similarly, the sablefish longline fishery underwent a significant change when NMFS restructured it to eliminate the rush for fish, replacing the "derby" fishery with a limited entry, tiered catch and fixed season program in 2001.

A description of the groundfish fishery including changes in fleet size, active fisheries, and fish dealers at coastal ports; Westport, Ilwaco, Chinook, Bellingham, Blaine, Neah Bay and La Push, are summarized below.

Westport, Ilwaco, and Chinook

The groundfish fleet at Westport, Ilwaco, and Chinook ports was impacted by the fishing regulations implemented from 1990 to 2000. In 1990, the combined fleet size at these ports was approximately 55 groundfish vessels (including vessels participating in the shoreside hake fishery). By 1997 the fleet size was reduced to 19 vessels, and no trawlers landed in Chinook after that year. By 2000, the fleet decreased to nine vessels.

After the implementation of the NMFS Buyback Program, only six groundfish trawl vessels remained in the ports of Westport and Ilwaco in 2003. After the Buyback Program many groundfish trawlers started to fish for hake.



Sablefish being offloaded from a longline vessel at Westport.

Now, in 2014, Westport and Ilwaco has a trawl fleet of 11 vessels, most of which are hake trawlers. Groundfish landings ended for the small footrope gear and only three vessels landed groundfish with large footrope gear or selective flatfish trawl gear.

Westport, Ilwaco, and Chinook ports also support a longline fleet. Now, in 2014, the longline fleet consists of 31 vessels.

Westport and Ilwaco support the following active groundfish fisheries: (1) Limited Entry Fixed Gear (LEFG) fishery where the primary target species is sablefish. This includes the year-round daily trip limit (DTL) fishery and the tiered sablefish fishery (season runs from April 1 through October 31, or until permit limits are attained); (2) Open Access (OA) fishery where primarily sablefish are targeted; (3) Individual Fishing Quota (IFQ) Program for the groundfish trawl fleet and for the IFQ sablefish that is fished with non-trawl gear (i.e., hook and line gear and pots); (4) recreational fishery for groundfish, comprised of a charter fleet as well as private boats.

There are multiple fish dealers at Westport, Ilwaco and Chinook. Ocean Gold Seafoods and Washington Crab Producers are the main dealers in Westport. Ocean Gold Seafoods buys fish from the IFQ trawl fleet, IFQ sablefish, and hake trawlers. Two smaller dealers, Westport Seafoods and Jolly Roger Seafood, purchase fish from the longline fleet. Ilwaco Landing and Jessie's Ilwaco Fish Co. are the main dealers in Ilwaco. Longline vessels and groundfish trawlers land at both dealers, and hake trawlers land at Jessie's Ilwaco Fish Co. Chinook has one dealer, Bell Buoy Crab Co., which purchases fish from the longline fleet.

Bellingham and Blaine

The groundfish fisheries at Bellingham and Blaine ports have considerably changed in the last 20 years. Prior to the implementation of the NMFS Buyback Program in 2003, the groundfish trawl fleet size generally consisted of nine vessels in Bellingham and one in Blaine. By 2011, after the implementation of the trawl catch share program, all of the trawlers had left the fishery by selling their vessel during the Buyback Program, leaving to fish outside of Washington, or retiring. Now, in 2014, one trawler is present from fall to late spring, and four other trawlers occasionally land in Bellingham. There are no groundfish trawlers based in Blaine.

Landings occur from January until Pacific whiting season starts (June 15th), and vessels target Dover sole, Petrale sole, sablefish, and lingcod. Additionally, fixed gear vessels will make landings from early spring to fall, though fishing may continue through winter for any remaining Petrale quota-share.

Following restructure of the sablefish “derby” fishery in 2001, longline landings in Bellingham were effectively spread out over the season. Up to six smaller vessels would land early in the season, and four larger vessels would land late in the season. Now, in 2014, the longline fleet consists of four to eight vessels. In the last few years, there has been a shift in effort with many of the smaller vessels moving to fish grounds further south. As a result, Bellingham is a slow port in the first half of the summer.

Bellingham and Blaine support the following active groundfish fisheries: (1) Limited Entry Fixed Gear (LEFG) fishery where the primary target species is sablefish. This includes the year-round daily trip limit (DTL) fishery and the tiered sablefish fishery (season runs from April 1 through October 31, or until permit limits are attained); (2) Open Access (OA) fishery where primarily sablefish are targeted; (3) Individual Fishing Quota (IFQ) Program for the groundfish trawl fleet and for the IFQ sablefish that is fished with non-trawl gear (i.e., hook and line gear and pots).

Bellingham has two main fish dealers, Bornstein Seafoods and Dana F. Besecker Co. The catch brought into Bornstein Seafoods is usually a random mix of groundfish; and the buyer may limit (50% of the time) the amount of certain species, dictated by market demand. Dana F. Besecker Co. located at Bellingham Cold Storage (BCS), lands mostly sablefish and a mix of rockfish and skates from fixed gear vessels. On occasion, two smaller dealers, Northport Fisheries and Icy Strait Seafoods will have custom off-loads at BCS. Blaine has one dealer, Boundary Fish, which buys primarily dogfish.

Neah Bay and La Push

Neah Bay and La Push ports are located on tribal reservations in the northwest corner of Washington State, the Makah Tribe at Neah Bay and Quileute Tribe at La Push. Unlike the other coastal ports, most landings are from tribal commercial fisheries, but landings from state fisheries occur as well.

Responding to the crisis in the West Coast groundfish fishery and changing fishery dynamics, state and tribal fishery managers joined forces to meet critical data needs in 2002. At that time, a growing treaty groundfish fleet and a greater need for catch accounting prompted tribal fishery managers to begin exploring ways to monitor the treaty groundfish fisheries. Due to funding constraints, state and tribal fishery managers combined their efforts and established a joint state-tribal port sampling position. Since WDFW already had the infrastructure to support the shared position, it was established within WDFW, and a full time sampler began working in 2002 at Neah Bay.

Currently, Neah Bay and La Push ports are tribal commercial fishing based, with no non-tribal trawlers based at either port. However, there was a small non-tribal effort with several trawlers based at Neah Bay from 2004 to 2010. Three to four longline vessels were present at both Neah Bay and La Push, and three to four smaller jig boats were present at La Push.

Groundfish fleets composed of treaty and non-treaty fishers are located at both ports. At Neah Bay, the tribal trawl fleet includes seven treaty trawlers and four larger mid-water Pacific whiting treaty trawlers. Of the seven treaty trawlers, three engage in a unique mid-water fishery targeting Yellowtail rockfish with a bycatch of Widow, Canary, and a variety of Shelf Rockfish. There are no tribal trawlers at La Push.

At Neah Bay, the tribal longline fleet consists of generally 40 treaty vessels. At La Push, the tribal fleet consists of five treaty and four non-treaty longliners. Many of the tribal longline vessels at both ports switch to salmon/tuna trolling or crabbing in-season.

Neah Bay and La Push support the following active groundfish fisheries: halibut, tribal trawl and longline, and the Open Access (OA) fishery where primarily sablefish are targeted. There is one main fish dealer at Neah Bay, The Cape Flattery Fishermen's Cooperative; and one at La Push, High Tide Seafoods. The majority of fish are trucked to various processors, mostly Pacific Coast Seafoods in Warrenton, Oregon. However, the Cape Flattery Fishermen's Cooperative has recently added a small fillet line.

Fishery Data Collection

Over the past decade, the groundfish fishery has undergone large-scale changes reflecting various management actions and economic forces. To ensure adequate biological data collection and catch accounting, the Washington Department of Fish and Wildlife has employed an adaptive approach to sampling.

The initial sampling design was stratified random: stratified by gear, month, and port, with vessels randomly selected at the port. When groundfish fisheries operated year-round (prior to 2011), samplers simply arrived at port and sampled from the vessels landing that day. Now, vessel selection is opportunistic, as relatively small fleet sizes in both the groundfish trawl and longline fisheries preclude true random selection. Port samplers closely monitor fleet activity within their assigned ports, conferring with dealers and skippers' regarding each vessel's fishing plans.

Each year port samplers, fishery managers, resource scientists, and database managers assemble in a one or two-day meeting to recount fishery activity in each port. Additionally, fishery sampling protocols are evaluated and the coming year's sampling objectives are established. Annual adjustments to sampling goals anticipate stock assessment schedules and effort or activity shifts within or across fisheries.

Objective 1. Biological Data Collection

Biological Sampling

For over 60 years, WDFW has collected groundfish biological data crucial to the support of state and federal fishery stock assessments and research that serves as the foundation of management. Commercial groundfish data have been collected since 1954, starting with Petrale and Pacific cod, and expanding to other species in the 1960's. This long-term data set allows scientists to monitor fish population trends and structures, and to predict the potential effects of fishing on those populations. Further, scientists can measure the rates of various processes affecting fish, such as growth, maturity, and mortality. These long-term data are summarized in Tables 1-2, showing number of length measurements and age structures taken in the past ten years; and Figures 4-18, showing long-term average size (mean length) of key groundfish species.

Unit port samplers collect biological data and samples from commercial groundfish landings and rockfish species composition samples from mixed-species "market" categories (management unit

in which a single species or multiple species comprise a category based on management needs and ease or difficulty in speciating). Biological data and samples collected include length, weight, sex, maturity, and aging structures (Appendix A-1). To guide sampling activity, port samplers are provided a comprehensive list of goals by species and/or market category, gear or fishery (Appendix A-2). Each goal is expressed as the minimum number of lengths and/or age structures to collect; ensuring sampling efforts are distributed across all species. Due to the sporadic or low volume of landings it is rare to achieve the minimum. Throughout the year, port samplers frequently update a running tally sheet of sampling goals, and use it to coordinate sampling efforts to ensure optimal coverage across fisheries and ports (Appendix A-3).



Port samplers collecting biological data at Westport.

Prior to 2006, goals were achieved by month, and typically one or two samples were collected per month for a given species (Appendix A-4). Due to changes in groundfish fishery dynamics, defined sampling goals were modified to reflect the total number of samples desired for a year,

allocated in varying amounts across those months, ports or gears in which landings were most likely to occur.

All biological data are entered into the Biological Data System (BDS) by the Unit's lead technician. Further data processing procedures are provided in Tsou et al. (2015).



Otolith extraction from a Yellowtail rockfish.

Age Structure Processing

Fish-age data are provided by ageing labs at the three coastal state agencies (Washington, Oregon, California), and the Northwest Fisheries Science Center (NWFSC) and Southwest Fisheries Science Center (SWFSC). The WDFW groundfish ageing lab has two technicians that age the following primary species: Lingcod, Yelloweye Rockfish, Yellowtail Rockfish, Petrale Sole, Pacific Ocean Perch, China Rockfish, Canary Rockfish, Black Rockfish, Spiny Dogfish, and northern Pacific Sardine. In addition, WDFW ages other species collected from Washington fisheries and surveys. The ageing lab produces 10,000 to 20,000 groundfish ages per year (Table 3), focusing on different species based on PFMC and state management needs.

Port samplers process structures, such as otoliths, fins, interopercula, and spines to age fish. The age structure

selection depends
on which structure
most accurately
reflects the age of
the fish, has the
clearest growth
zones, and is the
most cost effective.
Detailed processing
methods for
otoliths, Lingcod
fins, English Sole



Technician cutting lingcod fins for age reading.

interopercula, and Spiny Dogfish spines are described in Appendix A-5.

Age reading methods include surface read, break and burn, and sectioning. Detailed age reading methods are described in the Manual on Generalized Age Determination - Procedures for Groundfish (C.A.R.E., 2006). Table 4 lists the age structures and methods used to age fish species, and year in which each species were first and last sampled.

Objective 2. Catch Data Collection

Species Composition Sampling

Species composition data is collected to estimate the catch of various species landed in single and mixed-species market categories and to verify fishermen/fish dealers sorting accuracy. Mixed-species market categories are comprised of groups of fish that share similar habitats and are often caught by the same gear, and single-species market categories are comprised of one species. Species composition sampling data (Appendix B) are used to produce proportions, by weight, for individual species by market category, port (or port group), gear (or gear group), and quarter. The number of species composition samples taken in the last ten years (2005-2014), by gear, year, and market category are reported in Table 5.

The majority of market categories are comprised of various rockfish species. Rockfish market categories include three mixed-species categories based on habitat: shelf, slope, and nearshore; and nine single-species categories: Black Rockfish, Canary Rockfish, Darkblotched Rockfish, Pacific Ocean Perch, Widow Rockfish, Yellowtail Rockfish, Yelloweye Rockfish, Shortspine Thornyhead, and Longspine Thornyhead. Shelf rockfish species include Bocaccio, Silvergray, Greenstriped, Redstripe, Rosethorn, Stripetail, Tiger, Vermilion, Chilipepper, Pygmy, Greenspotted, and Shortbelly. Slope rockfish species include Aurora, Blackgill, Redbanded, Rougheye, Sharpchin, Shortraker, Splitnose, Yellowmouth, and Blackspotted. Nearshore rockfish species include Blue, Brown, China, Copper, and Quillback. Photos of commonly observed Washington coast rockfish market categories are provided in Figure 19.

Species composition sampling is stratified by port per quarter and based on landed weights for each market category. At the beginning of each year, the quarterly goals for species compositions are set, with a minimum target rate of 20% of total pounds landed for each market category. Each port sampler receives a port sampling summary that shows the pounds landed for all species in their port and their percentage ratios per quarter. This information allows each sampler to increase or decrease the number of species comps they are collecting in order to reach their sampling goals.

Fish Tickets and Soft Catch Data

Washington groundfish landed catch data are provided to the PacFIN database via fish receiving ticket ('fish ticket') data collection and processing. Fish tickets are an official document provided to the fish dealer for commercial catch accounting and are mandatory to complete for all commercial fisheries. There are two different types of fish tickets: 1) non IFQ (Appendix C-1), and (2) IFQ (Appendix C-2). All IFQ-groundfish are tracked in real time via an e-ticket and reported to PSMFC's e-ticket portal within 24-hours from landing. Fish tickets capture market category landed, scale weight of market category, dressed status (filleted, gutted, headed), gear used, WDFW management area (Figure 20) where most of the fish were caught, landing date, seller and buyer information, and economic data such as the price per pound paid for each market category. Multiple tickets can be generated by the buyer for each landing and the vessel can land its catch over multiple days and ports, sometimes in different states from one trip.

Fish tickets are used to collect both "hard" and "soft" landed catch data. Hard catch data are obtained via fish tickets that have been processed by the WDFW Commercial Harvest Data Team. Dealers and processors are required to submit paper copy non-IFQ fish tickets to the Commercial Harvest Data Team within six days. Tickets received are keypunched, error checked, and entered into the Washington License and Fish receiving Ticket (LiFT) database. IFQ ticket data are obtained directly from the PSMFC's e-ticket portal, and they are error checked by port samplers before resubmitting to the LiFT database. Detailed fish ticket data processing procedures are described in Morningstar (pers. comm.) and Tsou et al. (2015).

Since hard data processing can take up to six weeks, port samplers provide unofficial fish ticket data ("soft catch data") to PacFIN. On Monday of each week, port samplers collect (via email) non-IFQ fish tickets directly from individual dealers/processors for the previous week's fishing activity (Sunday through Saturday). Both non-IFQ and IFQ tickets (obtained from PSMFC e-ticket portal) are compiled, error checked, and entered into the soft data report database to produce weekly reports, also known as the "market report".

Market reports are sent to PacFIN for its Quota Species Monitoring (QSM), a "real-time" summary of catch data for limited entry, open access, and tribal groundfish fleets. This QSM subsystem has become an important tool for PFMC in-season fisheries quota management. Best estimate reports (BER) for each groundfish species (or market category) by month, area, and gear-type are developed using catch data, associated vessel registration data, and species composition data.

Logbook

The coastwide trawl logbook (CTL) was developed by PFMC, the states of Washington, Oregon and California, and NMFS. Groundfish trawl captains are required to complete and turn in a log for midwater gear, trawl-roller gear, trawl-bottom gear, and selective flatfish gear. Fishing data such as individual fishing tows with information on area (latitude/longitude), depth, time, date and weight of each species of fish caught are recorded (Appendix D). Logbook data are used to generate catch-by-area proportions. Washington regularly achieves a high percentage of logbooks recovered, ranging from 82-100% per year in the last ten years (Table 6).

Logbooks are often collected by the port sampler during vessel offloads, but are required to be mailed to WDFW by the 10th of each month for the preceding months fishing activity. Port samplers match logbooks to fish tickets based on vessel and return date information and enter this data into the coastal trawl logbook system (CTLS) via front-end Microsoft Access forms. Further data processing procedures are described in Tsou et al. (2015).

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Table 1. Number of length measurements taken by species and year.

Common Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Aleutian Skate									8	
Arrowtooth Flounder	200	605	1050	900	1365	833	899	1100	500	600
Aurora Rockfish	51	30	15	18	40	16	134	186	24	78
Bank Rockfish						2			2	
Big Skate	87	192	175	94	18	15	9	38	167	249
Black (Roughtail) Skate									1	
Black Hagfish					14			5		53
Black Rockfish	1	20								
Blackgill Rockfish	40	22	28	28	30	22	48	48	26	31
Blackspotted Rockfish				13	9	15	34	6	6	4
Bocaccio	88	15		1	1		4	13	2	12
Canary Rockfish	521	667	508	640	681	792	637	524	396	127
Copper Rockfish		4								
Cowcod					1					
Darkblotched Rockfish	117	505	579	350	359	209	869	758	701	373
Dover Sole	850	1150	2150	2134	1000	1200	1400	800	1551	500
English Sole	823	1437	1650	1398	1500	800	1350	681	1082	993
Greenstriped Rockfish	86	90	3		62	21	12	185	162	160
Lingcod	358	380	496	496	386	201	465	479	831	282
Longnose Skate	15	255	381	972	456	150	735	600	1012	401
Longspine Thornyhead	69	53	316	370	454	616	796	352	605	351
Northern Anchovy										990
Pacific Cod	1181	920	700	300	900	1300	800	478	400	457
Pacific Hagfish					1352	432	405	175	70	1201
Pacific Ocean Perch	323	395	910	872	1082	430	460	573	523	616
Pacific Sardine	1495	375	250	301	300	250	250	1124	1725	627
Pacific Whiting (hake)				1422	1117	2110	1909	2146	2759	2229
Petrale Sole	1176	1700	2142	1777	1128	656	1123	1141	1908	1200
Quillback Rockfish	1	105								19
Redbanded Rockfish	102	264	419	399	346	306	514	443	603	706
Redstripe Rockfish		1						1		48
Rosethorn Rockfish	9	8		3	4	2	51	51	56	70
Rougheye Rockfish	1357	1635	1468	1663	1581	1097	1379	1463	1145	1005
Sablefish	2537	4167	2635	3629	2456	2904	4047	3333	2790	4294
Sharpchin Rockfish	2	9	11	2	2	4	33	376	95	36
Shortraker Rockfish	60	51	99	151	131	199	208	128	60	90
Shortspine Thornyhead	379	100	707	475	940	892	1130	997	990	1039
Silvergray Rockfish	2	42	3	10	8		23	12	107	45
Spiny Dogfish	200	1572	2090	985	401	853	1807	761	419	425
Splitnose Rockfish	4	54	85	62	163	9	96	313	377	306
Walleye Pollock	200									
Widow Rockfish	449	518	783	1212	1129	1003	693	1161	725	1076
Yelloweye Rockfish		70	28	1	14	27	10	30	17	6
Yellowmouth Rockfish	1		7	57			1	6	21	7
Yellowtail Rockfish	1173	968	2515	1841	1450	1614	1415	2231	1275	1309

Table 2. Number of age structures obtained by species and year.

Common Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Arrowtooth Flounder	200	50								
Aurora Rockfish					3	111	97	6	29	
Bank Rockfish						2				
Big Skate	87	172	174			5				
Black Rockfish		19								
Blackgill Rockfish					16	32	20	14	1	
Blackspotted Rockfish					13	19	1			
Bocaccio	16					1	13			6
Canary Rockfish	521	658	509	643	681	792	608	506	346	82
Darkblotched Rockfish	103	294	423	345	281	120	610	456	400	200
Dover Sole	850	600	1100	1134	500	600	700	400	651	250
English Sole	823	837	1150	748	750	400	701	350	525	500
Greenstriped Rockfish					21	10	111	107	20	
Lingcod	358	380	497	496	386	131	226	297	275	145
Longnose Skate	16	255	381							
Northern Anchovy										108
Pacific Cod	50									100
Pacific Ocean Perch	300	219	627	475	648	244	309	331	266	295
Pacific Sardine	1495	375	250	301	300	250	250	1124	1725	606
Pacific Whiting (hake)				240	180	340	300	340	540	460
Petrale Sole	1176	900	1100	940	550	394	650	600	850	700
Quillback Rockfish										15
Redbanded Rockfish			383	285	343	306	393	308	336	296
Redstripe Rockfish										5
Rosethorn Rockfish						2	45	7	55	7
Rougheye Rockfish	831	810	1034	952	1361	947	942	917	557	599
Sablefish	445	2404	1322	2521	1103	1092	1876	1794	1333	2239
Sharpchin Rockfish						3	32	5	44	1
Shortraker Rockfish	30	38	94	132	131	187	167	105	29	42
Shortspine Thornyhead								1	1	
Silvergray Rockfish							14	12	57	23
Spiny Dogfish	200	222	1161	829	401	548	1283	605	189	175
Splitnose Rockfish						3	82	75	50	25
Walleye Pollock	200									
Widow Rockfish	449	417	587	726	809	590	435	773	521	625
Yelloweye Rockfish		71	28	1	14	27	7	30	17	6
Yellowmouth Rockfish							1	2	19	
Yellowtail Rockfish	1173	767	1402	1097	942	932	814	1280	750	764

Table 3. Number of structures (from commercial samples) aged per species by year. Note that the number of structures aged in a year can come from samples collected over several years prior.

Common Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Arrowtooth Flounder		763	300							
Black Rockfish		19								
Canary Rockfish	481	5588		1285	51	1328			1153	
Darkblotched Rockfish		518	717	105	138	401		535	456	300
Dover Sole	1030		1037	173						
English Sole	2728	1134	370		1790	1042			1249	300
Lingcod	241		538	696	493			713		
Pacific Ocean Perch	447	100				1668	11368		634	
Pacific Sardine	948	746	375	246	300	299	250	248	1114	1703
Pacific Whiting (hake)				100	299	340	299	338	360	340
Petrale Sole	650	325	296	2675	300	784		50	1240	1240
Rougheye Rockfish									868	
Sablefish	108	239	1484	1006		576	961	378	133	993
Spiny Dogfish	300	310	1105		1273	271				
Splitnose Rockfish								3		
Walleye Pollock					942					
Widow Rockfish	50	901	687	675	629	749	384			
Yelloweye Rockfish		68	2	27	1	40			37	
Yellowmouth Rockfish								1		
Yellowtail Rockfish	1599			2990	1366			3760	150	

Table 4. List of age structures and methods used to age fish species, and year in which species were first and last sampled.

Common Name	Scientific Name	Age Structure	Age Method	First Sample Year	Last Sample Year
Arrowtooth Flounder	<i>Atheresthes stomias</i>	Otolith	Surface read	1986	1991
Arrowtooth Flounder	<i>Atheresthes stomias</i>	Otolith	Break and burn	1998	2005
Black Rockfish	<i>Sebastodes melanops</i>	Otolith	Break and burn	1976	2006
Bocaccio	<i>Sebastodes paucispinis</i>	Otolith	Break and burn	1995	1995
Brown Rockfish	<i>Sebastodes auriculatus</i>	Otolith	Surface read	1976	1976
Canary Rockfish	<i>Sebastodes pinniger</i>	Otolith	Break and burn	1980	2012
Canary Rockfish	<i>Sebastodes pinniger</i>	Otolith	Surface read	1975	1985
Chub Mackerel	<i>Scomber japonicus</i>	Otolith	Surface read	1997	1997
Darkblotched Rockfish	<i>Sebastodes crameri</i>	Otolith	Break and burn	2002	2012
Dover Sole	<i>Microstomus pacificus</i>	Otolith	Break and burn	1985	2007
English Sole	<i>Parophrys vetulus</i>	Interoperculum	Surface read	1969	2013
English Sole	<i>Parophrys vetulus</i>	Otolith	Surface read	1961	2013
Lingcod	<i>Ophiodon elongatus</i>	Fin	Sectioning	1978	2011
Longnose Skate	<i>Raja rhina</i>	Fin	Surface read	2006	2006
Pacific Cod	<i>Gadus macrocephalus</i>	Otolith	Surface read	1974	1975
Pacific Cod	<i>Gadus macrocephalus</i>	Scale	Surface read	1980	1980
Pacific Ocean Perch	<i>Sebastodes alutus</i>	Otolith	Break and burn	1981	2012
Pacific Ocean Perch	<i>Sebastodes alutus</i>	Otolith	Sectioning	2009	2010
Pacific Ocean Perch	<i>Sebastodes alutus</i>	Otolith	Surface read	1966	1983
Pacific Sardine	<i>Sardinops sagax</i>	Otolith	Surface read	2000	2013
Pacific Whiting (hake)	<i>Merluccius productus</i>	Otolith	More than one age method (as BB+SR)	2008	2013
Pacific Whiting (hake)	<i>Merluccius productus</i>	Otolith	Surface read	1965	2013
Pacific Whiting (hake)	<i>Merluccius productus</i>	Otolith	Break and burn	2008	2014
Petrale Sole	<i>Eopsetta jordani</i>	Otolith	Break and burn	2009	2014
Petrale Sole	<i>Eopsetta jordani</i>	Otolith	Surface read	1960	2010
Rougheye Rockfish	<i>Sebastodes aleutianus</i>	Otolith	Break and burn	2011	2013
Sablefish	<i>Anaplopoma fimbria</i>	Otolith	Age method not recorded	1986	2006
Sablefish	<i>Anaplopoma fimbria</i>	Otolith	Break and burn	1991	2013
Sablefish	<i>Anaplopoma fimbria</i>	Otolith	More than one age method (as BB+SR)	1987	2010
Sablefish	<i>Anaplopoma fimbria</i>	Otolith	Surface read	1988	1988
Silvergray Rockfish	<i>Sebastodes brevispinis</i>	Otolith	Surface read	1980	1980
Spiny Dogfish	<i>Squalus acanthias</i>	Second dorsal spine	Surface read	2003	2014
Spiny Dogfish	<i>Squalus acanthias</i>	Scale	Surface read	2004	2004
Splitnose Rockfish	<i>Sebastodes diploproa</i>	Otolith	Break and burn	2010	2010

Common Name	Scientific Name	Age Structure	Age Method	First Sample Year	Last Sample Year
Starry Flounder	<i>Platichthys stellatus</i>	Interoperculum	Surface read	1972	1972
Walleye Pollock	<i>Theragra chalcogramma</i>	Otolith	Surface read	1978	2005
Widow Rockfish	<i>Sebastodes entomelas</i>	Otolith	Age method not recorded	2006	2009
Widow Rockfish	<i>Sebastodes entomelas</i>	Otolith	Break and burn	1994	2010
Widow Rockfish	<i>Sebastodes entomelas</i>	Otolith	More than one age method (as BB+SR)	2004	2010
Widow Rockfish	<i>Sebastodes entomelas</i>	Otolith	Surface read	1980	2008
Yelloweye Rockfish	<i>Sebastodes ruberrimus</i>	Otolith	Break and burn	2001	2012
Yellowmouth Rockfish	<i>Sebastodes reedi</i>	Otolith	Break and burn	2011	2011
Yellowtail Rockfish	<i>Sebastodes flavidus</i>	Otolith	Surface read	1977	1982
Yellowtail Rockfish	<i>Sebastodes flavidus</i>	Otolith	Break and burn	1973	2012

Table 5. Number of species composition samples taken by gear type, year, and market category. DBRK = Darkblotched Rockfish, LSPN = Longspine Thornyhead, NUSF = Shelf Rockfish, NUSP = Slope Rockfish, NUSR = Nearshore Rockfish, SSPN = Shortspine Thornyhead, YEYE = Yelloweye Rockfish.

Gear	Year	DBRK	LSPN	NUSF	NUSP	NUSR	SSPN	YEYE
Bottom Trawl (Small Footrope)	2005	3		4	8	2	7	
Bottom Trawl (Small Footrope)	2006			3	12	2	3	
Bottom Trawl (Small Footrope)	2007		1	1	12	1	4	
Bottom Trawl (Small Footrope)	2008			4	2		1	
Bottom Trawl (Small Footrope)	2009				2			
Bottom Trawl (Small Footrope)	2010				1			
Bottom Trawl (Small Footrope)	2011				1			
Bottom Trawl (Small Footrope)	2012				2			
Bottom Trawl (Small Footrope)	2013				1			
Bottom Trawl (Small Footrope)	2014			2		1		
Bottomfish Pot	2013				2		1	
Bottomfish Pot	2014				3		1	
Midwater Trawl	2005			7				
Midwater Trawl	2006			2				
Midwater Trawl	2008			3				
Midwater Trawl	2009			3				
Midwater Trawl	2010			1				
Midwater Trawl	2012			1	2			
Midwater Trawl	2013			1				
Midwater Trawl	2014			2				
Roller Trawl (Large Footrope)	2005	4	1	3	8		6	
Roller Trawl (Large Footrope)	2006			1	6		3	
Roller Trawl (Large Footrope)	2007		1	4	19		11	
Roller Trawl (Large Footrope)	2008		1	2	20		8	
Roller Trawl (Large Footrope)	2009	3	2	3	24		15	
Roller Trawl (Large Footrope)	2010		2	2	11		7	
Roller Trawl (Large Footrope)	2011		6	10	19		9	
Roller Trawl (Large Footrope)	2012		7	12	16		8	
Roller Trawl (Large Footrope)	2013		9	11	13		13	
Roller Trawl (Large Footrope)	2014		5	10	7	4	5	
Selective Flattfish	2005	3		14	9	1	11	
Selective Flattfish	2006			12	3	3	2	2
Selective Flattfish	2007			1	1		1	
Selective Flattfish	2009			5				
Selective Flattfish	2010			1				
Selective Flatfish	2013			1	1			
Long Line	2005	6		10	96			
Long Line	2006	1		7	66			
Long Line	2007			2	64		4	
Long Line	2008		1	9	91		10	
Long Line	2009			5	84		6	1
Long Line	2010			3	74		5	2
Long Line	2011			3	61		11	1
Long Line	2012			3	52		11	
Long Line	2013			4	62		9	
Long Line	2014		1	4	66		13	

Table 6. Estimated percentage of logbooks recovered per year.

Year	Percent Logbooks Recovered
2005	82.2%
2006	94.0%
2007	88.1%
2008	90.9%
2009	83.0%
2010	98.8%
2011	100.0%
2012	97.0%
2013	97.7%
2014	100.0%

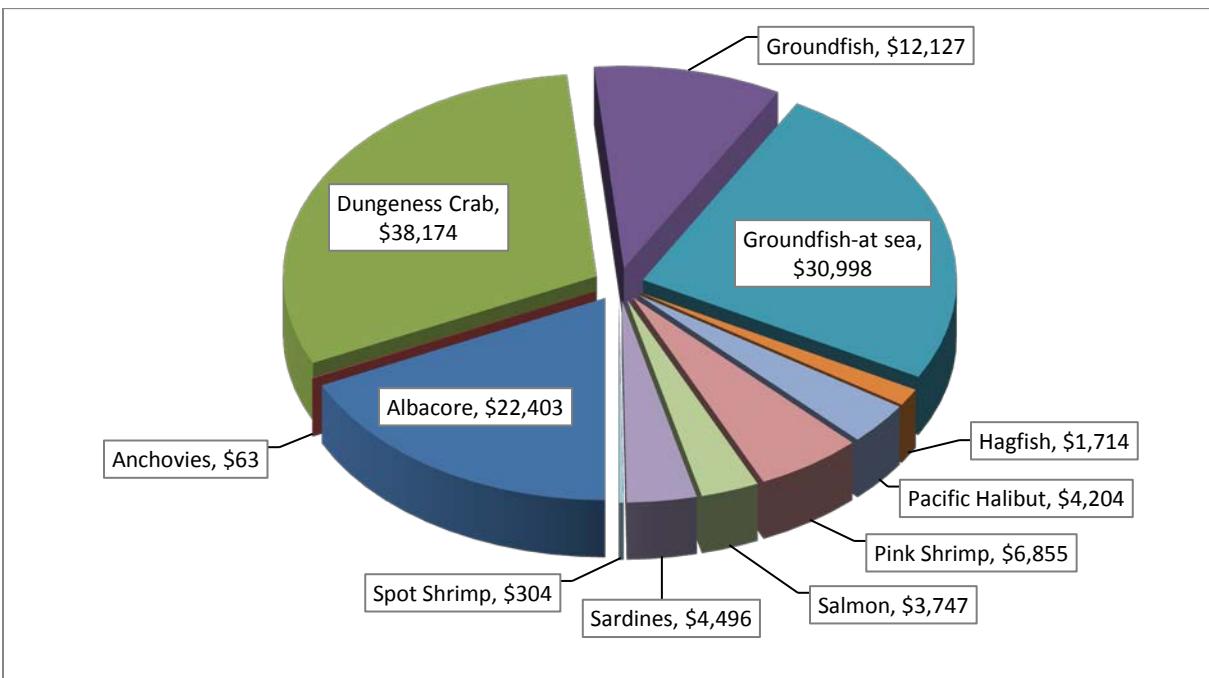


Figure 1. Washington coastal commercial fisheries average direct value revenue (dollars) for 2010 to 2014.

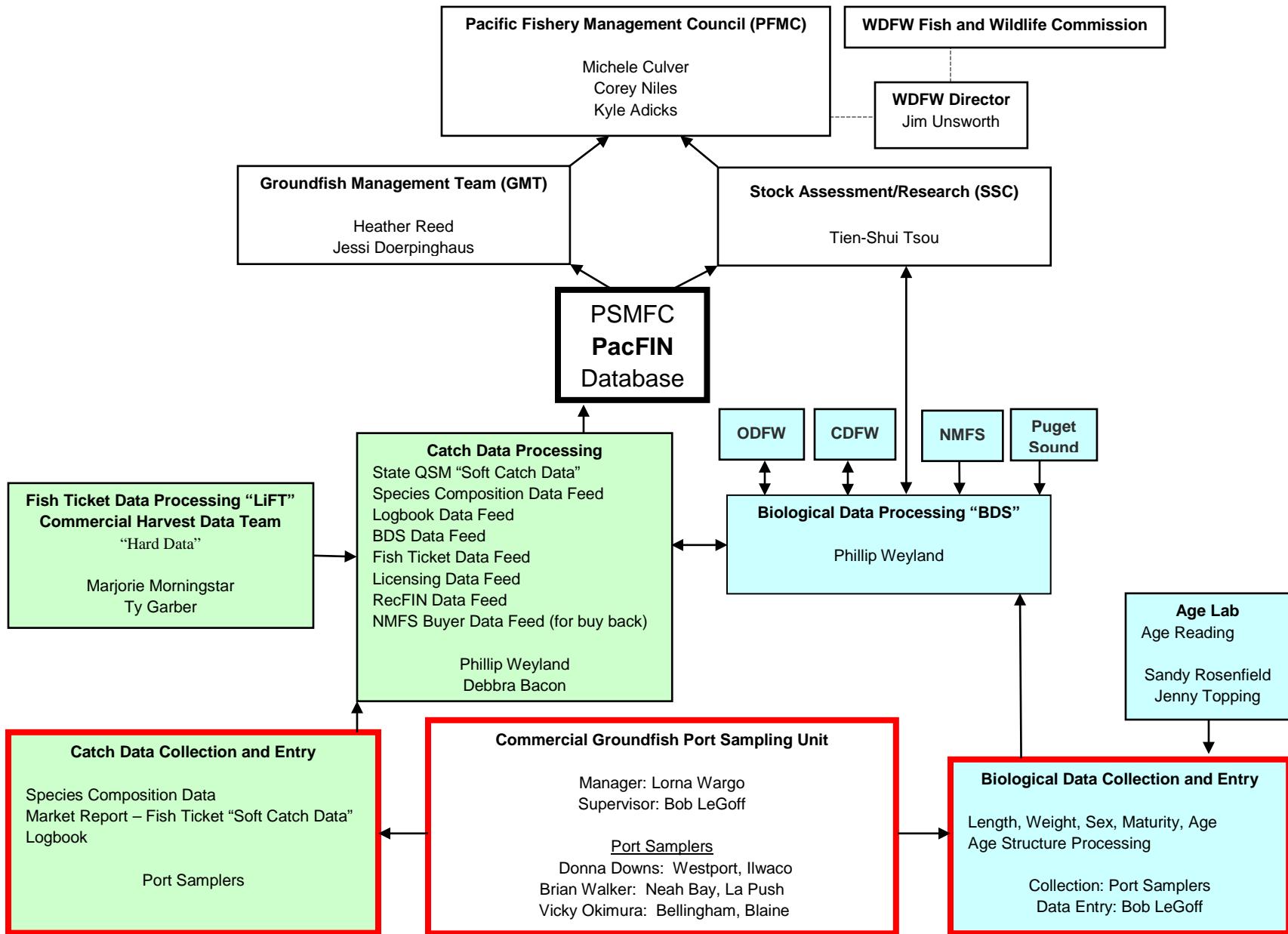


Figure 2. Systematic flow of commercial groundfish data. Blue = Biological data collection and processing. Green = Catch data collection and processing. Red Boxes = Groups discussed in this report.



Figure 3. Washington State waterways and ports. Coastal ports currently sampled by the Commercial Groundfish Port Sampling Unit are indicated with star symbols.

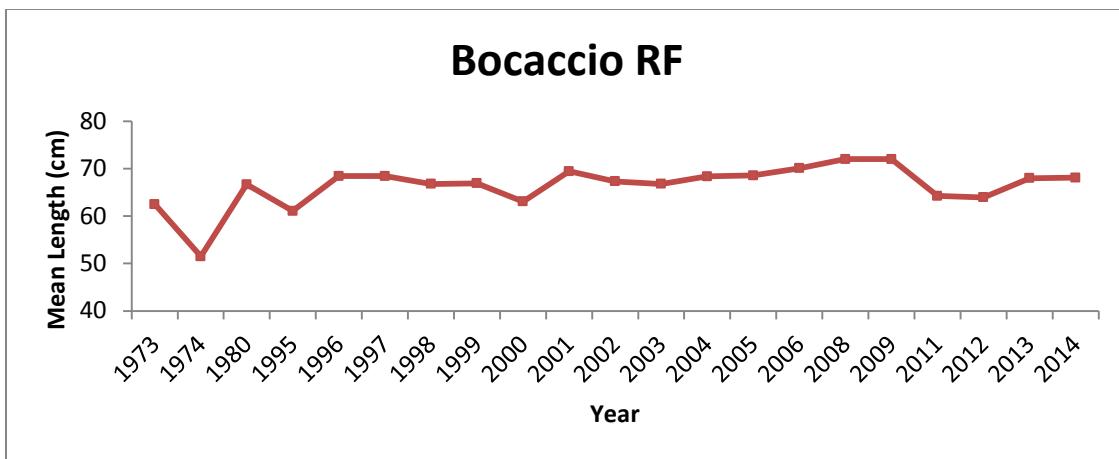


Figure 4. Mean length of Bocaccio Rockfish caught in commercial landings.

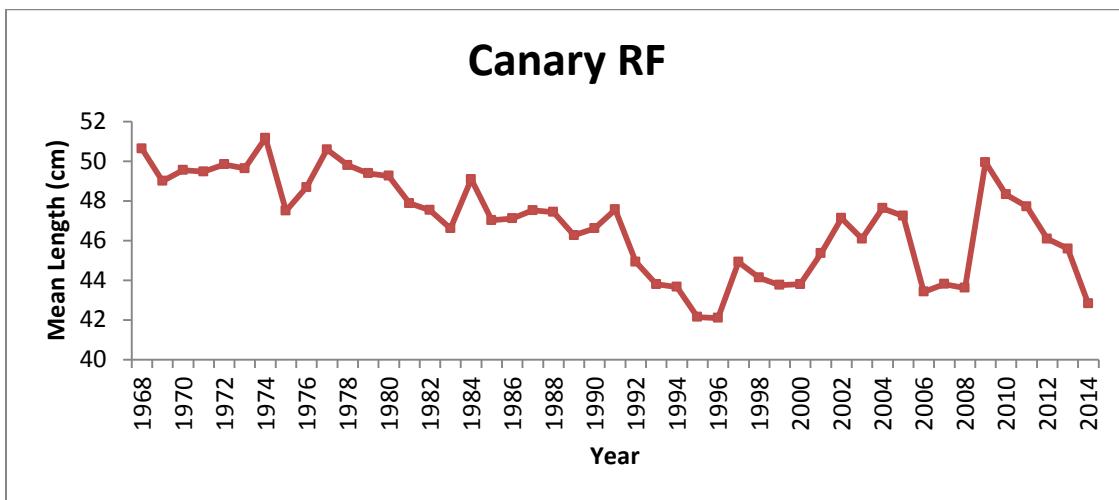


Figure 5. Mean length of Canary Rockfish caught in commercial landings.

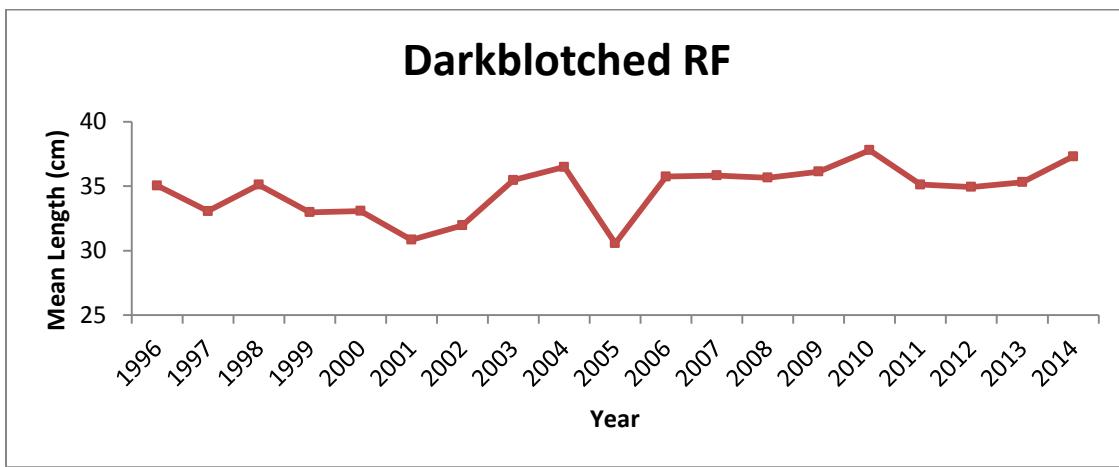


Figure 6. Mean length of Darkblotched Rockfish caught in commercial landings.

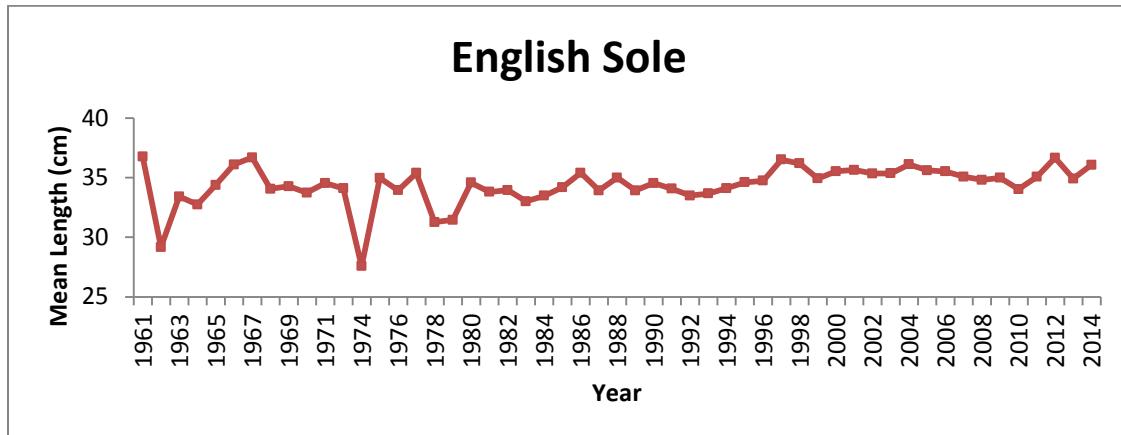


Figure 7. Mean length of English Sole caught in commercial landings.

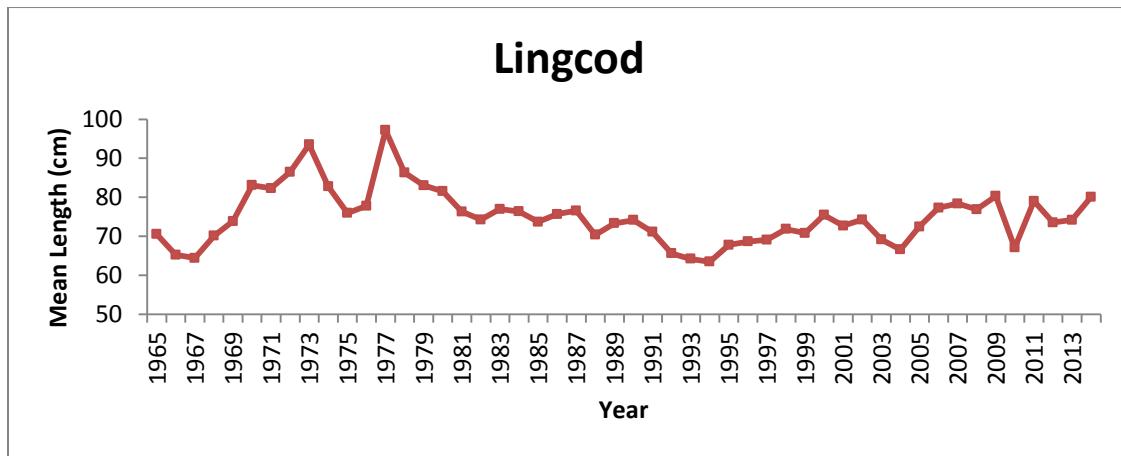


Figure 8. Mean length of Lingcod caught in commercial landings.

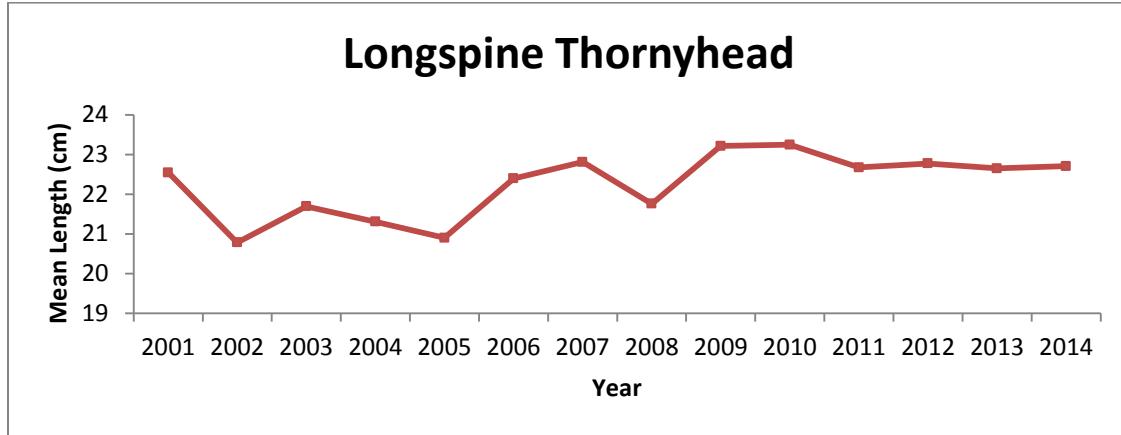


Figure 9. Mean length of Longspine Thornyhead caught in commercial landings.

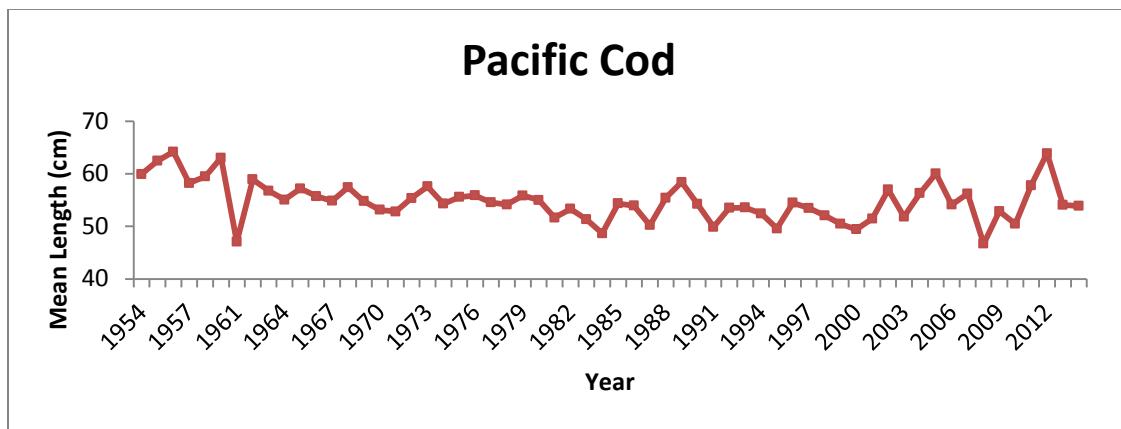


Figure 10. Mean length of Pacific Cod caught in commercial landings.

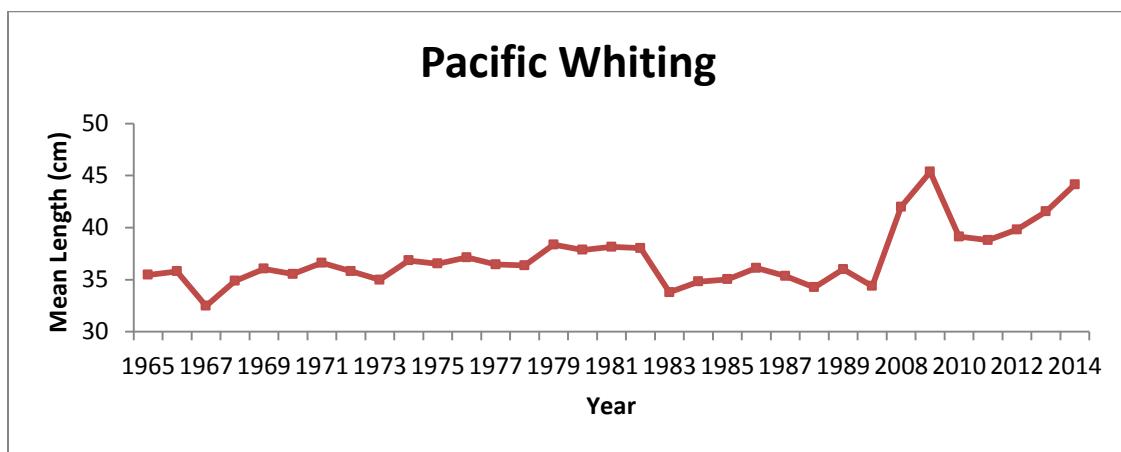


Figure 11. Mean length of Pacific Whiting caught in commercial landings.

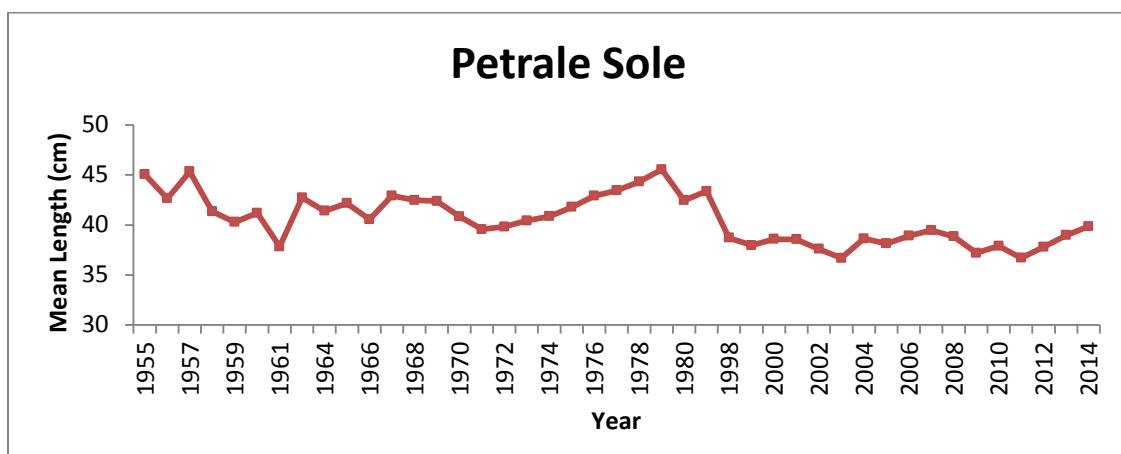


Figure 12. Mean length of Petrale Sole caught in commercial landings.

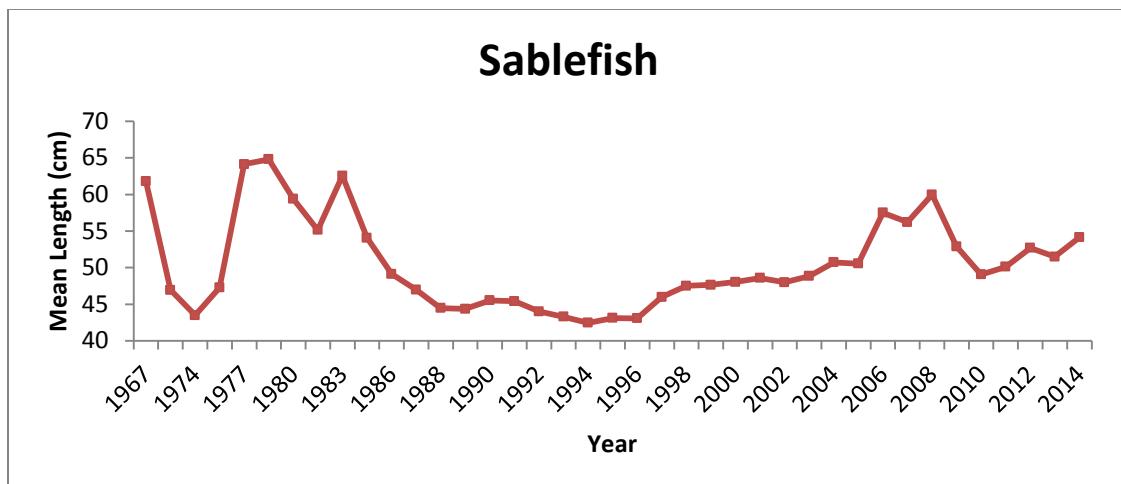


Figure 13. Mean length of Sablefish caught in commercial landings.



Figure 14. Mean length of Shortspine Thornyhead caught in commercial landings.

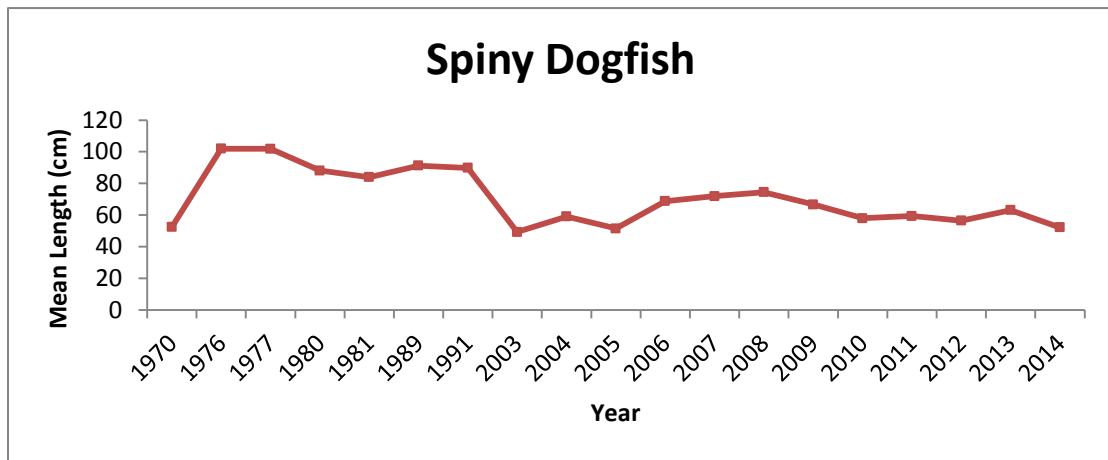


Figure 15. Mean length of Spiny Dogfish caught in commercial landings.

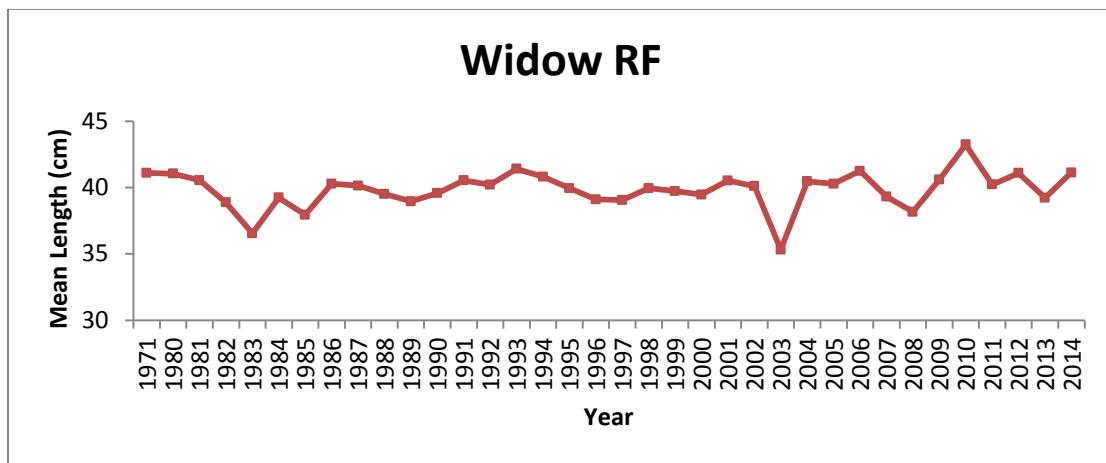


Figure 16. Mean length of Widow Rockfish caught in commercial landings.

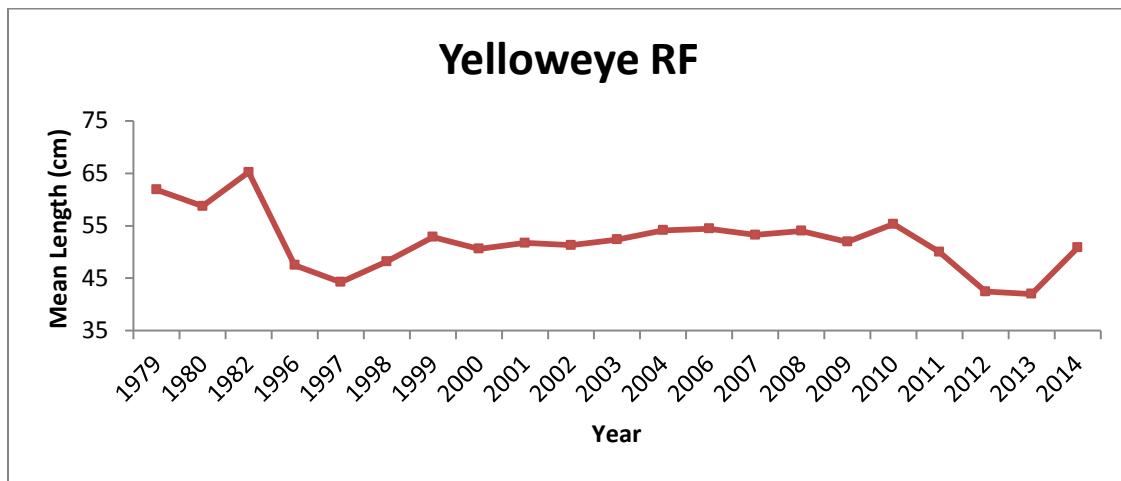


Figure 17. Mean length of Yelloweye Rockfish caught in commercial landings.

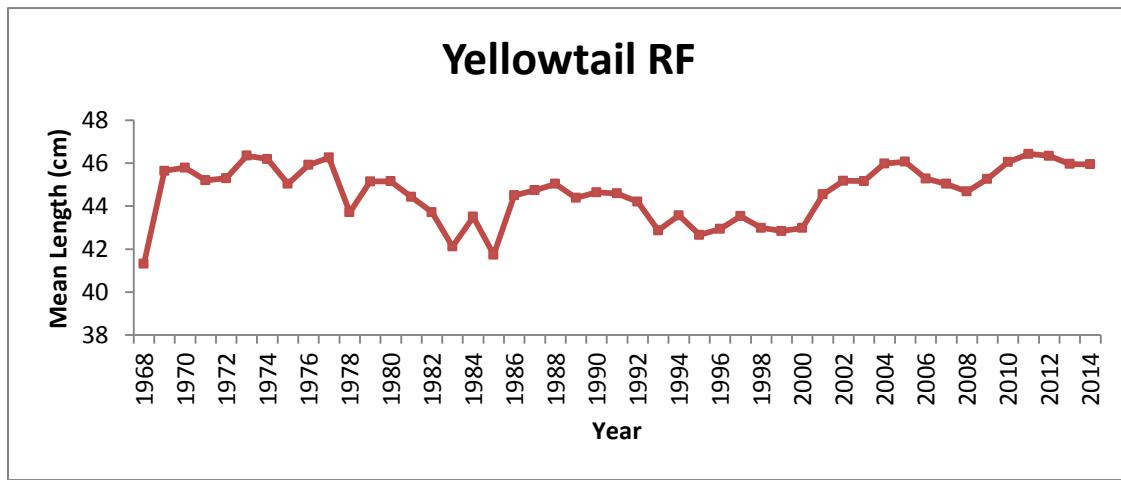


Figure 18. Mean length of Yellowtail Rockfish caught in commercial landings.

Washington Coast Rockfish

Slope Rockfish



Shelf Rockfish



Photos and text are from the book Guide to Northeast Pacific Rockfishes: Genera *Sebastodes* and *Sebastolobus*, by Donald E. Kramer and Victoria O'Connell, published by Alaska Sea Grant College Program



Figure 19. Washington coast rockfish species by market category (p. 1).

Washington Coast Rockfish

Nearshore Rockfish



Blue Rockfish
Sebastodes mystinus



Brown Rockfish
Sebastodes auriculatus



China Rockfish
Sebastodes nebulosus



Copper Rockfish
Sebastodes caurinus



Quillback Rockfish
Sebastodes maliger

Individual Market Category rockfish



Black Rockfish
Sebastodes melanops



Canary Rockfish
Sebastodes pinniger



Darkblotched Rockfish
Sebastodes crameri



Pacific Ocean Perch
Sebastodes alutus



Widow Rockfish
Sebastodes entomelas



Yellowtail Rockfish
Sebastodes flavidus



Yelloweye Rockfish
Sebastodes ruberrimus



Shortspine Thornyhead
Sebastolobus alascanus



Longspine Thornyhead
Sebastolobus altivelis

Sea Grant
Alaska

Washington Department of
FISH and WILDLIFE

Photos and text are from the book Guide to Northeast Pacific Rockfishes: Genera *Sebastodes* and *Sebastolobus*, by Donald E. Kramer and Victoria O'Connell, published by Alaska Sea Grant College

Figure 19. Washington coast rockfish species by market category (p. 2).



Marine Fish-Shellfish Management and
Catch Reporting Areas, coastal waters.
WAC 220-22-410

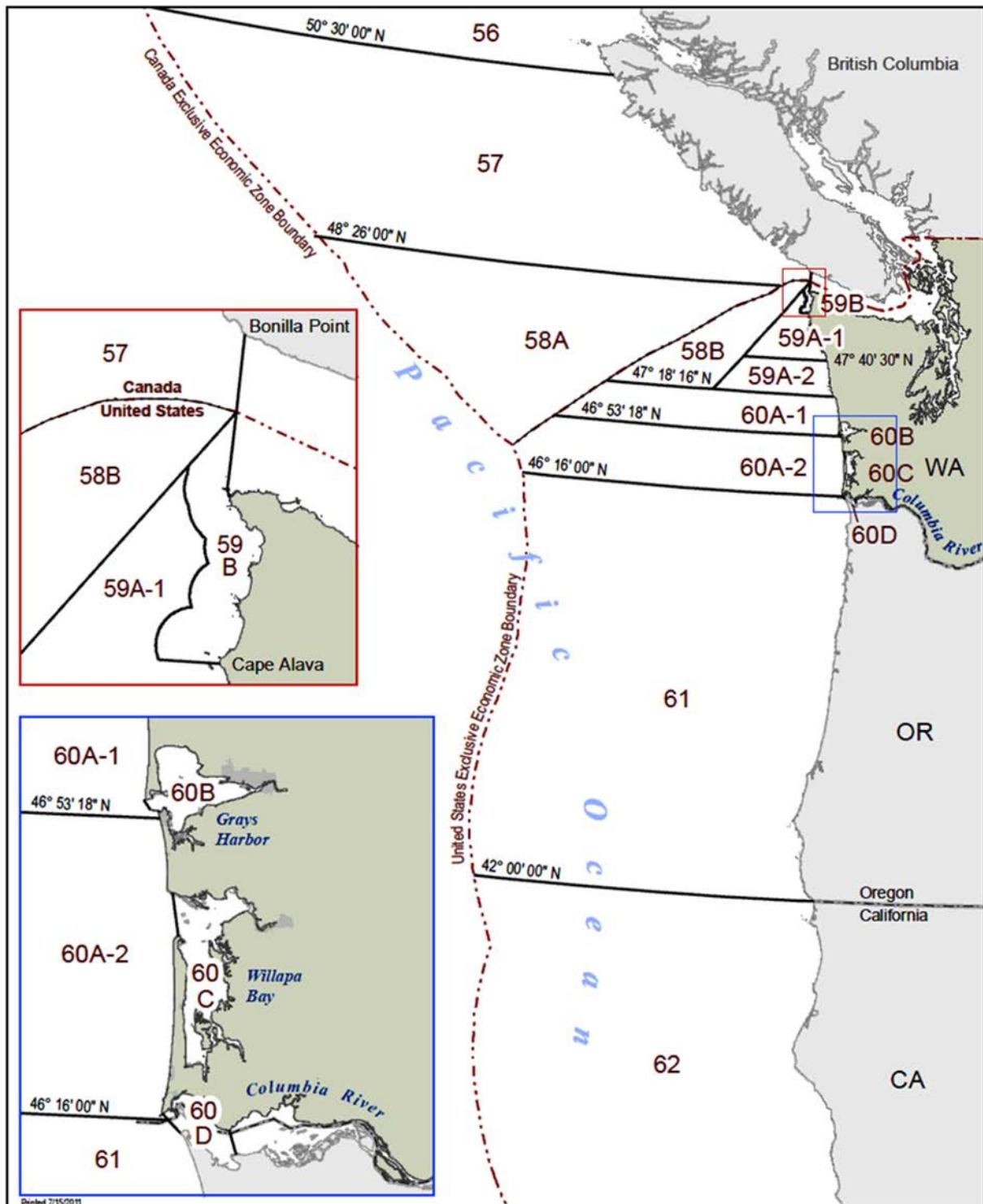


Figure 20. WDFW Marine Fish-Shellfish Management and Catch Reporting Areas.

Appendices

Appendix A-1. WDFW commercial groundfish biological data sheet.

WDFW COMMERCIAL GROUNDFISH												Sheet <u>1</u> of <u>1</u>									
Species _____			Vessel Name and Port Doc# _____			Sampler(s) <u>DD</u>		Port _____													
Data Source → <input checked="" type="checkbox"/> <u>W</u>		Other Sample No. _____			CHECK IF EFP → <input type="checkbox"/>		<input type="checkbox"/> EFILED <input type="checkbox"/> WINGED <input type="checkbox"/> BY ROUND		Fish ticket# → <u>1</u> <u>2</u> <u>3</u>												
Sequence Number Year Month Day		Use <u>H</u>		Age Stru <u>M</u>		Sample Method <u>R</u>		Length Unit <u>C</u>		Gear Type Size		Depth Fished		Catch Area Region PMFC Mo Day Yr INITIAL S							
CATCH WEIGHTS WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		VDFW Mo Day Yr INITIAL S							
WT. SOURCE (S=Sampler Estimate B=Buyer Scale)		Age Static / Len & Sex		WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		Ground							
WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		WT. SOURCE		INITIAL S							
BDS /												AGED									
Comments:												WDFW MONTERS REVISED 04/09/09									
COMMERCIAL FISHING												Front Page Continued									
Species _____																					
Sequence Number 51		Weight (gm)		Length		Sex Ma		Extra		Age		Weight (gm)		Length		Sex Ma		Extra		Age	
52		60		69		70		71		72		73		74		75		76		77	
53		78		79		80		81		82		83		84		85		86		87	
54		88		89		90		91		92		93		94		95		96		97	
55		98		99		100															
56																					
57																					
58																					
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61																					
62																					
63																					
64																					
65																					
66																					
67																					
Mo Day Yr 2ND AGE		SENT TO: _____		Mo Day Yr RECEIVED BACK:		Mo Day Yr 3RD AGE		INITIALS _____		INITIALS _____		INITIALS _____		INITIALS _____							
Mo Day Yr 3RD AGE		INITIALS _____		Mo Day Yr RECEIVED BACK:		Mo Day Yr BEST AGE		INITIALS _____		INITIALS _____		INITIALS _____		INITIALS _____							
READABILITY: _____																					

Appendix A-2. WDFW coastal commercial sampling goals for 2013.

Washington Department of Fish and Wildlife Coastal Commercial Sampling Goals								
Ports: Westport - Ilwaco, Neah Bay - LaPush, Bellingham Treaty landings at Neah Bay (and to a lesser extent at Bellingham) are sampled following these same guidelines, except sablefish from trawl landings have a separate goal.								
Species SABLEFISH - 2013		Sampling Goal			Sample Size		Sampling Guidelines	
Gear	Trawl/Longline	AREA	Minimum goal	AGE	LENGTH	Annual		
GF	TRAWL	Each port:	Otoliths	Fork length	36	One/Port		
LL	PRIMARY	Each port:	10% of landings	Otoliths	FL/d	x		
LL	DTL and POT DTL	Each port:		Otoliths	FL/d	36		
LL	TRIBAL: TRAWL & LL	Neah Bay		Otoliths	FL/d	12		
Species Comps - 2012		Sampling Goal			Sample Size		Sampling Guidelines	
Gear	Species	AREA	Port - each	AGE	LENGTH	Trawl	Longline	
Trawl/LL	Slope	Each port:		NO	Fork length			
Trawl/LL	Shelf	Each port:	20% of landings per quarter	NO	Fork length	20% of landings per quarter	20% of landings per quarter	
Trawl/LL	Nearshore	Each port:		NO	Fork length			
Trawl/LL	Skate	Each port:		NO	TL/LBS on large specimens			
Trawl/LL	Shortspine RF	Each port:		NO	Fork length			
Market Samples - 2012		Annual Sampling Goals			Sample Size		Sampling Guidelines	
Gear	Species	AREA	Minimum goal	AGE	Additional Lengths	Trawl	Longline	
GF Trawl	Arrowtooth flounder	Coastwide	1000 fish	NO		100 fish	Ditto	<i>Goals are applied to each gear separately.</i>
Trawl/LL	Big Skate	Coastwide	600 fish	Otoliths		25 fish	"	TL or length between spiracles (LBS) on large skate
Trawl/LL	Canary RF	Coastwide	600 fish	Otoliths		No Minimum	"	Small amounts landed: get as many as possible
Trawl/LL	Darkblotched RF	Coastwide	600 fish	Otoliths		No Minimum	"	
Trawl/LL	Dogshark	Coastwide	600 fish	Otoliths		25 fish	"	2nd Dorsal spine & 10 cm of V from that DS forward
GF Trawl	Dover sole	V	1000 fish	Otoliths	plus 1000 Lengths	50 fish	"	Try to get 50 Oto plus 50 length/sex per sample
GF Trawl	English sole	Coastwide	1200 fish	Otoliths		50 fish	"	
GF Trawl	Lingcod	Coastwide	600 fish	Fins		25 fish	"	Fin number 4-8 on 2nd Dorsal spine
Trawl/LL	Longnose Skate	Coastwide	600 fish	NO		25 fish	"	TL or length between spiracles (LBS) on large skate
GF Trawl	Longspine Thornyhead	Coastwide	600 fish	NO		50 fish	"	
Trawl/LL	Nearshore (Individual species)		As many as possible	Otoliths		No Minimum	"	
GF Trawl	Pacific cod	Coastwide	800 fish	NO		100 fish	"	
GF Trawl	Petrale	Coastwide	1200 fish	Otoliths	plus 1200 Lengths	50 fish	"	Try to get 50 Oto plus 50 length/sex per sample
GF Trawl	POP	Coastwide	1200 fish	Otoliths	plus 1200 Lengths	50 fish	"	Try to get 50 Oto plus 50 length/sex per sample
Trawl/LL	Redbanded RF	Coastwide	600 fish	Otoliths	plus 600 Lengths	No Minimum	"	Try to get 50 Oto plus 50 length/sex per sample
Trawl/LL	Rougheye RF	Coastwide	600 fish	Otoliths		No Minimum	"	Try to get 50 Oto plus 50 length/sex per sample
Trawl/LL	Shelf (Individual species)		As many as possible	Otoliths		No Minimum	"	
Trawl/LL	Shortraker RF	Coastwide	600 fish	Otoliths	plus 600 Lengths	No Minimum	"	Try to get 50 Oto plus 50 length/sex per sample
Trawl/LL	Shortspine Thornyhead	Coastwide	600 fish	NO		50 fish	"	
Trawl/LL	Slope (Individual species)		As many as possible	Otoliths		No Minimum	"	
GF Trawl	Widow RF	Coastwide	600 fish	Otoliths		No Minimum	"	
Trawl/LL	Yelloweye RF	Coastwide	600 fish	Otoliths		No Minimum	"	
GF Trawl	Yellowtail RF	Separated: V/C	600 fish	Otoliths		No Minimum	"	

Appendix A-3. Example port sampler tally sheet indicating number of samples/data collected from individual species by port.

PORT SAMPER TALLYSHEET								UPDATED ON	
Number in RED were just added.				# of AGE/LEN/SEX (OR) L&S					
SPECIES	GEAR	ILW	WES	NBY	BEL	ILW	WES	NBY	BEL
ARRA	GF TRWL				1				0/100
ARRA	LL								
ARTH	GF TRWL				1				0/100
BANK	GF TRWL								
BANK	LL								
BCAC	GF TRWL								
BCAC	LL								
BLCK	GF TRWL								
BLCK	LL								
BLGL	GF TRWL								
BLGL	LL								
BSKT	GF TRWL								
BSKT	LL								
BSPR	GF TRWL								
BSPR	LL								
CNRY	GF TRWL			1					6
CNRY	LL								
DBRK	GF TRWL								
DBRK	LL								
DOVR	GF TRWL				1				50/50
DSRK	GF TRWL								
DSRK	LL								
EGLS	GF TRWL			1					50/50
GSRK	GF TRWL								
GSRK	LL								
LCOD	GF TRWL								
LCOD	LL								
LSKT	GF TRWL								
LSKT	LL								
LSPN	GF TRWL	1				0/50			
PCOD	GF TRWL								
POP	GF TRWL								
POP	LL								
PTRL	GF TRWL	1			1	50/50			50/50
RDBD	GF TRWL								
RDBD	LL								
REDS	GF TRWL								
REDS	LL								
REYE	GF TRWL								
REYE	LL								
RSTN	GF TRWL								
RSTN	LL								
SHRP	GF TRWL								
SHRP	LL								
SKAT	GF TRWL								
SKAT	LL								
SLGR	GF TRWL								
SLGR	LL			1					6
SNOS	GF TRWL								
SNOS	LL								
SRKR	GF TRWL								
SRKR	LL				1				30/0
SSPN	GF TRWL								
SSPN	LL			1					50/50
STRK	GF TRWL								
STRK	LL								
TIGR	GF TRWL								
TIGR	LL								
VRML	GF TRWL								
VRML	LL								
WDOW	GF TRWL								
YEYE	GF TRWL								
YEYE	LL								
YMTH	GF TRWL								
YMTH	LL								
YTRK North	GF TRWL			1					50/50
YTRK South	GF TRWL								
YTRK North	LL			1					50/50
YTRK South	LL								

Appendix A-4. WDFW coastal commercial sampling goals for 2006.

2006		Coastal Sampling Goals												As of April 2006													
SPECIES	GEAR	ARE A/	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOT	AGE	LEN.	SEX	SAMPLE SIZE	SAMPLING GUIDELINES							
BIO SAMPLES (Includes age structure, length and sex. If number of lengths is not specified, goal is as many as possible.)																											
CNRY	GF TRWL	12-34	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	AS Many As Possible	High Priority; No minimum sample							
WDOW	GF TRWL	12-34	1	1	1	2	2	2	2	2	1	1	1	1	17	OTO	FL	YES	50	High Priority; No minimum sample							
YEYE	GF TRWL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12	OTO	FL	YES	AS Many As Possible	High Priority; No minimum sample							
DBRK	GF TRWL	12-34	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	50	High Priority; No minimum sample							
ENG	GF TRWL	12-34	1	1	1	1	2	2	2	2	1	1	1	1	16	OPRC	FL	YES	50	Randomly select 50 fish (both sexes)							
SRKR	GF TRWL	12-34	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	50	High Priority; No minimum sample							
REYE	GF TRWL	12-34	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	50	High Priority; No minimum sample							
SKAT-LONGNOSE	GF TRWL	12-34	2	2	2	2	2	2	2	2	2	2	2	2	2	24	SPN	TL	YES	25	High Priority; Spine from tail;						
SKAT-BIG	GF TRWL	12-34	2	2	2	2	2	2	2	2	2	2	2	2	2	24	SPN	FL	YES	25	High Priority; Spine from tail;						
POP	GF TRWL	12-15	1	1	1	1	1	1	1	1	1	1	1	1	12	OTO	FL	YES	50	Emphasize Jan-Mar; plus 50 lengths.							
POP	GF TRWL	16-34	1	1	1	1	1	1	1	1	1	1	1	1	12	OTO	FL	YES	50	Emphasize Jan-Mar; plus 50 lengths.							
YTRK	GF TRWL	12-15	1	1	1	2	2	2	2	2	1	1	1	1	17	OTO	FL	YES	50	No minimum sample size; plus 50							
YTRK	GF TRWL	16-34	1	1	1	1	1	1	1	1	1	1	1	1	8	OTO	FL	YES	50	No minimum sample size; plus 50							
LCOD	GF TRWL	16-30	2	2	2	2	2	2	2	2	2	2	2	2	2	24	FIN	FL	YES	50	No minimum sample size.						
PTRL	GF TRWL	12-34	2	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	50	Plus 50 length and sex.						
BCAC	GF TRWL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12	OTO	FL	YES	50								
DOV	GF TRWL	12-15	1	2	3	2	2	1	1	2	2	2	1	1	20	OTO	FL	YES	50	Plus 50 lengths.							
DSRK	GF TRWL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12	SPN	FL	YES	25	Take second dorsal spine/ovarian							
SABL	GF TRWL	12-34	6	6	6	6	6	6	6	6	6	6	6	6	72	OTO	FL/d	YES	2 baskets	2 samples/month/port (two 50 lb							
CNRY	LL		2	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	AS Many As Possible	High Priority; No minimum sample						
YEYE	LL	12-34	2	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	AS Many As Possible	High Priority; No minimum sample						
REYE	LL	12-35	2	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	50	High priority; No minimum sample						
DBRK	LL	12-36													0					High priority; No minimum sample							
SRKR	LL	12-37	2	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL	YES	50	High priority; No minimum sample						
LCOD	LL	12-38	2	2	2	2	2	2	2	2	2	2	2	2	2	24	FIN	FL	YES	25	No minimum sample size; rare to see						
SPECIES COMPS																											
SLOPE	GF TRWL	12-34																									
SHELF	GF TRWL	12-34																									
NSHR	GF TRWL	12-34																									
SKAT	GF TRWL	12-34																									
SSPN	GF TRWL	12-34																									
SLOPE	LL	12-34																									
SHELF	LL	12-34																									
NSHR	LL	12-34																									
SKAT	LL	12-34																									
LENGTH AND SEX																											
SLOPE	GF TRWL	12-34																									
SHELF	GF TRWL	12-34																									
NSHR	GF TRWL	12-34																									
LSPN	GF TRWL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12		FL	YES	50								
SSPN	GF TRWL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12		FL	YES	50								
PCOD	GF TRWL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12		FL	YES	100	Emphasize for 2006.							
ARTH	GF TRWL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12		FL	YES	100								
DSRK	GF TRWL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12		FL	YES	100	Total of 600 length and sex between gears.							
DSRK	LL	12-34	1	1	1	1	1	1	1	1	1	1	1	1	12		FL	YES	100								
SLOPE	LL	12-34																									
SHELF	LL	12-34																									
NSHR	LL	12-34																									
WHITING																											
PWHT	PWHT TRWL	12-34						4	4	4						12	OTO	FL	YES	30	Take individual weights.						
PWHT Lengths	PWHT TRWL	12-34						4	4	4						12		FL	YES	100	Total weight males and total weight						
Bycatch Comp	PWHT TRWL	WES																									
Bycatch Comp	PWHT TRWL	ILW																									
YTRK	PWHT TRWL	12-15						2	5	5						12	OTO	FL	YES	50	No minimum sample size; plus 50						
YTRK	PWHT TRWL	16-34						2	5	5						12	OTO	FL	YES	50	No minimum sample size; plus 50						
DSRK	PWHT TRWL	12-34						2	2	2								SPN		50	Total of 300 for season.						
SABL	LL DTL	12-34	6	6	6	6	6	6	6	6	6	6	6	6	6	72	OTO	FL/d	YES	2 Baskets	2 samples/month/port (two 50 lb						
SABL	LL PRIMARY	12-35																OTO	FL/d	YES	2 Baskets	Two 50 lb baskets per sample.					
SABL	LL POT	12-36	3	3	3	3	3	3	3	3	3	3	3	3	36	OTO	FL/d	YES	2 Baskets	1 sample/month/port (two 50 lb							
SABL	TRIBAL	--	2	2	2	2	2	2	2	2	2	2	2	2	24	OTO	FL/d	YES	2 Baskets								
RECREATIONAL																											
BLK RF	SPORT	NBY				1	3	3	3	3	3					16	OTO	FL	YES	50							
Misc. RF	SPORT	NBY														0	OTO	FL	YES	50	No minimum sample size.						
LCOD	SPORT	NBY						2	2	2	2	2				10	OTO	FL	YES	25	No minimum sample size.						
LCOD L&S	SPORT	NBY						2	2	2	2	2				10	OTO	FL	YES	25	No minimum sample size.						
BLK RF	SPORT	LAP				1	1	1	1	1	1					5	OTO	FL	YES	50							
BLK RF	CHARTER	WES		1	2	3	3	3	3	2						17	OTO	FL	YES	50							
Misc. RF	CHARTER	WES														0	OTO	FL	YES	50	No minimum sample size.						
LCOD	CHARTER	WES		1	2	2	2	2	2																		

Appendix A-5. Processing methods used to prepare otoliths, Lingcod fins, English Sole interopercula, and Spiny Dogfish spines for ageing.

Otoliths

Otoliths are cleaned with isopropyl alcohol and a soft brush. In order to easily remove any remaining fish tissue, cleaning is completed soon after collection. Once dry, the otoliths are sent to age readers. When otoliths are difficult to read or age readers need more definition to check for accuracy, otoliths are sectioned and mounted. The otolith is glued to the end of a small piece of wood and then coated with Cyanoacrylate glue. Each otolith is secured in a sectioning saw (Beuhler Isomet 1000) and 0.6 - 0.7 mm cross-sections are cut. The sections are mounted on microscope slides with Cytoseal, dried, and sent to age readers. Otoliths are aged using two methods, surface read or break and burn.

Lingcod Fins

Lingcod fins are processed for ageing using the fin cross-section method. The process includes four steps: drying, hardening, sectioning, and mounting. Before the drying process, frozen fin samples are thawed and excess fin tissue is trimmed. Fins are clamped into wire mesh racks and air dried for 24 to 60 hours. The use of wire mesh racks allows fins to dry in such a way that the final product is flat, with the rays parallel to each other and perpendicular to the baseline of the fin rays. The dried fins are coated with Cyanoacrylate glue and set aside for 24 hours to cure. Each hardened fin is secured in a sectioning saw (Beuhler Isomet 1000) and four to seven cross-sections (2.0 mm) are cut. The sections are mounted on microscope slides with Cytoseal, dried for at least 24 hours, and sent to age readers. Sectioned fins are aged using the surface read method.

English Sole Interopercula

Frozen operculum samples are thawed, and then cooked in water in a microwave to aid in the removal of fish tissue. The interopercle bone is removed from the operculum, and cleaned by soaking in a bowl of warm water and rubbing off any remaining fish tissue. Once dry, the interopercula are sent to age readers. Interopercula are aged using the surface read method.

Spiny Dogfish Spines

Frozen dorsal spine samples are thawed, and then cooked in water in a microwave to aid in the removal of fish tissue. The spines are hand cleaned, using between-teeth cleaners, until no obvious tissue remains. Once dry, the spines are sent to age readers. Age readers remove any

remaining tissue with a rough wool sock and polish the spine with oil to enhance growth zones. Spines are aged using the surface read method. Beginning in 2013, dogfish age is determined using vertebrae samples. Currently, vertebrae are not processed by port samplers and are immediately sent to age readers.

Appendix B. WDFW species composition sample form.

Appendix C-1. WDFW non-IFQ marine fish receiving ticket.

   																																																				
<small>WIG BY KARY SMITH (420) 208-8000 (1-800-802-3867)</small>																																																				
Y																																																				
<p>FISHER OR OWNER</p> <p>ADDRESS _____ DATE _____</p> <p>BOAT NAME _____ DEALER _____</p> <p>GEAR _____ WDFW BOAT REGISTRATION _____ BUYER _____</p> <p>FED. LE PERMIT # _____ IPHC LICENSE # _____</p> <p>Fisher Signature _____ Dealers Signature _____</p> <p><small>Under penalty of perjury, I certify that the information contained herein is true and complete.</small></p> <p>STATE OF WASHINGTON DEPARTMENT OF FISH AND WILDLIFE MARINE FISH RECEIVING TICKET</p> <p>CIRCLE PHYSICAL GEAR ACTUALLY USED</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">OTTER TRAWL</td> <td style="width: 10%;">32</td> <td style="width: 10%;">PURSE SEINE</td> <td style="width: 10%;">69</td> <td style="width: 10%;">SET LINE</td> <td style="width: 10%;">43</td> <td style="width: 10%;">DRAG SEINE</td> <td style="width: 10%;">12</td> <td style="width: 10%;">HAND LINE</td> <td style="width: 10%;">42</td> <td style="width: 10%;">SHRIMP TRAWL</td> <td style="width: 10%;">33</td> <td style="width: 10%;">POT</td> <td style="width: 10%;">23</td> <td style="width: 10%;">TROLL</td> <td style="width: 10%;">41</td> <td style="width: 10%;">OTHER (specify)</td> </tr> </table> <p>DEALER USE SPECIES CODE SPECIES DESCRIPTION POUNDS PRICE AMOUNT</p> <p>221 SABLE FISH - ROUND 221 SABLE FISH - DRESSED <1 221 SABLE FISH - DRESSED 1-2 221 SABLE FISH - DRESSED 2-3 221 SABLE FISH - DRESSED 3-4 221 SABLE FISH - DRESSED 4-5 221 SABLE FISH - DRESSED 5-7 221 SABLE FISH - DRESSED 7+ 205 DOVER SOLE 207 PETRALE SOLE 213 ARROWTOOTH FLOUNDER 231 LING COD 241 TRUE COD 248 SHELF ROCKFISH 249 SLOPE ROCKFISH 256 SHORT SPINE THORNYHEAD 291 OTHER SKATE 293 LONGNOSE SKATE 246 DARKBLOTTCHED ROCKFISH 125 SARDINE 292 HAGFISH 201 HALIBUT - HD/ON - < 23# 201 HALIBUT - HD/ON - 23# + 101 ALBACORE TUNA</p> <p>TAKE HOME FISH</p> <p>Name and Signature of Person If Other Than Fisher</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">DEALER USE</td> <td style="width: 10%;">SPECIES CODE</td> <td style="width: 30%;">SPECIES AND DESCRIPTION</td> <td style="width: 10%;">NO. OF FISH</td> <td style="width: 10%;">POUNDS</td> <td style="width: 20%;">NAME</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td>SIGNATURE</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td>NAME</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td>SIGNATURE</td> </tr> </table> <p>1 2 3 4 5 6 7 8 9 10 TOTAL AMOUNT LESS DEDUCTIONS AMOUNT PAID</p> <p>FORM WDFW-678 (1/06)</p>												OTTER TRAWL	32	PURSE SEINE	69	SET LINE	43	DRAG SEINE	12	HAND LINE	42	SHRIMP TRAWL	33	POT	23	TROLL	41	OTHER (specify)	DEALER USE	SPECIES CODE	SPECIES AND DESCRIPTION	NO. OF FISH	POUNDS	NAME						SIGNATURE						NAME						SIGNATURE
OTTER TRAWL	32	PURSE SEINE	69	SET LINE	43	DRAG SEINE	12	HAND LINE	42	SHRIMP TRAWL	33	POT	23	TROLL	41	OTHER (specify)																																				
DEALER USE	SPECIES CODE	SPECIES AND DESCRIPTION	NO. OF FISH	POUNDS	NAME																																															
					SIGNATURE																																															
					NAME																																															
					SIGNATURE																																															

Appendix C-2. WDFW IFQ marine fish receiving ticket.

IFQ ACCOUNT #	IFQ MANAGEMENT AREA	Fed. LE Permit #	Trawl Endorsed																																																																																																																									
-																																																																																																																												
FISHER <u>David Flatfish</u> OR OWNER:		Y490458 - FINAL																																																																																																																										
ADDRESS:																																																																																																																												
BOAT NAME: <u>MONTESANO</u>		DATE: <u>06/16/2010</u>																																																																																																																										
WDFW BOAT # <u>121212</u> GEAR <u>32</u>		STATE LICENSE#/ TRIBAL ID # <u>122221</u>																																																																																																																										
Fisher Signature _____		Dealer's Signature _____																																																																																																																										
Under penalty of perjury, I certify that the information contained herein is true and complete.		Under penalty of perjury, I certify that the information contained herein is true and complete.																																																																																																																										
STATE OF WASHINGTON DEPARTMENT OF FISH AND WILDLIFE MARINE FISH RECEIVING TICKET		Number of Days Fished 2	<table border="1" style="width: 100px; margin-left: auto; margin-right: auto;"> <tr> <td>FISH CAUGHT INSIDE 3 MILES</td> <td></td> </tr> <tr> <td>FISH CAUGHT OUTSIDE 3 MILES</td> <td>X</td> </tr> <tr> <td>FISH CAUGHT OUTSIDE ENHANCEMENT ZONE</td> <td></td> </tr> </table>	FISH CAUGHT INSIDE 3 MILES		FISH CAUGHT OUTSIDE 3 MILES	X	FISH CAUGHT OUTSIDE ENHANCEMENT ZONE		Catch Area 60A2																																																																																																																		
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PHYSICAL GEAR ACTUALLY USED: <u>34</u>																																																																																																																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SPECIES DESCRIPTION</th> <th>SPECIES CODE</th> <th>Gear Code</th> <th>Data Source</th> <th>Area</th> <th>Area SubUnit</th> <th># Fish</th> <th>POUNDS</th> <th>PRICE</th> <th>AMOUNT</th> </tr> </thead> <tbody> <tr> <td>Rockfish, Yellowtail, Green</td> <td>0-259-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>185.00</td> <td>\$0.25</td> <td>\$46.25</td> </tr> <tr> <td>Rockfish, Widow, Brown</td> <td>0-258-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>51.00</td> <td>\$0.25</td> <td>\$12.75</td> </tr> <tr> <td>Rockfish, Darkblotched</td> <td>0-246-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>42.00</td> <td>\$0.25</td> <td>\$10.50</td> </tr> <tr> <td>Rockfish, Slope</td> <td>0-249-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>2.00</td> <td>\$0.25</td> <td>\$0.50</td> </tr> <tr> <td>Whiting, Pacific</td> <td>20-244-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>76,429.00</td> <td>\$0.00</td> <td>\$0.00</td> </tr> <tr> <td>Perch, Pacific Ocean</td> <td>0-254-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>18.00</td> <td>\$0.25</td> <td>\$4.50</td> </tr> <tr> <td>Whiting, Pacific</td> <td>0-244-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>101,685.00</td> <td>\$0.09</td> <td>\$9,151.65</td> </tr> <tr> <td>Squid</td> <td>0-551-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>4.00</td> <td>\$0.00</td> <td>\$0.00</td> </tr> <tr> <td>Whiting, Pacific</td> <td>0-244-0</td> <td>34</td> <td>EFPT</td> <td>60A2</td> <td></td> <td></td> <td>8,133.00</td> <td>\$0.00</td> <td>\$0.00</td> </tr> <tr> <td colspan="8" style="text-align: right;">Totals</td> <td>186,549.00</td> <td>\$9,226.15</td> </tr> <tr> <td colspan="10">Notes: _____</td> </tr> </tbody> </table>					SPECIES DESCRIPTION	SPECIES CODE	Gear Code	Data Source	Area	Area SubUnit	# Fish	POUNDS	PRICE	AMOUNT	Rockfish, Yellowtail, Green	0-259-0	34	EFPT	60A2			185.00	\$0.25	\$46.25	Rockfish, Widow, Brown	0-258-0	34	EFPT	60A2			51.00	\$0.25	\$12.75	Rockfish, Darkblotched	0-246-0	34	EFPT	60A2			42.00	\$0.25	\$10.50	Rockfish, Slope	0-249-0	34	EFPT	60A2			2.00	\$0.25	\$0.50	Whiting, Pacific	20-244-0	34	EFPT	60A2			76,429.00	\$0.00	\$0.00	Perch, Pacific Ocean	0-254-0	34	EFPT	60A2			18.00	\$0.25	\$4.50	Whiting, Pacific	0-244-0	34	EFPT	60A2			101,685.00	\$0.09	\$9,151.65	Squid	0-551-0	34	EFPT	60A2			4.00	\$0.00	\$0.00	Whiting, Pacific	0-244-0	34	EFPT	60A2			8,133.00	\$0.00	\$0.00	Totals								186,549.00	\$9,226.15	Notes: _____									
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Appendix D. Coastwide trawl logbook.

Vessel Name	<u>EXAMPLE</u>		Departure: Date	7	6	10	Time	0400	Port	<u>WESTPORT, WA</u>				
Federal Document No	<u>12345</u>		Return: Date	Month 7	Day 8	Year 10	Time	Local - 24-hour 0600	Port	<u>WESTPORT, WA</u>				
Crew Size (including Captain)	<u>3</u>		EFP trip (check if yes) <input checked="" type="checkbox"/>	Observed trip (check if yes) <input checked="" type="checkbox"/>	Buyer(s)		<u>GENERIC SEAFOODS</u>							
DATE mo/day	TIME Local 24-hour clock	LATITUDE		LONGITUDE		Average depth of catch (fathoms)	NET TYPE	Target Strategy	Estimated pounds retained each tow – enter 3 or 4-letter code from species code list					
		Degress	Minutes	Degrees	Minutes				SABL	DOVR	LSPN	SSPN	WBOW	YTRK
7/6	set 1300	47	58•7	125	47•3	500	L	DTS	300	4,000	500	100		
	up 1730	48	02•6	125	45•5									
7/7	set 0800	47	20•3	125	28•3	575	L	DTS	100	5,000	800	150		
	up 1400	47	46•4	125	34•4									
7/7	set 1800	46	52•6	124	53•2	90	D	WDOW					16,000	500
	up 2200	46	54•1	124	53•6									
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