

Introduction to the West Coast Fishery

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Introduction

NOAA Fisheries, an agency within the Department of Commerce, is responsible for managing the fish resources from three to 200 nautical miles from the shores of the United States. This chapter will provide the basic framework of fishery management in the U.S., focusing on the Pacific (west) coast.

US Fisheries Management

With the passage of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) in 1976, the U.S. Government declared management authority over fish resources from three to 200 nautical miles from US shores, an area known as the **Exclusive Economic Zone** (EEZ). The goals of the Magnuson Act were to Americanize the fishery and to implement **fishery management plans** (FMP's) to maintain **optimum yield** (OY) of the resource while rebuilding depleted stocks. The Act also established eight regional councils to manage the nation's fisheries. The law was amended in 1996 to focus on rebuilding overfished fisheries, protecting fish habitat, and reducing bycatch.

The MSFCMA was amended most recently in 2006 and included such key provisions as:

- Mandating **Annual Catch Limits**
- Ensuring accountability for overages of harvest levels
- Establishing national guidelines for **Limited Access Privilege Programs** (LAPP's)
- Developing technologies and methods to reduce bycatch and mortality

Pacific Coast Fishery Management

Prior to 1982, each state was responsible for managing the domestic groundfish fisheries off their respective coasts. State regulations had been in effect for about 90 years, with each state acting independently in both management and enforcement. With the approval of the Pacific Coast Groundfish Fishery Management Plan (FMP) in 1982, the **Pacific Fisheries Management Council** (PFMC) assumed responsible over the EEZ off the coasts of Washington, Oregon, and California. Council members represent states, tribes, NOAA fisheries, industry, and other interested parties. Over 90 species are managed under the FMP.

The PFMC has introduced many management measures since 1982 to respond to the status of west coast groundfish stocks. Beginning in 1999, **stock assessments** have revealed unsustainably low stock sizes for a number of species. The most concerning findings were "**overfished**" stocks including: Bocaccio rockfish (1999), lingcod (1999, **rebuilt** in 2005), Pacific Ocean Perch (1999), Canary rockfish (2000), Cowcod (2000), Darkblotched rockfish (2001), Widow rockfish (2001, **rebuilt** in 2011), Yelloweye (2002), and Petrale sole (2009) (Figure 1-2). The Magnuson Act requires specific actions when stocks are "overfished". Since 2000, the PFMC has escalated its management action in order to respond to the overfished species listings. Most of the management measures enacted by the PFMC fall into one of two themes:

- Limiting access
- Limiting catch of species or complex

Exclusive Economic Zone (EEZ): The 200-mile jurisdiction zone in which a nation has exclusive fishing rights.

Fisheries Management Plans (FMP's): Documents prepared under the supervision of the appropriate fishery management authority or council for the management of fish stocks judged to be

in need of management. The plan must be formally approved. A management agreement plan includes data, analyses and management measures.

Optimum Yield: The harvest level for a species that achieves over all benefits including economic, social and biological considerations.

Management Measures to Limit Access

By enacting measures that limit access, fishery managers are able to control the number of people participating in the fishery. **Overcapitalized** fisheries are not only harmful to fish stocks but they're also economically unsustainable for the fishing industry.

The PFMC first limited access to the fishery by creating limited entry and open access sectors (See Figure 1-1). In order to participate in the **limited entry** sector, which allows greater access to fish resources, a federal permit is required. Limited entry permits were issued in 1994 based on the fishing history of qualifying vessels. **Open access** fisheries do not require a federal permit, however a state permit is often required.

WOC Groundfish Fishery

In 2001, the PFMC used a permit stacking program for the **Limited Entry Sablefish Endorsed** fishery to control capacity. The program allows for up to three Sablefish-endorsed permits to be stacked on a single vessel, potentially removing two-thirds of vessels from the fishery.

In 2003, the US government and remaining limited entry trawl and pink shrimp fisheries bought out 92 limited entry trawl permits, which represented around 50% of trawl fleet effort.

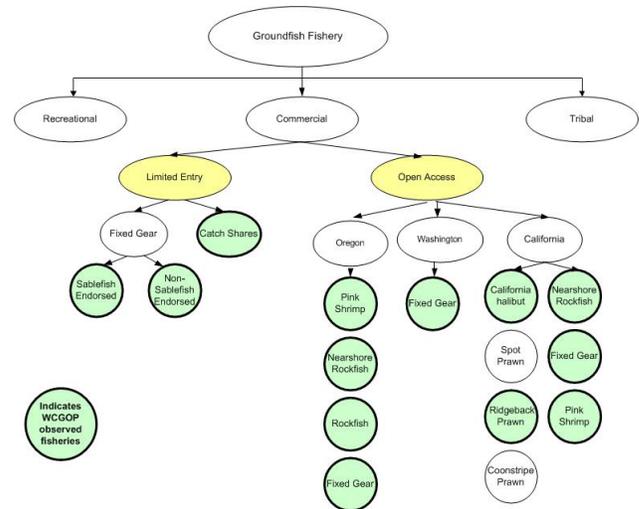


Figure 1-1: WOC Groundfish Fishery

Management Measures to Limit Catch of a Species or Complex

The first tool used by fishery managers to limit catch is the setting of the total amount of a species or **complex** that can be harvested in a year. This unit is called an Annual Catch Limit (ACL's). The Magnuson Act requires regional management councils to set an ACL for all FMP species/complexes.

One of the goals of the FMP is to have a year-round fishery. In order to control the rate of catch over a year, the PFMC uses a system of **trip limits** (Figure 1-4). Trip limits are complex as they have spatial (e.g. North/South of 40°10'), temporal (e.g. Jan-Feb), fishery sector (e.g. limited entry), and gear type (e.g. trawl, fixed gear) stratifications. The PFMC reviews data throughout the year and increases/decreases limits based on projected harvesting activity.

Limited Access Privilege Program (LAPP): authorized limits of access privileges to harvest fish to be held, acquired, used by or issued under the system to persons who substantially participate

in the fishery, including in a specific sector of such fishery, as specified by the Council.

PFMC: The PFMC is composed of twenty members, fifteen of whom are eligible to vote on matters brought before the Council.

Stock Assessments: An analysis that reports on the status of a fish stock (abundance) as well as the possible outcomes of different management alternatives.

Overfished: A level of fishing mortality that jeopardizes the

capacity of a fishery to produce a continuing maximum sustainable yield.

Rebuilt: Population of species of concern that attains acceptable sustainability levels.

 <p>Yelloweye Rockfish Status: Declared overfished 2002 % of unfished biomass: 21% (2011) Mean generation time: 46 years Target rebuilding year: 2074</p>	 <p>Petrale Sole Status: Declared overfished 2009 % of unfished biomass: 22% (2013) Mean generation time: 14 years Target rebuilding year: 2016</p>	 <p>Dark-blotched Rockfish Status: Declared overfished 2001 % of unfished biomass: 36% (2013) Mean generation time: 33 years Target rebuilding year: 2025</p>	 <p>Bocaccio Rockfish Status: Declared overfished 2000 (South of Cape Mendocino) % of unfished biomass: 26% (2011) Mean generation time: 13 years Target rebuilding year: 2021</p>
 <p>Cowcod Status: Declared overfished 2000 (South of Point Conception) % of unfished biomass: 34% (2013) Mean generation time: 38 years Target rebuilding year: 2020</p>	 <p>Canary Rockfish Status: Declared overfished 2000 % of unfished biomass: 23% (2011) Mean generation time: 23 years Target rebuilding year: 2027</p>	 <p>Pacific Ocean Perch Status: Declared overfished 1999 % of unfished biomass: 19% (2011) Mean generation time: 31 years Target rebuilding year: 2051</p>	

Figure 1-2: Overfished Species

Overcapitalized: A level of catching power that exceeds what is needed to catch available fishery resources.

Limited Entry: Longline, trap (or pot), or groundfish trawl gear used under the authority of a valid limited entry permit affixed with an endorsement for that gear.

Open Access: Fishery composed of commercial vessels using open access gear fished pursuant to the harvest guidelines, quotas and other management measures governing the harvest of open access allocations or governing the fishing activities of open

access vessels. Any commercial vessel not registered to a limited entry permit and which takes and retains, possesses or lands groundfish is a participant in the open access groundfish fishery.

In 2004, the Rockfish Conservation Area (RCA) was implemented. The RCA is a depth-based closure, ranging from 75fm to 200fm. (See Figure 1-4) This area has the highest concentration of overfished species and with it's closure the pressure on these species decreased significantly. The specific closure area changes throughout the year.

Managers also use size restrictions, species-to-species ratios, and other tools in the management of the west coast groundfish fishery.

The Trawl Catch Share Program, implemented in 2011, is a management measure that limits both access and catch. More information is available at V.

Data Used for Fishery Management

Fishery managers require robust data in order to ensure the economic and biological sustainability of a fishery. Managers need to know the status of the stock as well as how much of a species is being harvested, and they need biological information on the species. The west coast groundfish fishery uses multiple data sources for management including vessel logbooks, fish tickets, observer data, and port sampling data. All vessels in the groundfish fishery are also required to have a **Vessel Monitoring System (VMS)**. VMS data is primarily used to ensure compliance with spatial management restrictions. The NOAA Office of Law Enforcement (OLE) and state enforcement personnel are responsible for ensuring compliance with all federal regulations, including VMS.

Other Limits and Requirements Apply -- Read § 660.301 - § 660.390 before using this table

	JAN	FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
Rockfish Conservation Area (RCA) ^{6f} :	75 fm - modified 200 fm ^{7f}		100 fm - 200 fm			shoreline - 250 fm	
selective flatfish trawl gear is required shoreward of the RCA; all trawl gear (large footrope, selective flatfish trawl, and small footrope trawl gear) is permitted seaward of the RCA. Midwater trawl gear is permitted only for vessels participating in the primary whiting season.							
See §§ 660.370 and § 660.381 for Additional Gear, Trip Limit, and Conservation Area Requirements and Restrictions. See §§ 660.390-660.394 for Conservation Area Descriptions and Coordinates (including RCAs, YRCA, CCAs, Farallon Islands, and Cordell Banks).							
State trip limits may be more restrictive than federal trip limits, particularly in waters off Oregon and California.							
Minor slope rockfish^{8f} & Darkblotched rockfish	2,000 lb/ month	4,000 lb/ 2 months					CLOSED
Pacific ocean perch	1,500 lb/ month	3,000 lb/ 2 months					
DTS complex							
Sablefish							
large & small footrope gear	7,000 lb/ month	9,500 lb/ 2 months	17,000 lb/ 2 months	18,000 lb/ 2 months	11,000 lb/ 2 months		
selective flatfish trawl gear	2,500 lb/ month	10,000 lb/ 2 months		15,000 lb/ 2 months		11,000 lb/ 2 months	
multiple bottom trawl gear ^{8f}	2,500 lb/ month	9,500 lb/ 2 months	10,000 lb/ 2 months	15,000 lb/ 2 months		11,000 lb/ 2 months	
Longspine thornyhead							
large & small footrope gear	7,500 lb/ month	15,000 lb/ 2 months	23,000 lb/ 2 months			7,000 lb/ 2 months	
selective flatfish trawl gear	1,500 lb/ month	1,000 lb/ 2 months		8,000 lb/ 2 months		7,000 lb/ 2 months	
multiple bottom trawl gear ^{8f}	1,500 lb/ month	1,000 lb/ 2 months		8,000 lb/ 2 months		7,000 lb/ 2 months	
Shortspine thornyhead							
large & small footrope gear	2,000 lb/ month	3,500 lb/ 2 months	4,900 lb/ 2 months	5,200 lb/ 2 months		3,500 lb/ 2 months	
selective flatfish trawl gear	1,500 lb/ month	1,000 lb/ 2 months	3,000 lb/ 2 months	4,000 lb/ 2 months		3,500 lb/ 2 months	
multiple bottom trawl gear ^{8f}	1,500 lb/ month	1,000 lb/ 2 months	3,000 lb/ 2 months	4,000 lb/ 2 months		3,500 lb/ 2 months	
Dover sole							
large & small footrope gear	25,000 lb/ month	69,000 lb/ 2 months	30,000 lb/ 2 months		35,000 lb/ 2 months	20,000 lb/ 2 months	
selective flatfish trawl gear	10,000 lb/ month	35,000 lb/ 2 months	35,000 lb/ 2 months			20,000 lb/ 2 months	
multiple bottom trawl gear ^{8f}	10,000 lb/ month	35,000 lb/ 2 months	30,000 lb/ 2 months		35,000 lb/ 2 months	20,000 lb/ 2 months	

TABLE 3 (North)

Figure 1-3: Trip Limit Table Example

Haul location, depth, target strategy and estimates of retained catch from vessel logbooks are used to map the spatial and temporal distribution of a fishery. Trawl vessels participating in the Catch Share fishery (Figure 1-5) are required under federal regulations to maintain a vessel logbook. Other west coast fisheries are not required under federal regulation to maintain a logbook although states have logbook requirements for a number of fisheries.

Shoreside processors produce fish tickets, or landing receipts. Fish tickets are trip level summaries that include the total landing weight of each species/complex based on mandated sorting requirements.

Limited Entry Sablefish Endorsed: Fixed gear sector of the groundfish fishery that receives increased harvest privileges for sablefish.

Complex: A grouping of species that have similar life histories and habitats.

Trip Limits: A trip limit is a specified weight of fish that can be landed during either a two-month period or a day.

Groundfish trawlers are regulated by two-month trip limits. Limited entry fixed gear and open access vessels have daily, weekly and monthly limits.

Vessel Monitoring System (VMS): A mobile transceiver unit that automatically determines the vessel's position and transmits it to a land-based service provider.

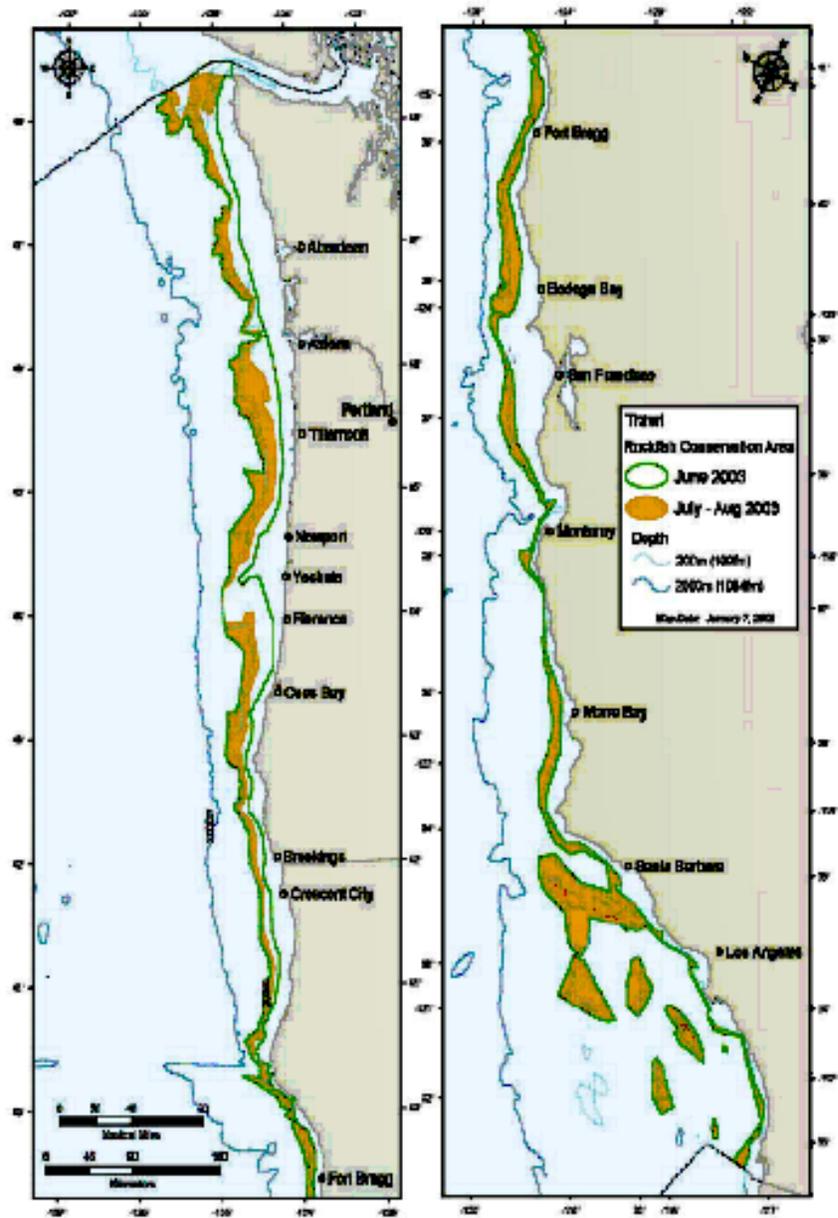


Figure 1-4: Rockfish Conservation Area

Observer data is primarily used to estimate the at-sea discard of groundfish species. In the Trawl Catch Share fishery, observer data is also used to confirm retention of overfished species. Observer data is “matched” to fish tickets to create haul level total catch estimates (retained + discarded). This data is used to estimate the total impacts of the fishery. The total impacts are compared to ACLs on a yearly basis to ensure species and complexes are not over utilized. Observers also collect biological data on the discarded catch, which is used in stock assessment to understand the length/age distribution of discarded catch. The **Northwest Fishery Science Center** (NWFSC) runs two observer program, the At-Sea Hake Observer (A-SHOP) Program and the West Coast Groundfish Observer Program (WCGOP).

State biologists take species composition samples from landed complexes and collect biological data on landed catch. This data is used in stock assessments to understand the length/age distribution of landed catch.

Fishery managers are not only concerned about the status of FMP groundfish stocks. They must also consider overall environmental impacts, including the effect of fishing on habitat, non-groundfish species, and species of concern. Species of concern include marine mammals, seabirds, sea turtles, and ESA-listed fish species, such as green sturgeon. Observer data is the primary tool used to estimate the impacts of the fishery on habitat, non-groundfish species, and species of concerns.

West Coast Trawl Catch Share

Program

The implementation of West Coast Trawl Catch Share Program, also known as Trawl Rationalization, was an important milestone in the management of the LE Groundfish Trawl sector. As of 2010, the groundfish trawl fishery was still marked by serious biological, social, and economic concerns, despite the fleet buyback and other management measures put in place to promote fishing opportunities. The fishery was not economically sustainable due to the number of participating vessels, a regulatory approach that constrained efficiencies, and the status of certain groundfish stocks along with the measures in place to protect those stocks.

To goal of fisheries managers when implementing catch shares was to increase net economic benefits, create individual economic stability, provide for full utilization of the trawl sector allocation, consider environmental impacts, and achieve individual accountability of catch and bycatch.

There are three sectors within the Catch Share Program: Shoreside IFQ

- At-sea mothership cooperative
- At-sea catcher-processor cooperative

Shoreside Individual Fishing Quota Sector

The shoreside IFQ sector includes vessels that land groundfish, including Pacific hake, to shoreside processors. Vessels can use trawl, longline, or pots to take the shoreside IFQ quota. Over 60 species are included the 24 IFQ species/complexes (Figure 1-6 and Figure 1-7).

Northwest Fishery Science

Center: An organizational unit within the US Department of Commerce, National Oceanic and Atmospheric Administration, NOAA Fisheries.

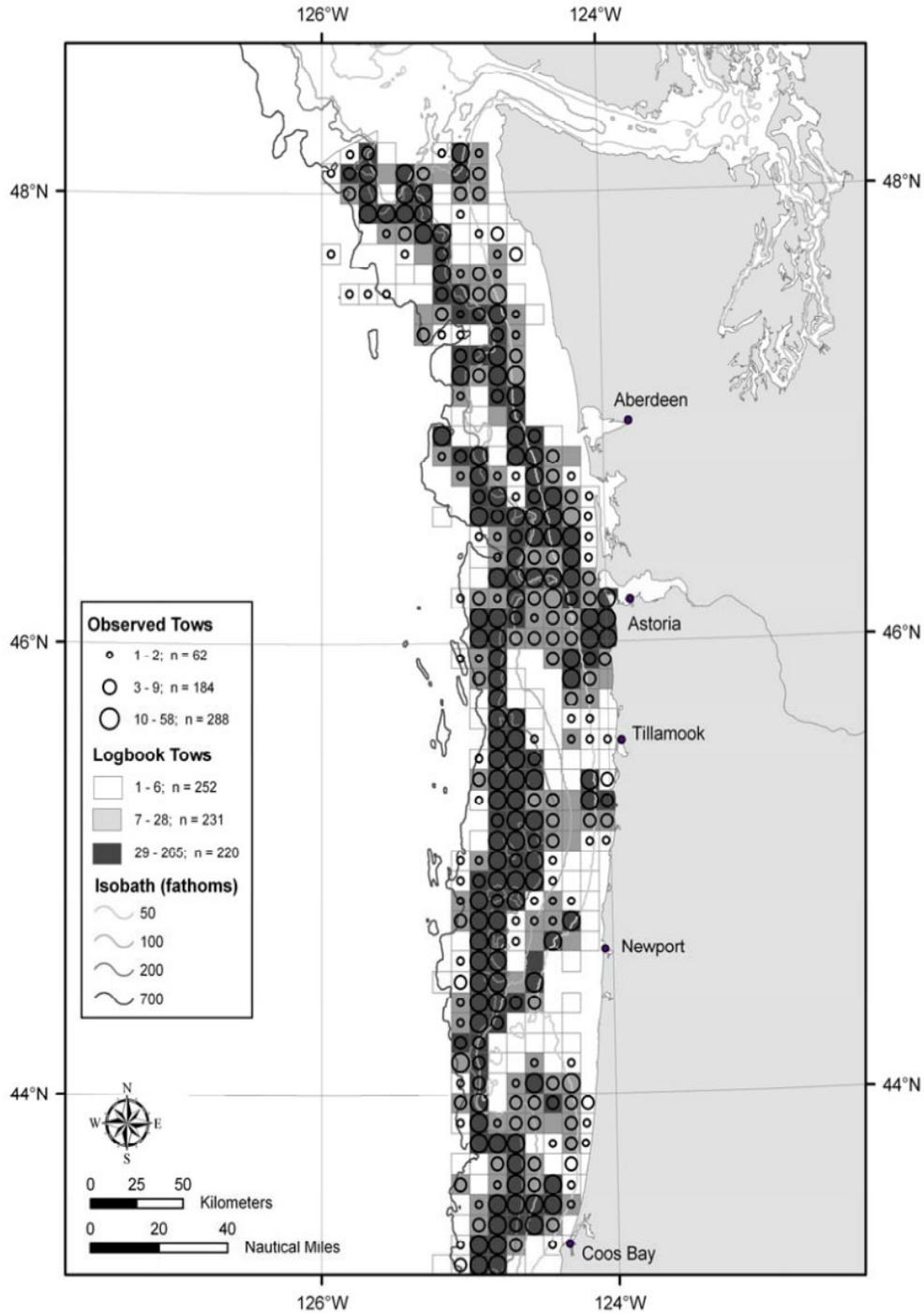


Figure 1-5: Locations of 2010 observed and fleet logbook limited entry trawl tows, north of Coos Bay, Oregon. A trawl towline model (i.e., line connecting start and end point locations of a trawl event) was used to allocate effort data to 10 x 10 kilometer grid cells.

The owner of IFQ quota can choose to harvest that amount of fish or sell/lease quota for others to harvest. The IFQ fishery requires 100% at-sea and shoreside monitoring.

To determine the amount of quota for each permit, a species/complex ACL is divided between the catch share and non-catch share fishery sectors based on intersector allocation decisions made by the PFM. The catch share sector allocation is then divided into quota for each permit. The management units used in the catch share sector are **quota shares (QS)** and **quota pounds (QP)**.

All catch of IFQ species/complexes are subtracted from the vessel's quota pounds. Vessels use the Northwest Regional's Office Vessel Account System to track attainment of their quota pounds. Landings data from fish tickets and discard data from observers are sent to the Vessel Account system where fishers can view total allocated quota pounds, quota pounds caught, and remaining quota pounds for each species/complex.

In order to prevent entities from obtaining undue influence over the IFQ fishery and ensure economic benefits are shared more widely, accumulation limits are in place for IFQ holders. There are two accumulation limits, one that prevents a single entity from owning over a given percentage of QS and one that prevents a single vessel from harvesting over a given percentage of QP.

A variety of other management tools are also used in the IFQ fishery, such as the RCA, trip limits, and seasonal constraints. Trip limits are still in place for the "Other Species" FMP complex which includes spiny dogfish

shark and minor nearshore rockfish. The shoreside Pacific hake fishery has closed and open seasons depending on area. The season are: North of 42°N. lat opens June 15th; Between 42°–40°30' N. lat opens April 1st; and South of 40°30'N. lat opens April 15th. The at-sea sectors open on May 15th.

At-Sea Mothership and Catcher-Processor Sectors

The at-sea fleet includes motherships, mothership catcher-vessels and catcher-processors. Vessels use mid-water trawl nets to harvest Pacific hake and process the catch at-sea. Both sectors operate using cooperatives. Cooperatives are industry-based groups that work together to manage on an overall allocation/quota. Because the fishery sectors that target Pacific hake, including the shoreside sector, fish midwater, the bycatch is very low, less than 1% of total catch. Therefore, the Catch Share allocations for these fisheries only encompassed five species: Pacific hake, Widow rockfish, Canary rockfish, Darkblotched rockfish, and Pacific Ocean Perch. Trip limits and other harvest measures are used to ensure catch of other FMP species are constrained.

The at-sea sectors also require 100% observer coverage, with two observers on each mothership and catcher-processor. To ensure all discard is accounted for, observers are also required on the mothership catcher-vessels. The At-Sea Hake Observer Program manages observers on the motherships and catcher-processors while the WCGOP manages mothership catcher-vessel observers.

Quota Shares (QS): The amount of fishing quota for an individual species/complex and area expressed as a percentage of the annual allocation of fish to the Shorebased IFQ Program.

Quota Pounds (QP): The quotas, expressed in round weight of fish, that are issued annually to each QS permit owner in the Shorebased IFQ Program based on the amount

of QS they own and the amount of fish allocated to the Shorebased IFQ Program.

Northwest Fisheries Science Center Observer Program Trawl Catch Share Program

November 2010



Species List for Shoreside Trawl Catch Share Fishery

NOAA Fisheries Service

More information can be found on the NOAA Fisheries' Trawl Rationalization website:

www.nwr.noaa.gov/Groundfish-Hellbait/Groundfish-Fishery-Management/Trawl-Program/index.cfm

NWFSC Observer Program

<http://www.nwisc.noaa.gov/research/divisions/frame/observer/index.cfm>

For more information, contact:
(206) 302-1777



Overfished

Species Name	North of 40°10'N	South of 40°10'N
Bocaccio rockfish	Minor shelf	OVERFISHED
Canary rockfish	OVERFISHED	OVERFISHED
Cowcod rockfish	Minor shelf	OVERFISHED
Darkblotched rockfish	OVERFISHED	OVERFISHED
Pacific Ocean Perch	OVERFISHED	Minor slope
Petrale sole	OVERFISHED	OVERFISHED
Widow rockfish	OVERFISHED	OVERFISHED
Yelloweye rockfish	OVERFISHED	OVERFISHED

Roundfish

Species Name	North of 42°	South of 36°
Lingcod	Lingcod	
Pacific cod	Pacific cod	
Pacific whiting	Pacific whiting	
Sablefish	Sablefish North of 36°	Sablefish South of 36°

Flatfish

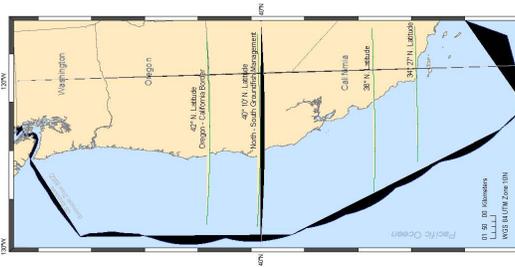
Species Name	North of 40°10'N	South of 40°10'N
Arrowtooth flounder	Arrowtooth	Arrowtooth
Butter sole	Other flatfish	Other flatfish
Carrfin sole	Other flatfish	Other flatfish
Dover sole	Dover sole	Dover sole
English sole	English sole	English sole
Flathead sole	Other flatfish	Other flatfish
Pacific halibut	Pacific halibut IBQ	No IBQ needed
Pacific sanddab	Other flatfish	Other flatfish
Rex sole	Other flatfish	Other flatfish
Rock sole	Other flatfish	Other flatfish
Sand sole	Other flatfish	Other flatfish
Starry flounder	Starry flounder	Starry flounder

U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service

Figure 1-6: IFQ Species/Complexes - page 1



Rockfish



Light-colored tracks associated with no shortside trawl catch shares fishery.
Dark tracks associated with shortside trawl catch shares fishery.

Species Name	North of 49°10'N	South of 49°10'N
Aurora rockfish	Minor slope	Minor slope
Bank rockfish	Minor slope	Minor slope
Blackgill rockfish	Minor slope	Minor slope
Bronzespotted rockfish	Minor shelf	Minor shelf
Chameleon rockfish	Minor shelf	Minor shelf
Chillipepper rockfish	Minor shelf	Chillipepper rockfish
Flag rockfish	Minor shelf	Minor shelf
Freckled rockfish	Minor shelf	Minor shelf
Greenblotched rockfish	Minor shelf	Minor shelf
Greenspotted rockfish	Minor shelf	Minor shelf
Halfbanded rockfish	Minor shelf	Minor shelf
Greenstriped rockfish	Minor shelf	Minor shelf
Hallbanded rockfish	Minor shelf	Minor shelf
Harlequin rockfish	Minor shelf	Minor shelf
Honeycomb rockfish	Minor shelf	Minor shelf
Mexican rockfish	Minor shelf	Minor shelf
Pink rockfish	Minor shelf	Minor shelf
Pinkrose rockfish	Minor shelf	Minor shelf
Pygmy rockfish	Minor shelf	Minor shelf
Redbanded rockfish	Minor slope	Minor slope
Redstripe rockfish	Minor shelf	Minor shelf

Species Name	North of 49°10'N	South of 49°10'N
Rosehorn rockfish	Minor shelf	Minor shelf
Rosy rockfish	Minor shelf	Minor shelf
Rougheye rockfish	Minor slope	Minor slope
Sharpchin rockfish	Minor slope	Minor slope
Shortraker rockfish	Minor slope	Minor slope
Silvergray rockfish	Minor shelf	Minor shelf
Speckled rockfish	Minor shelf	Minor shelf
Splintnose rockfish	Minor slope	Splintnose rockfish
Squarespot rockfish	Minor shelf	Minor shelf
Starry rockfish	Minor shelf	Minor shelf
Stripetail rockfish	Minor shelf	Minor shelf
Swordspine rockfish	Minor shelf	Minor shelf
Tiger rockfish	Minor shelf	Minor shelf
Vermilion rockfish	Minor shelf	Minor shelf
Yellowmouth rockfish	Minor slope	Minor slope
Yellowtail rockfish	Yellowtail rockfish	Minor shelf

Thornyheads

Species Name	North of 34°27'N	South of 34°27'N
Longspine thornyheads	Longspine thornyheads	NO IQ
Shortspine thornyheads	Shortspine thornyheads	Shortspine thornyheads

For more details about proposed vessel observer requirements or other trawl catch shares information, please visit: www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/Trawl-Program/index.cfm

Figure 1-7: IFQ Species/Complexes - page 2