NATIONAL MARINE FISHERIES SERVICE REPORT

National Marine Fisheries Service (NMFS) West Coast Region (WCR) will briefly report on recent regulatory developments relevant to groundfish fisheries and issues of interest to the Council.

NMFS Northwest Fisheries Science Center (NWFSC) will also briefly report on groundfish-related science and research activities.

Council Task:

Discussion.

Reference Materials:

1. Agenda Item J.1.b, FR Notices: *Federal Register* Notices Published Since the Last Council Meeting.

Agenda Order:

a.	Agenda Item Overview	Kelly Ames
b.	Regulatory Activities	Frank Lockhart
c.	Fisheries Science Center Activities	John Stein and Michelle McClure
d.	Reports and Comments of Advisory Bodies and Management Entities	
e.	Public Comment	
f.	Council Discussion	

PFMC
10/21/14

Agenda Item J.1.b
FR Notices
November 2014

Groundfish and Halibut Notices

8/15/14 through 10/20/2014

Documents available at NMFS Sustainable Fisheries Groundfish Web Site
http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/index.cfm

79 FR 53401: NOAA Fisheries proposes a seabird avoidance program in the Pacific coast groundfish fishery; public comment period closes October 9, 2014

79 FR 61272: Proposed rule to revise Pacific coast groundfish regulations for the start of 2015 fisheries; public comment period closes November 10, 2014

Rulemaking Plan for 2014

Groundfish and Halibut

In addition to a list of groundfish and halibut actions that have already published over 2014, NMFS is providing a list of rulemakings that are in progress over the remainder of 2014.

Published:

1. Trawl Cost Recovery, Final Rule (12/11/2013, effective 1/10/2014)
2. Pacific Halibut Catch Sharing Plan, Proposed Rule (2/6/2014)
3. Observer/Catch Monitor, Proposed Rule (2/19/2014)
4. Whiting Fishery Allocations, Proposed Rule (2/28/2014)
5. Trawl Program Improvement and Enhancement (PIE 2) Rule, Correction (3/5/2014)
6. Trawl Chafing Gear, Proposed Rule (3/19/2014)
7. Pacific Halibut Catch Sharing Plan, Final Rule (4/4/2014)
8. Trawl Chafing Gear, Proposed Rule Correction (4/4/2014)
9. Inseason Action (4/9/2014)
10. Trawl Rockfish Conservation Area (RCA), Final Rule (4/17/2014)
11. Whiting Fishery Allocations, Final Rule (5/13/2014)
12. Trawl Rockfish Conservation Area (RCA), Correction (5/13/2014)
13. 13-14 Specifications, Trawl Allocations, Correction (5/16/2014)
14. Inseason Action (7/25/2014)
15. List of Authorized Fisheries and Gear, Proposed Rule (8/7/2014)
16. Seabird, Proposed Rule (9/9/2014)
17. AMP Pass-thru & Start of 2015 Fisheries, Proposed Rule (10/10/2014)

In Progress:

	Rule	*Timing*	*Sectors Affected*
1	**Chafing Gear Rule** Includes: changes to chafing gear requirements	Final rule – Nov 2014 Effective – Jan 2015	limited entry (LE) trawl (IFQ/MS/CP)
2	**Observer/Catch Monitor Rule** Includes: permitting for new observer providers, observer safety, minor revisions	Final rule – ~ Dec 2014 Effective – ~Jan/Feb 2015	LE trawl (IFQ/MS/CP)
3	**Seabird Rule** Includes: mandatory streamer lines	Final rule – 2015 Effective – 2015	LE and open access (OA) fixed gear
4	**2015/2016 Harvest Specifications and Management Measures, Amendment 24** Includes: groundfish harvest levels, allocations, commercial trip limits, bag limits, etc.	Proposed Rule – fall 2014 Final rule – Feb 2015 Effective – Mar 1, 2015	Tribal, LE trawl, LE fixed gear, OA, and recreational
5	**AMP Pass-thru Rule, Start of 2015 Fisheries** Includes: pass through of the AMP QP to QS owners	Final rule – Dec 2014 Effective – January 1, 2015	LE trawl (IFQ)

6	**Whiting Clean-up Rule** Includes: whiting IFQ >50% whiting by weight, disposition of maximized retention catch, only midwater in RCA north of 40°10’	Proposed Rule – fall 2014 Final rule – winter 2014/15 Effective – before May 2015	LE trawl (IFQ/MS/CP)
7	**Whiting Season Date Rule** Includes: IFQ whiting season starts May 15	Proposed Rule – winter 2014/15 Final rule – spring 2015 Effective – May 2015	LE trawl (IFQ/ MS/CP)
8	**Pacific Halibut Catch Sharing Plan, 2015** Includes: changes to commercial and recreational halibut fisheries for Area 2A	Proposed Rule – Dec 2014 Final rule – Mar 2015 Effective – Mar 2015	LE & OA fixed gear
9	**Whiting Fishery Allocations** Includes: whiting fishery TAC and sector allocations (tribal, IFQ, MS, CP)	Proposed Rule – Feb/Mar 2015 Final rule – Apr 2015 Effective – May 2015	Tribal, LE trawl (IFQ/MS/CP)
10	**Sablefish Rule** Includes: Registering a LE trawl and fixed gear permit to a vessel at same time (joint registration), sablefish-endorsed LE fixed gear ownership issues, electronic fish tickets	Proposed Rule – summer 2015 Final rule – fall 2015 Effective – April 1, 2016	LE trawl (IFQ), LE fixed gear, OA

Agenda Item J.1.b
Supplemental NMFS Report 2
November 2014

Omnibus Update

At the September Council meeting, under the agenda items for omnibus and future Council meeting planning (Agenda Items J.1 and I.6, respectively), NMFS said that it would coordinate with the Council staff and come back at the November Council meeting with further input on potential packaging for groundfish actions. This document provides that further input and reflects some coordination with Council staff.

At the September Council meeting, NMFS stated its belief that it could address in the near-term two of the items on the "omnibus" list. NMFS and Council staff worked together at that meeting to prioritize over 2015/2016 a list of up to 11 actions (see Agenda Item I.6.a., Supplemental Joint NMFS/Council staff report, September 2014 (joint report)).[1] NMFS wants to keep the Council well informed about the timeframes within which these joint priorities can be addressed, particularly those to be addressed in the near-term.

In October, NMFS was proud to partner with the Council in its rapid and responsive action to address inseason issues that arose in the whiting fishery, activity which included an emergency meeting of the Council. NMFS believes, if not assumes, that the Council recognizes that the in-season action (and unanticipated impacts of the whiting fishery on ESA-listed Chinook salmon), has affected NMFS' near-term workload distribution and timeframes for action items. Work on the reinitiated salmon biological opinion is a NMFS priority that has potential consequences for any upcoming groundfish action pending completion of the consultation. As a result, NMFS anticipates further coordination with Council staff over the coming months to ensure that the priorities established in September are considered as workload changes, and that expected timeframes associated with the priorities are jointly supported.

NMFS notes that it maintains attention to routine actions (*e.g*. groundfish specifications & inseason actions, whiting specifications, halibut regulations) and several actions already at various stages of implementation (*e.g.,* electronic monitoring, whiting clean-up, whiting season date change, ecosystem/Am 25, sablefish, and Essential Fish Habitat phase 3/regulations). In the near-term, NMFS will also focus on widow QS reallocation and divestiture as a priority.

NMFS will continue to work with Council staff on the priorities over the coming months. NMFS will also provide updates at Council meetings throughout the year on the progress of rulemakings and encourages the Council to consider these when planning for future Council meetings.

[1] NMFS notes that its commitment to address 2 items in the near-term is consistent with the joint report to prioritize 11 items during the scheduling horizon.

Science, Service, Stewardship

Agenda Item J.1.c
Supplemental NWFSC PowerPoint
Electronic Only
November 2014

Groundfish Science Report

John Stein and Michelle McClure
Northwest Fisheries Science Center

November 18, 2014



NOAA FISHERIES SERVICE

NWFSC NORTHWEST FISHERIES SCIENCE CENTER

NOAA FISHERIES SERVICE

Overview

- Recent Awards
- Data management
- Halibut bycatch
- Groundfish mortality
- Juvenile rockfish/ecosystem survey
- Habitat news
- Science update

Science, Service, Stewardship

Key Groundfish Awards for 2014

Gold Award – NWFSC, SWFSC, OMAO

For design and execution of first joint survey for Pacific hake and Pacific sardine with Canadian and industry partners at considerable cost savings.

Special Commendation -- *Robert W. Morgan*

In recognition of outstanding efforts resulting in the saving of life at sea. Displaying admirable competence and composure, Robert directed efforts to administer CPR and make preparations for USCG rescue. His remarkable actions led to the crewmember's survival.

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Science, Service, Stewardship

Special Commendation 2014

Robert W. Morgan

In recognition of outstanding efforts resulting in the saving of life at sea. Displaying admirable competence and composure, Robert directed efforts to administer CPR and make preparations for USCG rescue. His remarkable actions led to the crewmember's survival.

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Science, Service, Stewardship

Groundfish Data Management Update

NOAA FISHERIES SERVICE

FRAM Data

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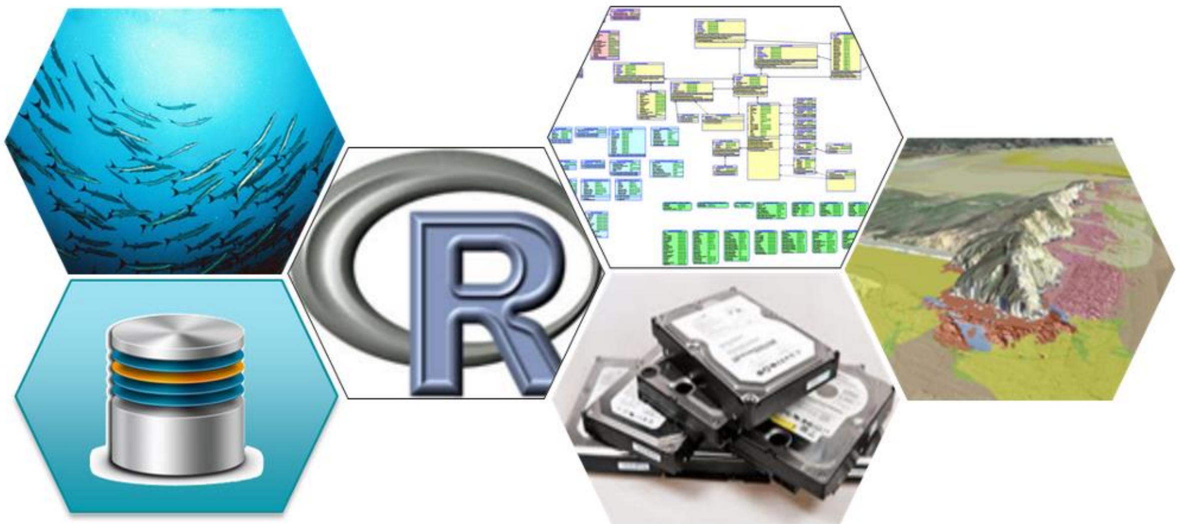
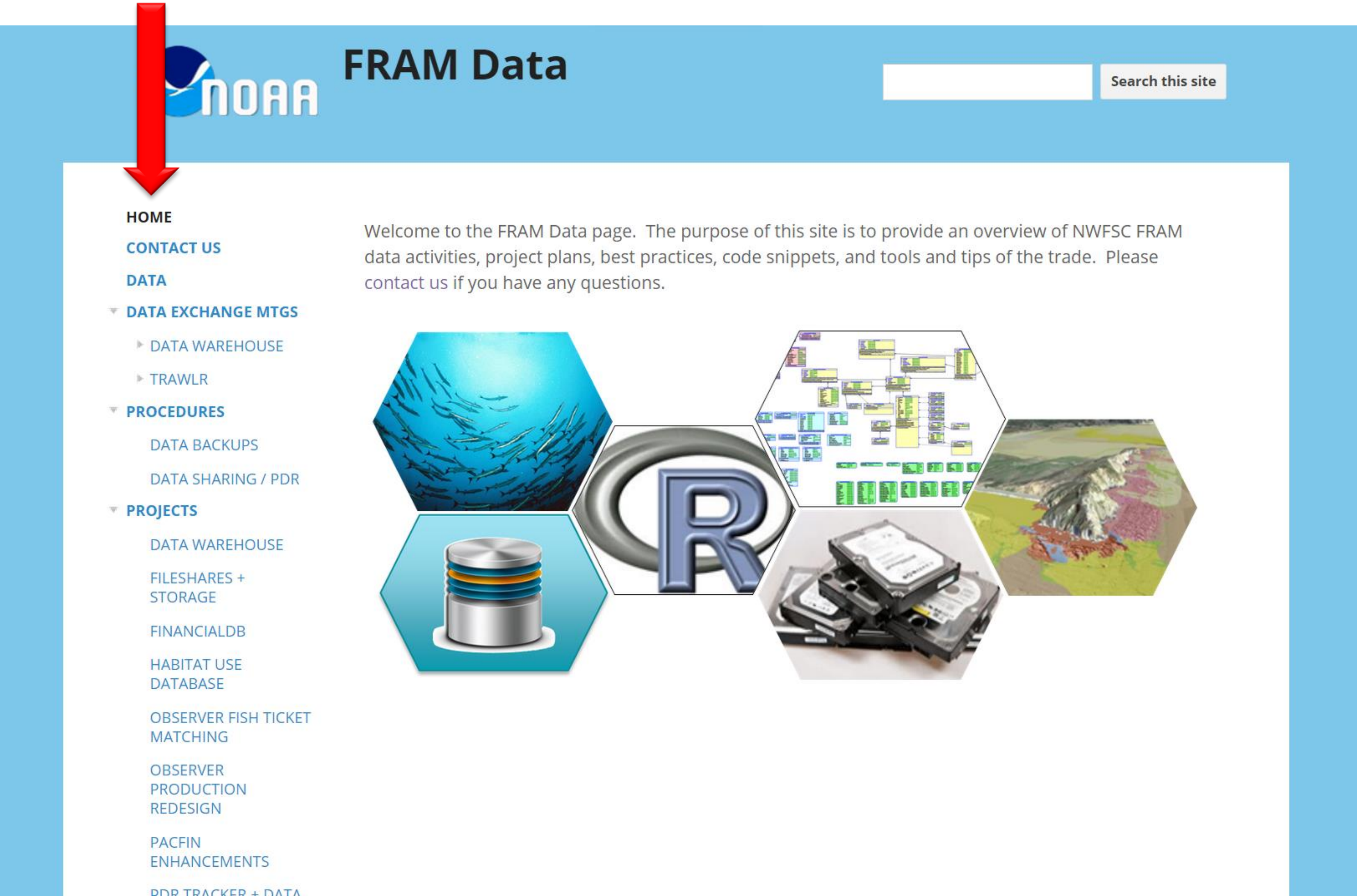
- OBSERVER PRODUCTION REDESIGN
- PACFIN ENHANCEMENTS
- PDR TRACKER + DATA

Welcome to the FRAM Data page. The purpose of this site is to provide an overview of NWFSC FRAM data activities, project plans, best practices, code snippets, and tools and tips of the trade. Please contact us if you have any questions.



Main Categories



Our Data – Goal: Single Point of Access for FRAM Data

FRAM Data

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Data

FRAM is home to a number of important data sources. This page is intended to provide an overview of these datasets, links for accessing them, as well as information on the currency of the data content.

Data Source	Description	Program	Web Access Link	Point of Contact	Last Updated
Economic Data Collection (EDC)		ESSR	Production Test Dev	Erin Steiner	
Limited Entry Programs		ESSR		Carl Lian	
Open Access		ESSR		Carl Lian	
Habitat Use Database		Habitat	Production	Waldo Wakefield	
Habitat Video Data		Habitat		Waldo Wakefield	
Observer Production		Observer	Production Test Dev	Neil Riley	
Observer Logistics		Observer	Production Test Dev	Neil Riley	
Corals		Specimens	N/A	John Buchanon	
Finclips		Specimens	N/A	John Harms	
Otoliths		Specimens	N/A	Patrick McDonald	
Ovaries		Specimens	N/A	Melissa Head	
Stomachs		Specimens	N/A	John Buchanon	
Tissues		Specimens	N/A	Keith Bosley	

Project Details – Sample

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- REPRODUCIBLE RESEARCH
- **SURVEY REDESIGN**

TECH NOTES
- DATABASES

Projects >

Survey Redesign

CONTENTS

Overview

Provide a consolidated field collection capability across trawl, hook & line, and acoustics surveys as well as the Observer program.

Status

- **Software Architecture**
  - Python Desktop Client Chosen for At-Sea Data Collection
    - Kivy Natural User Interface (NUI) Library
    - APSW SQLite Library
    - Oracle cx_Oracle Library
    - SQLAlchemy Object Relational Mapper Library
  - Oracle for centralized storage and dissemination
  - PyCharm chosen as the Integrated Development Environment
- **Database Design**

How to get there?

Inside the NOAA Network:

framdata.nwfsc.noaa.gov

Outside the NOAA Network:

https://sites.google.com/a/noaa.gov/nmfs-nwc-fram-data/

Science, Service, Stewardship

Pacific Halibut Bycatch in U.S. West Coast Groundfish Fisheries, 2002-2013

Jason Jannot[1], Jon McVeigh[1], Neil Riley[1], Kayleigh A. Somers[2],

[1]FRAM Division NWFSC, [2]PSMFC

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2013 P. halibut mortality

- IFQ P. halibut mortality ~10 mt less than 2012
- IFQ P. halibut mortality well below allocation & LE Bottom Trawl (2002-10)
- Significant drop in LE Sablefish P. halibut mortality
  - 2013 = 3.7 mt vs. 2012 = 24.23 mt
  - Drop in discard ratios (fewer encounters rel. to target)
- Other sectors P. halibut mortality remains relatively low.

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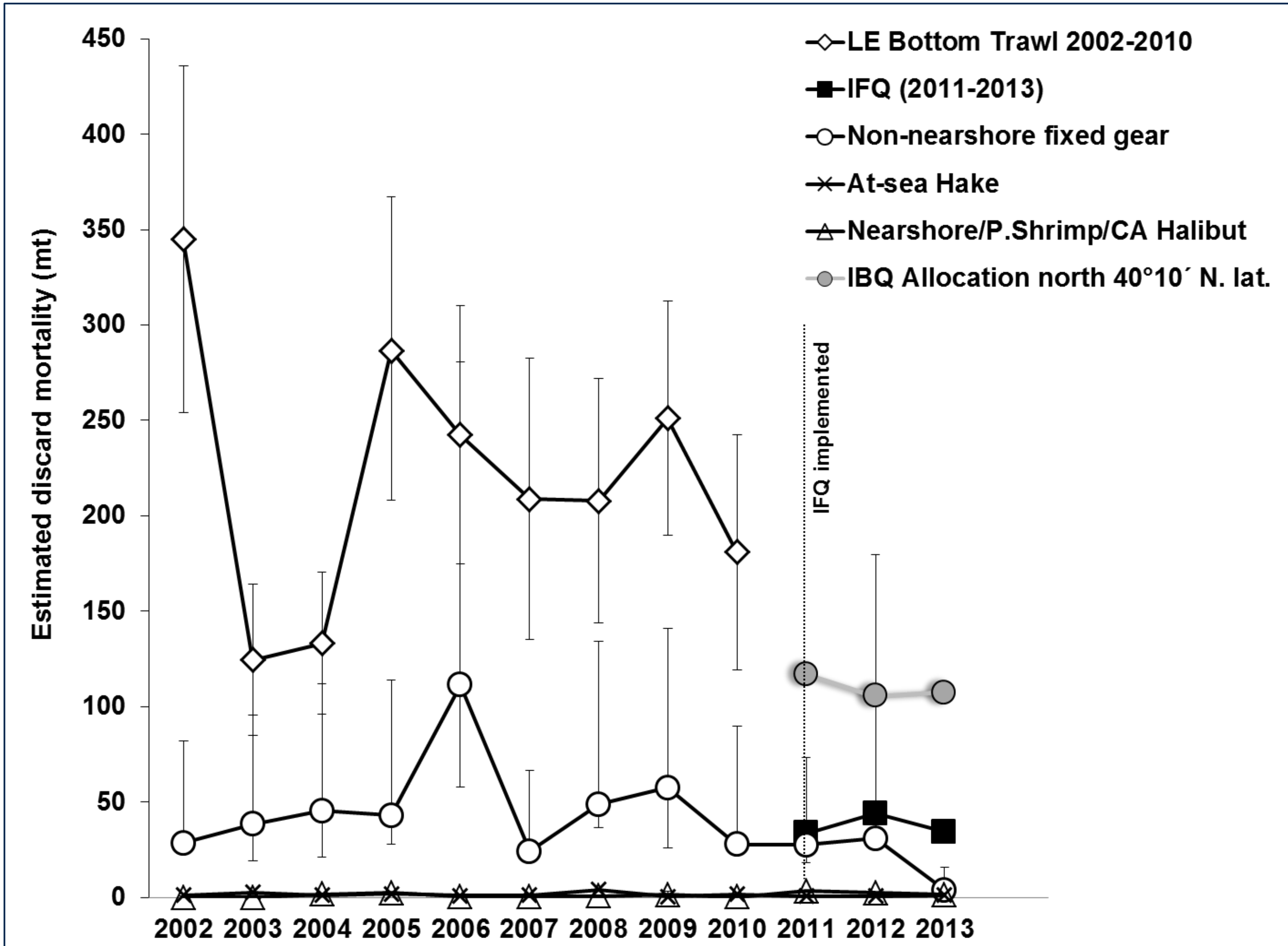

Science, Service, Stewardship

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

Marlene Bellman[1], Jason Jannot[1], Jon McVeigh[1], Neil Riley[1], Kayleigh A. Somers[2]

[1]FRAM Division NWFSC, [2]PSMFC

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2013 Mortality Estimates

- Total mortality > 90% of ACL:
  - CA scorpionfish – south of 34°27' N. latitude (96%)
- Total mortality <50% of 2013 ACLs:
  - 28 groundfish species/complexes 68%
- Increases/decreases from 2012:
  - almost equal # of species

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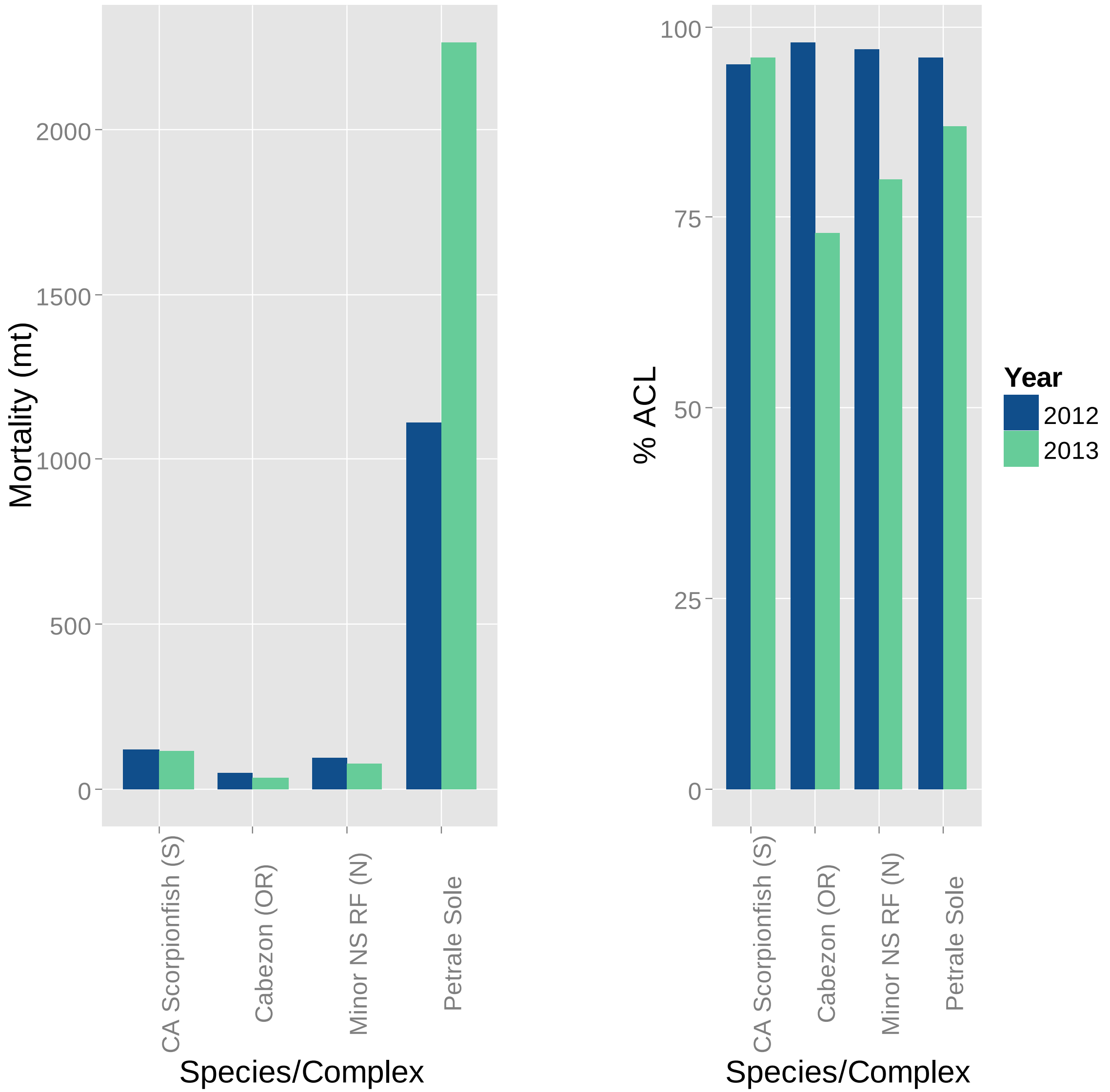
2012 and 2013 Mortality and ACL



Science, Service, Stewardship

Rockfish Recruitment and Ecosystem Assessment Survey

A joint SWFSC/NWFSC effort to conduct a coastwide midwater trawl survey for Young-of-the-Year (YOY) rockfish, Pacific hake, and other groundfish, conducted May 1 through June 28, 2014

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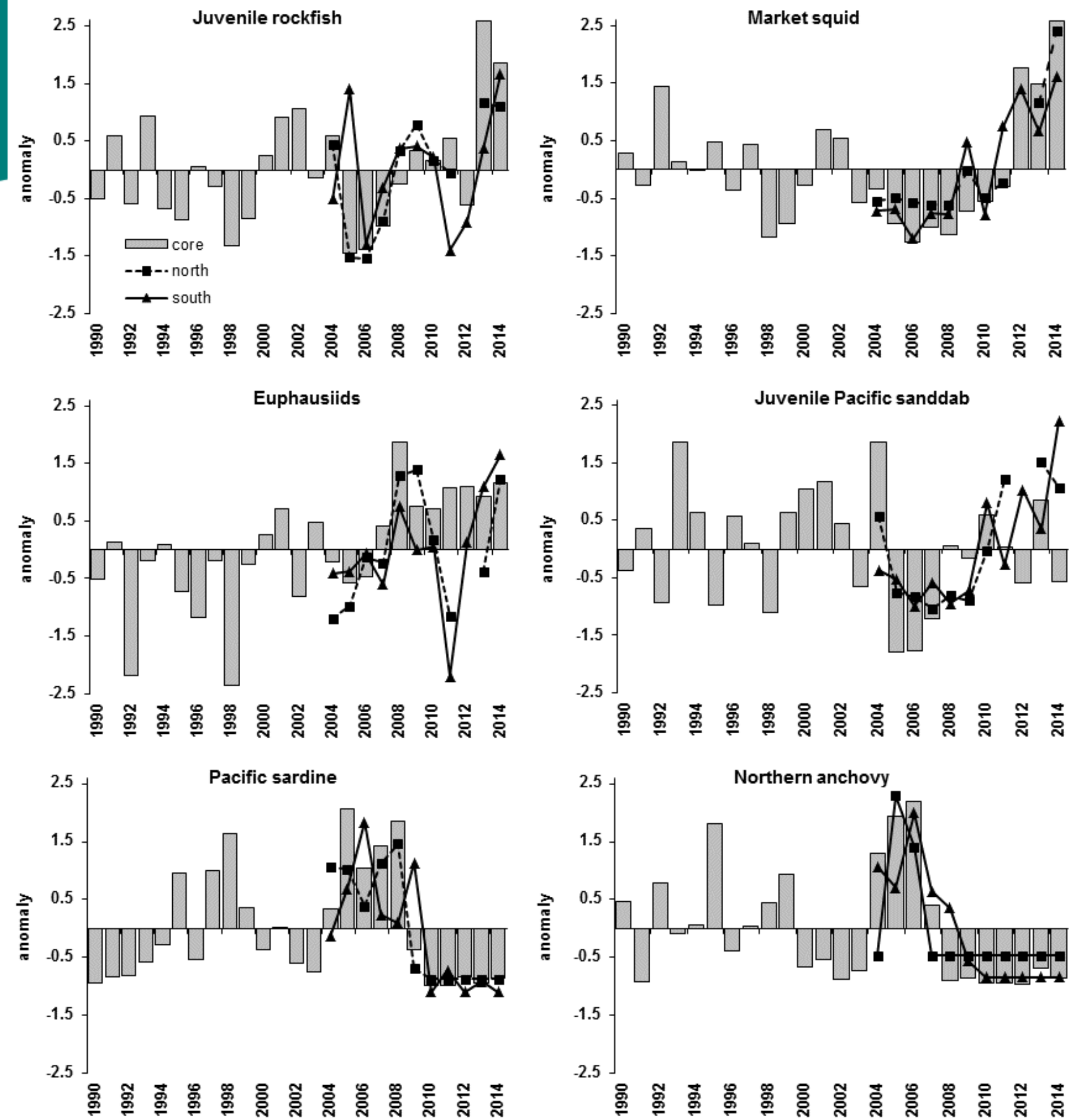
- Last two years (2013, 2014) have seen the greatest abundance of YOY rockfish since early 1980s (in the core area, but high catches throughout the survey range).
- High and record-high catches of market squid, krill, and other YOY groundfish (sanddab, lingcod) have also been observed, catches of coastal pelagics have been low.
- Coastwide indices will be available for several 2015 groundfish stock assessments (canary, bocaccio, widow rockfish).
- Analysis of potential indices of Pacific hake, lingcod and other is ongoing and should be available for future assessments.



Standardized anomalies of several of the most frequently encountered pelagic forage species from rockfish recruitment survey in the core (Central California) region (1990-2014) and the southern and northern California survey areas (2004-2014, excluding 2012 for the northern area).

Science, Service, Stewardship

Marine Habitat Ecology

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NOAA NMFS National Bycatch Reduction Engineering Program, BREP's 6th Annual Report to Congress

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Bycatch Reduction Engineering Program

2013 Annual Report to Congress

Importance Of Bycatch Reduction

Bycatch occurs when fishing operations discard fish or interact with marine mammals, seabirds, or sea turtles. Bycatch can have significant biological, economic, and social impacts on fisheries. Reducing bycatch can improve the recovery of endangered marine mammals, sea turtles, seabirds, and fish. Coastal communities benefit by reducing bycatch of species that are valuable targets in other fisheries. In support of our mission to sustainably manage the nation's fisheries, NOAA's National Marine Fisheries Service (NOAA Fisheries) has been investing in technological and engineering solutions to reduce bycatch, and in 2012 began funding external partners from state governments, academia, and the fishing industry.

External Grant Program Summary

The mission of the Bycatch Reduction Engineering Program (BREP) is to develop technological solutions and change fishing practices to minimize bycatch and reduce post-release injury and mortality of non-target species in our nation's fisheries. BREP grants have addressed bycatch of sponges, corals (deep and shallow), protected species, and non-target fish in commercial and recreational fisheries. The BREP also strengthens cooperation and collaboration between NOAA Fisheries and the fishing industry by giving priority to research projects that have strong management application.

This report highlights outcomes and management applications of projects funded with $2.44 million in FY 2012 in four priority areas: reducing protected species bycatch, reducing post-release mortality, improving fishing practices, and developing innovative technologies. Project highlights include:

- Researchers in Florida are developing timed-release chemical shark repellants that could reduce shark bycatch by 18 to 35 percent depending on the type and intensity of repellent used.
- In the North Pacific, researchers have found that by using illumination they can reduce Chinook salmon bycatch by attracting the fish toward escape areas in Pacific hake midwater trawl nets.
- In the Northwest, researchers found that using a sorting grate that allow the smaller, target fish (Pacific hake) to pass through leads to a 26 percent reduction in widow rockfish bycatch.

The report also identifies projects funded in FY 2013, although results from these projects will not be available until next year.

http://www.nmfs.noaa.gov/by_catch/brep_2013_report_to_congress.html

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NOAA Fisheries
Untrawlable Habitat Strategic Initiative

Year one (July/August 2014):

- Pilot study in shallow clear waters of the Gulf of Mexico – Florida Middle Grounds, a snapper/grouper reef area with NWFSC participation

Year two (tentative):

- Return to Florida Middle Grounds for a full experiment
- Initiate pilot study off Pacific coast focused on rockfishes in deep water lower visibility habitats

Science, Service, Stewardship

A spatially distinct history of the development of California Groundfish Fisheries

Rebecca Miller[1,4], John Field[1], Jarrod Santora[2], Isaac Schroeder[3] David Huff[4], Meisha Key[5], Don Pearson[1], and Alec MacCall[1]

[1] Fisheries Ecology Division, SWFSC/NMFS/NOAA, [2] Center for Stock Assessment Research, University of California Santa Cruz, [3] Environmental Research Division, SWFSC/NMFS/NOAA, [4] Institute of Marine Sciences, University of California at Santa Cruz, [5] California Department of Fish and Wildlife

Public Library of Science (PLOS ONE) 9:6: e99758

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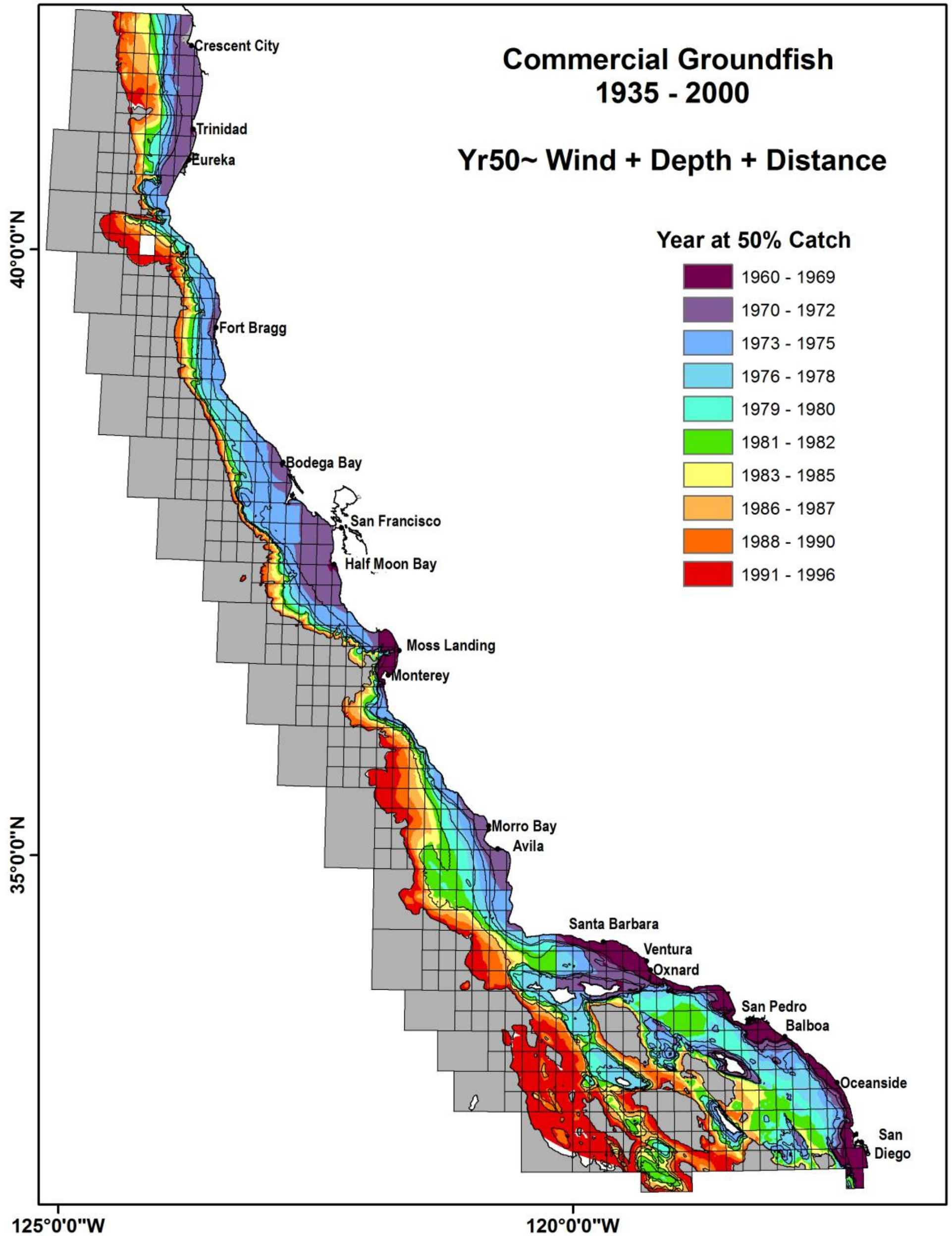
- Used CDFW historical block summary data and habitat/climate information to better understand the factors that related to the spatial expansion of the groundfish fishery (commercial and recreational).
- Observed estimates of the year at which 50% of the cumulative catch was attained (Yr50) by block are best explained by depth, distance from port, and wind.
- Results demonstrate that over time the groundfish fishery has fished deeper habitats, further from port, in increasingly inclement weather.
- This provides the basis for revisiting catch reconstructions (particularly ratio shelf/slope rockfish for commercial), and should also inform spatial management, ecosystem services.



Agenda Item J.1.d
Supplemental GAP Report
November 2014

GROUNDFISH ADVISORY SUBPANEL REPORT ON
NATIONAL MARINE FISHERIES SERVICE REPORT

The Groundfish Advisory Subpanel (GAP) discussed the National Marine Fisheries Service (NMFS) report (Agenda Item J.1.b, Supplemental NMFS Report 1) and offers the following comments and recommendations.

The GAP primarily focused on cost recovery and what it believes is an ongoing lack of transparency. To reiterate previous GAP statements on this issue, as specifically set forth in Agenda Item C.3.d, Supplemental GAP Report, April 2014, the industry is facing huge costs to participate in the trawl individual quota program, including: the 5 percent buyback loan payments (5 percent of ex-vessel value), the increasing costs of observers, and the 3 percent cost recovery fee. These are all in addition to the state landings taxes and other fixed costs associated with fishing. Overall these costs can be upwards of 20 percent of some businesses' gross income. The GAP believes that when industry is responsible for covering some of the costs of management, there should be a corresponding responsibility for the agency to delineate costs related to management, data collection, and enforcement at a much finer scale than is currently done. Currently there is little confidence in the numbers, and the industry feels more like a blank check is being written potentially for costs not associated with the program. We understand that cost recovery reports in the North Pacific are much more detailed, so there is no insurmountable barrier to providing the information the GAP would like to see.

The GAP is also concerned by comments we heard from Mr. Frank Lockhart that there will not really be an opportunity for stakeholders to make recommendations on the upcoming cost recovery report in a meaningful way. We had understood that there would be an opportunity to make suggestions, but now understand that any recommendations are unlikely to change the upcoming report due in April. To begin to remedy this disconnect, the GAP recommends reconvening the Cost Recovery Committee (CRC) in early 2015 in order to give meaningful input to NMFS.

PFMC
11/18/14

WIDOW ROCKFISH REALLOCATION AND DIVESTITURE ISSUES

Under the Amendment 20 trawl catch share program, overfished species were allocated in a manner intended to meet the bycatch needs for those receiving quota for target species. Amendment 20 included a provision which noticed the possibility that when an overfished species attains rebuilt status, quota shares (QS) for the species would be actively considered for reallocation. Widow was declared rebuilt for the 2013-2014 biennial specifications cycle, but consideration of a QS reallocation was delayed due to other pressing fishery management workload. Under the September 2014 groundfish omnibus agenda item, the Council prioritized the consideration of widow QS reallocation, scheduled adoption of a range of alternatives for analysis at this meeting, and scheduled selection of a final preferred alternative f6r the April 2015 Council meeting. This schedule, along with a listing of significant upcoming events and some alternative implementation scenarios, is provided in Agenda Item J.2.a, Attachment 1.

A draft scoping document has been produced (Agenda Item J.2.a, Attachment 2) which includes a purpose and needs statement (Chapter 1), some strawman alternatives for consideration (Chapter 2), and some preliminary analysis (Chapter 3). The strawman alternatives for widow QS reallocation include two alternatives (Strawman Alternatives 4 and 5) which were recommended by the Groundfish Advisory Subpanel in November 2011. Those alternatives did not move forward at that time because the Council prioritized other trawl trailing issues for more immediate attention. The widow reallocation alternatives provided in Chapter 2 of the attached scoping document are:

Alternative 1: *No Action*
Alternative 2 (Strawman): *Reallocate Widow QS Using the Amendment 20 Target Species Allocation Formula* (a portion to all permits equally and a portion to permits based on landings history x to y)
Alternative 3 (Strawman): *Include Landings History to 2010* (same as Alternative 2 but for the landings history portion of the formula include landings history through 2010)
Alternative 4 (Strawman): *Pounds Neutral Reallocation* (leave a base amount of QS unreallocated, such that in 2016 every permit would receive the same amount of quota pound (QP) that they received in 2012, the last year of rebuilding; and reallocate the remainder using the historic landings formula from Alternative 2)
Alternative 5 (Strawman): *Pounds Neutral – Plus* (same as Alternative 4 but leave an additional amount of QS in each account such that in 2016 every permit would receive an increase in QP relative to their 2012 QP allocations)

Allocation policy guidance for Council consideration is provided in Agenda Item J.2.a, Attachment 3.

In addition to deciding on an allocation formula, a number of decisions or determinations may be needed pertaining to the requirement that those who control QS in excess of the control limits (accumulation limits) divest themselves down to those limits. The single species QS accumulation limit for widow rockfish is 5.1 percent. The aggregate non-whiting species QS accumulation limit is 2.7 percent. The regulations state:

> Any person that qualifies for an initial allocation of QS or IBQ [individual bycatch quota] in excess of the accumulation limits will be allowed to receive that allocation, but must divest themselves of the QS (except for widow rockfish QS) or IBQ in excess of the accumulation limits by November 30, 2015.... Once the divestiture period is completed, any QS or IBQ held by a person ... in excess of the accumulation limits will be revoked and redistributed to the remainder of the QS or IBQ owners in proportion to the QS or IBQ. § 660.140(d)(4)(v).

Widow rockfish is exempted from the deadline because there is a moratorium on widow QS trading, pending action on the widow rockfish QS reallocation decision (or a determination that no reallocation will occur). The following questions are outstanding with respect to the divestiture deadline.

- What should be the divestiture deadline for widow rockfish QS?
- Should there be a delay in the divestiture deadline for the aggregate non-whiting control limit?
- If revocation of QS becomes necessary, how should that revocation be distributed in situations where a person:
    - has multiple permits, or
    - is over the aggregate limit?

Widow Rockfish Divestiture Deadline

A deadline for divestiture of widow QS should be set for a reasonable period after widow QS has been reallocated (or after the Council makes a decision not to reallocate). For the original program, the divestiture deadline was set for two years after the end of the QS trading moratorium. This period may or may not be appropriate for widow rockfish divestiture. See Section 2.2.1 for an example alternative.

Aggregate Non-whiting Species Divestiture Deadline

In a number of ways, the widow rockfish QS reallocation affects choices individuals need to make in order to meet the aggregate non-whiting control limit.

- A widow rockfish reallocation could affect where a person's holdings stand in relation to the aggregate non-whiting limit (pushing people above or below that limit). For example, a person who divests because they are over the aggregate limit might find that after widow QS reallocation they are under the limit.
- The reallocation results could change the optimal choices for divesting down to the aggregate limit. For example, a person who finds themselves with substantially more widow QS after reallocation might want to have held on to species that would be taken while targeting widow rockfish.
- The widow QS trading moratorium eliminates the option of divesting of widow QS, forcing divestiture of other species to get within the aggregate limit.

It should be noted that regardless of divestiture outcomes, individuals will be able to trade QS afterward to rebalance their accounts. If the widow rockfish reallocation can be completed and implemented by October 2015, there might not be a need to delay the deadline for the aggregate limit (assuming that if QS owners know their expected widow QS reallocations well in advance of that deadline, a month would provide a reasonable amount of time to complete any final divestiture transactions). In this case, the implementation timeline would be that identified in "Implementation Scenario 1" of the calendar in Agenda Item J.2.a, Attachment 1. However, if full implementation by October is not feasible, or a period of about a month for completing divestiture transactions not reasonable, then a delay in the divestiture deadline might be appropriate. "Implementation Scenario 2" shows a timeline in which widow QS reallocations are completed on time for the 2016 QP allocations, and a delay in divestiture is implemented in the same rulemaking. "Implementation Scenario 3" shows a timeline in which widow QS reallocations are completed on time for 2017, and a separate earlier rulemaking is undertaken to delay the divestiture deadline. There is no need for the Council to choose between Scenarios 2 and 3; however, Scenario 1 would require a significant reprioritization of resources to meet the deadlines. See Section 2.2.2 for some example alternatives for a divestiture deadline delay or guidance.

Revoking Forfeited QS in Complex Situations

National Marine Fisheries Service (NMFS) will have to make a determination on how to implement the revocation provision for situations in which a person is over the control limit for a species and has multiple permits or is over the aggregate non-whiting limit. A rulemaking may not be required for this determination. An opportunity is being provided for Council comment. Agenda Item J.2.b, NMFS Report provides additional information on this issue and the need for action.

Council Action:

1. **Select ranges of alternatives on the following topics, as needed**
    a. **Widow rockfish QS reallocation**
    b. **Widow rockfish divestiture deadline**
    c. **Delay of the aggregate non-whiting species divestiture deadline**
2. **Guidance on revoking QS in complex situations.**

Reference Materials:

1. Agenda Item J.2.a, Attachment 1: Calendars for Action and Implementation.
2. Agenda Item J.2.a, Attachment 2: Widow QS Reallocation Consideration: Initial Public Scoping Document (Draft).
3. Agenda Item J.2.a, Attachment 3: Guidance for Making Allocation Decisions Related to Catch Shares.
4. Agenda Item J.2.b, NMFS Report.

Agenda Order:

a. Agenda Item Overview — Jim Seger
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment

d. **Council Action:** Adopt Range of Alternatives for Widow Rockfish Reallocation and, as Necessary, Divestiture Issues

PFMC
10/24/14

WIDOW ROCKFISH REALLOCATION AND DIVESTITURE CALENDAR

Attached is a calendar with some possible schedules for moving ahead on widow rockfish reallocation and related issues having to do with control limits and divestiture. The implementation scenarios provided are a preliminary assessment by Council staff.

Key Upcoming Events

The first group of rows shows the upcoming dates which may constrain or require some action:

- divestiture deadline (November 30, 2014), and
- issuance of quota pounds (QP) for 2016.

Proposed Council Schedule and Issues

The second group of rows shows a proposed Council schedule and issues to be covered in this action. The issues to be included are dependent on the implementation timeline for a widow reallocation (longer timelines will likely require a delay in the divestiture rules).

Implementation Scenario 1

Meeting this timeline would be tight and likely require a concerted effort that involves the de-prioritization of other regulatory actions. If the Council chooses no action on widow reallocation and regulatory action on the control limit forfeiture rules, implementation by November 30th might be more feasible, without making other substantial sacrifices.

Implementation Scenario 2

Under this scenario, the widow reallocations are in place on time for the 2016 QP allocations, but not prior to the divestiture deadline. Some degree of a delay in the divestiture deadline would be required.

Implementation Scenario 3

Under this scenario, the widow reallocations are not in place on time for the 2016 QP allocations. In order to modify the divestiture deadline prior to its effective date (November 30, 2014) a separate rulemaking on divestiture would be required. The forfeiture rules might also be included in that separate rulemaking. The QP issued for 2016 would be based on the old quota share (QS) allocations. Widow QS could be reallocated any time during 2016 and it would not affect the 2016 QP allocations, but widow QS trading could commence shortly thereafter. The first QP allocation to be affected by the widow reallocation would be for the 2017 fishing year.

Table. Timeline related to widow rockfish reallocation issue.

	F'1	W '14-15			Spr '15			Sum '15			Fall '15			Win '15-16				Spg '16			Sum '16		
	Nov CM			Mar CM	Apr CM		Jun CM			Sept CM		Nov CM					Mar CM	Apr CM		Jun CM			Sept CM
Key Upcoming Events																							
Divestirure Deadline												11/30											
2016 QP Issued																							
Proposed Council Schedule and Issues																							
Actions	ROA				FPA																		
Issues																							
Widow Reallocation	X				X																		
Divestiture Delay	?				?																		
Control Limit - Forfeiture (fft) Rules	?				?																		
Implementation Scenario 1 (full implementation in 2015 - Very Tight)																							
Regulations promulgated																							
QS holders able to estimate their allocations							Y																
Reallocation completed											Y												
Widow QS trading moratorium lifted											Y												
Divesture deadline (no change)													Y										
Control limit forfeiture rules (apply)													Y										
2016 QP reflect widow QS reallocations														Y									
Implementation Scenario 2 (delay divestiture deadline)																							
Regulations promulgated																							
QS holders able to estimate their allocations							Y																
Reallocation completed													Y										
Widow QS trading moratorium lifted													Y										
Divesture deadline (delayed)																TBD=>>							
Control limit forfeiture rules (apply w/div deadline)																TBD=>>							
2016 QP reflect widow QS reallocations														Y									
Implementation Scenario 3 (delay divestiture deadline and use old widow QS allocations for 2016 allocation)																							
Regulations promulgated - Whiting Reallocation																							
Regulations promulgated - Divestiture/Fft Rules																							
QS holders able to estimate their allocations							Y																
Reallocation completed																Y							
Widow QS trading moratorium lifted																Y							
Divesture deadline (delayed)																TBD=>>							
Control limit forfeiture rules applied																TBD=>>							
2016 QP reflect widow QS reallocations														N									

PFMC
10/24/14

Widow QS Reallocation Consideration: Public Scoping Document (DRAFT)

CHAPTER 1

1.1 Introduction

Under Amendment 20, widow rockfish QS for nonwhiting trips in the shoreside trawl IFQ fishery was originally allocated using an allocation formula for overfished species. Based on a 2011 assessment of widow rockfish, the stock was declared rebuilt and increased fishing opportunities were provided for the 2013-2014 biennial specifications period. The ACLs for the fishery were further increased for the 2015-2016 biennial specifications period Figure 1-1.

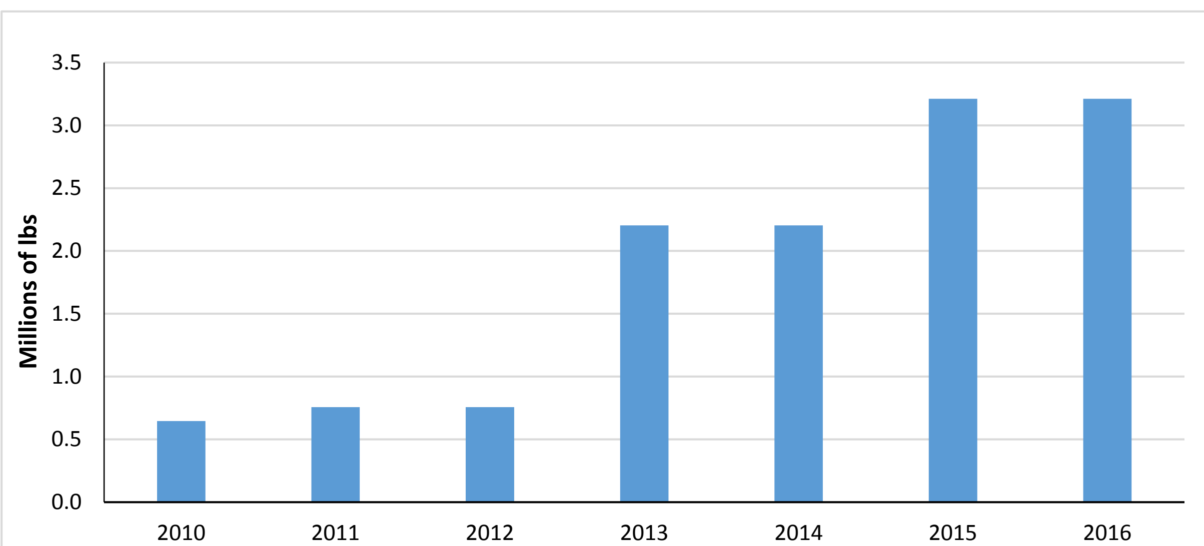


Figure 1-1. Recent history of widow rockfish allocations to the shoreside trawl fishery, 2010 through 2016.

Now that widow rockfish has been rebuilt, the Council is considering whether or not to reallocate widow rockfish QS on some other basis. This document is intended to provide background information to assist the Council and public in the initial scoping of this issue.

1.2 Proposed Action

The proposed action is to adopt a widow rockfish QS allocation formula to facilitate the re-establishment of historic widow rockfish target fishing opportunities for initial QS recipients. The new allocation would take the place of the initial widow rockfish QS allocations, which were based on each catcher vessel permit's allocations of target species, average widow rockfish incidental catch rates and geographic distribution of fishing activities, as specified in the Amendment 20 trawl rationalization program.

1.3 Purpose and Need

The purpose of the proposed action is to adopt allocations of widow rockfish quota shares based on criteria that are consistent with the Magnuson-Stevens Fishery Conservation and Management Act (MSA), other applicable law, and the goals and objectives of the Pacific Coast Groundfish Fishery Management Plan, including Amendment 20 to that plan (the trawl rationalization program). Under Amendment 20, overfished species, such as widow rockfish, were allocated to permit holders based on the QS allocation of the target species QS with which widow rockfish is incidentally caught. Amendment 20 states that for overfished species QS reallocations will be reconsidered when an overfished species become rebuilt.

> Reallocation with Change in Overfished Status: When an overfished species is rebuilt or a species becomes overfished there may be a change in the QS allocation within a sector (allocation between sectors is addressed in the intersector allocation process). When a stock becomes rebuilt, the reallocation will be to facilitate the re-establishment of historic target fishing opportunities.

Prior to the declaration of overfished status for widow rockfish there was a substantial target fishery for this species. Without a reallocation, the increased fishing opportunity for this stock provided as a result of achievement of rebuilt status and the attendant dramatic increase in the ACL will go to QS owners who previously used widow QS as bycatch and may not have historically participated in directed widow targeting. Under such circumstances, absent a reallocation, historical widow fishery participants wanting to take advantage of renewed fishing opportunities will have to purchase widow QS on the market, in common with other later entrants to the fishery. Thus, the proposed action is needed to allow historical widow fishery participants to benefit from a direct reallocation based on the renewed fishing opportunities.

1.4 Background

1.4.1 Widow Rockfish Target and Bycatch Fisheries

Widow rockfish is generally targeted with midwater trawl gear together with yellowtail rockfish. It is also incidentally caught in the midwater whiting fishery. After a major fishing-down in the

1990s, the stock because overfished and for most of the last decade, up through 2012, was managed for rebuilding (see Figure 3-1).

1.4.2 Divestiture

Amendment 20 includes control limits for all species individually (5.1 percent for widow rockfish) and an aggregate control limit for nonwhiting species of 2.7 percent. All persons controlling QS are required to divest down to these limits by November 30, 2015. However, there is a moratorium on widow rockfish QS trading, pending the outcome of these Council deliberations on whether or not to reallocate widow rockfish QS now that the species has been rebuilt. The moratorium presents a number of challenges:

- A widow rockfish reallocation could affect where a person’s holdings stand in relation to the aggregate non-whiting QS limit (pushing people above or below that limit). For example, a person who divests because they are over the aggregate limit might find that after widow QS reallocation they are now under the limit.
- The reallocation results could change the optimal choices for divesting down to the aggregate limit. For example, a person who finds themselves with substantially more widow QS after reallocation might want to have held on to species that would be taken while targeting widow rockfish.
- The widow QS trading moratorium eliminates the option of divesting of widow QS, forcing divestiture of other species in order to get within the aggregate limit.

For these reasons, the Council may wish to consider an extension of the divestiture period as part of this action.

CHAPTER 2 DEVELOPMENT OF ALTERNATIVES

In this section a No Action alternative (Alternative 1) is described along with four other strawman alternatives, provided to stimulate discussion.

Alternative 1: *No Action*
Alternative 2 (Strawman): *Reallocate Widow QS Using the Amendment 20 Target Species Allocation Formula* (a portion to all permits equally and a portion to permits based on landings history x to y)
Alternative 3 (Strawman): *Include Landings History to 2010* (same as Alternative 2 but for the landings history portion of the formula include landings history through 2010)
Alternative 4 (Strawman): *Pounds Neutral Reallocation* (leave a base amount of QS unreallocated, such that in 2016 every permit would receive the same amount of quota pound (QP) that they received in 2012, the last year of rebuilding; and reallocate the remainder using the historic landings formula from Alternative 2)
Alternative 5 (Strawman): *Pounds Neutral – Plus* (same as Alternative 4 but leave an additional amount of QS in each account such that in 2016 every permit would receive an increase in QP relative to their 2012 QP allocations)

The Amendment 20 allocation formulas set 10 percent of the non-whiting QS aside for the adaptive management program and allocated the remaining 90 percent to limited entry permit owners. Those limited entry permit owners became the owners of the QS accounts to which initial QS allocations were made. Because of the trading moratorium on widow rockfish QS, all of the current widow rockfish QS can be traced directly back to the permits for which the QS was initially issued. Therefore it is still possible to reallocate widow QS among the current QS owners based on the catch histories on which initial allocations were based.

2.1 Possible Alternatives for Consideration

Alternative 1: No Action

Summary: **Maintain the existing allocations.** Allocations are based on a formula intended to allocate widow QS to those who need it to cover bycatch taken in fisheries directed on other species.

Detailed Description

Adaptive Management: 10 percent of the QS set aside for adaptive management.
Equal division: No widow QS was allocated based on equal division of buyback history.
Whiting/Non-whiting Split: The allocation of the remaining QS was split between whiting and nonwhiting trips based on the proportions derived from the following allocations

Whiting Trips: The shorebased portion (42%) of the whiting sector allocation (52 percent of the 2010 trawl allocation) (28 percent[1] of widow QS for whiting trips)
Nonwhiting Trips: 48 percent of the 2010 trawl allocation (62 percent[1] of the widow QS for nonwhiting trips)

Historic Landings Formula for the 28 percent of the widow QS Distributed for Whiting Trips: Distribute in proportion to each permit's whiting allocation--as specified in Amendment 20, Section A-2.1.3, for bycatch species and in regulations at 660.140(d)(8)(iv)(C)(2)(ii) (whiting trips, incidentally caught species).
Historic Landings Formula for the 62 percent of the widow QS Distributed for NonWhiting Trips: Distribute based on the target species QS allocation to a permit, the permit's distribution of catch among areas as recorded in logbooks, and area specific fleet average bycatch rates and logbook information (using 2003-2006 WCGOP information)--as specified in Amendment 20, Section A-2.1.3, for overfished species taken incidentally on nonwhiting trips and in regulations at 660.140(d)(8)(iv)(B)(3) (nonwhiting trip Group 2 species).

[NOTE: 10% for AMP + 28% for whiting trips + 62% for nonwhiting trips equals 100%]

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[1] The percent widow QS for each sector is derived as follows, where T = the trawl sector's allocation of widow:
Shorebased trawl whiting share of widow = T x 0.52 (whiting share) x 0.42 (shorebased share of whiting) = 0.22 T
Shorebased trawl nonwhiting share of widow = T x 0.48 (nonwhiting share) = 0.48 T
Total shorebased share = 0.22 T + 0.48 T = 0.7 T
Shorebased trawl whiting share of shorebased widow = 0.22T/0.7T = 0.31
Shorebased trawl nonwhiting share of shorebased widow = 0.48T/.7T = 0.69
Multiply both values by 0.9 to reduce result for the 10 percent AMP set aside.
0.31 x 0.9 = 0.28; 0.69 x 0.9 = 0.62

Alternative 2 (Strawman): Reallocate Widow QS Using Amendment 20 Target Species Allocation Formula (Allocation formula for Category 1 Species)

Summary: AMP: 10 % of QS to adaptive management
Equal Division: 22% of QS divided equally among all participants (buyback history)
68% of QS allocated based on widow catch from 1994-2003

In the following, the Amendment 20 allocation formula used for all nonoverfished species has been applied to widow. Note that Amendment 21 included a whiting/nonwhiting intersector allocation formula for widow rockfish that would have been used in the Amendment 20 allocation formula in the event that widow rockfish had been rebuilt at the time of the intitial allocation. Under this alternative, the Amendment 21 allocation rules for widow rockfish under rebuilt status would be applied to the 2016 trawl allocations allocation.

Detailed Description

Adaptive Management: 10 percent of the QS set aside for adaptive management.
Equal division: The pool of QS for equal allocation was determined using the 1994-2003 landings history from Federal limited entry groundfish permits that were retired through the Federal buyback program (70 FR 45695, August 8, 2005). Based on that process, 28 percent of the widow rockfish QS would have been allocated on this basis.
Whiting/Non-whiting Split: The allocation of the remaining QS was split between whiting and nonwhiting trips based on the proportions derived from the following allocations

Whiting Trips: The shorebased portion (42%) of the whiting sector allocation of widow (500 mt) (13 percent for whiting trips--using the Amendment 21 allocation rules for widow rockfish under rebuilt status applied to the 2016 trawl allocations allocation)
Nonwhiting Trips: The 2016 trawl allocation of widow minus 500 mt (49 percent for non-whiting trips--using the Amendment 21 allocation rules for widow rockfish under rebuilt status applied to the 2016 trawl allocations allocation)
Historic Landings Formula for the 13 percent of the widow QS Distributed for Whiting Trips: Same as specified for Alternative 1, No Action.
Historic Landings Formula for the 49 percent of the widow QS Distributed for Non-Whiting Trips: Allocate

- using a 1994-2003 allocation period,
- measure history each year relative to the catch of the entire fleet (i.e. as a percent of the fleet's total landings for a year),
- drop three lowest years
  --as specified in Amendment 20, Section A-2.1.3, for overfished species taken incidentally on nonwhiting trips and in regulations at 660.140(d)(8)(iv)(B)(2) (nonwhiting trip Group 1 species).

[NOTE: 10% for AMP + 28% for equal allocation + 13% for whiting trips + 49% for nonwhiting trips equals 100%]

Alternative 3 (Strawman): Include Landings History Through 2010

Summary: This alternative would be the same as Alternative 2 but the period used for the historic landings formula for non-whiting trips would be 1994-2010.

Currently the allocation of widow QS is based on an allocation formula intended to meet bycatch needs. From 2002 through 2010 trip limits were reduced with the intention of providing only enough widow to meet bycatch needs. Extending the end of the allocation period from 2003 to 2010 would increase the weighting on bycatch needs relative to years in which there was widow targeting (1994 through the mid-year 2002). Because individual permit's catch history for any particular year is measured as a share of total fleet landings (relative pounds), years in which there was a minimal amount of recorded landings would still have a substantial influence on the overall allocation formula.

Previously Endorsed Alternatives (GAP Endorsed for Analysis, November 2011)

At the November 2011 Council meeting two alternatives were endorsed by the GAP. The trawl allocation for widow has increased substantially since it was last in overfished status (in 2012). The alternatives endorsed by the GAP were designed to ensure that no one would be worse off in terms of the QP they receive annually, relative to their 2012 QP allocation amounts. At its November 2012 meeting, the Council decided not to move ahead with reallocation of widow rockfish. Those alternatives were as follows (updated for the current years and reworded to increase clarity).

Alternative 4 (Strawman): Pounds Neutral Reallocation

Pounds Neutral QS: Determine how much QS is required such that no one would receive less non-AMP QP in 2016 than they received in 2012: [2] with respect to the QS in individual accounts, identify the percent of the total QS which, when applied to the 2016 allocation, would result in each account receiving non-AMP QP allocations in the amounts the account received in 2012. Leave that amount of QS untouched in each account.
Reallocation of Remainder: Reallocate all of the remainder among QS accounts based on the "Historic Landings Formulas" of Alternative 2 (excluding the AMP QS, which are not in individual QS accounts).

For example, if the 2012 trawl allocation was 600 mt and the new allocation will be 2,400 mt, if everyone keeps 25 percent of their QS then they would receive the same amount of non-AMP QP in 2016 that they did in 2012. This would leave 75 percent of the non-AMP QS for redistribution based on the allocation formula specified in the "Historic Landings Formulas" of Alternative 2.

[2] For QS accounts which have the same amount of widow QS as they did in 2012. While widow QS transfers have been prohibited, some transfers have been allowed under exceptional circumstances, e.g. court orders.

Alternative 5 (Strawman): Pounds Neutral - Plus

All QS holders receives at least some increase in QP relative to their 2012 QP level: same as Alternative 4 but in the second step reallocate only half the remaining QS and leave the other half untouched (leave in the accounts to which they were originally issued, along with the pounds neutral QS amount).

For the example provided in Alternative 4 this would mean that 37.5 percent would be reallocated based on the Alternative 2 formula and 62.5 percent would not be reallocated (25 percent from the pounds neutral portion of the formula plus 37.5 percent that, under Alternative 4, would have been reallocated as part of the "remainder" portion). Everyone would experience at least a 150 percent increase in the amount of non-AMP QP they receive as compared to 2012, i.e., 62.5 percent of the QS would not be reallocated as compared to the 25 percent that would not be reallocated under Alternative 4 pounds-neutral approach.

2.2 Possible Complimentary Actions

2.2.1 Widow Rockfish Divestiture Deadline

Strawman Alternative. End the widow rockfish trading moratorium upon completion of reallocation and set a widow control limit divestiture deadline for **XX** months/years after reallocation is completed.

2.2.2 Aggregate Nonwhiting Species Divestiture Deadline

Alternative 1: No Action
Alternative 2 (Strawman): Extend the aggregate control limit deadline to coincide with the widow control limit.

- **Option A**: Extend the nonwhiting aggregate control limit with respect to all species (the November 30, 2015 deadline would apply to species individually, except widow)
- **Option B**: Exclude widow rockfish from the nonwhiting aggregate control limit until the widow rockfish divestiture deadline. (The aggregate nonwhiting limit is 2.7 percent. Since widow QS would not count toward the limit, individuals would be able to control up to 2.7 percent of the QS for all nonwhiting species plus their holdings of widow QS).

2.2.3 Rules for Revoking Forfeited QS (for Aggregate Nonwhiting Control Limit)

Resolution of this issue may or may not require regulatory action. See Agenda Item J.2.b, NMFS Report. At the November 2014 meeting, there should be a determination of whether regulatory action is required on this issue.

CHAPTER 3 PRELIMINARY INFORMATION

The information provided here focuses primarily on Alternative 1 and the Alternative 2 strawman because these are two allocation formulas which the Council used under Amendment 20 (albeit Alternative 2 was not applied to widow rockfish).

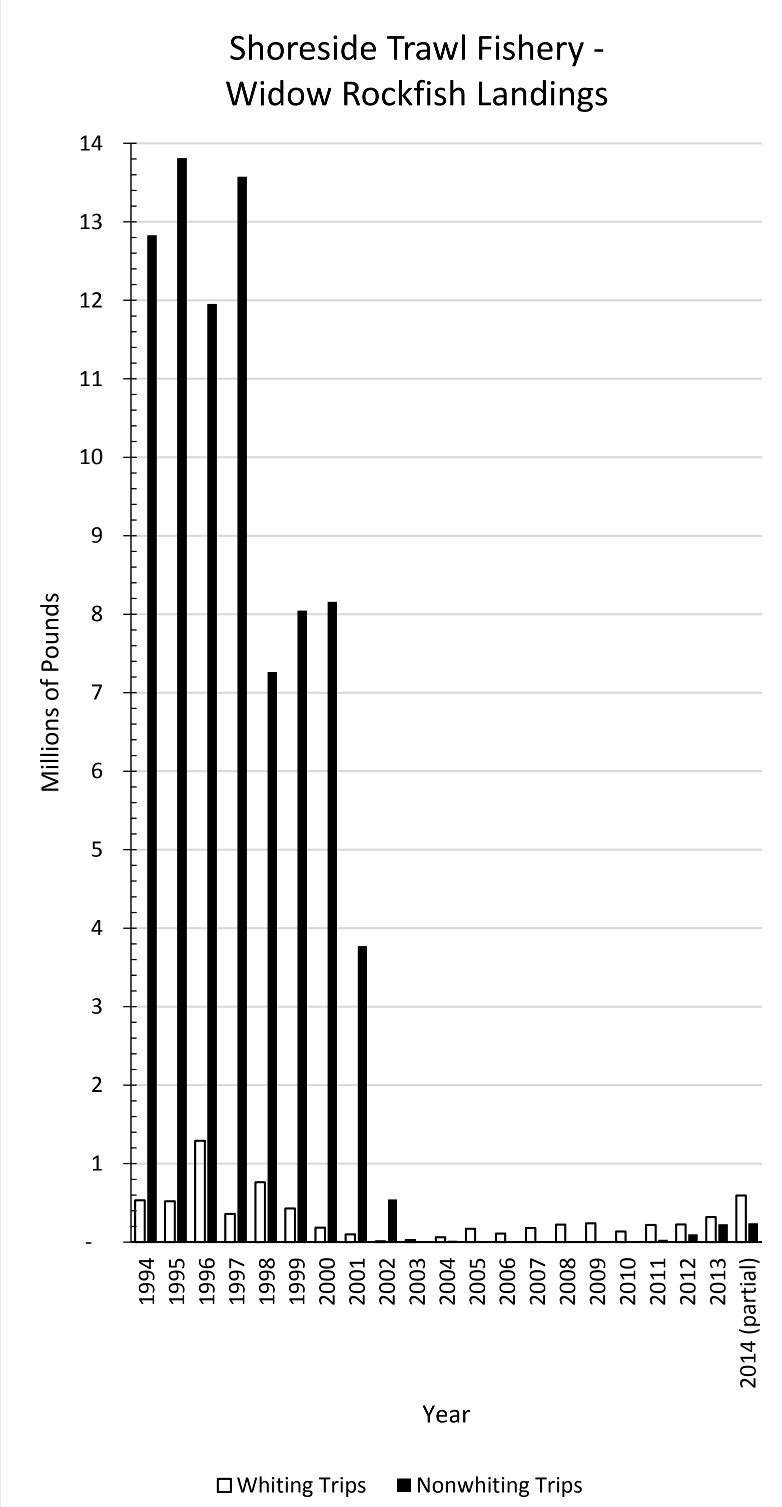
The history of widow rockfish landings in the trawl fishery from 1994 through 2014 is provided in Figure 3-1. This figure shows that recent years' fisheries are still far below the levels achieved when the stock was being fished down in the 1990s. Also of note in this figure is the low level of harvest in 2002, and, in particular, in 2003, both of which years are part of the Amendment 20 landings history allocation period. Under the Alternative 2 strawman, each year's landings are expressed as a percent of the fleet's total landings in that year (i.e., relative pounds). Because of the very low level of landings in 2003 (8,000 pounds), it is possible for a single vessel to take substantial portion of the fleet's harvest. For example, only four thousand pounds of widow bycatch would account for half the fleet's landings in 2003, giving a single permit credit for 50 percent of relative pounds for that year. Under the allocation formula, a permit that harvested widow in only in one year, 2003, landing only 4,000 pounds would establish credit for catch history equivalent to taking approximately 7% of the fleet's total relative pounds over the allocation period (i.e., 50% spread out over seven years - the ten year allocation period minus the lowest three years).[3] This dynamic is actually observed in the data and is the cause of some of the more dramatically high allocations shown in Figure 3-2 resulting under the Alternative 2 strawman. This dynamic would also likely have a strong effect on initial allocations under the Alternative 3 strawman, which would extend the history-based allocation period out through 2010.

The effect of increased OYs for widow rockfish on the amount of QP that would be received under Alternative 1 and the Alternative 2 strawman is illustrated in Figure 3-3. Note that in Figure 3-3 under the Alternative 2 strawman, in 2015/2016 almost every recipient would receive

[3] The weight of this 7 percent in the allocation formula would be lower than 7 percent because all permits are able to eliminate their three worst years and by the amounts set aside for equal allocation and the AMP program.

an amount of QP at least equivalent to the QP they received in 2012. Therefore, the Alternative 2 strawman would, for the most part, achieve the objective of the Alternative 4 strawman (ensuring that no one is worse off with respect to the amount of QP received). Alternative 2 might also be considered to achieve the objective of the Alternative 5 strawman in that most would receive more QP than they received in 2012.

The results of the widow reallocations as they relate to the total allocations are shown in Figure 3-4 and Figure 3-5. These two figures show that the effects of a widow reallocation on aggregate shoreside nonwhiting QS holdings (Figure 3-4) and estimated exvessel value of the combined shoreside and mothership allocations (Figure 3-5) are quite small. With respect to Figure 3-4, the effect on aggregate shoreside nonwhiting QS is small because widow rockfish QS receives a weight of only 0.05 in determining its contribution to the aggregate (i.e., an individual’s widow QS is multiplied by 0.05 to determine its contribution to aggregate nonwhiting QS holdings). Figure 3-5 converts each permit’s QS and mothership history to quota pounds and then applies 2013 average exvessel prices to generate exvessel value equivalents. Values are also shown “adjusted for attainment.” The adjusted for attainment values simply multiply each QS holder’s exvessel value equivalent for each QS species by the fleet’s average attainment of the overall trawl allocation for that species during 2011-2013 (except that attainment for widow and yellowtail rockfish are assumed to be 100%). Note that this figure may understate the effect on total exvessel value to the degree that increased availability of widow QS leverages harvest of target species other than yellowtail rockfish.



Year	Whiting	Nonwhiting
1994	0.532	12.828
1995	0.521	13.811
1996	1.291	11.953
1997	0.360	13.576
1998	0.764	7.262
1999	0.428	8.045
2000	0.184	8.157
2001	0.098	3.770
2002	0.011	0.544
2003	0.028	0.008
2004	0.062	0.018
2005	0.170	0.006
2006	0.109	0.013
2007	0.181	0.010
2008	0.223	0.004
2009	0.239	0.009
2010	0.136	0.009
2011	0.219	0.031
2012	0.225	0.100
2013	0.318	0.228
2014 (partial)	0.595	0.240

Figure 3-1. Millions of pounds of shoreside widow rockfish landings by year in whiting and nonwhiting fisheries.

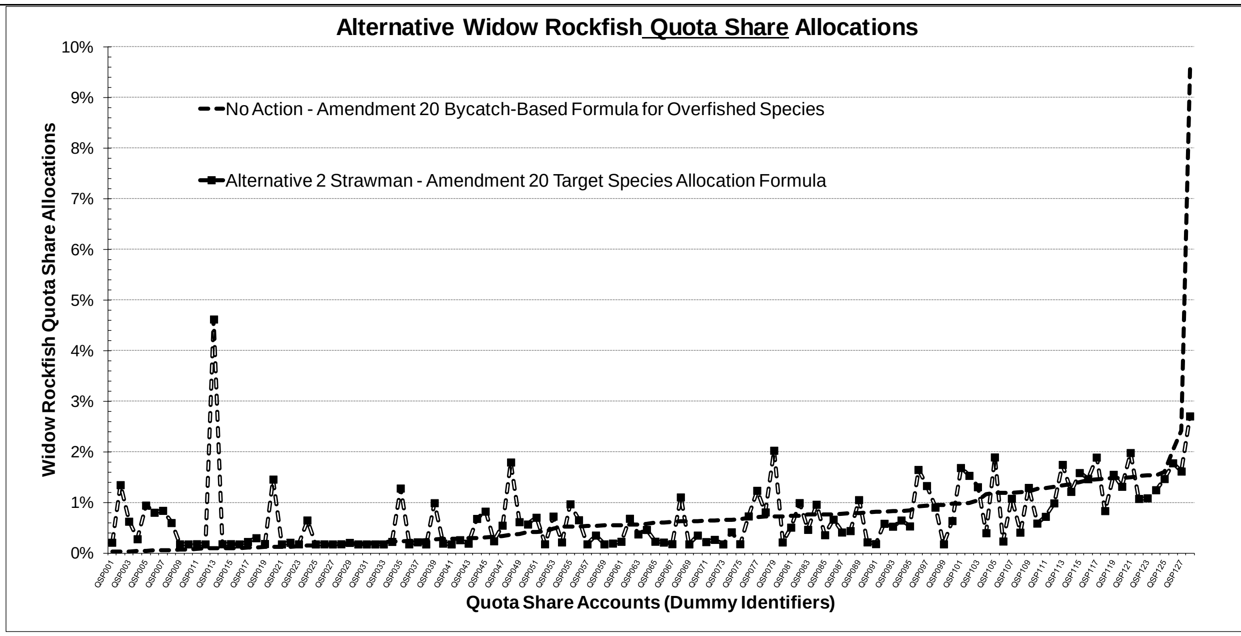


Figure 3-2 Comparison of current widow QS allocations (No Action) to the allocations that would result under the Alternative 2 strawman.

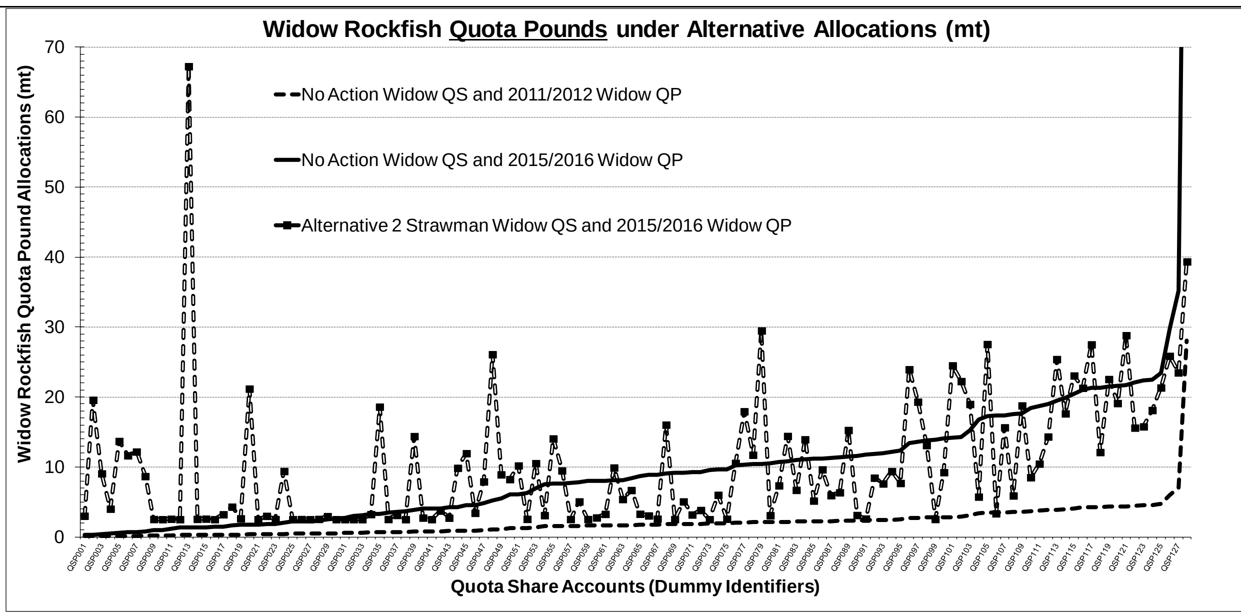


Figure 3-3. Comparison of widow QP allocations among QS accounts based on the current widow QS allocations (with the 2011/2012 and 2015/2016 shoreside trawl allocations) and the Alternative 2 strawman with the 2015/2016 shoreside trawl allocation.

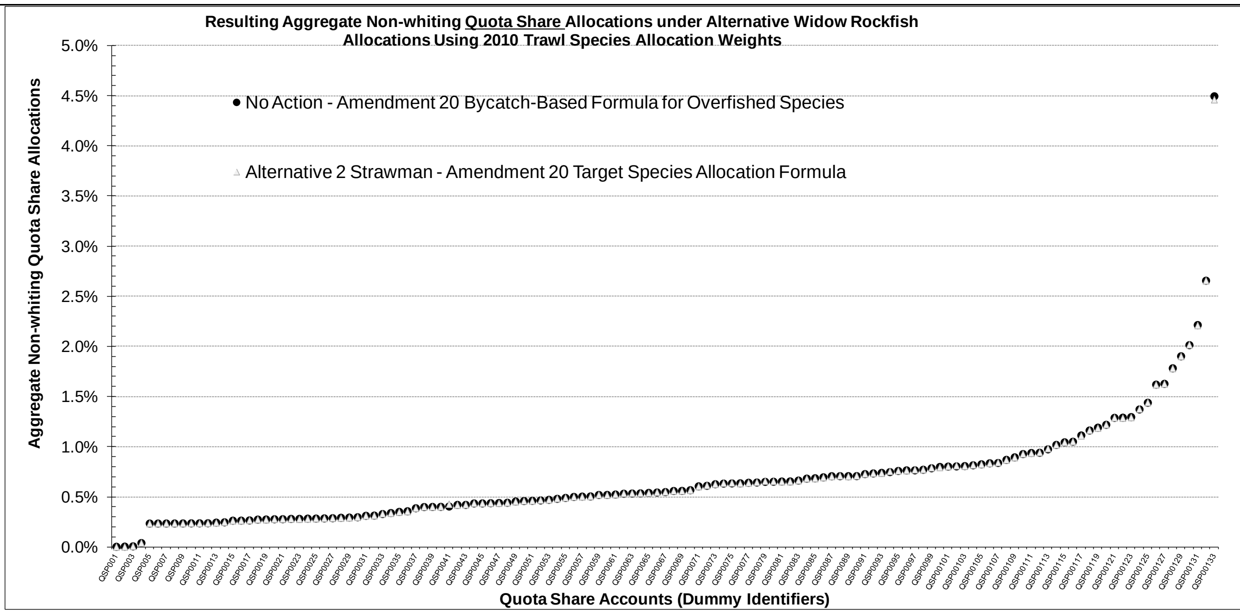


Figure 3-4. Aggregate shoreside nonwhiting QS under No Action and the Alternative 2 strawman.

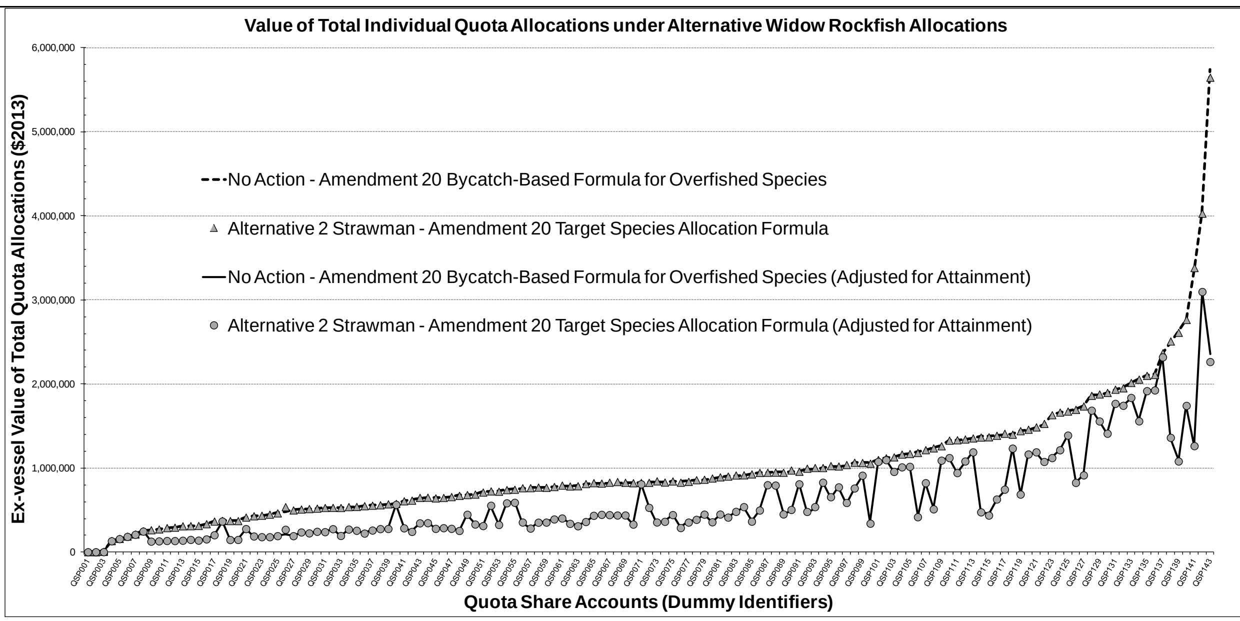


Figure 3-5. Total quota holdings (shoreside whiting and nonwhiting plus mothership) converted to exvessel value equivalents using 2013 prices and 2015 allocations for No Action and the Alternative 2 strawman (includes total QP and QP adjusted for average fleet attainment during 2011-2013).

Agenda Item J.2.a
Attachment 3
November 2014

GUIDANCE FOR MAKING ALLOCATION DECISIONS
RELATED TO CATCH SHARES

This document contains guidance on allocation issues that the Council should take into account in its consideration of reallocation of widow rockfish QS. The guidance is drawn from the Magnuson Stevens Act (MSA), related NOAA/NMFS guidance, and the groundfish FMP.

Contents

MSA

MSA § 303(b)(6) 16 U.S.C. § 1853(b)(6)

> **[**Any FMP may] establish a limited access system for the fishery in order to achieve optimum yield if, in developing such a system, the Council and the Secretary take into account—
> (A) present participation in the fishery;
> (B) historical fishing practices in, and dependence on, the fishery;
> (C) the economics of the fishery;
> (D) the capability of fishing vessels used in the fishery to engage in other fisheries;
> (E) the cultural and social framework relevant to the fishery and any affected fishing communities;
> (F) the fair and equitable distribution of access privileges in the fishery; and
> (G) any other relevant considerations

The phrase “take into account” means only that the council and NMFS must consider the factors listed in section 303(b)(6) and must balance the factors against each other and against any other relevant considerations. *Sea Watch Int’l v. Mosbacher*, 762 F. Supp. 370, 379 (D.D.C. 1991).

MSA § 303A—LIMITED ACCESS PRIVILEGE PROGRAMS - 16 U.S.C. §1853a

(c)(5) ALLOCATION.—In developing a limited access privilege program to harvest fish a Council or the Secretary shall—

(A) **establish procedures to ensure fair and equitable initial allocations, including consideration of—**

(i) current and historical harvests;

(ii) employment in the harvesting and processing sectors;

(iii) investments in, and dependence upon, the fishery; and

(iv) the current and historical participation of fishing communities;

(B) consider the basic cultural and social framework of the fishery, especially through…

(C) include measures to assist, when necessary and appropriate, entry-level…

(D) ensure that limited access privilege holders do not acquire and excessive share…

(E) authorize limited 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 specific sector of such fishery, as specified by the Council.

MSA National Standards

An allocation must be consistent with:

National Standard 2: Conservation and management measures shall be based on the best scientific information available.

National Standard 4: Conservation and management measures shall not discriminate between residents of different States. **If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocations shall be (A) fair and equitable to all such fishermen**; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

National Standard 8: Conservation and management measures shall, consistent with the conservation requirements of this Act…take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (AP provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

Agency Guidance

National Standard Guidelines

600.325 National Standard 4 – Allocations

****

(c)(2) ***Analysis of allocations.*** Each FMP should contain a description and analysis of the allocations existing in the fishery and of those made in the FMP. The effects of eliminating an existing allocation system should be examined. Allocations schemes considered but rejected by the Council, should be included in the discussion. The analysis should relate the recommended allocations to the FMP's objectives and OY specification, and discuss the factors listed in (c)(3) of this section.

(c)(3) ***Factors in making allocations.*** An allocation of fishing privileges must be fair and equitable, must be reasonably calculated to promote conservation, and must avoid excessive shares. These tests are explained in paragraphs (c)(3)(i) though (c)(3)(iii) of this section.

(i) ***Fairness and equity***.

(A) An allocation of fishing privileges should be rationally connected to the achievement of OY or with the furtherance of legitimate FMP objectives. Inherent in an allocation is the advantaging of one group to the detriment of another. The motive for making a particular allocation should be justified in terms of the objectives of the FMP; otherwise, the disadvantaged user groups would suffer without cause. For example, an FMP objective to preserve the economic status quo cannot be achieved by excluding a group of longtime participants in the fishery. On the other hand, there is a rational connection between an objective of harvesting shrimp at their maximum size and closing a nursery area to trawling.

(B) An allocation may impose a hardship on one group if it is outweighed by the total benefit received by another group or groups. An allocation need not preserve the status quo in the fishery to qualify as "**fair and equitable,"** if a restructuring of fishing privileges would maximize overall benefits. The Council should make an initial estimate of the relative benefits and hardships imposed by the allocation, and compare its consequences with those of alternative allocation schemes, including the status quo. Where relevant, judicial guidance and government policy concerning the rights of treaty Indians and aboriginal Americans must be considered in determining whether an allocation is fair and equitable.

(ii) ***Promotion of conservation.*** Numerous methods of allocating fishing privileges are considered "conservation and management" measures under 303 of the Magnuson-Stevens Act. An allocation scheme may promote conservation by encouraging a rational, more easily managed use of the resource. Or, it may promote conservation (in the sense of wise use) by optimizing the yield in terms of size, value, market mix, price, or economic or social benefit of the product. To the extent that rebuilding plans or other conservation and management measures that reduce the overall harvest in a fishery are necessary, any harvest restrictions or recovery benefits must be allocated fairly and equitably among the commercial, recreational, and charter fishing sectors of the fishery.

(iii) ***Avoidance of excessive shares*.** An allocation scheme must be designed to deter any person or other entity from acquiring an excessive share of fishing privileges, and to avoid creating conditions fostering inordinate control, by buyers or sellers, that would not otherwise exist.

(iv) ***Other factors.*** In designing an allocation scheme, a Council should consider other factors relevant to the FMP's objectives. Examples are economic and social consequences of the scheme, food production, consumer interest, dependence of the fishery by present participants and coastal communities, efficiency of various types of gear used in the fishery, transferability of effort to and impact on other fisheries, opportunity for new participants to enter the fishery, and enhancement of opportunities for recreational fishing.

§ 600.345 National Standard 4—Communities.

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(b)(2) This standard does not constitute a basis for allocating resources to a specific fishing community nor for providing preferential treatment based on residence in a fishing community.

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(c)(3)To address the sustained participation of fishing communities that will be affected by management measures, the analysis should first identify affected fishing communities and then assess their differing levels of dependence on and engagement in the fishery being regulated. The analysis should also specify how that assessment was made. The best available data on the history, extent, and type of participation of these fishing communities in the fishery should be incorporated into the social and economic information presented in the FMP. The analysis does not have to contain an exhaustive listing of all communities that might fit the definition; a judgment can be made as to which are primarily affected. The analysis should discuss each alternative's likely effect on the sustained participation of these fishing communities in the fishery.

(4) The analysis should assess the likely positive and negative social and economic impacts of the alternative management measures, over both the short and the long term, on fishing communities. Any particular management measure may economically benefit some communities while adversely affecting others. Economic impacts should be considered both for individual communties and for the group of all affected communities identified in the FMP….

(5) A discussion of social and economic impacts should identify those alternatives that would minimize the adverse impacts on those fishing communities within the constraints of conservation and management goals of the FMP, other national standards, and other applicable law.

NOAA Guidance on LAPP Programs

Selected portions relevant to the "reconsideration of the qualifying time periods for the initial allocations of whiting" from *The Design And Use Of Limited Access Privilege Programs*, NOAA Technigcal Memoradum NMFS-F/SPO-86, November 2007

In summary, the allocations must be fair and equitable and they should consider the cultural and social framework of the fishery. However, given the use of term "including consideration of" there is some allowable flexibility beyond the four required considerations in determining exactly how the harvest privileges will be distributed. The discussion here will not attempt to list all of the things that cannot be done other than to say any distribution that showed blatant favoritism or utter disregard to the "fair and equitable" standard in the law would likely not be approved nor would it withstand legal challenge. Similarly there will be no attempt to make a list of all the permissible procedures or formulae that could be used. Rather the discussion will focus on procedures and lessons learned. The goal will be to assist the Councils as they use their ingenuity and inventiveness to develop allocation procedures that support their objectives, taking into account the recent changes in the Act.

The initial allocation task can be broken down into two parts.[7] Note however that the material under (B) has more to do with restrictions on the use of the harvesting privilege than it does with initial allocation, but the two are related. First, it is necessary to select the pool of entities that will be eligible to receive harvest privileges. The basics of this step have already been discussed in the section on "Eligibility." It is possible however, that the pool of potential recipients can be a subset of those who are qualified to own privileges. The Council may approve of certain types of entities being able to acquire privileges in the open market, but may feel that they do not merit an initial allocation. Congress has placed RFAs in this category.

The second step is to determine how the privileges will be distributed among those in the designated pool. Under the reauthorized MSA, there are two ways that this can be accomplished. As has been done in the past, the privileges can be given away according to specified allocation formulae. It is also possible to use auctions to sell the initial privileges as long as the auctions are constrained such that they meet the "fair and equitable" standards specified in the Act. If auctions are to be used, they would be most appropriate in traditional IFQ programs, but Councils may also wish to use them in more general LAP programs as well. The two possible ways of allocating the privileges will be discussed in turn. The revised MSA also allows rent collection with formula-based allocations, and this will be treated in a separate section.

B. Free Formula-Based Allocations

There are literally an infinite number of allocation formulae that are acceptable under the MSA. It is possible, however, to list some of the attributes upon which the formulae can be based. In the IFQ programs that have already been adopted under the MSA, the attributes were related to various aspects of participation in the fishery, primarily catch, capital investment, and number of years fished over a reference period.

In response to suggestions to expand the pool of eligible recipients that lead to some of the most recent revisions in the Act, characteristics of entities have become other attributes to consider. Examples are size, ownership characteristic (owner-operated), and operating location of the firm, various measures of dependence on the fishery including percent of revenue or opportunities to participate in other fisheries, and inter-relations with other fishery related business especially with respect to employment.

The participation attributes, though not without controversy, are relatively easy to handle both conceptually and with respect to data availability. For example, in the surf clam and ocean quahog program, the allocation formula was based on a weighted average of a relative catch index and a relative investment index. Working with characteristic attributes will likely be a different story. Coming up with appropriate measures of the specific characteristics that can be calculated given existing or readily available data, and then using several of them to come up with an actual allocation formula will be more difficult. Nonetheless it is a task that will have to be accomplished by those Councils who choose to broaden the potential range of eligible entities.

The following discussion starts of with a consideration of the relatively easy participation attributes in the context of traditional IFQ fisheries. Using that as a base, the discussion will turn to a preliminary assessment of the consideration of both types of attributes in the context of more general LAP programs.

Traditional IFQ Programs.

If the eligible group is restricted to vessel owners, the allocation formula could be based on equal shares (for all individuals satisfying some minimum requirements), vessel size, catch history, the number of consecutive years of participation in the fishery, or some combination of two or more of these factors. One problem with equal shares is that part-timers will have their relative shares increased, and highliners (those who have historically accounted for a disproportionate share of the landings) will be brought down to the level of the average fisherman. If the eligible group also includes crew members, it might be difficult to use catch histories for logistic reasons (turnover rates of crew are high and there may be no records of who was on which boat when catches were taken). Allocations to crew members could be based on either equal shares or the number of years of participation in the fishery or both.

If both vessel owners and crew members are considered to be eligible to receive an initial allocation, it would probably be necessary to include several of the above categories in the allocation formula. For example, 30 percent of the total quota could be divided equally among all eligible parties, 30 percent could be divided on the basis of the number of years of full-time participation in the fishery, and 40 percent could be split among vessel owners on the basis of vessel size. Strategies of this nature (with the percentages split out differently) should be explored with the industry as alternatives to strategies that rely on catch histories especially where catch documentation is weak or missing. An alternative that avoids the necessity of deriving an allocation formula is to use a lottery system.

Identified options for allocations:

1. Allocate shares equally among eligible recipients.
2. Allocate shares on the basis of vessel size.
3. Allocate shares on the basis of catch histories.
4. Allocate shares on the basis of historical participation.
5. Use a lottery to allocate shares.
6. Allocate shares using combinations of two or more of the above.

General LAP Programs.

There is little new in the above discussion for those individuals who have watched the current IFQ programs being developed. It is all second nature. However, to consider how to approach more complicated cases where LAPs are given to both traditional recipients and to FCs and may be available for purchase by RFAs, it will be useful to go back and recreate the mental process through which the above potential options were developed.

Given the laws and accepted views on who were potential recipients, historically the main concern was to set up an allocation that would change the fishery from the *status quo* to an IFQ fishery with a minimum disruption of the current distribution between the recipients. When that was the goal, the question became what sorts of things could be used to quantitatively compare allocations among the potential recipients? Looking at participation characteristics was a good way to do this. Catch histories are a way to compare the relative success of various participants. Comparing the financial investments shows, albeit imperfectly, relative commitments to a fishery, and at the same time, relative differences in amounts that will have to be earned to support the capital equipment. It is interesting to note that the two measures will provide different rankings. A smaller older boat operated by a high-liner could have a very good catch record but could be way low on the financial investment ladder. Which measure is best? That is a judgment call. At the same time, others may not like either of these measures and would argue for years of participation. Finally, others would suggest that the notion of maintaining the existing distribution is not appropriate and would argue for an equal distribution. The allocation formulae actually used in U.S IFQ programs were usually based on more than one of these measures (see the initial allocation entries in the LAP Program Spotlights in Appendix 1).

Consider now the problem of coming up with an allocation formula or procedure for a more general LAP program. It would certainly be permissible to use the same type of measures that have been used in IFQ programs. However, such measures may miss some of the elements or issues that are being addressed by allowing FCs to receive harvesting privileges. It may be possible to correct for this by only using a subset of the measures or to use different weights to make weighted averages.

If Councils want to do more, it may be useful to go through the same type of exercise as described above. For example, what are the motivations for choosing to use a RFA-type organization in a particular case? Assume that it is the ability to look at the full range of fishery related businesses including processing, supply companies, and downstream marketers. In that case it will be necessary to find some measures that capture the specific issues that are being addressed, and can be quantitatively measured. Some possibilities include total employment, employees per unit of fish, percentage of net revenue that remains in the area, etc. The final step would be to turn these measures into an allocation formula. This is but one example of many options, and simply demonstrates a process that the Councils can use to expand the standard ways of calculating allocation formula if they choose to do so.

It would also be possible to use different types of formulae within the general LAP program. The Council may split the TAC into two parts and allocate one part as IFQs according to more or less traditional methods and allocate the second part to other entities with other methods.

Even with this vast array of choices, it is probably impossible to devise a system that will be perceived as equally fair by all eligible entities. To improve the perceived fairness it would be essential for the Council to repeatedly consult with the members of the selected pool and the broader suite of stakeholders.

FMP Goals, Objectives, and Guidance on Allocations

The guidelines for National Standard 4 state with respect to analysis of allocation

> **"The analysis should relate the recommended allocations to the FMP's objectives and OY specification ...." 600.325(c)(2)**

To that end, the Council FMP goals and objectives and the goals and objectives for Amendment 20 are provided here.

Section 2.1 Goals and Objectives for Managing the Pacific Coast Groundfish Fishery

The Council is committed to developing long-range plans for managing the Washington, Oregon, and California groundfish fisheries that will promote a stable planning environment for the seafood industry, including marine recreation interests, and will maintain the health of the resource and environment. In developing allocation and harvesting systems, the Council will give consideration to maximizing economic benefits to the United States, consistent with resource stewardship responsibilities for the continuing welfare of the living marine resources. Thus, management must be flexible enough to meet changing social and economic needs of the fishery as well as to address fluctuations in the marine resources supporting the fishery. The following goals have been established in order of priority for managing the west coast groundfish fisheries, to be considered in conjunction with the national standards of the Magnuson-Stevens Act.

Management Goals

Goal 1 - Conservation. Prevent overfishing and rebuild overfished stocks by managing for appropriate harvest levels and prevent, to the extent practicable, any net loss of the habitat of living marine resources.

Goal 2 - Economics. Maximize the value of the groundfish resource as a whole.

Goal 3 - Utilization. Within the constraints of overfished species rebuilding requirements, achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

Objectives. To accomplish these management goals, a number of objectives will be considered and followed as closely as practicable:

Conservation

Objective 1. Maintain an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs.

Objective 2. Adopt harvest specifications and management measures consistent with resource stewardship responsibilities for each groundfish species or species group. Achieve a level of harvest capacity in the fishery that is appropriate for a sustainable harvest and low discard rates, and which results in a fishery that is diverse, stable, and profitable. This reduced capacity should lead to more effective management for many other fishery problems.

Objective 3. For species or species groups that are overfished, develop a plan to rebuild the stock as soon as possible, taking into account the status and biology of the stock, the needs of fishing communities, recommendations by international organizations in which the United States participates, and the interaction of the overfished stock within the marine ecosystem.

Objective 4. Where conservation problems have been identified for non-groundfish species and the best scientific information shows that the groundfish fishery has a direct impact on the ability of that species to maintain its long-term reproductive health, the Council may consider establishing management measures to control the impacts of groundfish fishing on those species. Management measures may be imposed on the groundfish fishery to reduce fishing mortality of a non-groundfish species for documented conservation reasons. The action will be designed to minimize disruption of the groundfish fishery, in so far as consistent with the goal to minimize the bycatch of non-groundfish species, and will not preclude achievement of a quota, harvest guideline, or allocation of groundfish, if any, unless such action is required by other applicable law.

Objective 5. Describe and identify EFH, adverse impacts on EFH, and other actions to conserve and enhance EFH, and adopt management measures that minimize, to the extent practicable, adverse impacts from fishing on EFH.

Economics

Objective 6. Within the constraints of the conservation goals and objectives of the FMP, attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

Objective 7. Identify those sectors of the groundfish fishery for which it is beneficial to promote year-round marketing opportunities and establish management policies that extend those sectors fishing and marketing opportunities as long as practicable during the fishing year.

Objective 8. Gear restrictions to minimize the necessity for other management measures will be used whenever practicable. Encourage development of practicable gear restrictions intended to reduce regulatory and/or economic discards through gear research regulated by EFP.

Utilization

Objective 9. Develop management measures and policies that foster and encourage full utilization (harvesting and processing), in accordance with conservation goals, of the Pacific Coast groundfish resources by domestic fisheries.

Objective 10. Recognize the multispecies nature of the fishery and establish a concept of managing by species and gear or by groups of interrelated species.

Objective 11. Develop management programs that reduce regulations-induced discard and/or which reduce economic incentives to discard fish. Develop management measures that minimize bycatch to the extent practicable and, to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch. Promote and support monitoring programs to improve estimates of total fishing-related mortality and bycatch, as well as those to improve other information necessary to determine the extent to which it is practicable to reduce bycatch and bycatch mortality.

Social Factors.

Objective 12. When conservation actions are necessary to protect a stock or stock assemblage, attempt to develop management measures that will affect users equitably.

Objective 13. Minimize gear conflicts among resource users.

Objective 14. When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures, and the environment.

Objective 15. Avoid unnecessary adverse impacts on small entities.

Objective 16. Consider the importance of groundfish resources to fishing communities, provide for the sustained participation of fishing communities, and minimize adverse economic impacts on fishing communities to the extent practicable.

Objective 17. Promote the safety of human life at sea.

[Amended; 7, 11, 13, 16-1, 18, 16-4]

FMP Allocational Guidelines

Section 6.2.3 Non-biological Issues—The Socioeconomic Framework

From time to time, non-biological issues may arise that require the Council to recommend management actions to address certain social or economic issues in the fishery. Resource allocation, seasons, or landing limits based on market quality and timing, safety measures, and prevention of gear conflicts make up only a few examples of possible management issues with a social or economic basis. In general, there may be any number of situations where the Council determines that management measures are necessary to achieve the stated social and/or economic objectives of the FMP.

Either on its own initiative or by request, the Council may evaluate current information and issues to determine if social or economic factors warrant imposition of management measures to achieve the Council's established management objectives. Actions that are permitted under this framework include all of the categories of actions authorized under the points of concern framework with the addition of direct resource allocation.

If the Council concludes that a management action is necessary to address a social or economic issue, it will prepare a report containing the rationale in support of its conclusion. The report will include the proposed management measure, a description of other viable alternatives considered, and an analysis that addresses the following criteria: (a) how the action is expected to promote achievement of the goals and objectives of the FMP; (b) likely impacts on other management measures, other fisheries, and bycatch; (c) biological impacts; (d) economic impacts, particularly the cost to the fishing industry; (e) impacts on fishing communities; and (f) how the action is expected to accomplish at least one of the following, or any other measurable benefit to the fishery:

1. Enable a quota, HG, or allocation to be achieved.
2. Avoid exceeding a quota, HG, or allocation.
3. Extend domestic fishing and marketing opportunities as long as practicable during the fishing year, for those sectors for which the Council has established this policy.
4. Maintain stability in the fishery by continuing management measures for species that previously were managed under the points of concern mechanism.
5. Maintain or improve product volume and flow to the consumer.
6. Increase economic yield.
7. Improve product quality.
8. Reduce anticipated bycatch and bycatch mortality.
9. Reduce gear conflicts, or conflicts between competing user groups.
10. Develop fisheries for underutilized species with minimal impacts on existing domestic fisheries.
11. Increase sustainable landings.
12. Reduce fishing capacity.
13. Maintain data collection and means for verification.
14. Maintain or improve the recreational fishery.

The Council, following review of the report, supporting data, public comment, and other relevant information, may recommend management measures to the NMFS Regional Administrator accompanied by relevant background data, information, and public comment. The recommendation will explain the urgency in implementing the measure(s), if any, and reasons therefore.

The NMFS Regional Administrator will review the Council's recommendation, supporting rationale, public comments, and other relevant information, and, if it is approved, will undertake the appropriate method of implementation. Rejection of the recommendation will be explained in writing.

The procedures specified in this chapter do not affect the authority of the Secretary to take emergency regulatory action as provided for in Section 305(c) of the Magnuson-Stevens Act if an emergency exists involving any groundfish resource, or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(d) of the Magnuson-Stevens Act.

If conditions warrant, the Council may designate a management measure developed and recommended to address social and economic issues as a routine management measure, provided that the criteria and procedures in Section 6.2.1 are followed.

Quotas, including allocations, implemented through this framework will be set for one-year periods and may be modified inseason only to reflect technical corrections to an

ABC. (In contrast, quotas may be imposed at any time of year for resource conservation reasons under the points of concern mechanism.)

Section 6.3.1 Allocation Framework

Allocation is the apportionment of an item for a specific purpose or to a particular person or group of persons. Allocation of fishery resources may result from any type of management measure, but is most commonly a numerical quota or HG for a specific gear or fishery sector. Most fishery management measures allocate fishery resources to some degree, because they invariably affect access to the resource by different fishery sectors by different amounts. These allocative impacts, if not the intentional purpose of the management measure, are considered to be indirect or unintentional allocations. Direct allocation occurs when numerical quotas, HGs, or other management measures are established with the specific intent of affecting a particular group's access to the fishery resource.

Fishery resources may be allocated to accomplish a single biological, social or economic objective, or a combination of such objectives. The entire resource, or a portion, may be allocated to a particular group, although the Magnuson-Stevens Act requires that allocation among user groups be fair and equitable, reasonably calculated to promote conservation, and determined in such a way that no group, person, or entity receives an undue excessive share of the resource. The socioeconomic framework described in Section 0 provides criteria for direct allocation. Allocative impacts of all proposed management measures should be analyzed and discussed in the Council's decision-making process.

In addition to the requirements described in Section 0, the Council will consider the following factors when intending to recommend direct allocation of the resource.

1. Present participation in and dependence on the fishery, including alternative fisheries.
2. Historical fishing practices in and historical dependence on the fishery.
3. The economics of the fishery.
4. Any consensus harvest sharing agreement or negotiated settlement between the affected participants in the fishery.
5. Potential biological yield of any species or species complex affected by the allocation.
6. Consistency with the Magnuson-Stevens Act national standards.
7. Consistency with the goals and objectives of the FMP.

The modification of a direct allocation cannot be designated as routine unless the specific criteria for the modification have been established in the regulations.

Amendment 20 Goals and Objectives

Section 1.2.3 Purpose of the Proposed Action

In 2003, the Council established a Trawl Individual Quota Committee (TIQC), which was charged with assisting the Council in identifying the elements of a trawl individual quota program and scoping alternatives and potential impacts of those alternatives in support of the requirements of the MSA and NEPA. At its first meeting in October 2003, the TIQC drafted a set of goals and objectives, which another Council-established committee, the Independent Experts Panel (IEP), subsequently recommended modifying. The Council adopted this list in June 2005, but at their March 2007 meeting, the Council adopted a further revision of the goals and objectives. The participation of the TIQC, the IEP, and other entities in the scoping process is described below in Section 1.6. To pursue the goal thus developed and shown below, the Council considered alternatives that would rationalize the west coast trawl fishery and provide incentives to reduce bycatch, either through an IFQ program for all groundfish LE trawl sectors and/or through cooperatives for the fishery sectors targeting Pacific whiting. Under either alternative, allocations would be made to eligible fishery participants as a privilege to harvest a portion of fish, and not as a property right. Though structurally different, the Council's intention is that both the IFQ and co-op alternatives fulfill the goal of the program.

The following goal objectives outline the purpose of the proposed action:

Goal

> *Create and implement a capacity rationalization plan that increases net economic benefits, creates individual economic stability, provides for full utilization of the trawl sector allocation, considers environmental impacts, and achieves individual accountability of catch and bycatch.*

Objectives

The above goal is supported by the following objectives:

1. Provide a mechanism for total catch accounting.
2. Provide for a viable, profitable, and efficient groundfish fishery.
3. Promote practices that reduce bycatch and discard mortality and minimize ecological impacts.
4. Increase operational flexibility.
5. Minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical.
6. Promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry.
7. Provide quality product for the consumer.
8. Increase safety in the fishery.

Constraints and Guiding Principles

The above goals and objectives should be achieved while the following occurs:

1. Take into account the biological structure of the stocks including, but not limited to, populations and genetics.
2. Take into account the need to ensure that the total OYs and allowable biological catch (ABC) are not exceeded.
3. Minimize negative impactsresulting from localized concentrations of fishing effort.
4. Account for total groundfish mortality.
5. Avoid provisions where the primary intent is a change in marketing power balance between harvesting and processing sectors.
6. Avoid excessive quota concentration.
7. Provide efficient and effective monitoring and enforcement.
8. Design a responsive mechanism for program review, evaluation, and modification.
9. Take into account the management and administrative costs of implementing and oversee the IFQ or co-op program and complementary catch monitoring programs, as well as the limited state and Federal resources available.

Agenda Item J.2

Agenda Item J.2.a
Supplemental Agenda Overview PowerPoint
(*Electronic Only*)
November 2014

Widow Rockfish Reallocation and Divestiture Issues

Council Action

1. Ranges of alternatives
   a. Widow rockfish QS reallocation
   b. Widow rockfish divestiture deadline
   c. Aggregate non-whiting species divestiture deadline

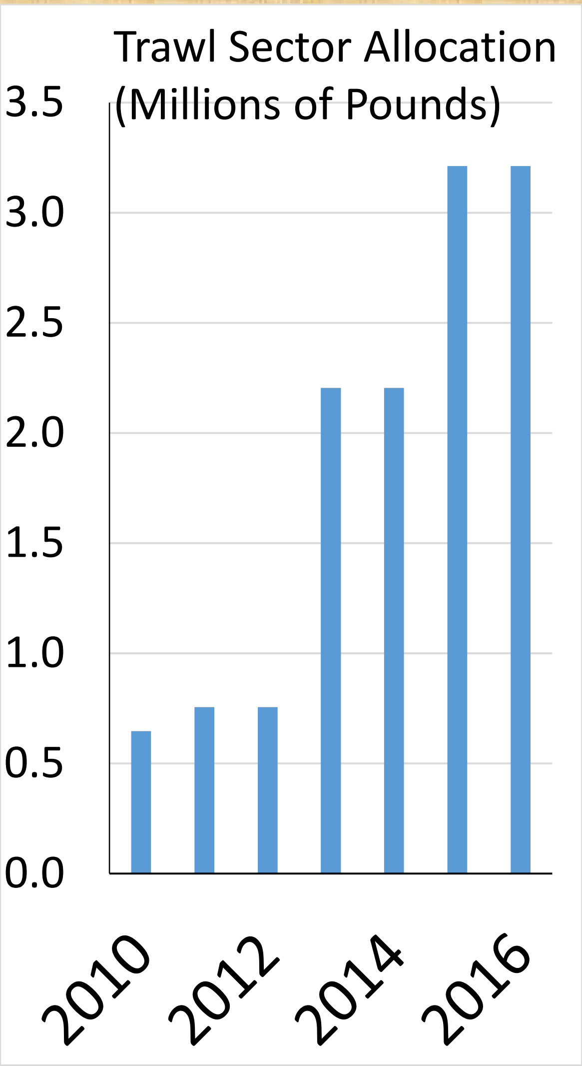
2. Guidance on revoking QS in complex situations

Widow Reallocation - Purpose and Need (J.2.a, Att 1, pg 3)

- Amendment 20 had two allocation approaches
  - **Target Species** –equal allocation and historic catch
  - **Overfished Species** –bycatch for harvest of target species

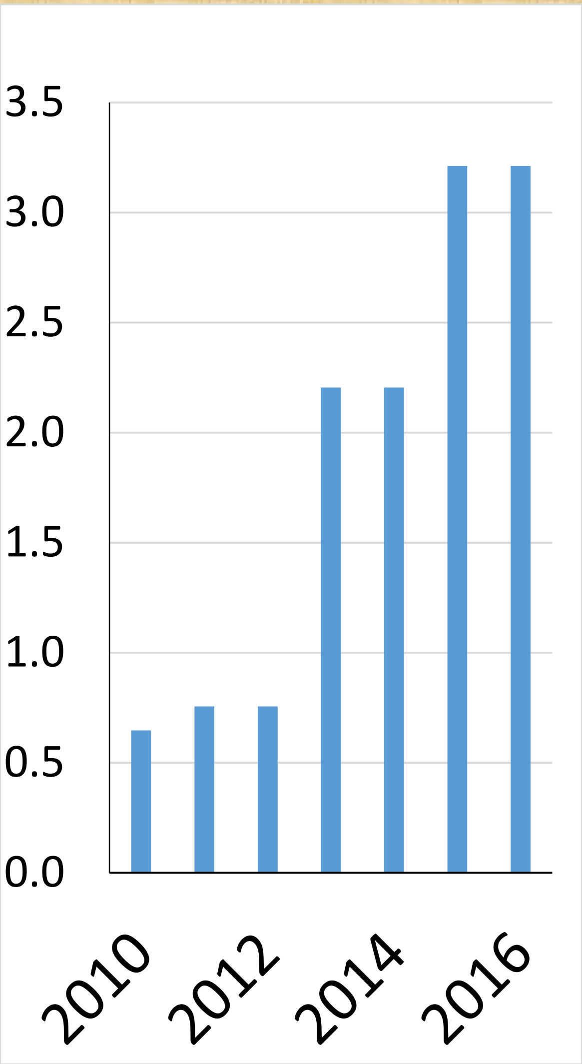
- Widow rockfish
  - Overfished at time of initial allocation
  - Now rebuilt
  - Amendment 20 states that on rebuilding

> "…there may be a change in the QS allocations within a sector….
>
> When a stock becomes rebuilt, the reallocation will be to facilitate the <u>re-establishment of historic target fishing opportunities</u>."

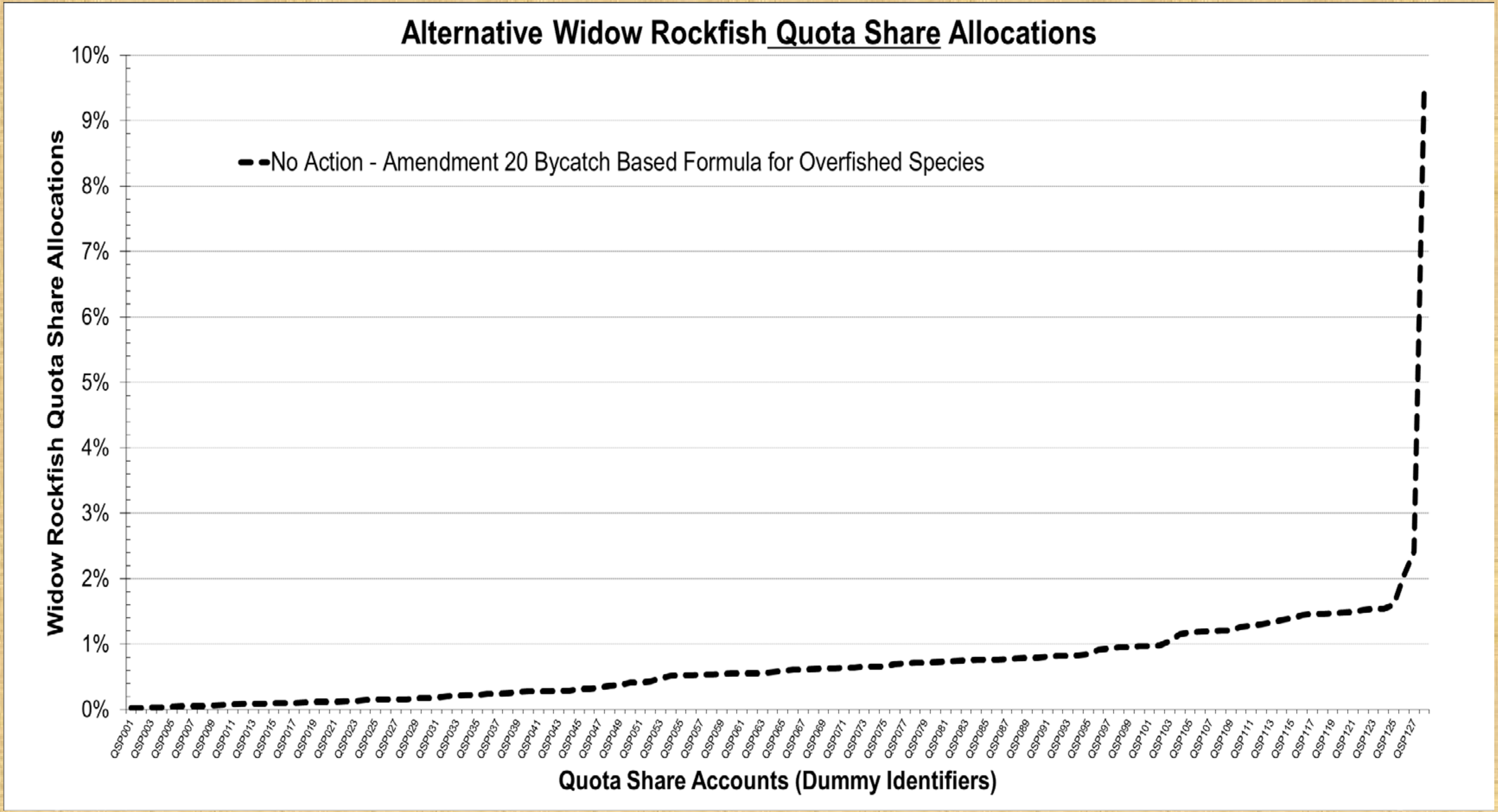


Widow Rockfish
Range of Alternatives (Strawmen)
(J.2.a, Att 1, p. 5)

- Alt 1 - No Action – allow market to reallocate
- Alt 2 – Reallocate using the A-20 target species formula
- Alt 3 – Same as Alt 2 but include landings through 2010
- Alt 4 – Pounds neutral reallocation – (in 2016 no one worse off in terms of QP than in 2012)
- Alt 5 – Pounds neutral plus – (same as Alt 4 but everyone somewhat better off than in 2012).

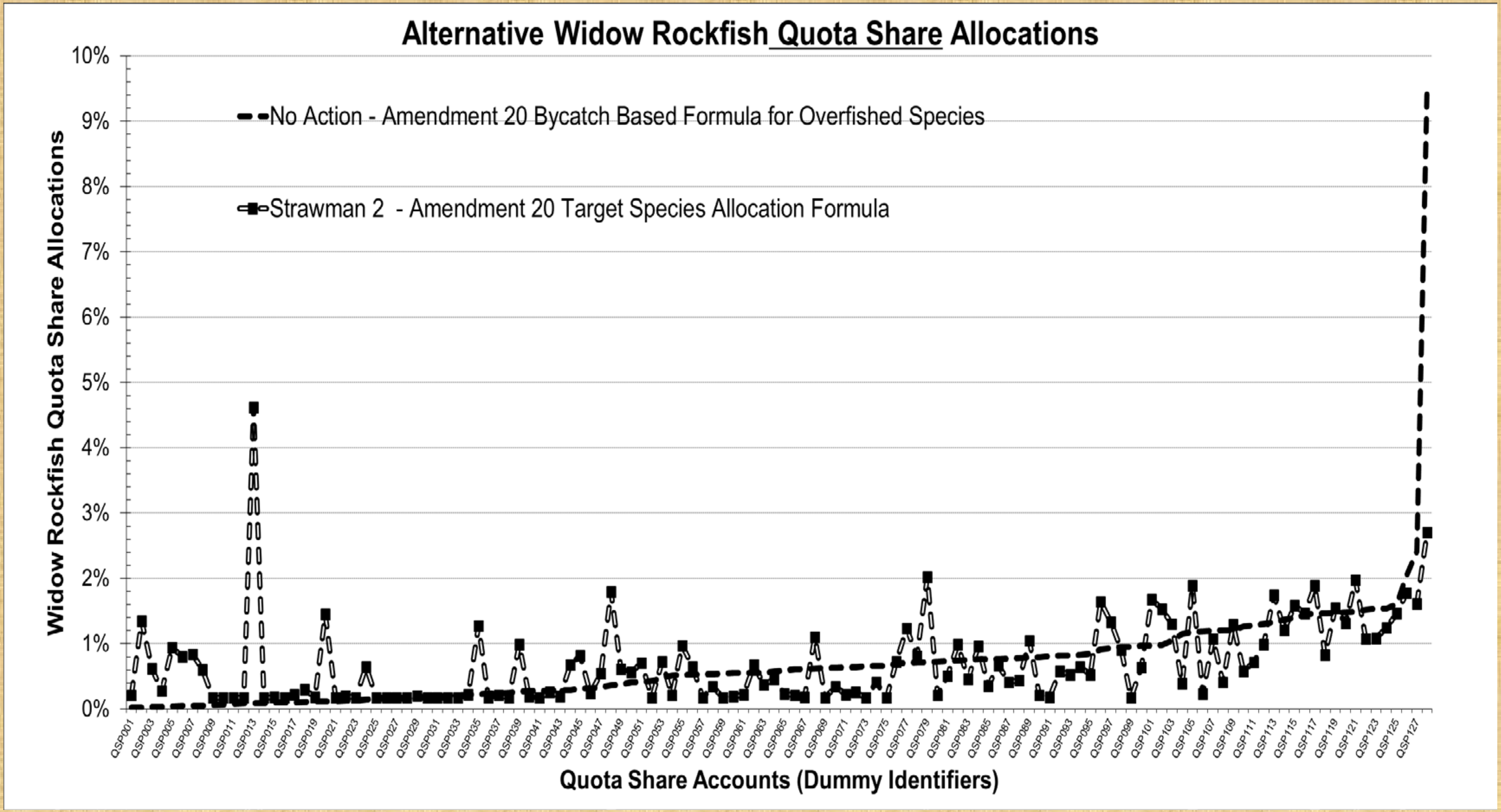


QS - No Action

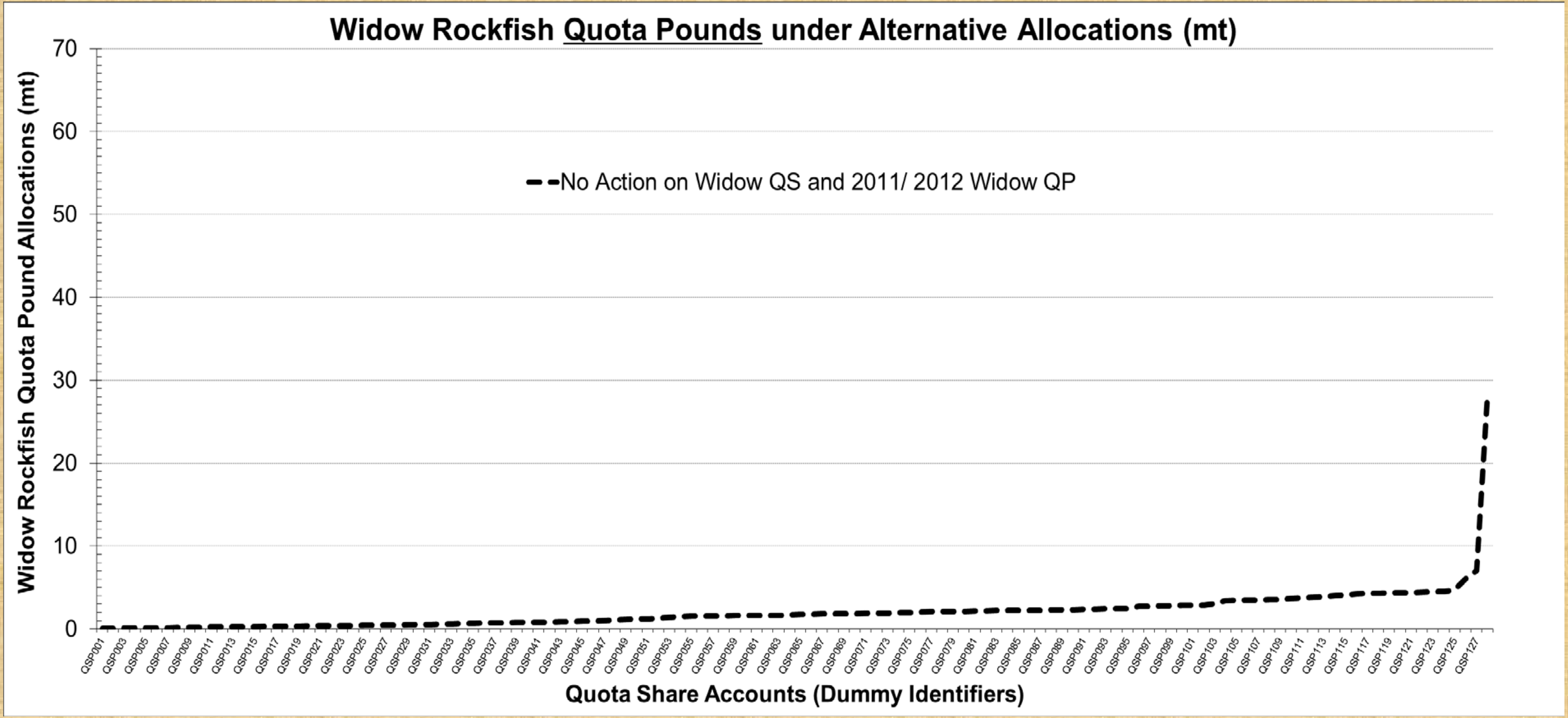


Alternative Widow Rockfish Quota Share Allocations
No Action - Amendment 20 Bycatch Based Formula for Overfished Species
Widow Rockfish Quota Share Allocations
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Quota Share Accounts (Dummy Identifiers)

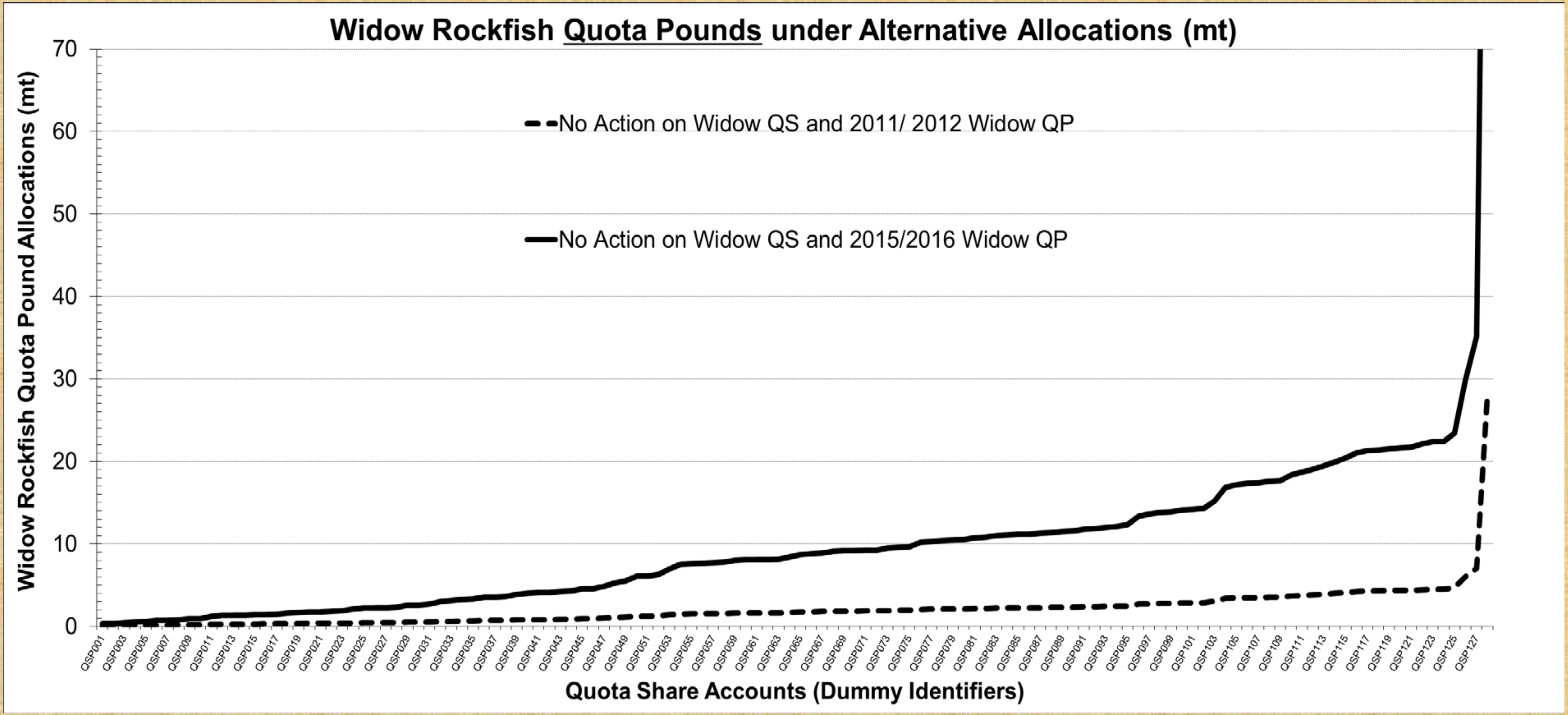
QS - No Action v. Alternative 2



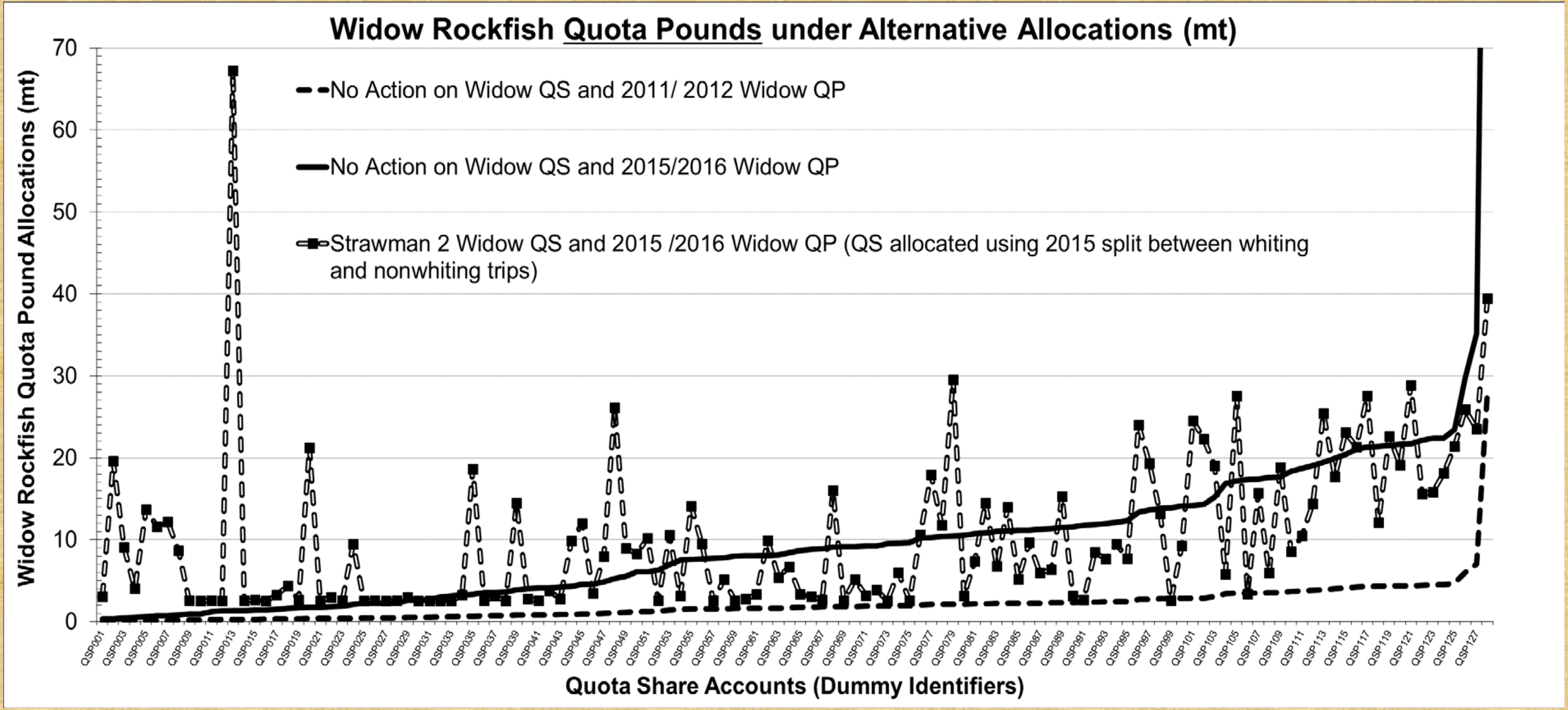
QP - No Action ('11/'12)

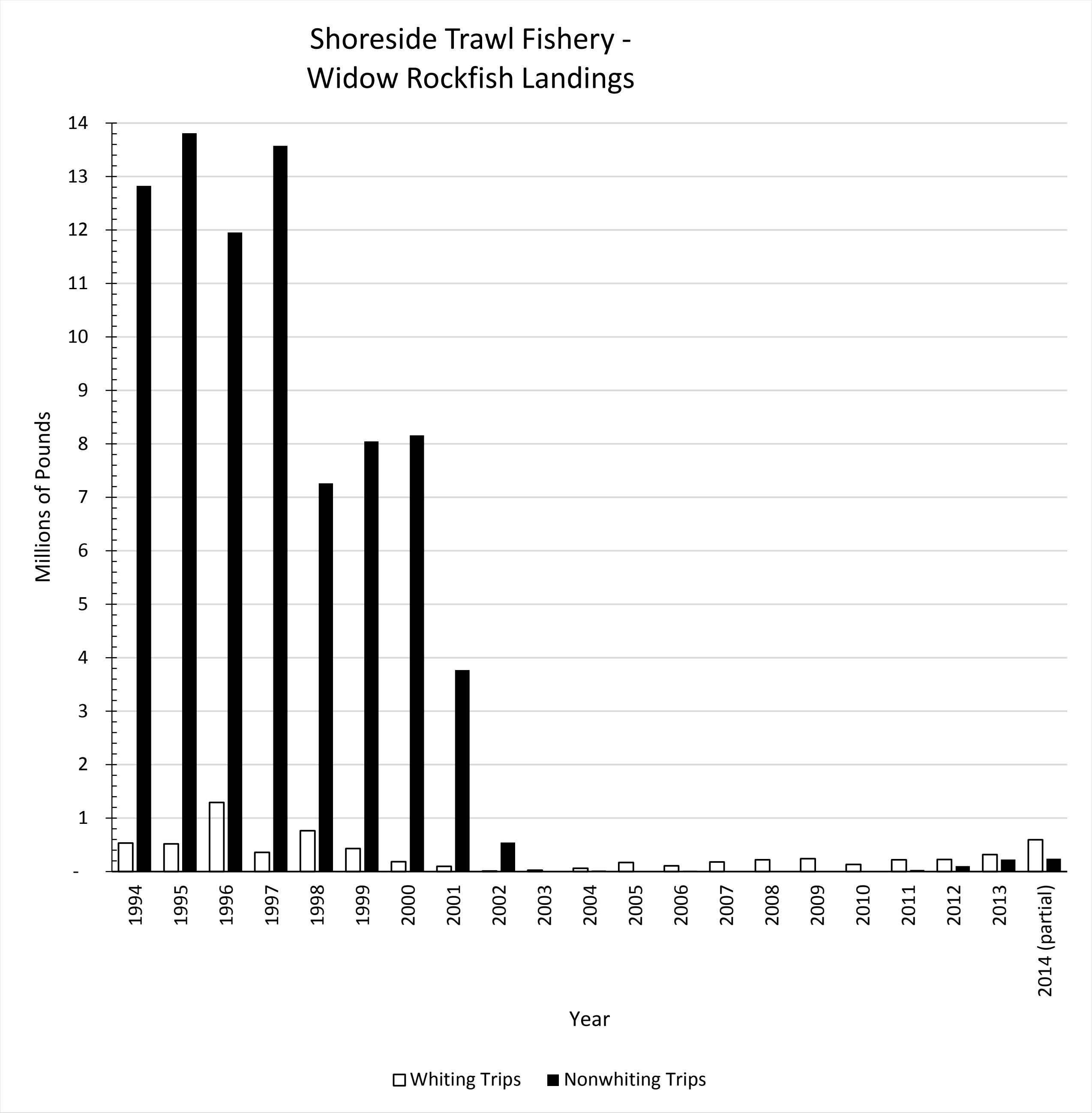


QP - No Action ('11/'12 & '15/'16)



QP - No Action ('11/'12 & '15/'16) v. Alternative 2 ('15/'16)

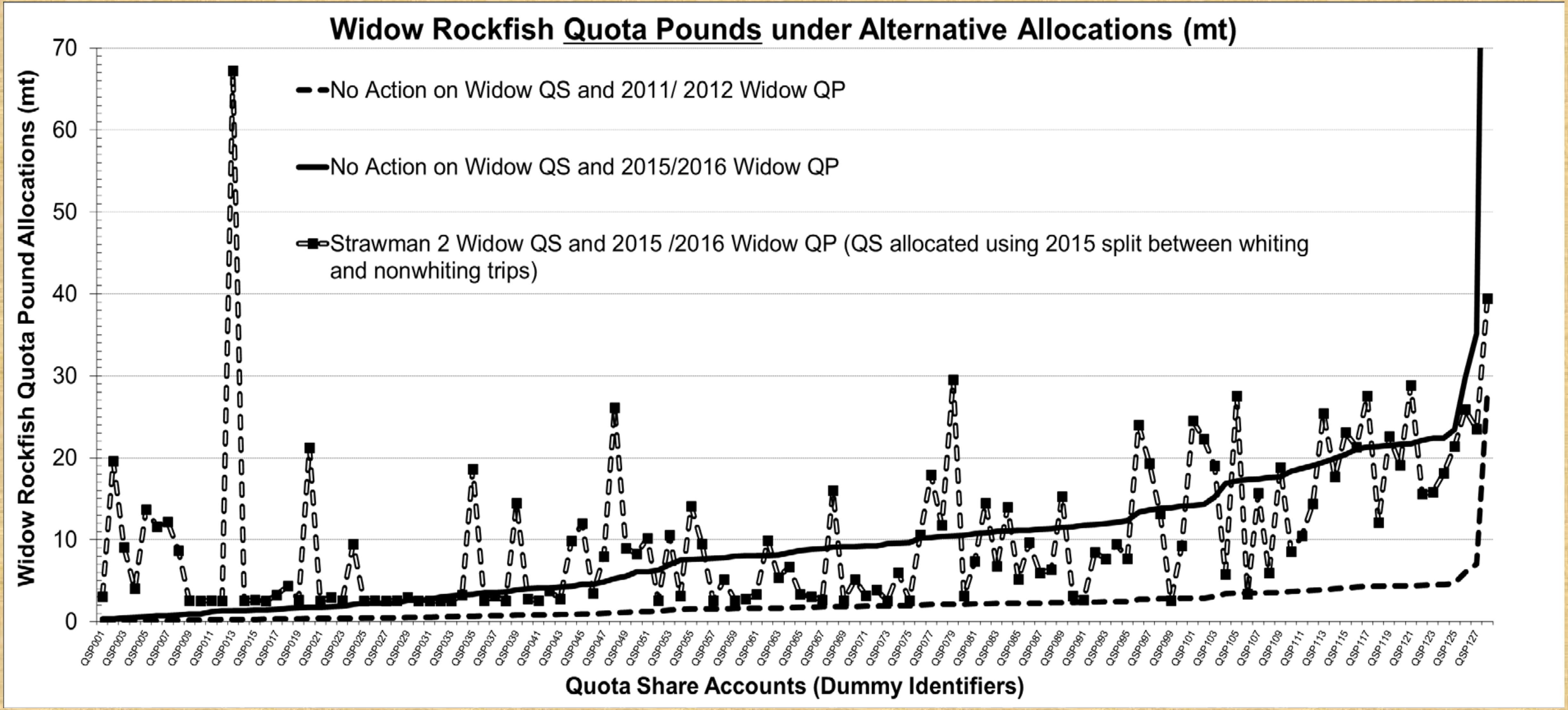




Consideration of 2003-2010 Landings – (Alternative 3)

- From 2003 to 2010 the amount harvested by the shoreside trawl fishery was very small.
- A permit with small landings in a year with low fleet harvests can receive a large credit toward QS allocations.
  - Assumes permit history measured as percent of annual landings.
  - Measured as an annual poundage, 2003-2010 landings would have minimal impact on allocations.

QP - No Action (‘11/’12 & ‘15/’16) v. Alternative 2 (‘15/’16)



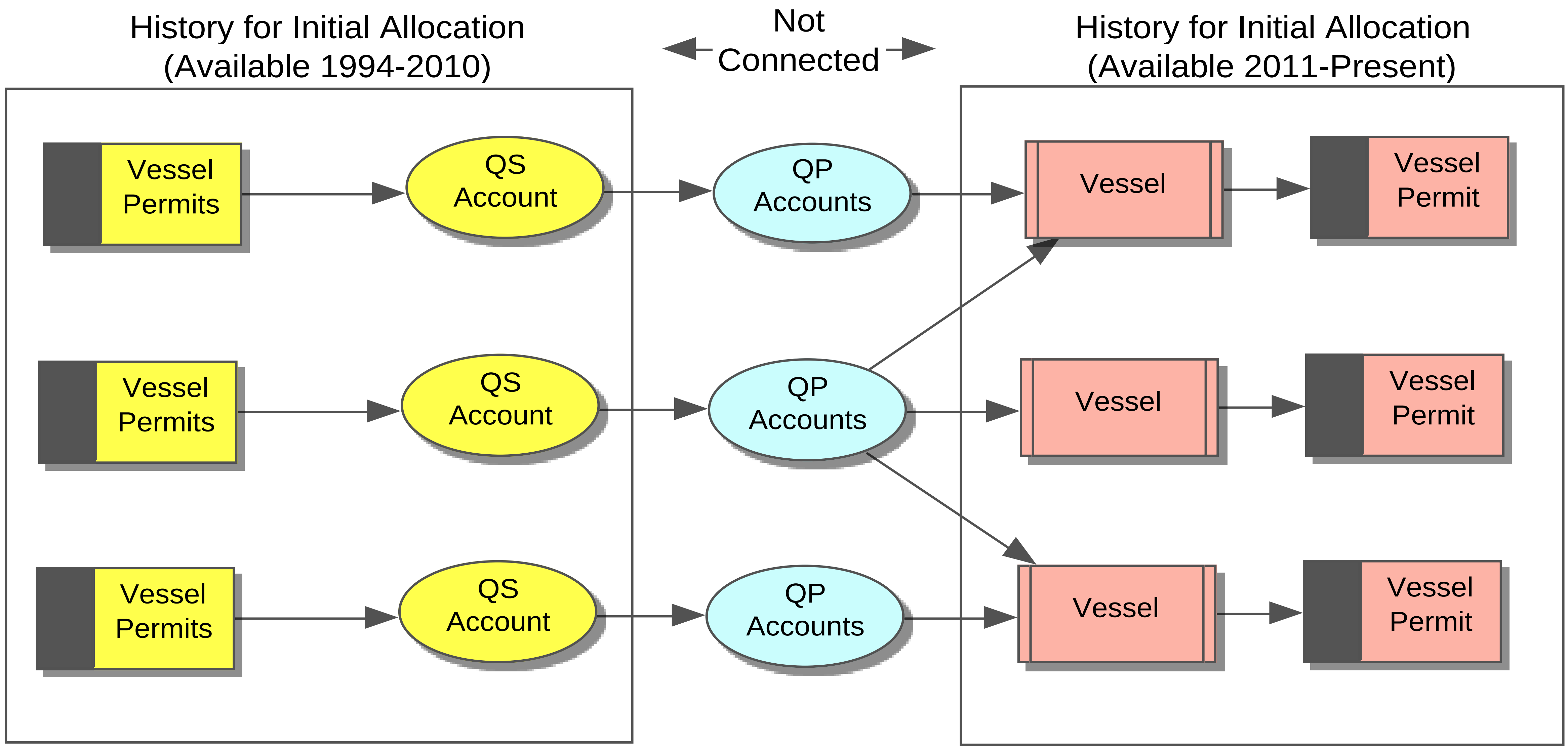
Divestiture Deadlines for Control Limits (Agenda Item J.2.a, Attachment 2, page 9)

- Divestiture deadline: November 30, 2015
- Widow rockfish control limit divestiture deadline
  - **Alternative:** extend the widow rockfish divestiture deadline by XX months
- Aggregate non-whiting control limit deadline
  - **Alternative**
    - Option A: Extend the nonwhiting aggregate control limit
    - Option B: Exclude widow rockfish from the non-whiting aggregate control limit until the widow rockfish divestiture deadline.

Guidance on Revoking Forfeited QS in Complex Situations

- In the event someone does not meet the divestiture deadline, how should divestiture be imposed in complex situations?
  - When an individual
    - has full or partial ownership over more than one account
    - is over the aggregate accumulations limit
- See Agenda Item J.2.b, NMFS Report

2011-2014 catch history cannot be tracked back to the permits on which original QS allocations were based.



CONSIDERATIONS FOR INDIVIDUAL FISHING QUOTA (IFQ) WIDOW ROCKFISH DIVESTITURE

Control Limit and Divestiture Considerations

Under Amendment 20, widow rockfish QS for the shoreside trawl IFQ fishery was originally allocated using on an allocation formula for overfished species. Based on a 2011 assessment of widow rockfish, the stock was declared rebuilt and increased fishing opportunities were provided for the 2013-2014 biennial specifications period. The ACLs for the fishery were further increased for the 2015-2016 biennial specifications period. The widow rockfish QS reallocation consideration creates several issues with the existing IFQ control limit and divestiture regulations that NMFS would like to bring to the Council's attention.

In particular, NMFS would like to raise four specific circumstances under which the Council may wish to provide additional input on divestiture:

1) Widow Rockfish Control Limit and Divestiture
2) Aggregate Nonwhiting Control Limit and Divestiture
3) Forced Divestiture for Individual Species Control Limits
4) Forced Divestiture for Aggregate Nonwhiting

Widow Rockfish Control Limit and Divestiture

The regulations currently prohibit the transfer of widow rockfish QS (§660.140 (d)(3)(ii)(B)(2)), so any QS permit owner over the current widow 5.1% accumulation limit would be unable to divest of their excess shares by the divestiture deadline of November 30, 2015. However, current regulations, §660.140(d)(4)(v), already have a provision indefinitely delaying divestiture for widow QS. To address this issue, the Council may want to consider options applying to widow only, allowing widow quota holders that want to leave the fishery to divest, or changing the 5.1% widow control limit.

Aggregate Nonwhiting Control Limit and Divestiture

It is unclear whether the widow rockfish QS reallocation consideration will create overages of the 2.7% control limit for aggregate nonwhiting QS holdings for some quota share holders. Because widow rockfish was considered to be under rebuilding in 2010, the aggregate nonwhiting formula currently uses the rebuilding formula to determine the 2010 OY value (§660.140 (d)(4)(i)(B).[1] The regulations at §660.140 (d)(4)(i)(B) left flexibility for the Council to change the method for calculating the aggregate nonwhiting control limit. The Council may want to consider delaying divestiture for the aggregate nonwhiting control limit to determine which formula to use for widow in the calculation, and/or to reconsider the use of the 2010 OYs.

[1] see also: http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/catch_shares/aggregateqs-explanation.pdf)

Forced Divestiture for Individual Species Control Limits

While not directly related to the widow rockfish reallocation, NMFS has developed a proposed method by which to force divestiture in cases where QS permit owners have not divested of non-widow species by November 30, 2015.

If one QS permit owner was over an individual species control limit by 1%, the regulations are clear that NMFS would revoke and redistribute that 1% to the remainder of the QS or IBQ owners in proportion to their QS or IBQ holdings (§ 660.140 (d)(4)(v)). However, if an individual person held full or partial ownership in 5 QS permits and exceeded a control limit by 1% for a certain species across those QS permits, it is unclear how NMFS would revoke QS across permits.

NMFS proposes to revoke QS from each QS permit in proportion to the amount owned by the individual in each permit. As in the example below, first NMFS would calculate the share of permits 1-5 in terms of the total percent of the species owned by the individual (see column E below). Next, the total overage would be multiplied by this share to determine the amount to revoke (see column F below). The amount revoked would equal the total individual's overage, while the total amount remaining would equal the control limit. NMFS would apply normal rounding rules.

Table 1: Example of QS ownership and subsequent control limit for an individual species (see Table 2).

Total QS % Owned by Individual Across QS Permits	11.00%
QS Control Limit for Species	10.00%
Amount Over Control Limit	1.00%

Table 2: Example of forced divestiture calculation (using table 1 example).

A	B	C, D	E	F	G
QS Permit	QS Permit Owned by Individual in Each Permit for Species	Total Overage of Individual, Total Owned by Individual	Individual Permit's Share (sum of column B rows) of Total Percent Owned Across Permits (B/D)	Amount Revoked and Redistributed by NMFS (C*E)	Amount Remaining Owned by Individual (B-F)
1	2.50%	1%, 11%	22.727%	0.227%	2.273%
2	1.00%	1%, 11%	9.091%	0.091%	0.909%
3	3.00%	1%, 11%	27.273%	0.273%	2.727%
4	0.50%	1%, 11%	4.545%	0.045%	0.455%
5	4.00%	1%, 11%	36.364%	0.364%	3.636%
			100.00%	1.000%	10.000%

Forced Divestiture for Aggregate Nonwhiting

In addition to potential issues with divestiture of individual species, the regulations do not currently describe a method for NMFS to revoke and redistribute QS if a business entity or individual is over the aggregate nonwhiting control limit of 2.7%. NMFS proposes to use a similar method as above – that is, use a proportion (***overage/total amount owned***, in terms of 2010 shorebased trawl allocations) to determine how much to revoke from each non-whiting, non-halibut species.

Although NMFS hopes that there will not be a need to revoke QS from any QS permit owning business or individual, we thought it was important to propose our plan so that the Council has time to consider it before the divestiture deadline, November 30, 2015.

GROUNDFISH ADVISORY SUBPANEL REPORT ON WIDOW ROCKFISH REALLOCATION AND DIVESTITURE ISSUES

The Groundfish Advisory Subpanel (GAP) heard presentations from Mr. Jim Seger and Mr. Colby Brady regarding widow rockfish reallocation and divestiture issues. Additionally the GAP heard public testimony from affected stakeholders and has the following comments and recommendations.

The GAP appreciates the Council's decision in September to prioritize the issue of widow rockfish reallocation and our preference is to keep this process on track for final action in April 2015 with implementation in January 2016.

Range of Alternatives for Widow Reallocation

The GAP discussed the range of alternatives presented in Agenda item J.2.a Attachment 2 and believes that the current range does not consider recent participation adequately.

While the GAP understands the Council's intent is to reestablish historic widow rockfish target opportunities for initial quota share recipients, the Magnuson Stevens Act requires that certain characteristics must be considered when allocating fish. Magnuson requires that we consider:

- Current and historical harvests
- Employment in the harvesting and processing sector
- Investments in and dependence on the fishery
- Current and historical participation of fishing communities

The GAP recommends removing Alternatives 3 & 5 from the current list. The GAP recommends removing Alternative 3 because landings through 2010 do not reflect target fisheries so this alternative is somewhat similar to status quo. We recommend removing Alternative 5 because our amended Alternative 4 captures the effects of Alternative 5.

We recommend adding a new Alternative 3 that utilizes non-whiting groundfish revenue as a proxy for participation between 2003 and 2010 to consider recent participation. Additionally we recommend modifying the original Alternative 4 by replacing 2012 with 2014.

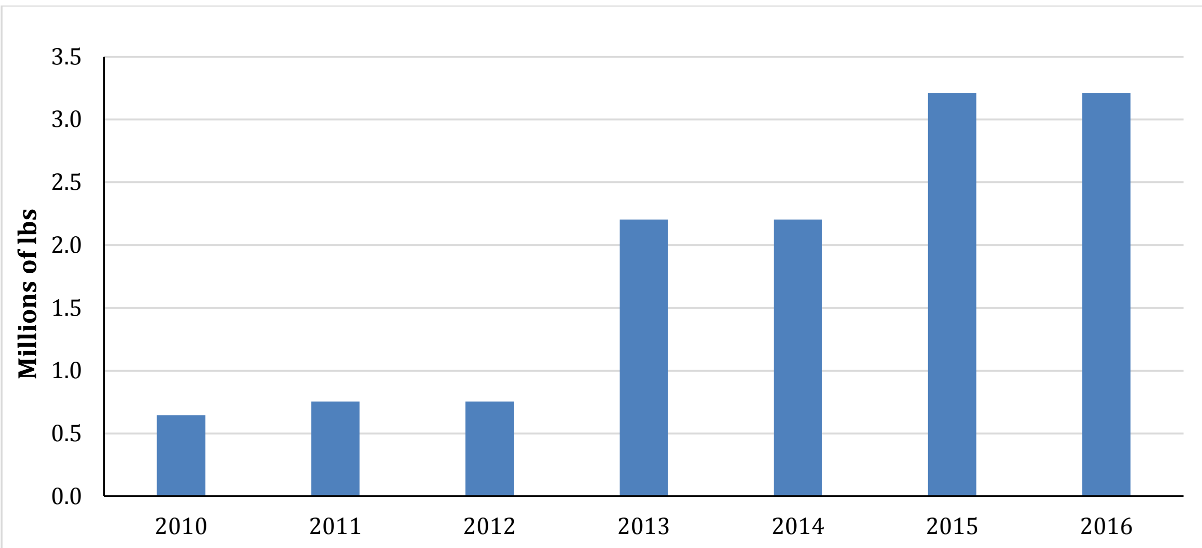
The GAP's recommended list of alternatives for analysis is as follows:

Alternative 1: No Action – status quo

Alternative 2: Reallocate widow quota shares using the Amendment 20 target species allocation formula (a portion to all permits equally and a portion to permits based on landings history between 1994-2002).

Alternative 3: Reallocate widow rockfish using non-whiting groundfish revenue between 2003-2010 as a proxy for recent participation. The equal sharing component, set-aside for whiting, and adaptive management would come off the top and then the remaining quota is computed 50% by the revenue proxy (2003-2010) and 50% by the landings history 1994-2002.

Alternative 4: Leave a base amount of quota share unreallocated such that in 2016 every permit would receive the same amount of quota pounds that they received in 2014 and reallocate the remainder using the historic landings formula (a portion to all permits equally and a portion to permits based on landings history between 1994-2002). By base amount the GAP means the difference between the top of the 2014 column and the top of the 2016 column depicted in the figure below taken from Agenda Item J.2.a Attachment 2.



This range of alternatives provides a look at both historical catches and recent participation in the non-whiting groundfish fishery. The alternatives are varied enough that a robust analysis should be available for the Council, GAP and stakeholders to choose a final preferred alternative in April which meet the goals and objectives of Amendment 20 while meeting the requirements of the MSA and other applicable law.

<u>Widow Rockfish Divestiture deadline</u>

The GAP recommends that Widow rockfish divestiture should occur twelve months following implementation of reallocation of widow rockfish.

<u>Range of alternatives for aggregate non-whiting species divestiture deadline</u>

The GAP believes that with the following change to Alternative 2, suboption A (in italics) that the following is a reasonable range of alternatives to consider action with regards to the divestiture deadline.

Alternative 1: No Action (current divestiture deadline of November 15th, 2015 remains)

Alternative 2: Extend the aggregate control limit deadline to coincide with the widow control limit.

Suboption A: *Delay* the non-whiting aggregate control limit *until the implementation of any regulatory changes developed pursuant to the first program review for the trawl rationalization program (the November 15th 2015 deadline would still apply to all individual species except widow)*

Suboption B: Exclude widow rockfish from the non-whiting aggregate control limit until 12 months following the implementation of the widow reallocation.

Rules for Revoking Forfeited Quota Share

The GAP believes a non-punitive option that allows participants to "abandon" quota share should be developed. In some cases there may be no market for quota share that needs to be divested. If a participant is unable to transfer that quota share for reasons beyond his control, he should not be penalized. An option that allows the quota to be "abandoned" to NMFS should be developed.

PFMC
11/18/14

THE GROUNDFISH MANAGEMENT TEAM REPORT ON WIDOW ROCKFISH REALLOCATION AND DIVESTITURE ISSUES

The Groundfish Management Team (GMT) received presentations from Mr. Jim Seger and Mr. Colby Brady on widow rockfish reallocation and divestiture, as well as individual and aggregate non-whiting control limit considerations. Mr. Ed Waters provided data and additional figures for inclusion in this statement. In addition, the GMT reviewed Agenda Item J.2.b Supplemental National Marine Fisheries Service (NMFS) Report to provide background and additional context to the presentations. The GMT appreciates the thoroughness of their presentations and the overview of these issues under consideration by the Council.

Appendix F to the Groundfish FMP, reflecting actions under Amendment 20, states that “when a stock becomes rebuilt, the reallocation will be to facilitate the re-establishment of historic target fishing opportunities.” The Council may wish to consider incorporating this into the purpose and need as stated in the scoping document (Agenda Item J.2.a, Attachment 2) as widow rockfish was recently rebuilt. Prior to 2002 and prior to widow rockfish being declared overfished, there was a directed widow rockfish midwater trawl fishery. Reinstating this historic midwater fishery could allow vessels to further diversify their economic portfolios, and allow fishing operations to further take advantage of the individual accountability and flexibility envisioned in the inception of the Individual Fishing Quota (IFQ) program. The Magnuson Stevens Fishery Conservation and Management Act (MSA) § 303(b)(6) provides guidance to the Council on reallocation considerations within limited access privilege programs, such as the trawl rationalization program. However, this GMT report will focus mostly on the need to consider recent participation and historical practices in the fishery, as other issues such as economics, capability to engage in other fisheries, cultural and social framework, fairness and equity, employment in the harvesting and processing sectors, and other considerations further outlined in National Standard 2, 4, and 8 that have already been considered in the Amendment 20 Environmental Impact Statement (EIS). The Council’s Groundfish Fishery Management Plan (FMP) also covers these goals and objectives in detail as recommended by the MSA.

The scope of this GMT supplemental report includes the following: (1) considerations for widow rockfish reallocation; (2) the history of the directed widow rockfish fishery; (3) the effect of choosing various widow rockfish target and bycatch periods, and potential allocation consequences to permit holders for the five alternatives mentioned in the Council scoping document (Agenda Item J.2.a, Attachment 2), as well as a new potential alternative proposed in supplemental public comment (Agenda Item J.2.c, Supplemental Public Comment 2); (4) aggregate limits and divestiture; and (5) other considerations for the Council. The GMT notes that this document focuses on widow rockfish reallocation, and only touches on the topics of divestiture and aggregate accumulation limits. Our emphasis on reallocation is to provide visual comparisons and contrasts among alternatives provided in the draft scoping document (J.2.a Attachment 2 November 2014) as well as comparisons with additional alternatives provided by the GMT. The GMT does not provide recommendations regarding most or least suitable alternatives. Those decisions are dependent on the purpose and need of the proposed action (described above) and the goals of the Council.

I. Widow Rockfish Reallocation

Overfished or Non-Overfished Formulas

Background on the different formulas utilized to determine quota shares and potential alternatives for reallocation for widow rockfish has been provided in the Situation Summary, three associated attachments, and two NMFS reports under this agenda item and will not be repeated here. In general, the approaches may be characterized as utilizing either a "Group 2" overfished formula (§660.140 (d)(8)(iv)(B)(2)), which puts more weight on discarded bycatch or a "Group 1" non-overfished formula (§660.140 (d)(8)(iv)(B)(1)), which puts more weight on targeted landings. The GMT notes that the Council can utilize either formula, or combination of formulas, for whichever alternative they find most appropriate to meet the goals and objectives.

II. Dynamics of the Non-Whiting Widow Rockfish Fishery (1994 – 2010)

Groundfish regulations affecting widow rockfish landings and fishery decisions resulted in three periods that may be generalized as: targeting (1994-2001), transition (2002), and bycatch (2003-2010). Although regulations that affected access and retention of widow rockfish gradually became more restrictive as the 1990's progressed, 2003 represents the beginning of the most restrictive period whereas 2002 was somewhat intermediate between targeting and avoidance periods (Table 1). The increasingly restrictive regulations were brought about by the declining stock status of widow rockfish, which was deemed overfished by the 2000 stock assessment (Status of the Widow Rockfish Resource in Y2K). Although not provided in Table 1, we note that Rockfish Conservation Area (RCA) management was initiated in 2002, resulting in less access to widow rockfish on the shelf by bottom trawl.

Impacts of regulations to the widow rockfish fishery are shown in Figure 1. Widow rockfish landings during the targeting period (1994-2001) ranged from 3.8 to 13.8 million pounds, whereas landings during the period of avoidance (2003-2010) was less than 0.02 million pounds annually. Landings during 2002 were somewhat intermediate relative to the other two periods (i.e., 0.5 million pounds).

Although widow rockfish can be caught with bottom trawl gear, targeting with midwater trawl is most effective and used when large landings are allowed (e.g., during the targeting period). Figure 2 illustrates the number of permits that landed at least 1,000 pounds of widow rockfish (annually) using midwater trawl gear or bottom trawl gear. Trawl permits showing annual landings greater than 1,000 pounds declined dramatically beginning 2003; indeed, all widow rockfish landings for the years 2003-2010 were made by bottom trawl (none by midwater trawl; PacFIN query). The change in trip limits beginning 2003 effectively eliminated the non-whiting midwater trawl fishery for widow rockfish.

III. Effect of Target and Bycatch periods to Permit Holders

Five alternatives for widow rockfish reallocation are provided in the draft scoping document (Agenda Item J.2.a, Attachment 2). As described in that document, the no action alternative (Alternative 1) is based on widow rockfish bycatch rates applied to landings of 11 target species during the 2003 to 2006 window period. Alternatives 2 and 3 are based on annual landings of widow rockfish during different periods between 1994 and 2010. In this section, we provide graphics and discussion regarding Alternatives 1 through 3; the scoping document indicates that these alternatives satisfy the requirements outlined in the Alternatives 4 and 5 (Groundfish Advisory Subpanel, GAP, Alternatives). As such, we do not provide much additional information about Alternatives 4 and 5.

The GMT notes that any alternative based on landings of widow rockfish may represent different weighting priorities. Alternatives containing more landings during the earlier years are weighted more heavily by catches made during the targeting period, whereas those containing more recent catch histories are weighted more heavily by the avoidance/bycatch years.

Alternatives 1 and 2: Figure 3 shows the comparison of widow rockfish quota pound (QP) allocations among quota share (QS) accounts based on the current widow rockfish QS calculations (No Action in the scoping document) with the 2011/2012 and 2015/2016 shoreside trawl allocations. Figure 3 also includes a comparison with strawman Alternative 2, which is based on landings for the years 1994 to 2003. This is similar to Figure 3-3 in the scoping document (Agenda Item J.2.a Attachment 2 November 2014). The scoping document indicates that Alternative 2 mostly addressed the GAP's purpose for developing Alternatives 4 and 5: "ensure that no one would be worse off in terms of QP they receive annually, relative to their 2012 QP allocation amounts" (i.e., Alternative 4) and "all QS holders receive at least some increase in QP relative to their 2012 QP level" (i.e., Alternative 5). Figure 3 demonstrates that in most cases, QP allocations under Alternative 2 would be similar to or greater than QP allocations received in 2012 (dashed line). This figure also demonstrates that as the widow rockfish Annual Catch Limit (ACL) increases, QP allocations under status quo will also increase for all QS holders (solid line; 2011 vs 2015 ACL allocations). Figure 3 also illustrates that under the strawman Alternative 2, QP allocations will be variable relative to No Action. Some QS holders will receive significantly more QP under Alternative 2, whereas some will receive much less.

There are some obvious high QP values shown in Figure 3 relative to QP values for most permit holders. The scoping document showed that some of these high values may be attributed to the inclusion of 2003 landings in Alternative 2. That year was during the period of avoidance (see above), and the total landings of widow rockfish during 2003 was approximately 8,000 pounds. Since QS calculations are based on ratios of the means (i.e., annual proportions of landings by individual permits relative to the sum of landings for all permits), a permit that was credited with 50 percent of the catch during a single year could theoretically receive 7 percent of QS under Alternative 3, without fishing during any of the remaining nine years. Some of the spikes shown in Figure 3 are partially attributed to that explanation.

Alternative 3: Figure 4 compares strawman Alternative 3 (1994-2010) to Alternatives 1 and 2 (Figure 3). Although this alternative was described in the scoping document, there were no plots associated with it. In this case, all widow targeting years (1994-2001) and all widow avoidance years (2003-2010) were included for calculating QS allocations, along with the period of transition (2002). Thus, Alternative 3 provides more weight to the widow avoidance years than Alternative 2. The impact of including years where fishermen avoided widow rockfish (i.e., period of avoidance) to the catch histories for QS calculations is increased variability in QS and QP allocations (Figure 4). Indeed, some permits that would receive the lowest QPs under Alternative 2 would receive some of the highest QPs under alternative 3.

GMT-Alternative 6: Figure 5 compares the three cases from Figure 3 (Alternatives 1 and 2) to the additional case of using a narrower window of years covering 1994–2001, instead of 1994–2003, to exclude years with low widow landings. This is a graphic representation of the results of including only the widow rockfish targeting period when calculating QPs for each permit. Figure 5 demonstrates that by removing the transition year (2002) and the year of avoidance (2003), variation among permit holders is reduced. Excluding these years also eliminated the single largest spike shown in Figure 3. The QP calculations for most of the other permit holders were similar between GMT-Alternative 6 and Alternative 2.

GMT-Alternative 7: Figure 6 compares the three cases from Figure 3 (Alternatives 1 and 2; 1994-2003) to the additional case of using only the avoidance/bycatch years (2003–2010) and the transition year (2002) for QP calculations. Figure 6 shows that GMT-Alternative 7 would result in the highest variability and highest peaks for QP distributions than shown in the remaining alternatives.

Other Potential Alternatives

The GMT provided GMT-Alternative 6 and Alternative 7 to display the effects of weighting QP calculations solely by the period of widow targeting (1994-2001) versus the period of widow avoidance/bycatch (2003-2010) and transition (2002) combined. It was not our intent to suggest that either alternative would be beneficial or detrimental. Our intent was only to provide the Council with contrast between the two alternatives and provide perspective on the effect of weighting by various years with different management strategies.

The GMT is aware of a new alternative that a member of the fishing industry recently distributed (Agenda Item J.2.c., Supplemental Public Comment 2). It is unfortunate that the GMT did not have the resources or data available at this meeting to provide any analysis for that alternative. However, the GMT notes that the Council may choose to include that new alternative, or other alternatives, for full analysis and consideration for the April Council meeting.

IV. Aggregate Limits and Divestiture

The GMT heard from members of industry that removing the aggregate non-whiting control limit would improve business planning and increase flexibility. We appreciate that aggregate limits affect business decisions and could potentially be considered at the same time as reallocation and divestiture. We recommend that the Council weigh input from industry (i.e. from the GAP and public comment) in deciding the scope of issues to include in this action. Likewise, we understand that there needs to be further discussion between NMFS and Council staff to determine whether changing or eliminating the aggregate control limit can be included as part of this action, if the Council wishes to do so. It is our understanding that including aggregate limit considerations might take additional analysis and a different level of workload and rulemaking than has been previously contemplated for reallocation and divestiture decisions alone.

We also heard from NMFS that they are proposing a forfeiture formula that requires proportional divestiture from the holdings of an individual or entity that is over the control limit(s) if the limits are not reached by the divestiture deadline. The GMT finds this to be a reasonable formula, should it be necessary to apply a forfeiture formula.

V. Other Considerations

Potential Overfished Status Change Considerations for Widow Rockfish and Other Groundfish Stocks in the Future

The GMT recognizes that in the future, some stocks' overfished status may change as new assessment information becomes available (from overfished to not overfished, and vice versa). The GMT is not of the opinion that reallocation of widow rockfish should necessarily set precedence for quota share reallocation of other groundfish stocks in which QS trading has already occurred, and for which overfished status may change in the future. Amendment 20 states that for overfished species, the QS reallocations *may* be reconsidered when overfished species become rebuilt.

Reallocation of widow rockfish may be an easier process for implementation than what may be required for other species in which quota share trading has already commenced. For other groundfish stocks besides widow rockfish, if numerous QS trades of a stock have occurred since initial QS issuance, NMFS could be required to backtrack all trades and reissue quota shares based upon different calculation methods than status-quo (overfished formula) methods, and reallocate to all the new quota share owners *pro-rata*. However, widow rockfish is a different situation that allows for a substantially easier recalculation of initial quota shares if a different formula (i.e., non-overfished formula) were used, due to the QS trading moratorium that has been in effect for this stock. It is a relatively easier process to reallocate widow QS among the original IFQ QS recipients.

2015 Widow Rockfish Stock Assessment Considerations

The GMT notes that although widow rockfish is currently determined to be in a healthy status, the last widow rockfish assessment had some disagreement among stock assessment review (STAR) panel experts and a minority opinion alternate view of widow rockfish productivity that was submitted to the Council (Agenda Item E.1.a, Supplemental Attachment 11, November, 2011). Therefore, the newly scheduled 2015 widow rockfish assessment *may* have a chance of yielding a fairly different depletion estimate; however, the GMT notes that a new rebuilding plan would only be required if the assessment estimated that the stock status was below B25%. If the Council proceeds with reallocating widow rockfish quota shares using the non-overfished formula, and per chance the 2015 assessment determines that the widow rockfish stock status is not above B40% but above B25%, then the stock could still be allocated as a target species.

Potential Impact for Future Control Dates

The GMT also wants to note the potential impact of this decision on the veracity of future control dates. Alternative 3 would provide allocation for harvest occurring after the 2003 control date and prior to the initial allocation of QS for the 2011 fishery. In the past, the Council has effectively argued that the consideration of landings from 2003 to 2010 would degrade its ability to use control dates and adversely impact future fishery management. In advancing an alternative that includes post-2003 landings, the GMT believes that the Council should address the effect on control date in the rationale supporting those alternatives, particularly if post 2003 history is included in the final preferred alternative.

Table 1. Summary of trip limits and other restrictions regarding widow in the limited entry groundfish trawl fishery. MDT= midwater trawl, SFT= small footrope trawl, LFT= large footrope trawl. Open access regulations are not shown. Only regulations north of 40º 10' N. latitude are provided between 1998-2010. Prior to 1998, regulations were for all landings coastwide. The years 2003-2010 are summarized together as the regulations were used to restrict widow bycatch and prevent targeting of the species and are therefore very similar across all years. For more specific changes, please see http://www.pcouncil.org/wp-content/uploads/Widow_2011_Assessment.pdf.

Classification	Year	Regulations Implemented
Target	1994	• Start:30,000 lb cumulative limit per calendar month End:3,000 lb trip limit with unlimited number of trips
	1995	• Start:30,000 lb cumulative limit per calendar month • End:45,000 lb cumulative limit per calendar month Mesh size restriction of 4.5" to entire net and bottom trawl fleets
	1996	• Start:70,000 lb cumulative trip limit/ 2 mo End:25,000 lb cumulative trip limit/ 2 mo
	1997	• Start:70,000 lb cumulative limit/ 2 mo End:60,000 lb cumulative limit/ 2 mo
	1998	Limited Entry
		• Start: 25,000 lb cumulative limit/ 2 mo • End: 19,000 lb cumulative limit/mo
	1999	• Start: Cumulative limits- Phase 1- 70,000 lbs/period, Phase 2- 16,000 lbs/period, Phase 3-30,000 lbs/period • End: Decrease phase 2 and 3 to 11,000 lbs/period • Vessels in OR and WA using 30,000 lb cumulative monthly limit must had MWT gear aboard or state cumulative limit imposed
	2000	• 30,000lbs/2 mo for trawl • 3,000 lbs/mo for FG • Classified as shelf species
	2001	• MDT Start: 20,000 lbs/ 2mo for Jan-Apr and Sep-Oct, otherwise 10,000 lbs/2 mo • SFT Start: 1,000 lb/mo • FG Start: 3,000 lbs/mo • End: All fisheries closed except MDT. MDT can land 2,000 lbs/mo in N for October, then 25,000 lb/2 mo
Transition	2002	• MDT Start: Closed through Nov except small bycatch in whiting fishery. Nov 13,000 lbs/2 mo with no more than 2 trips. • SFT start: 1,000 lb/mo through Sept, then closed Sept-Oct, then 500 lbs/mo Nov-Dec.
Bycatch	2003 - 2010	• MDT: Fishery closed except for small amount of whiting bycatch (varied per year, few years fishery open in Nov-Dec) • SFT/LFT: 300 lbs/ 2 mo (early years had increases for SFT in May-Oct) • FG: 200 lbs/mo • Selective flatfish: Various monthly closures and trip limits over timespan, including RCA restrictions Sector specific bycatch caps begin in 2009 for whiting fleet

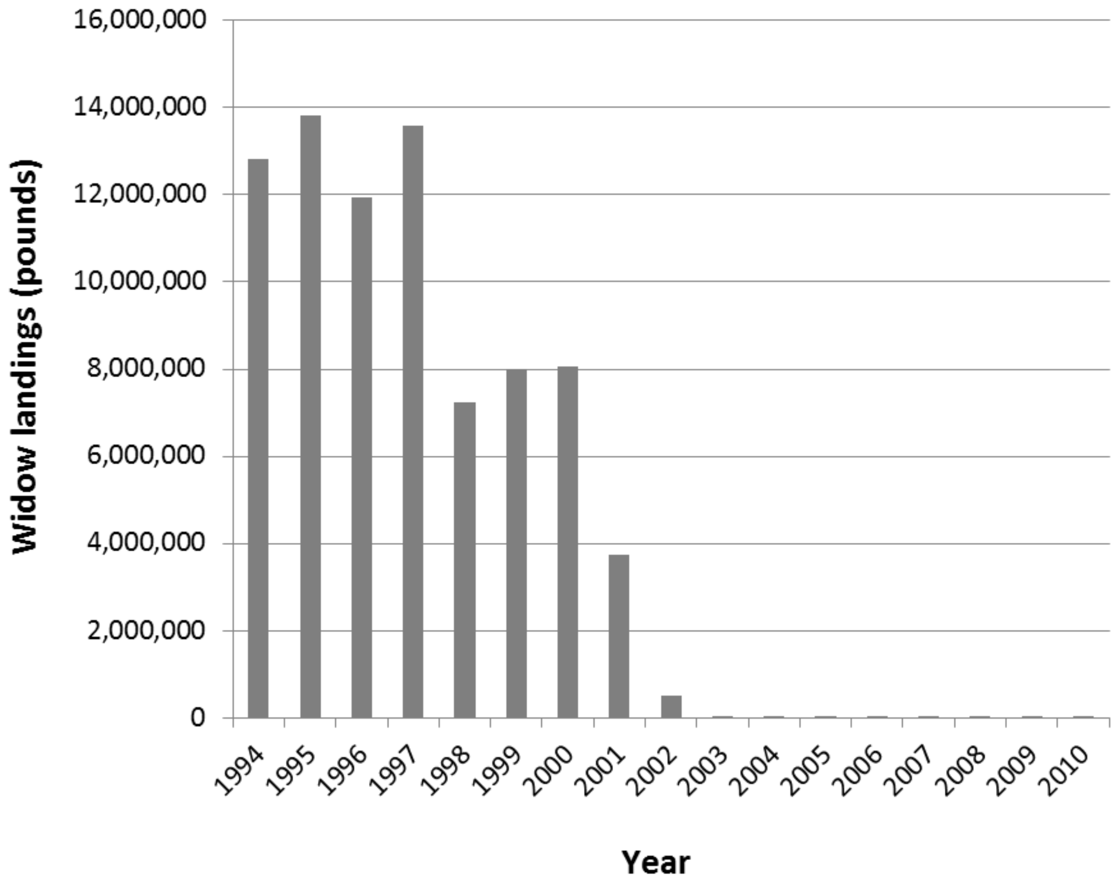


Figure 1. Widow rockfish landings (pounds) by non-whiting groundfish trawl vessels. Data were provided by Mr. Ed Waters.

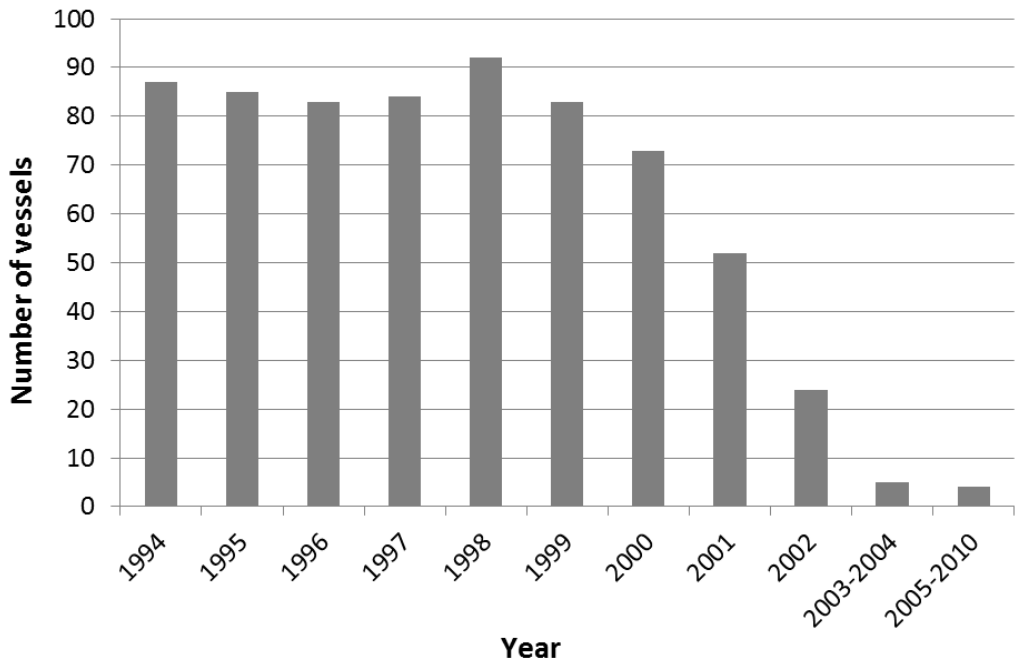


Figure 2. Number of permits with annual landings of widow rockfish > 1,000 pounds. Data were provided by Mr. Ed Waters.

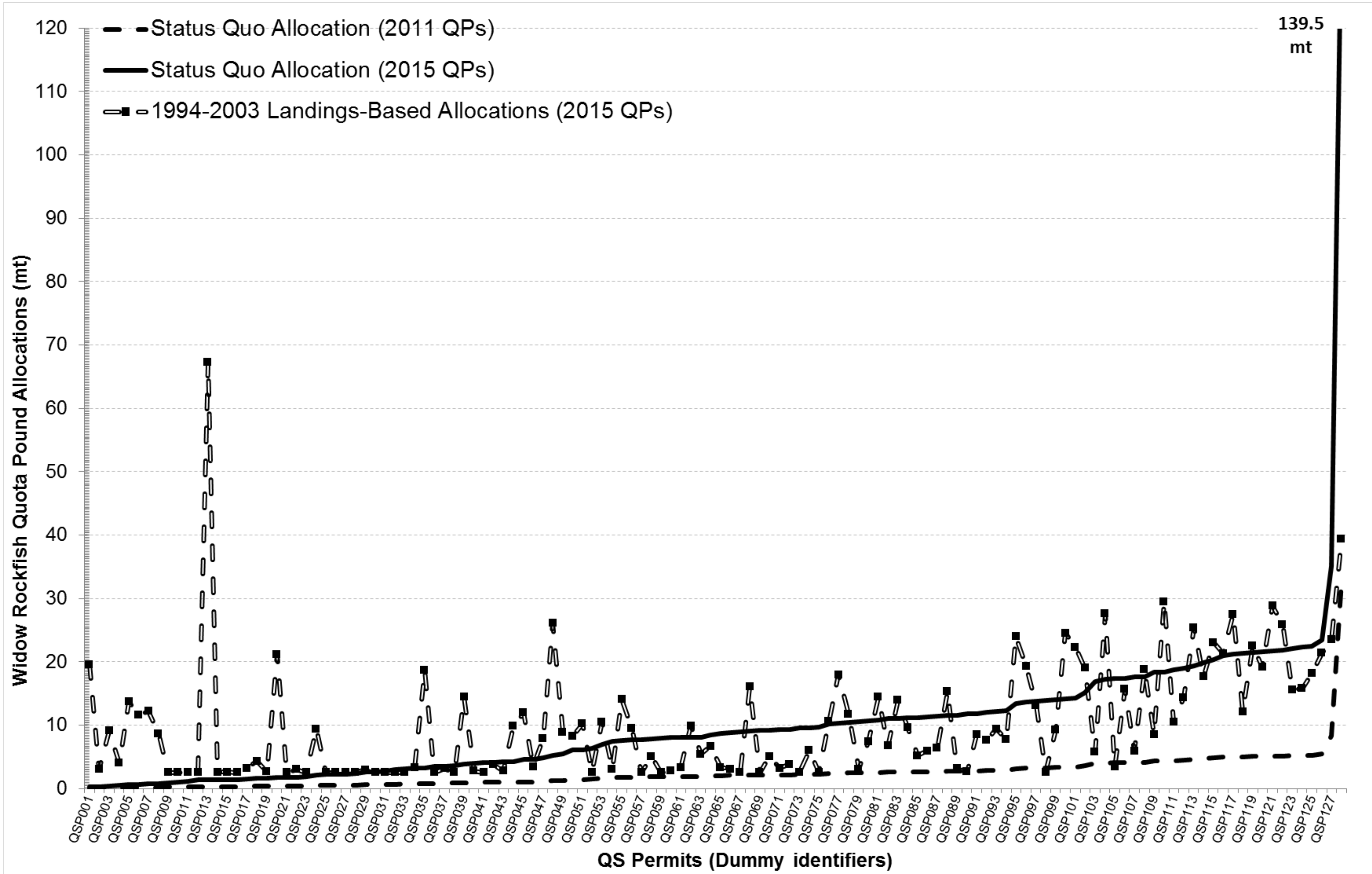


Figure 3. Comparison of widow QP allocations among QS accounts based on the current widow QS allocations (with the 2011/2012 and 2015/2016 shoreside trawl allocations) and the Alternative 2 strawman, which is based on landings for the years 1994–2003. This is similar to Figure 3-3 in [Agenda Item J.2.a Attachment 2 November 2014].

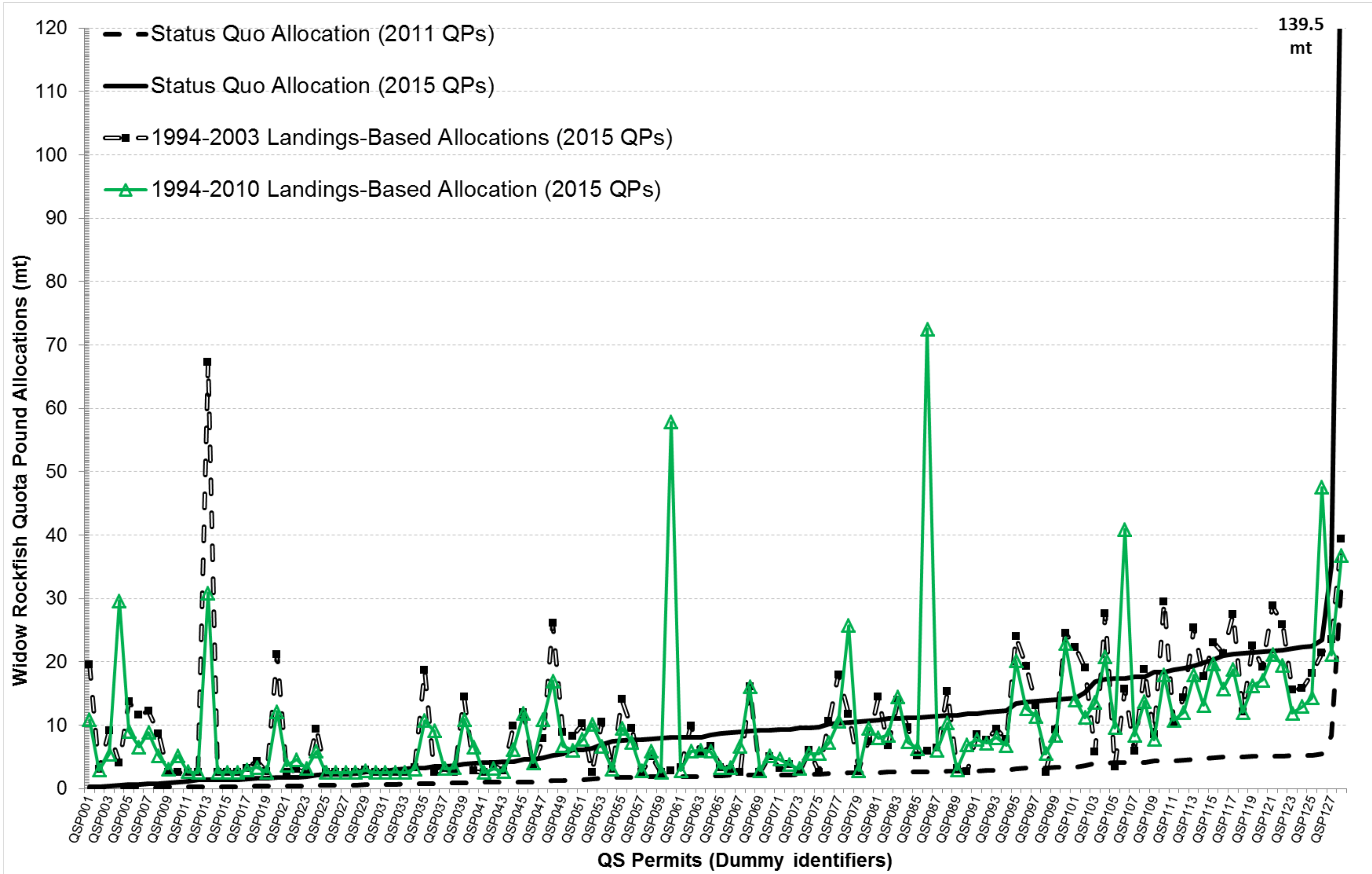


Figure 4. The three cases from Figure 3 compared to the Alternative 3 strawman which uses a wider window of years covering 1994–2010 instead of 1994–2003.

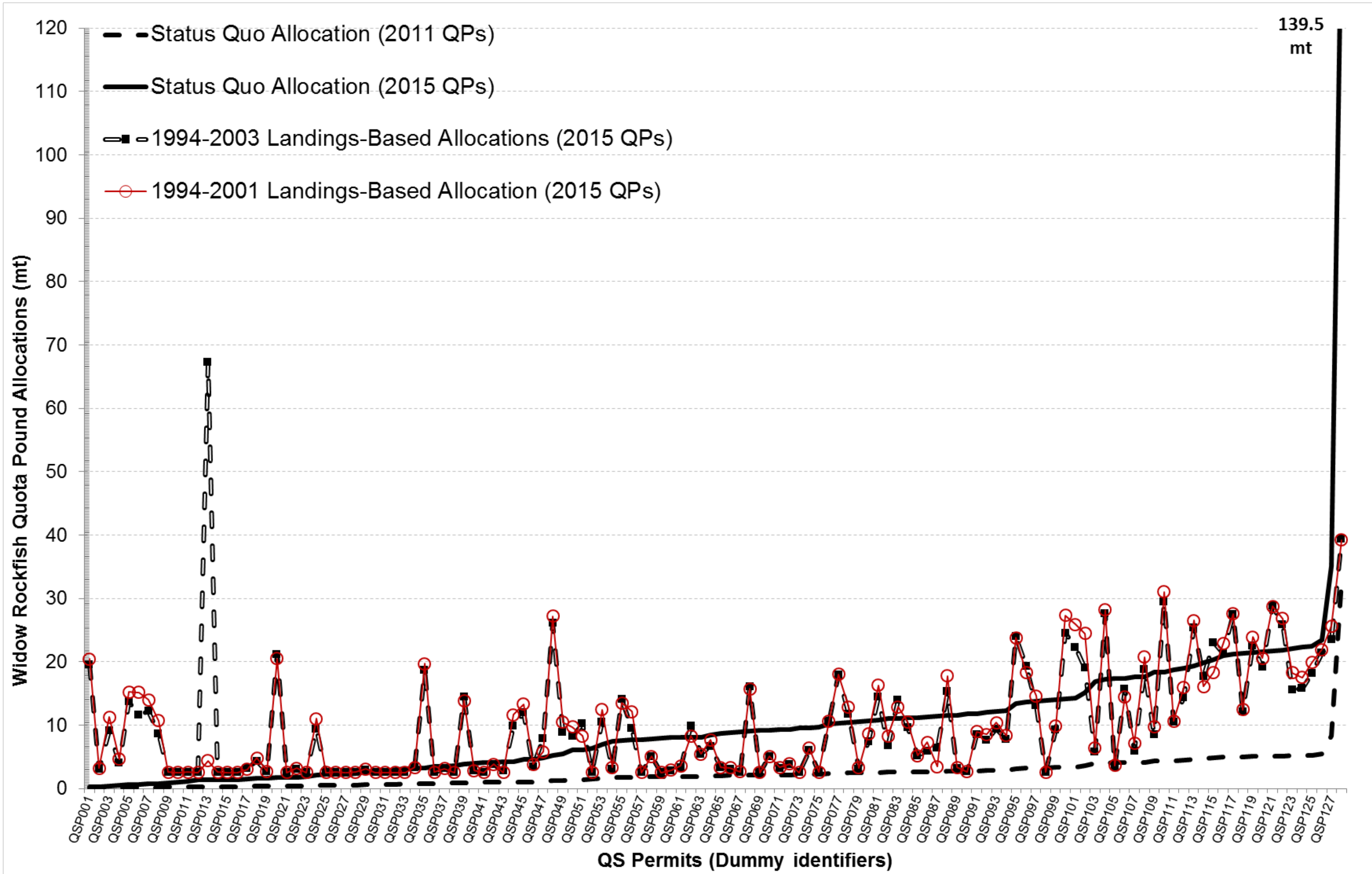


Figure 5. The three cases from Figure 3 compared to the additional case of using a narrower window of years covering 1994–2001 instead of 1994–2003 to exclude years with low widow landings.

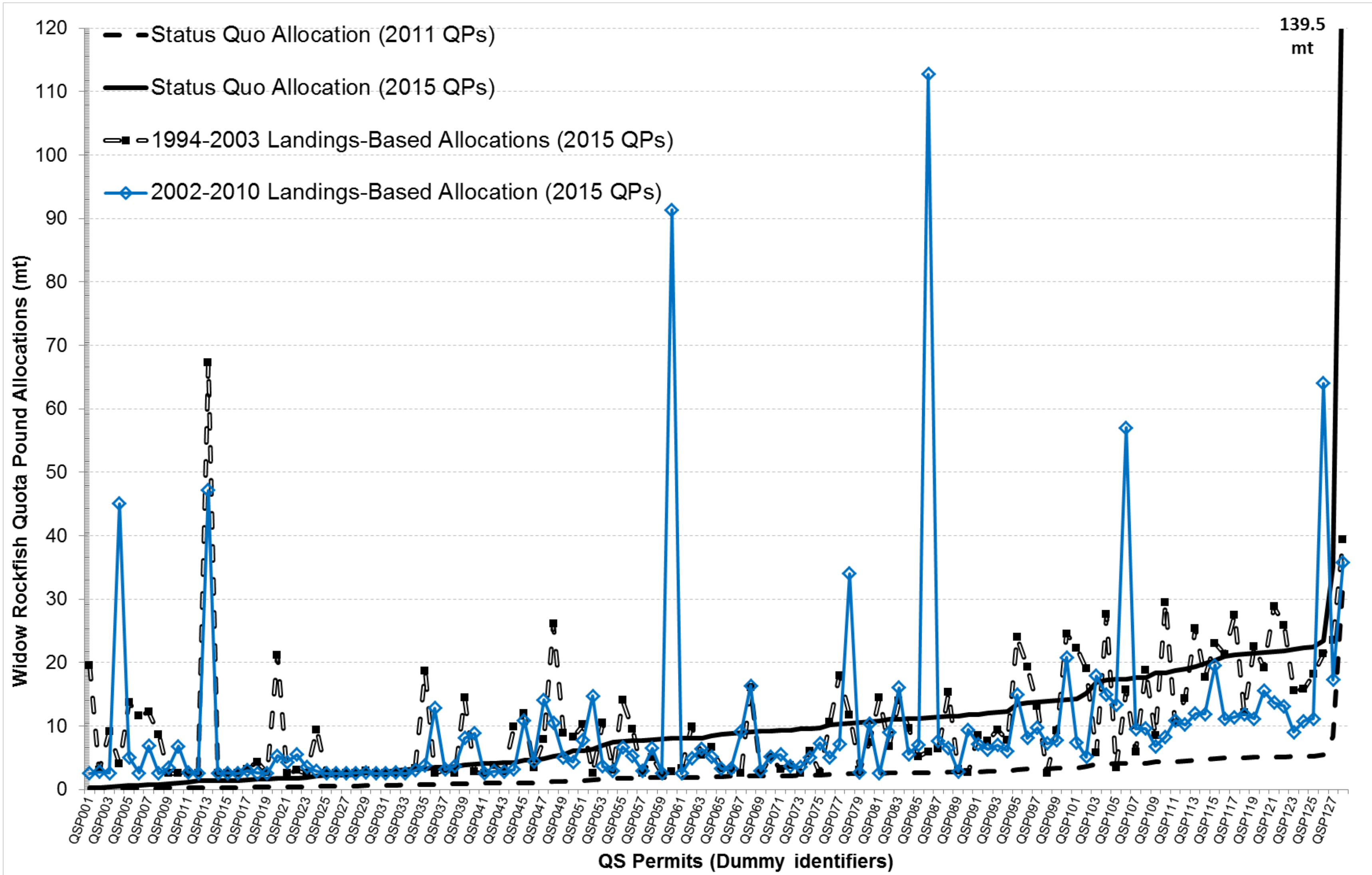


Figure 6. The three cases from Figure 3 compared to the additional case of using the bycatch year range covering 2002–2010 instead of 1994–2003.

Agenda Item J.2.b
Supplemental NMFS PowerPoint
(Electronic Only)
November 2014

NOAA FISHERIES
West Coast Region

Divestiture Considerations

Widow reallocation, Individual, and Aggregate species limits

November 2014

Widow Rockfish Control Limit and Divestiture Considerations

Presentation Overview:

1. Widow Rockfish Control Limit and Divestiture
2. Aggregate Nonwhiting Control Limit and Divestiture
3. Required Divestiture for Individual Species Control Limits
4. Required Divestiture for Aggregate Nonwhiting

- At the time of initial widow rockfish allocation, widow rockfish was declared overfished

- 2011 widow rockfish stock assessment determined the widow rockfish stock to be rebuilt

Widow Rockfish Control Limit & Divestiture

- Any QS permit owner over the widow accumulation limit of 5.1% is currently unable to divest of their excess shares by the divestiture deadline of November 30, 2015 due to the moratorium on widow QS transfers (§660.140 (d)(3)(ii)(B)(2)).
- Aggregate Nonwhiting Control Limit- the pounds for all nonwhiting (and halibut) species summed and divided by the total shoreside trawl allocation of all nonwhiting species. This calculation is used to determine a business or individuals' share of the aggregate nonwhiting trawl quota, which is currently set at 2.7%
- Now that widow rockfish are rebuilt, reallocation may be appropriate to allow increased targeting of the stock.
- The reallocation of widow rockfish may have implications for the ratio of widow to the aggregate non-whiting control limit.

Aggregate Nonwhiting Control Limit & Divestiture

Because widow rockfish was considered to be under rebuilding in 2010, the aggregate non-whiting control limit currently uses the rebuilding formula for widow to determine the 2010 OY value (§660.140 (d)(4)(i)(B).

Aggregate Nonwhiting Control Limit & Divestiture

Given widow reallocation considerations, there are options for implementing aggregate nonwhiting limit control limits:

- One option might be to apply the aggregate nonwhiting control limit for all species except widow rockfish until reallocation is finalized.
- Another option may be to delay the deadline for QS divestiture, which is currently November 30, 2015 for all species except widow rockfish.
- Another consideration could be the elimination of the Aggregate Nonwhiting Control Limit

Required Divestiture for Individual Species Control Limits

- Under current regulations, all QS owners must divest all their QS to their limits by November 30, 2015.
  - Under the best of circumstances, all QS owners would divest

- Current regulations are clear that if owners of one QS permit are over an individual species control limit by 1%, NMFS would revoke and redistribute that 1% to the remainder of the QS or IBQ owners in proportion to their QS or IBQ holdings (§ 660.140 (d)(4)(v)).

- However, the regulations do not currently describe a specific method by which NMFS would revoke and redistribute QS in the case where an individual is over their control limit across multiple permits.

  1. For example, if a person owned 5 QS permits and exceeded a species control limit by 1% across those permits, how much would NMFS revoke from each permit to get the person under the limit?

Required Divestiture for Aggregate Nonwhiting Species Control Limits (NMFS preferred approach)

- The regulations do not currently describe a specific method for NMFS to revoke and redistribute QS in the case where a business entity or individual is over the aggregate non-whiting control limit of 2.7%.

- NMFS proposes to use a proportion (Overage/total amount owned) to determine how much QS to revoke from each individual non-whiting (and non-halibut) species.
  - Currently, only 9 individuals are over their control limit for one or more species
  - Currently, only ≤3 individuals are over the 2.7% aggregate nonwhiting control limit

- Although NMFS hopes that there will not be a need to revoke QS from any QS permit owning business or individual, we thought it was important to propose our plan so that the Council has time to consider it before the divestiture deadline, November 30, 2015.

- This required divestiture method could be added to the widow reallocation rulemaking.

Input Requested by NMFS from QS Owners

- NMFS would like to hear from QS owners whether proportionally revoking QS when over a limit (individual or aggregate) is appropriate

- NMFS would like to hear from QS owners whether a delay in the divestiture deadline would be appropriate

- NMFS would like to hear from QS owners whom may have already divested their non-whiting aggregate species to under 2.7%.

Questions?

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Colby Brady, NMFS, WCR
Colby.brady@noaa.gov
206-526-6117

Appendix: NMFS Preferred Required Divestiture Approach (individual species)

Individual Species Example:

A	B	C	D	E	F	G
QS Permit	**QS Percent Owned by Individual in Each Permit for Species**	**Total Overage of Individual**	**Total Owned by Individual**	**Individual Permit's Share of Total Percent Owned Across Permits (B/D)**	**Overage Amount Revoked and Redistributed by NMFS (C*E)**	**Amount Remaining Owned by Individual (B-F)**
1	2.500%	1.000%	11.000%	22.727%	0.227%	2.273%
2	1.000%	1.000%	11.000%	9.091%	0.091%	0.909%
3	3.000%	1.000%	11.000%	27.273%	0.273%	2.727%
4	0.500%	1.000%	11.000%	4.545%	0.045%	0.455%
5	4.000%	1.000%	11.000%	36.364%	0.364%	3.636%
				100.000%	1.000%	**10.000%**

Total QS% Owned by Individual Across QS Permits	11.000%
QS Control Limit for Species	**10.000%**
Amount Over Control Limit	1.000%

Widow Rockfish Divestiture Considerations

NMFS Handout to Supplement Presentation by Colby Brady

Because the control limit and divestiture issues in the trawl IFQ program are so complex, NMFS has provided additional information and calculations that may help to visualize some of the issues.

How does the Widow Rockfish QS Reallocation Consideration affect control limits and divestiture?

There are two control limits that affect the amount of quota share (QS) a person or entity can own:

- Control Limits for Individual Species: These are limits set for each species, and these are fairly straightforward to calculate. For example, the control limit for widow rockfish is 5.1%. If a permit owner has 6%, they are over the individual control limit and must divest 0.9% of widow rockfish. If an individual is an owner or partial owner across many QS permits, he or she must add up their shares across permits to see if they are under the limit.

  For example: if Joe Dragger has three QS permits: permit A has 1% of widow rockfish, permit B has 1%, and permit C has 2%, the total widow rockfish owned by this person would be 4%, and they would be under the 5.1% control limit.

	Permit A	Permit B	Permit C	Total QS Owned	Control Limit	Amount Under Limit
Widow Rockfish	1%	1%	2%	4%	5.1%	1.1%

- Aggregate Non-Whiting Control Limit: This is a total limit of 2.7% that can be owned across IFQ species, and is more restrictive than the sum of individual species limits. The limit is calculated by converting an entity's QS percentages into pounds based on the 2010 OYs, and then dividing those pounds by the total 2010 OY to convert it back to a percentage. For example, if an entity owned 3% of aggregate non-whiting pounds, they would be over the limit by 0.3% and would need to divest of some shares (of the species of their choosing) in order to get under or equal to the 2.7% limit. You can see an example entity's aggregate non-whiting control limit calculation on page 3. 2010 OYs were used to set a stable limit that would not change with the sector allocation each year (otherwise, someone who was below the limit this year could be above the limit next year if the amount of pounds for the sector decreased).

The deadline to divest of QS or IBQ in excess of the control limits is November 30, 2015. Right now, there is no trading of widow rockfish QS because the Council knew that they might reallocate widow rockfish shares. The regulations at 50 CFR 660.140(d)(4)(v) exclude widow rockfish from needing to be divested by the deadline because it cannot be traded yet. However, it is difficult for QS permit owners to calculate compliance with the aggregate non-whiting control limit because widow rockfish is a part of that calculation, and widow QS is subject to change through the reallocation consideration. See Agenda Item J.2.a, Attachment 2, Section 1.4.2 for more detail on the challenges presented by the divestiture deadline and the moratorium on trading widow.

For these reasons, the Council may want to consider:

- Applying the aggregate non-whiting control limit of 2.7% to all species except widow for the November 30, 2015 deadline
- Delaying the November 30, 2015 divestiture deadline until after the Widow Rockfish QS Reallocation Consideration is complete
- Changing or eliminating the aggregate non-whiting control limit

What are the Control Limits, and how many people are over?

QS and IBQ Control limits are accumulation limits and are the amount of QS and IBQ that a person, individually or collectively, may own or control. The table below shows the control limits as specified at 50 CFR 660.140(d)(4)(i)(C), and the number of permits and individuals (lowest level of ownership in a QS permit) that exceed each limit. These overage values were calculated using Fall 2013 ownership interest information and October 2014 QS% holdings.

IFQ Species Category	QS or IBQ Control Limit (%)	Number of QS Permits Over Limit	Number of Individuals Over Limit
Arrowtooth flounder	10.0%	0	0
Bocaccio rockfish South of 40°10' N.	13.2%	1	Less than or equal to 3
Canary rockfish	4.4%	0	Less than or equal to 3
Chilipepper rockfish South of 40°10' N.	10.0%	0	0
Cowcod South of 40°10' N.	17.7%	1	Less than or equal to 3
Darkblotched rockfish	4.5%	0	Less than or equal to 3
Dover sole	2.6%	2	Less than or equal to 3
English sole	5.0%	0	Less than or equal to 3
Lingcod N. of 40°10' N. lat.	2.5%	0	Less than or equal to 3
Lingcod S. of 40°10' N. lat.	2.5%	0	Less than or equal to 3
Longspine thornyheads North of 34°27' N.	6.0%	0	0
Minor shelf rockfish North of 40°10' N.	5.0%	0	0
Minor shelf rockfish South of 40°10' N.	9.0%	0	0
Minor slope rockfish North of 40°10' N.	5.0%	0	0
Minor slope rockfish South of 40°10' N.	6.0%	2	Less than or equal to 3
Other flatfish	10.0%	0	0
Pacific cod	12.0%	0	0
Pacific halibut (IBQ) North of 40°10' N.	5.4%	2	Less than or equal to 3
Pacific ocean perch North of 40°10' N.	4.0%	0	Less than or equal to 3
Pacific whiting	10.0%	0	Less than or equal to 3
Petrale sole	3.0%	1	Less than or equal to 3
Sablefish North of 36° N.	3.0%	1	Less than or equal to 3
Sablefish South of 36° N.	10.0%	2	Less than or equal to 3
Shortspine thornyheads North of 34°27' N.	6.0%	0	0
Shortspine thornyheads South of 34°27' N.	6.0%	2	Less than or equal to 3
Splitnose rockfish South of 40°10' N.	10.0%	0	0
Starry flounder	10.0%	1	0
Widow rockfish	5.1%	1	Less than or equal to 3
Yelloweye rockfish	5.7%	1	Less than or equal to 3
Yellowtail rockfish North of 40°10' N.	5.0%	0	Less than or equal to 3
Aggregate non-whiting groundfish species	**2.7%**	**1**	**Less than or equal to 3**

The totals in the table below show that relatively few QS permit owners or individuals (lowest level of ownership in a QS permit) currently exceed control limits for individual species, and an even smaller amount exceed the aggregate non-whiting control limit of 2.7%. We also have shown the number of QS permit owners who are closest to reaching the aggregate non-whiting control limit without exceeding it. Again, these overage values were calculated using Fall 2013 ownership interest information and October 2014 QS% holdings.

Total QS permit owners or individuals over control limit for one or more species	9
Total QS permit owners or individuals over 2.7% aggregate non-whiting control limit	Less than or equal to 3
Total QS permit owners or individuals within 0.5% of 2.7% aggregate non-whiting control limit	Less than or equal to 3
Total QS permit owners or individuals within 1.0% of 2.7% aggregate non-whiting control limit	5

How is the Aggregate Non-Whiting Control Limit Calculated?

Current regulations (at 50 CFR 660.140(d)(4)(i)(B)) specify a method for calculating the 2.7% control limit for non-whiting groundfish species using 2010 OYs. Below you can see a calculation for an example entity who owns a QS permit. We set this example entity's QS holdings equal to the QS and IBQ control limits, above (page 2), but you could take this same table and insert any QS percentages. You can see that the aggregate non-whiting control limit is more constraining than the sum of all individual species QS and IBQ control limits.

IFQ Species	2010 Shorebased Trawl Allocation (lbs)	An Example Entity's QS% - Here Set Equal to Control Limits	Conversion of Individual Entity's QS to Pounds
Arrowtooth flounder	21,156,441	10.000%	2,115,644
Bocaccio rockfish South of 40°10' N.	113,287	13.200%	14,954
Canary rockfish	34,294	4.400%	1,509
Chilipepper rockfish South of 40°10' N.	4,046,034	10.000%	404,603
Cowcod South of 40°10' N.	4,409	17.700%	780
Darkblotched rockfish	655,071	4.500%	29,478
Dover sole	34,546,436	2.600%	898,207
English sole	20,398,822	5.000%	1,019,941
Lingcod North of 40°10' N.	3,494,084	2.500%	87,352
Lingcod South of 40°10' N.	1,283,443	2.500%	32,086
Longspine thornyheads North of 34°27' N.	4,544,278	6.000%	272,657
Minor shelf rockfish North of 40°10' N.	543,925	5.000%	27,196
Minor shelf rockfish South of 40°10' N.	133,526	9.000%	12,017
Minor slope rockfish North of 40°10' N.	1,950,209	5.000%	97,510
Minor slope rockfish South of 40°10' N.	869,459	6.000%	52,168
Other flatfish	9,646,547	10.000%	964,655
Pacific cod	3,340,003	12.000%	400,800
Pacific ocean perch North of 40°10' N.	377,577	4.000%	15,103
Petrale sole	2,502,247	3.000%	75,067
Sablefish North of 36° N.	6,606,862	3.000%	198,206
Sablefish South of 36° N.	1,164,834	10.000%	116,483
Shortspine thornyheads North of 34°27' N.	3,288,084	6.000%	197,285
Shortspine thornyheads South of 34°27' N.	110,231	6.000%	6,614
Splitnose rockfish South of 40°10' N.	965,514	10.000%	96,551
Starry flounder	1,176,166	10.000%	117,617
Widow rockfish	713,178	5.100%	36,372
Yelloweye rockfish	406	5.700%	23
Yellowtail rockfish North of 40°10' N.	8,189,203	5.000%	409,460
Total Non-Whiting Non-Halibut QP Sum:	**131,854,570**	Example Entity's QP Sum:	7,700,338
		Example Entity's Aggregate Non-Whiting Percentage:	5.840%
		Amount Over Limit (2.7%):	3.140%

How will NMFS revoke QS if someone over a limit does not divest?

Right now, the regulations at 50 CFR 660.140 (d)(4)(v) make it clear that if a QS permit is in excess of a control limit after the divestiture deadline, NMFS will revoke the QS or IBQ in excess of the limit and redistribute it to all other QS permit owners in proportion to their holdings. For example, the control limit for Pacific whiting is 10%. If a QS permit owner had 11% of Pacific whiting, NMFS would revoke 1% and redistribute it to all other QS permit owners.

However, the regulations do not currently describe a method for NMFS to revoke shares in two situations:

1. When a business entity or individual person is over an individual species control limit across several QS permits
2. When a business entity or individual person is over the aggregate non-whiting control limit

NMFS hopes that all QS permit owners and individuals will divest of any QS in excess of the control limits, so that no QS will need to be revoked. However, in case there is a need to revoke, NMFS would like to propose a proportional method to do so. This method is described in greater detail below, and NMFS is seeking feedback from the Council on whether this method is appropriate.

If an entity is over an individual species control limit across several QS permits, NMFS proposes to revoke QS in proportion to the amount owned by the entity in each permit. In the example below, NMFS would first calculate the total QS owned by the entity across each of their five permits to see if they were over the limit. In this case, they own 11% across permits, which is 1% over the 10% limit. Second, NMFS would determine how much each permit is contributing to the total amount owned. Below, in column C, this permit owner has 11% total QS for this species, and 18.182% of this is coming from permit 1, 9.091% is coming from permit 2, etc. Third, NMFS would calculate how much each permit is contributing to the 1% overage proportionally, to figure out how much to revoke from each permit. This permit owner would have 1% QS revoked across permits, and be left with 10% QS remaining across permits.

A	B	C	D	E
QS Permit	QS Percent Owned by Individual in Each Permit for Species X	Individual Permit's Share of Total Percent Owned Across Permits = [B / Total (11%)]	Amount Revoked and Redistributed by NMFS = [C x Overage (1%)]	Amount Remaining Owned by Individual = (B-D)
1	2%	18.182%	0.182%	1.818%
2	1%	9.091%	0.091%	0.909%
3	3%	27.273%	0.273%	2.727%
4	1%	9.091%	0.091%	0.909%
5	4%	36.364%	0.364%	3.636%
Total QS% Owned by Individual Across QS Permits	11%		**1.000%**	**10.000%**
QS Control Limit for Species	10%			
Amount Over Control Limit	1%			

If an entity is over the aggregate non-whiting control limit, NMFS proposes to revoke QS in proportion to the amount each species is contributing to the overage. This would bring the QS permit owner's aggregate non-whiting holdings to an amount equal to the aggregate non-whiting control limit.

A	B	C	D	E	F	G	H
IFQ Species	2010 Shorebased Trawl Allocation (lbs)	An Example Entity's QS% - Here Set Equal to Control Limits	Conversion of Example Entity's QS to Pounds	Overage/Total Owned = (3.140% / 5.840%)	Amount Revoked and Redistributed by NMFS = (C*E)	Amount Remaining Owned by Example Entity = (C-G)	Conversion of Example Entity's Remaining QS to Pounds
Arrowtooth flounder	21,156,441	10.000%	2,115,644	53.767%	5.377%	4.623%	978,119
Bocaccio rockfish South of 40°10' N.	113,287	13.200%	14,954	53.767%	7.097%	6.103%	6,914
Canary rockfish	34,294	4.400%	1,509	53.767%	2.366%	2.034%	698
Chilipepper rockfish South of 40°10' N.	4,046,034	10.000%	404,603	53.767%	5.377%	4.623%	187,059
Cowcod South of 40°10' N.	4,409	17.700%	780	53.767%	9.517%	8.183%	361
Darkblotched rockfish	655,071	4.500%	29,478	53.767%	2.420%	2.080%	13,629
Dover sole	34,546,436	2.600%	898,207	53.767%	1.398%	1.202%	415,265
English sole	20,398,822	5.000%	1,019,941	53.767%	2.688%	2.312%	471,546
Lingcod North of 40°10' N.	3,494,084	2.500%	87,352	53.767%	1.344%	1.156%	40,385
Lingcod South of 40°10' N.	1,283,443	2.500%	32,086	53.767%	1.344%	1.156%	14,834
Longspine thornyheads North of 34°27' N.	4,544,278	6.000%	272,657	53.767%	3.226%	2.774%	126,057
Minor shelf rockfish North of 40°10' N.	543,925	5.000%	27,196	53.767%	2.688%	2.312%	12,574
Minor shelf rockfish South of 40°10' N.	133,526	9.000%	12,017	53.767%	4.839%	4.161%	5,556
Minor slope rockfish North of 40°10' N.	1,950,209	5.000%	97,510	53.767%	2.688%	2.312%	45,082
Minor slope rockfish South of 40°10' N.	869,459	6.000%	52,168	53.767%	3.226%	2.774%	24,118
Other flatfish	9,646,547	10.000%	964,655	53.767%	5.377%	4.623%	445,986
Pacific cod	3,340,003	12.000%	400,800	53.767%	6.452%	5.548%	185,301
Pacific ocean perch North of 40°10' N.	377,577	4.000%	15,103	53.767%	2.151%	1.849%	6,983
Petrale sole	2,502,247	3.000%	75,067	53.767%	1.613%	1.387%	34,706
Sablefish North of 36° N.	6,606,862	3.000%	198,206	53.767%	1.613%	1.387%	91,636
Sablefish South of 36° N.	1,164,834	10.000%	116,483	53.767%	5.377%	4.623%	53,853
Shortspine thornyheads North of 34°27' N.	3,288,084	6.000%	197,285	53.767%	3.226%	2.774%	91,210
Shortspine thornyheads South of 34°27' N.	110,231	6.000%	6,614	53.767%	3.226%	2.774%	3,058
Splitnose rockfish South of 40°10' N.	965,514	10.000%	96,551	53.767%	5.377%	4.623%	44,638
Starry flounder	1,176,166	10.000%	117,617	53.767%	5.377%	4.623%	54,377
Widow rockfish	713,178	5.100%	36,372	53.767%	2.742%	2.358%	16,816
Yelloweye rockfish	406	5.700%	23	53.767%	3.065%	2.635%	11
Yellowtail rockfish North of 40°10' N.	8,189,203	5.000%	409,460	53.767%	2.688%	2.312%	189,304
Total Non-Whiting Non-Halibut QP Sum:	131,854,570	Example Entity's QP Sum:	7,700,338			Example Entity's NEW QP Sum:	3,560,075
		Example Entity's Aggregate Non-Whiting Percentage:	5.840%			Example Entity's NEW Aggregate Non-Whiting Percentage:	2.700%
		Amount Over Limit (2.7%)	3.140%			NEW Amount Over Limit (2.7%)	0.000%

Pacific Seafood

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Ms. Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: WIDOW ROCKFISH REALLOCATION AND DIVESTITURE ISSUES

Dear Chair Lowman,

We write on behalf of Pacific Seafood to provide comments for the Council's consideration of widow rockfish (widow) reallocation and associated issues with the scheduled divestiture of aggregate non-whiting groundfish quota share (QS) holdings under Agenda Item J.2.

For the reasons detailed below, we urge the Council to (1) proceed with widow reallocation in accordance with either one of the two strawman alternatives four or five (Agenda Item J.2.a, Attachment 2) as previously endorsed by the GAP in November 2011, (2) delay divestiture for the aggregate non-whiting control limit pending the upcoming five-year review of the IFQ program, and (3) proceed with a formal rulemaking for revoking forfeited QS over the control limits.

1. <u>Widow Should be Reallocated per Strawman Alternatives Four or Five</u>

Now that widow is rebuilt, there is a need to address the increased fishing opportunities, especially for those who developed and are looking to participate in directed widow fishery. Historically, widow was a large revenue contributor to harvesters and processors and enjoyed good market reception. As the output and profitability of the present IFQ West Coast non-whiting fishery were recently declared to be a disaster by prominent members of the fishing community, the widow reallocation could be an important piece of the economic "stimulus package" necessary to jump start the IFQ non-whiting fishery. Strawman alternatives four and five presented in Agenda Item J.2. a, Attachment 2 achieve the goals and objectives of the trawl rationalization program and are most fair and equitable when compared to the other proposed alternatives.

2. Delay Divestiture for the Aggregate Non-whiting Control Limit Pending the Upcoming Five-year Review of the IFQ Program

When the Council created the trawl catch share program, both the individual species and the aggregate non-whiting QS control limits were established. The aggregate non-whiting control limit of 2.7% places a significant restriction on the QS holdings in the sense that no QS holder will be able to maximize his/her holdings for individual species (i.e. have QS up to individual species limits) if they have a handful of non-whiting species with large ACLs in their QS portfolio. As the Council and NMFS recognized, the widow QS reallocation creates significant problems pertaining to the current aggregate non-whiting control limit and divestiture requirement as highlighted below.

- Widow reallocation may change an entity's aggregate non-whiting QS holdings. Some QS holders might be pushed over the 2.7% control limit while others might find themselves under the limit after the widow is reallocated (Agenda Item J.2, Situation Summary, pg. 2). It is somewhat complicated to estimate whether an entity might be over or under the 2.7% control limit and by how much exactly after the widow reallocation. This is particularly true in more complex cases where an entity owns and/or controls and/or has an ownership and/or controlling interest in multiple permits and QS accounts. The effect of the widow reallocation on the aggregate non-whiting QS holdings might be small in simple situations where for example an individual owns one permit and one QS account associated with that permit, as stated in Agenda Item J.2 a, Attachment 2 (pg. 11, paragraph 2). This may not prove to be the case in circumstances where an entity fully or partially owns and/or controls multiple permits and QS accounts. In addition, the rebuilding formula was used for widow and other species that were overfished when the initial allocation was implemented to determine a person's aggregate non-whiting QS holdings. Given the possibility of changing the formula for widow and/or the method for calculating the aggregate non-whiting control limit and entities' aggregate holdings, the widow reallocation effect on divestiture to meet the aggregate control limit is indeed unclear as stated in NMFS report (Agenda Item J.2.b).
- Widow reallocation affects the ability to decide which species and how much of it to divest in order to meet the 2.7% aggregate non-whiting control limit. Not understanding precisely, and well in advance of a reallocation, how much additional widow an entity may or may not receive will result in ill-informed decision making regarding divestiture.
- The moratorium on widow QS trading not only prevents any QS holder divesting down to 5.1% widow control limit but also forces the QS holders to undertake divestiture decisions that might not be the most optimal choice for their business operations.
- Widow reallocation scoping document (Agenda Item J.2.a, Attachment 2) suggests that excluding the widow from the aggregate non-whiting control limit might be one of the possible solutions for the issues created by the widow reallocation. It is

important to note here that the issues with the current IFQ control limits and divestiture regulations arising from the widow QS reallocation will be the same or even more complicated for other rebuilding species once they are declared rebuilt. Furthermore, the same issues arise each time the composition of species in four complexes managed by IFQs is changed. While interesting, the idea of excluding the widow from the aggregate non-whiting limit does not resolve the problem pertaining to aggregate QS holdings. Once the widow is reallocated and included back into the aggregate non-whiting limit equation, it may change an entity's aggregate holdings. Simply excluding the widow from the aggregate non-whiting calculation not only does not solve the issues currently at hand but it does not resolve the overall problem of dealing with the other potential reallocation cases mentioned above. Widow reallocation might actually be the most straightforward since the current widow QS can be traced directly back to the permits for which the QS was initially issued due to the widow trading moratorium (Agenda Item J.2.a, Attachment 2, pg. 5, last paragraph). This raises the question of whether the future reallocation of the other currently rebuilding species for which there is no trading moratorium is feasible.

Under the "Implementation Scenario 1" (Agenda Item J.2.a, Attachment 1), divestiture for the aggregate non-whiting control limit would not be delayed if the widow reallocation can be completed and implemented by October 2015 and assuming the QS holders know their expected widow QS reallocations well in advance of divestiture deadline. Even if the widow reallocation is implemented by October 2015, one month is not a reasonable amount of time to complete all divestiture transactions. This scenario would be ideal for those individuals looking to "pick off" non-widow QS from the individuals being forced to "sell-off" in the one month period. Sellers however, would suffer having their trading opportunities and negotiation power severely diminished. Furthermore, the assumption that QS holders would know their expected widow QS reallocations well in advance is a questionable assumption. In order to somewhat accurately estimate the widow QS reallocation, quota holders would need to know not only the history of their permit(s) but also the history of *all* other permits and exactly which three years will be dropped for each of the permits. It is our belief that this will be a Council/NMFS staff task that will need to be accomplished well in advance of October 2015 to meet November 2015 divestiture deadline. It would seem that the scope of this work would force staff to delay work on almost all other important issues.

At September 2014 Council meeting (Agenda Item J.1.d, Public Comment), we submitted an economic analysis comparing the West Coast and British Columbia (BC) groundfish catch share programs. We noted that the single biggest element that is different in the better performing BC program is "built in flexibility to maximize economic results". This is achieved, among other things, by not having the aggregate non-whiting control limit but rather only individual species control limits. The Council should evaluate the need for the aggregate non-whiting control limit during the five-year IFQ program review. The use of individual species control limits alone without the aggregate non-whiting limit allows for a more flexible program which could lead to (among other things) target species specialization, better economic performance for the whole sector and coastal communities, more consistent market supply of the West Coast groundfish, and less problems with potential future reallocations.

Postponing divestiture for the aggregate non-whiting control limit will not harm anyone, but *NOT* postponing it will complicate the widow QS reallocation and cause a burden to the non-whiting IFQ program which is already struggling. We believe that without the removal of the aggregate non-whiting control limit the same problems we are dealing with now will occur again when other species are rebuilt, become overfished or are moved in and out of the complexes.

3. The Council Should Proceed with a Formal Rulemaking for Revoking Forfeited QS over the Control Limits

The aggregate non-whiting QS control limit is a significant constraint on the regulatory framework and general ability of the West Coast IFQ program to reach its economic potential. For this reason, we believe the need for the aggregate non-whiting control limit should be thoroughly evaluated at the five-year program review to see whether this limit is necessary for the West Coast IFQ program to meet its objectives. However, if it is the Council's conviction to push ahead forced divestiture for individual species and/or the aggregate control limits, as presently scheduled, then it should go through a formal rule making process that allows for public input and analysis.

Conclusion

Pacific Seafood has invested heavily in our infrastructure to support the fisheries home ported in our communities on the West Coast. We employ a great number of individuals in our coastal plants, the majority of whom are dependent on the IFQ non-whiting groundfish for employment. We believe a great opportunity exists to increase our harvest within the ACL constraints. This would create higher employment, help rebuild lost market share, and increase the revenues from an underutilized public resource. We also believe that a key factor to accomplish this under the present program is to remove some of the regulatory restrictions that are preventing us from a full launch. However, we cannot assume that regulatory relief alone is enough to provide the engine and fuel for the next steps necessary to reach the program's economic goals and objectives. The markets to purchase our groundfish products must be reinvigorated as well. This will require an effort on all our parts; but as much as anything else a new spirit of cooperation. With the advent of MSC certification we have a valuable tool to aid us but it will require a "go to market" strategy, and consistency of delivery as well. Most of us in the industry have faced daunting challenges in our past and found solutions. The challenges we face now are unique but they can be solved. The stakes are simply too high not to move forward.

Mike Okoniewski, Alaska Operations Manager/Fisheries Policy and Management
Ana Kujundzic, Economist
Pacific Seafood Group

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1715 Southwind
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Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 Ambassador Place, Suite 101
Portland, OR 97220

RE: Widow Rockfish Reallocation

Dear Chair Lowman & Council Members,

My name is Paul Kujala and I am a life-long trawler from Warrenton,OR. I was involved in the development of the trawl ITQ program and continue to fish non-whiting groundfish year-round and I'm engaged in the Council process. I am writing to you today because I do not believe that the current list of reallocation alternatives presented in Attachment 2 provides for a reasonable range as required by the National Environmental Policy Act (NEPA). Further Magnuson Act requires consideration of several factors when making allocations. None of the alternatives truly consider:

Current participation
Employment in the harvesting and processing sector
Investments in and dependence on the fishery

To meet the objectives of Amendment 20 as well as MSA, I believe it is necessary to include more recent participation than 2003. And while Alternative 3 includes the years 2004-2010, there was no directed fishery for widow rockfish in those years. So essentially, this alternative is only further representing more bycatch, which is not the intent of reallocation. If the Council is only interested in representative bycatch harvest than you should stick with the status quo and avoid all the workload (and controversy) associated with reallocation because status quo does just that – represents bycatch.

Amendment 20, however, is about rationalizing a fishery to bring the greatest benefit to the stakeholders, communities and nation. I do believe the council should consider activity in more recent years than 2003 or identify other reasonable calculations of recency and dependence.

After all, more years of fishing has passed since the window years than the actual window years themselves.

So the question becomes "How do we allocate on history during a period where there was no directed Widow fishery?"

Widow is a non-whiting species, so the best way to model dependence on the non-whiting groundfish trawl fishery is to use gross revenue of permits per year (non-whiting groundfish trawl) as a proxy for widow. This makes since because there is no recent history for a directed widow fishery. The gross receipts of deliveries for non-whiting trawl will show dependence on the current groundfish fishery. I believe this is the closest representation we can get to fairly allocating on directed widow catch.

Utilizng this type of formula has several advantages:

1) Widow was rebuilding and not targeted during these years being considered. Therefore no one is being rewarded for either fishing "dirty" or increasing effort after the window years just to build history in hopes of receiving more quota.
2) This is still in keeping with the rationale of the initial allocations, just using a substitute for information that we do not currently have (and never will).
3) This formula will make sense moving forward in the future when additional species come out of rebuilding plans
4) It allows the trawlers that have fished and continue to fish to share in some of the benefits of the hard work and sacrifice they have done to keep infrastructure, jobs, and markets going throughout the tough times

For these reasons, and to meet the Magnuson Act required considerations when allocating quota, I am advocating a for an additional alternative. **Alternative 3a** is similar Alt. 3, but that includes gross reciepts from 2003-2010 as a substitute for direct history.

Please add the additional options for analysis:

Alternative 3a: Instead of landings history during the window period use gross trawl (non-whiting) groundfish landings

Thank you for your consideration.

Sincerely,

Paul Kujala

INITIAL BLACKGILL ROCKFISH REALLOCATION CONSIDERATION

The Council scheduled consideration of a process to restructure the Slope Rockfish complex south of 40°10' N latitude by removing blackgill rockfish from the complex and reallocating the harvestable surplus of both blackgill rockfish and the remaining stocks in the southern Slope Rockfish complex. This initial discussion is to consider background material towards a goal of identifying what would be necessary to continue consideration through to a final regulatory process. Final prioritizing of a blackgill rockfish reallocation process with other competing workload would occur under Agenda Item C.9, future meeting planning, as appropriate.

The most recent assessment of blackgill rockfish in 2011 indicated the stock was in the precautionary zone with a 30 percent depletion rate at the start of 2011. The Council and NMFS responded by specifying very low cumulative landing limits for the non-trawl sectors to reduce any incentive to target blackgill rockfish. Blackgill rockfish landings in the non-trawl sectors have been at a reduced level since 2013, when the regulation was implemented, indicate targeting behavior in those sectors was effectively reduced; however, targeting of blackgill rockfish in the trawl individual fishing quota fishery continues. This is because trawl quotas are managed at the complex level (i.e., the southern Slope Rockfish complex) and not the individual stock level. Blackgill rockfish would have to be removed from the complex and managed separately as a quota species to effectively reduce trawl targeting. If this action is to be considered, the Council should also consider a different trawl:non-trawl allocation of blackgill rockfish and the remaining stocks in the southern Slope Rockfish complex. The original Amendment 21 allocation of the southern Slope Rockfish (63 percent trawl, 37 percent non-trawl) was influenced by the management of blackgill rockfish in the complex. Blackgill rockfish are readily caught by both trawl and non-trawl gears while the other stocks in the complex are more trawl-dominant. An allocation of blackgill rockfish alone based on catch history would likely result in a higher non-trawl allocation than the 37 percent allocation currently specified for the southern Slope Rockfish complex. Likewise, an allocation of the southern Slope Rockfish complex with blackgill rockfish removed would likely result in a higher trawl allocation than 63 percent if based on catch history. Attachment 1 details the catch history by sector of blackgill rockfish and the other stocks currently managed in the southern Slope Rockfish complex.

The Council should consider the advice of its advisors and the public, as well as the priority of this management action relative to the other workload items being considered. The Council should consider what would be necessary to complete a regulatory process and indicate when they would next like to see further analysis on this issue under future workload planning if it is agreed this is a management priority.

Council Action:

Identify, prioritize, and schedule issues for changes in the blackgill rockfish allocation from restructuring the south of 40°10’ Slope Rockfish complex.

Reference Materials:

1. Agenda Item J.3.a, Attachment 1: Reallocation of Blackgill Rockfish South of 40°10’ N Latitude.

Agenda Order:

a. Agenda Item Overview — John DeVore
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Identify, Prioritize, and Schedule Issues for Changes in the Blackgill Rockfish Allocation from Restructuring the South of 40°10’ Slope Rockfish Complex

PFMC
10/28/14

REALLOCATION OF BLACKGILL ROCKFISH SOUTH OF 40°10' N LATITUDE

Introduction

This document provides background information and a summary of data to inform Council decision-making on reallocation of blackgill rockfish (south of 40°10' N. latitude) between trawl and non-trawl sectors. Reallocation of blackgill rockfish was a California Department of Fish and Wildlife and industry-recommended priority at the September 2014 meeting given its importance to southern California non-trawl fleets. Reallocating blackgill rockfish would require removing it from the Slope Rockfish complex south of 40°10' N. latitude and issuing stock-specific specifications (overfishing limits, acceptable biological catches, and annual catch limits). This action would require an amendment to the Pacific Coast Groundfish Fishery Management Plan. The Council may also want to consider whether the current Amendment 21 allocation for the Slope Rockfish complex should be re-evaluated as a result of removing blackgill rockfish.

Background

Long-term formal allocations were made under Amendment 21 to support the Amendment 20 trawl rationalization program (hereafter referred to as the individual fishing quota (IFQ) program). These formal allocations were made to provide more certainty to the various sectors by reducing the risk that the actions of one sector might negatively impact the others. Providing for this certainty was important for the IFQ program because it enabled fishery participants to make long range planning decisions based on the allocation of harvest privileges. Long-term formal allocations were made for trawl-dominant stocks/complexes and some stocks utilized by many sectors (e.g., lingcod).

Blackgill rockfish was one of many species formally allocated under Amendment 21. Blackgill, a slope rockfish species, was allocated within the slope rockfish complexes north and south of 40°10' N. latitude based on the average 2003-2005 sector total catch percentage[1]. The trawl and non-trawl sectors were allocated 63 percent and 37 percent of the slope rockfish fishery harvest guideline south of 40°10' N. latitude, respectively. Although blackgill rockfish was historically targeted by the non-trawl sector, it was allocated according to the Amendment 21 allocations because it is managed within the slope rockfish complex.

Management History

The Slope Rockfish complex south of 40°10' N. latitude is composed of the following species: aurora rockfish (*Sebastes aurora*), bank rockfish (*S. rufus*), blackgill rockfish (*S. melanostomus*), blackspotted rockfish (*S. melanostictus*), Pacific ocean perch (*S. alutus*), redbanded rockfish (*S. babcocki*), rougheye rockfish (*S. aleutianus*), sharpchin rockfish (*S. zacentrus*), shortraker rockfish (*S. borealis*), and yellowmouth rockfish (*S. reedi*).

Historically, management of slope rockfish has generally not been to the species level, but rather as a part of the "Sebastes complex". In 2000, the "Sebastes complex" was split into slope, shelf, and nearshore complexes which were stratified north and south of 40°10' N. latitude (SAFE

[1] Other alternatives considered under Amendment 21 included: 1995-2005 sector landed catch percentage and 2003 to 2005 sector total catch percentages with 10% higher non-trawl allocation for select species.

document: Status of the Pacific Coast Groundfish Fishery through 2000 and Recommended Acceptable Biological Catches for 2001, http://www.pcouncil.org/wp-content/uploads/SAFE_October_2000.pdf). Annual catch limits were established for the slope rockfish complexes starting in 2005 (Table 1).

Slope rockfish were managed under bi-monthly trip limits for both the trawl and non-trawl sectors. Trip limits were set at the complex level and the entire trip limit could have been comprised of a single species.

The IFQ program was implemented in 2011. This changed how the trawl fishery operated by allowing participants the flexibility to decide how and when to fish. The gear switching provision under this program also allowed species taken with IFQ to be caught using non-trawl gears. Bi-monthly cumulative limits remain in effect for the commercial non-trawl sectors. Recreational regulations provide for a 10-fish bag limit.

In 2013, a harvest guideline for blackgill rockfish south of 40°10' N. latitude was implemented in response to new stock assessment results which indicated the stock was in the precautionary zone and reductions to harvest levels were needed (see stock status and current management).

Table 1. Optimum yields, annual catch limits and harvest guideline (mt) for the Slope Rockfish complex and blackgill rockfish south of 40°10' N. latitude, 2005-2013.

Stock	2005 OY	2006 OY	2007 OY	2008 OY	2009 OY	2010 OY	2011 ACL	2012 ACL	2013 ACL/HG
Slope Rockfish	639	639	626	626	626	626	626	626	618
Blackgill Rockfish									106

Stock Status

With the exception of bank rockfish, which was assessed in 2000 (Piner et al. 2000), blackgill rockfish, which was last assessed in 2011 (Field and Pearson 2011), and rougheye rockfish, which was assessed in 2013, none of the southern slope rockfish stocks have been assessed. The most recent blackgill rockfish stock assessment, conducted for the stock south of 40°10' N. latitude (Field and Pearson 2011) estimated that it was below target with a depletion of 30 percent of unfished biomass at the start of 2011, which places this stock in the precautionary zone.

Given the change in the perception of stock status and the need to reduce mortality, the Council recommended to continue managing this stock within the southern Slope Rockfish complex and established a harvest guideline in 2013 reflecting the recent stock assessment results (Table 1). A sorting requirement was also implemented at the same time to improve inseason tracking of blackgill rockfish in all sectors.

Current Management

Although blackgill rockfish is managed within the slope rockfish complex, it must be individually sorted and total mortality is counted against its harvest guideline. In 2013, management measures were implemented in the non-trawl sector to ensure that mortality remains within allowable levels informed by the recent stock assessment.

In the non-trawl sector, a blackgill rockfish specific sub-trip limit was implemented in the limited entry and open access sectors within the aggregate slope rockfish bi-monthly limits. The intent of the sub-trip limits was to reduce targeting and keep mortality within the non-trawl allocation. Although blackgill rockfish had been a target for the non-trawl sector, low landings indicate that targeting has essentially been eliminated due to the reduced sub-trip limits.

In the IFQ fishery, landings and discards of blackgill rockfish are counted against the southern slope rockfish quota[2]. Because blackgill rockfish does not have its own quota, it is difficult to eliminate targeting. Any changes to management measures to reduce targeting of blackgill rockfish in the IFQ fishery under the current management framework would have to be applied to all sectors and would severely disrupt fishing for all sectors. For example, if one wanted to reduce blackgill targeting by the trawl sector under the current management framework, either the southern Slope Rockfish complex ACL would have to be significantly reduced and/or the trawl and non-trawl RCAs may need to extend much further offshore (blackgill are found in depths greater than 250 fm and are one of the deepest rockfish). Given the inability to effectively reduce targeting and to avoid unnecessary disruptions to the trawl sector, management measures have not been implemented in the IFQ fishery for blackgill rockfish. Recent landings data indicate that targeting still continues in this sector.

Summary of Data

The data considered under Amendment 21 has been updated with recent years' catches by sector and included within this summary to facilitate Council discussions and future deliberations. For the purposes of this analysis the trawl sector catches include landings taken with a limited entry trawl permit (including those taken in the IFQ fishery under gear switching); the non-trawl sector catches include landings made by limited entry and open access fixed gear fleets using hook-and-line, traps, gillnet, etc. Because many slope rockfish reside outside the allowable depths for the recreational sector, take of these species is minimal and therefore not included in this summary.

Between 1995 and 2013, vessels in the non-trawl sector accounted for 55.5 percent of the blackgill rockfish landings (Table 2). After implementation of the IFQ program, the non-trawl sector accounted for 62.8 percent of blackgill landings. Implementation of the harvest guideline in 2013 accounted for the steep decline in non-trawl landings. Had Amendment 21 criteria (2003-2005) been applied to blackgill rockfish separately at the time, the trawl sector would have received 43.7 percent; the non-trawl sector, 56.3 percent.

[2] IFQ can only be issued based on an ACL, not a harvest guideline.

Table 2. Landings of blackgill rockfish (south of 40°10' N. latitude) by sector and year, 1995-2013. Shaded cells represent post trawl rationalization years. (Note: 1995-2001 and 2013 are PacFIN data (table vdrfd) and 2002-2012 are WCGOP data; Data sources: PacFIN extract on 10/6/2014, WCGOP from GMMultiYr_DataProduct_122313_wPivotTables_Final.xlsx).

Year	Trawl	Non-trawl	Total
1995	128.4	218.9	347.3
1996	152.7	210.9	363.6
1997	130.2	139.6	269.8
1998	114.7	113.1	227.8
1999	27.6	24.2	51.8
2000	53.2	32.9	86.1
2001	90.1	39.3	129.4
2002	61.7	77.9	139.5
2003	54.4	133.8	188.2
2004	79.2	70.4	149.6
2005	51.5	36.1	87.5
2006	35.7	57.4	93.1
2007	25.5	22.2	47.7
2008	37.5	36.2	73.7
2009	53.2	80.2	133.4
2010	61.2	90.1	151.2
2011	15.9	131.2	147.1
2012	78.8	112.4	191.2
2013	54.7	18.3	73.0
Total	1,306.1	1,645.2	2,951.3

Between 1995 and 2013, vessels in the trawl sector accounted for 87.1 percent of the slope rockfish landings if blackgill catches were excluded (Table 3). After implementation of the IFQ program, the trawl sector accounted for 81.9 percent of slope rockfish landings. If the years used in Amendment 21 (2003-2005) had been applied to slope rockfish with blackgill rockfish removed, the trawl sector would have received 83.0 percent; the non-trawl sector, 17.0 percent.

Table 3. Landings of slope rockfish excluding blackgill (south of 40°10' N. latitude) by sector and year, 1995-2013. Shaded cells represent years post trawl rationalization program. (Note: 1995-2001 and 2013 are PacFIN data (table vdrfd) and 2002-2012 are WCGOP data; Data sources: PacFIN extract on 10/6/2014, WCGOP from GMMultiYr_DataProduct_122313_wPivotTables_Final.xlsx).

Year	Trawl	Non-trawl	Total
1995	483.4	115.6	599.0
1996	645.7	51.6	697.3
1997	784.3	45.4	829.7
1998	608.2	162.8	771.0
1999	68.8	10.3	79.1
2000	134.5	21.6	156.1
2001	154.8	21.2	176.0
2002	281.4	49.9	331.2
2003	129.1	27.2	156.4
2004	157.0	31.2	188.2
2005	59.3	20.8	80.2
2006	54.7	24.2	78.9
2007	55.0	13.4	68.3
2008	99.6	4.7	104.3
2009	68.1	12.7	80.9
2010	18.1	3.3	21.4
2011	35.2	3.8	39.0
2012	39.7	14.3	54.0
2013	54.9	11.6	66.5
Total	3,931.8	645.6	4,577.4

Table 4 summarizes landings of individual species in the southern Slope Rockfish complex for the period 1995 through 2013. During this time slope rockfish landings were dominated by two species: bank and blackgill rockfish (39.9 percent and 38.2 percent, respectively). The top species landed in this complex were bank rockfish, blackgill rockfish, darkblotched rockfish, and aurora rockfish. These species, with the exception of blackgill rockfish, are primarily caught using trawl gear. Blackgill rockfish are the most significant target species for the non-trawl sectors of those managed in the southern Slope Rockfish complex.

Table 4. Summary of sector landings for species comprising the southern Slope Rockfish complex compared to total southern Slope Rockfish complex landings from 1995-2013. (Note: Data are combined: 1995-2001 and 2013 from PacFIN (table vdrfd) and 2002-2012 from WCGOP; Data sources: PacFIN extract on 10/6/2014, WCGOP from GMMultiYr_DataProduct_122313_wPivotTables_Final.xlsx).

Species	Trawl	Non-trawl	Total	% trawl	% Non-trawl	% Total Slope
Aurora rockfish	423.9	22.4	446.3	95.0%	5.0%	5.9%
Bank rockfish	2,579.5	465.7	3,045.2	84.7%	15.3%	40.5%
Blackgill rockfish	1,306.1	1,637.7	2,943.9	44.4%	55.6%	39.1%
Blackspotted rockfish	0.1	9.1	9.2	0.6%	99.4%	0.1%
Darkblotched rockfish	724.6	15.5	740.1	97.9%	2.1%	9.8%
Pacific ocean perch	15.8	0.9	16.7	94.7%	5.3%	0.2%
Redbanded rockfish	13.5	12.0	25.5	53.0%	47.0%	0.3%
Rougheye rockfish	3.7	16.6	20.3	18.1%	81.9%	0.3%
Sharpchin rockfish	136.8	1.3	138.2	99.1%	0.9%	1.8%
Shortraker rockfish	8.5	0.4	8.9	95.4%	4.6%	0.1%
Yellowmouth rockfish	0.7	0.1	0.8	87.5%	12.5%	0.0%
Unspecified slope rockfish	47.8	78.2	126.1	38.0%	62.0%	1.7%
	5,261.0	2,260.0	7,521.0			100.0%

* Unspecified slope rockfish groups are combined and represent unsampled landings; species composition adjustments have not been applied.

The following tables summarize landings and discards by sector for blackgill rockfish and the slope rockfish complex of 40°10' N. latitude, from 2002 to 2013 (Table 5 and Table 6).

West Coast Groundfish Observer Program data indicate that landings of blackgill rockfish have been variable in both sectors over the years (Table 5). In the non-trawl sector, landings range from 21.7 mt to 129.2 mt; in the trawl sector, they range from 14.2 mt to 79.2 mt. After implementation of the IFQ program, landings increased in the non-trawl sector to some of the highest during that entire time period. During that same time landings in the trawl sector decreased and then increased somewhat but were still less than the non-trawl sector. Discards in the non-trawl sector were relatively low for all years (3.3 percent; Table 6); after IFQ implementation discards increased slightly to 6 percent. Discards in the trawl sector have been low, approximately two percent for all years); after IFQ implementation, discards were less than one percent.

Similar to blackgill rockfish, slope rockfish landings have also been variable in both sectors (Table 5). In the non-trawl sector, landings were low and ranged from 3.1 mt to 12.9 mt; trawl sector landings were more variable and ranged from 18.1 mt to 281.4 mt. After implementation of the IFQ program, landings in both sectors remained low. Discards in the non-trawl sector decreased slightly after implementation of the IFQ program, from 12.6 percent to 11.8 percent (Table 6). In the trawl sector, discards were reduced in half after implementation of the IFQ program (14.1 percent versus 6.0 percent).

Table 5. Summary of landings (mt) by sector for blackgill rockfish and the Slope Rockfish complex south of 40°10' N. latitude, from 2002 to 2013 (source: West Coast Groundfish Observer Program).

Blackgill rockfish

Year	Non-Tribal at-sea hake	Non-Tribal shoreside hake	Non-Tribal IFQ trawl	Non-Tribal IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	CA halibut	Pink shrimp	Incidental fisheries	CA rec	Research	Estimated landings mortality
2012			73.0	5.8	104.3	2.3						185.4
2011			14.2	1.7	129.2	0.4						145.5
2010			61.2		83.9	0.5			5.6			151.2
2009			53.2		77.2	2.4			0.5			133.4
2008			37.5		32.8	0.4			3.1			73.7
2007			25.5		21.7	0.3			0.2			47.7
2006		0.0	35.7		52.4	3.8			1.2			93.1
2005			51.5		33.7	2.0			0.3			87.5
2004			79.2		65.4	3.2			1.9			149.6
2003			54.4		119.8	4.1			9.9			188.2
2002		0.0	61.7		72.3	4.4	0.0	0.0	1.2			139.5

Southern Slope Rockfish complex (excludes blackgill rockfish)

Year	Non-Tribal at-sea hake	Non-Tribal shoreside	Non-Tribal IFQ trawl	Non-Tribal IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	CA halibut	Pink shrimp	Incidental fisheries	CA rec	Research	Estimated landings mortality
2012			39.5	0.2	12.9	0.1			1.1			53.8
2011			34.8	0.3	3.4	0.0			0.1			38.6
2010			18.1		3.1	0.0		0.0	0.2			21.4
2009			68.1		12.4	0.0	0.0	0.0	0.3			80.9
2008			99.6		3.5	0.1			1.1			104.3
2007			55.0		5.6	0.2			7.5			68.3
2006			54.7		7.4	0.6			16.2			78.9
2005		0.4	59.3		9.0	0.5		0.0	10.9			80.2
2004			157.0		10.9	0.5		0.0	19.8			188.2
2003			129.1		11.0	0.1		0.1	16.0			156.4
2002		22.7	281.4		7.1	0.9	0.0	0.2	19.0			331.2

Table 6. Summary of discards (mt) by sector for blackgill rockfish and the Slope Rockfish complex south of 40°10' N. latitude, from 2002 to 2013 (source: West Coast Groundfish Observer Program).

Blackgill rockfish

Year	Non-Tribal at-sea hake	Non-Tribal shoreside hake	Non-Tribal IFQ trawl	Non-Tribal IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	CA halibut	Pink shrimp	Incidental fisheries	CA rec	Research	Estimated discard mortality
2012			0.1	0.2	9.4							9.8
2011			0.0	0.0	5.6							5.7
2010			0.0		0.9							0.9
2009			0.1		1.8							2.0
2008			0.1		0.6							0.6
2007			0.2		0.5							0.6
2006			0.5		1.6							2.1
2005			0.7		0.2							0.8
2004			1.2		2.1							3.4
2003			0.3		4.2							4.5
2002			9.8		0.5							10.3

Southern Slope Rockfish complex (excludes blackgill rockfish)

Year	Non-Tribal at-sea hake	Non-Tribal shoreside hake	Non-Tribal IFQ trawl	Non-Tribal IFQ fixed gear	Non-nearshore fixed gear	Nearshore fixed gear	CA halibut	Pink shrimp	Incidental fisheries	CA rec	Research	Estimated discard mortality
2012		0.2	3.8	0.0	1.4							5.5
2011			0.9	0.0	0.8							1.7
2010			2.5		0.0			0.0				2.6
2009			15.4		0.5			0.0				15.9
2008			5.8		0.5							6.3
2007			11.7		0.4							12.1
2006			72.6		0.8							73.5
2005			12.7		0.6			0.0				13.3
2004			9.4		1.3			0.1				10.7
2003			7.1		1.2			0.0				8.3
2002			21.9		5.1			0.0				27.0

Possible Range of Alternatives

Table 7 provides strawman alternatives which could help inform a possible range of alternatives for Council consideration. Alternatives could include allocating blackgill rockfish and the remaining southern Slope Rockfish complex using the same methodology as was used to decide Amendment 21 allocations (2003-2005 sector total catch percentage), a recent time frame such as post-IFQ implementation (2011-2013) or some combination of historical and recent time periods. The complexity and workload associated with this analysis would depend in part on the range of alternatives for analysis, including whether to only reallocate blackgill rockfish or whether to include the remaining southern Slope Rockfish complex as well.

Table 7. Strawman alternatives for allocation of blackgill rockfish and slope rockfish south of 40°10' N. latitude.

Alternatives	Blackgill Rockfish		Slope Rockfish	
	Trawl	Non-Trawl	Trawl	Non-Trawl
No Action	63% trawl: 37% non-trawl			
Am-21 years (2003-2005)	43.7%	56.3%	83.0%	17.0%
Post IFQ (2011-2013)	37.2%	62.8%	81.9%	18.1%
Am 21+Post IFQ (03-05,11-13)	40.6%	59.4%	82.7%	17.3%

Future Considerations/Next steps:

When identifying a process and timeline for moving forward, it will be important to consider the tradeoffs and implications on the 2017-2018 harvest specifications and management process. Completing final action on blackgill reallocation prior to beginning that process would likely be beneficial. It would reduce the complexity of the analyses and facilitate more efficient decision-making in the 2017-2018 specifications process.

While not specifically addressed in this report, other issues related to reallocation could also be explored.

Literature Cited

Field, J. C. and D. Pearson. 2011. Status of the blackgill rockfish, *Sebastes melanostomus*, in the Conception and Monterey INPFC areas for 2011. Groundfish Analysis Team Fisheries Ecology Division, Southwest Fisheries Science Center, Santa Cruz (CA).

Piner, K., M. Schirripa, T. Builder, J. Rogers, and R. Methot. 2000. Bank rockfish (*Sebastes rufus*) Stock Assessment for Eureka, Monterey, and Conception INPFC Areas North of Pt. Conception, California. Pacific Fishery Management Council.

Agenda Item J.3.b
Supplemental GAP Report
November 2014

GROUNDFISH ADVISORY SUBPANEL REPORT ON INITIAL CONSIDERATION OF BLACKGILL ROCKFISH REALLOCATION

The Groundfish Advisory Subpanel (GAP) met with Mr. Bob Leos and Mr. John DeVore to discuss initial blackgill rockfish reallocation consideration. Mr. Leos led the discussion focusing on the options contained in Attachment 1 (Agenda Item J.3.a, Attachment 1) for potentially correcting the allocation of blackgill rockfish south of 40°10’ N latitude based on actual catch history and subsequently reallocating the southern Slope Rockfish complex. The GAP offers the following recommendations and comments on this initial consideration of blackgill rockfish reallocation.

After listening to the discussion of the options, the GAP agrees that analysis of allocation issues for blackgill rockfish and the remaining species in the southern Slope Rockfish complex should move forward on an expedited basis, with a goal to decide a final preferred alternative by the November 2015 Council meeting. This will allow potential implementation of new sector allocations by the start of 2017 without making the analysis of 2017-2018 specifications and management measures overly complex.

PFMC
11/17/14

GROUNDFISH MANAGEMENT TEAM REPORT ON THE INITIAL BLACKGILL ROCKFISH REALLOCATION CONSIDERATION

The Groundfish Management Team (GMT) received a report from Mr. John DeVore on the Pacific Fishery Management Council's consideration of a process to restructure the Slope Rockfish complex south of 40°10' N. latitude (hereafter referred to as the southern Slope Rockfish complex) by removing blackgill rockfish from the complex and reallocating the harvestable surplus of both blackgill rockfish and the remaining stocks within this complex. Several issues are identified with comments provided by the GMT.

When blackgill rockfish was last assessed in 2011, the stock was determined to be at a 30 percent depletion level, placing it in a precautionary status. Because of this, the Council chose to manage the stock utilizing a harvest guideline strategy beginning in 2013. Management of this stock was addressed by implementing reduced trip limits for both the limited entry and open access non-trawl fixed-gear fisheries south of 40°10' N. latitude. As a result of this management strategy, landings in 2013 for both sectors decreased by approximately 77 percent and 93 percent, respectively, compared to the previous two years that the individual fishing quota (IFQ) program has been in existence (Figure 1). While this decrease is closely linked to the more restrictive trip limits placed on these sectors, landings for the trawl fishery did not follow this pattern. They were 15.9 mt in 2011, increased to 78.8 mt in 2012, and then decreased to 54.7 mt in 2013 (Agenda Item J.3.a Attachment 1, November 2014) (Figure 1).

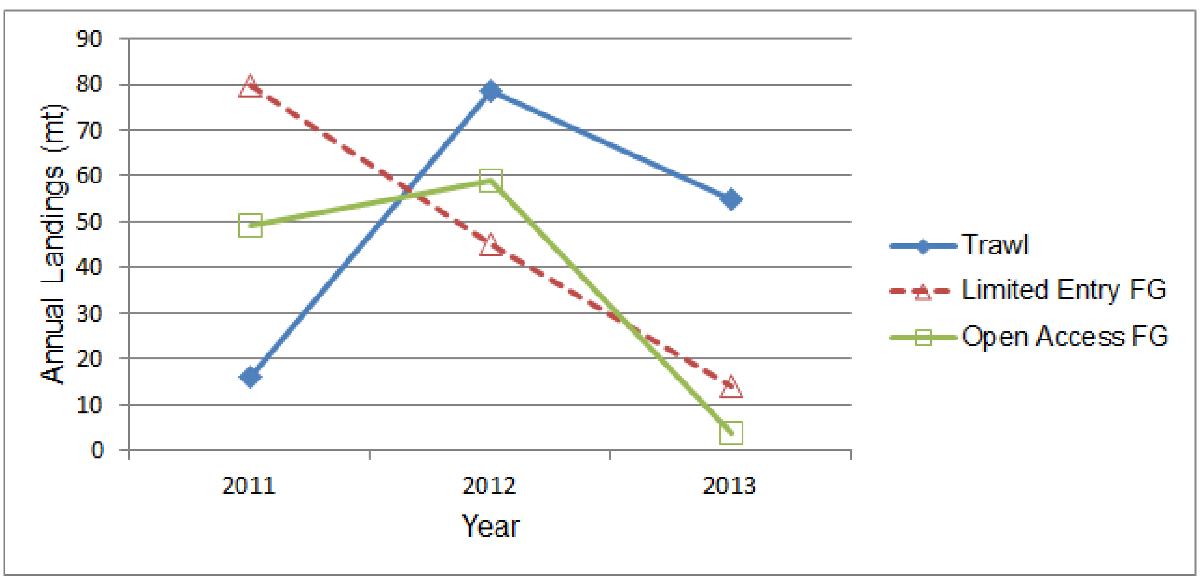

Figure 1. Commercial blackgill rockfish landings (metric tons) for the IFQ trawl and the limited entry and open access fixed-gear non-IFQ sectors south of 40°10' N. latitude since 2011. Data source: PacFIN (vdrfd table).

The landing pattern for the trawl sector differs from the non-IFQ fixed gear sector because blackgill rockfish are included in the southern Slope Rockfish complex and trawl quotas are managed at the complex level with much higher trip limits in place. The GMT notes that included in these trawl landing totals, are non-trawl gear landings that reflect vessels' use of the gear switching option available to them.

The GMT analyzed and the Council considered whether to manage blackgill rockfish separately by removing it from the southern Slope Rockfish complex. If this restructuring were pursued, the team acknowledged that an adjustment to the trawl/non-trawl allocation amounts would be advisable. The team feels that a key reason for managing blackgill rockfish separately from the southern Slope Rockfish complex and supporting an adjustment to the trawl /non-trawl allocation would be to benefit the stock, as such an action would likely even out fishing pressure exerted on the stock by a single sector. If blackgill rockfish remains in the southern Slope Rockfish complex, the pressure exerted by the IFQ sector could lead to a continuing negative impact beyond the most recent stock assessment result of a 30 percent depletion level. Central to this concern is the ability of IFQ trawlers to utilize the gear switching option. Because of this, the GMT supports managing the stock separate from the southern Slope Rockfish complex and then further supporting a full detailed analysis that would calculate the most appropriate trawl/non-trawl allocation percentage that would provide for a viable fishery for all fishery sectors. This analysis would also address the issue of allocation amounts for the remaining stocks in the southern Slope Rockfish complex.

When Amendment 21 was implemented, the trawl/non-trawl allocation was set at 63 percent and 37 percent, respectively. The GMT notes that since the IFQ program was implemented, blackgill rockfish mortality amounts by fishery sector have essentially reversed, with 37.2 percent taken by the IFQ trawl fleet and 62.8 percent by the non-trawl fleet in the Post IFQ years (2011-2013). Along with this allocation alternative, two other strawman alternatives presented in Attachment 1 indicate a larger percentage of blackgill landings for the non-trawl sector compared to the trawl sector when examining allocations based on Amendment 21 (2003-2005) and a combination of Amendment 21 and Post IFQ years (2003-2005, 2011-2013). (Agenda Item J.3.a Attachment 1, November 2014, Table 7) However, when looking at slope rockfish landings (excluding blackgill) under the three strawmen alternatives, the trawl fleet took over 80 percent in all scenarios while non-trawl landed 17 to 18 percent. The GMT recognizes that the years that the Council chooses for analysis may impact the trawl/non-trawl allocation as the trip limits that were put into place in 2013 for the non-trawl sector may cause the landings of blackgill for the trawl sector to be weighted higher in alternatives that include 2013 data.

A broader analysis will be necessary to determine the most appropriate allocation split. That analysis would include the potential effects on the IFQ trawl permit structure. In September, the Council adopted a number of priority items to be implemented by the 2017-2018 cycle under the omnibus package, including blackgill allocation. The GMT notes that completing such an analysis before the beginning of the work needed to set up the 2017-2018 biennial management cycle would help to alleviate Council and state staff workload issues. Having the results of this analysis in place before the beginning of the 2017-2018 biennial harvest specifications and management measures cycle process would not only result in a more efficient use of staff time and resources, but would contribute to streamlining the work involved in the specification cycle. The GMT recommends that the analysis be completed by either the April or the June 2015 Council meetings. While this is an aggressive time schedule, it would streamline the work involved in formulating the 2017-2018 biennial management cycle.

PFMC
11/17/14

Agenda Item J.4
Situation Summary
November 2014

GROUNDFISH MANAGEMENT ONGOING RULEMAKING

At previous Council meetings, an opportunity has been provided under groundfish agenda items to allow Council comment on rules being drafted, or in the public comment period, to implement actions taken at prior meetings. Such opportunity has been provided under omnibus, fixed gear program review, or trawl trailing action agenda items. For this November 2014 Council meeting, a completely separate agenda item provides that opportunity. The following two issues on which the Council may wish to provide guidance or comment were known at the time of the advance briefing book deadline; there may be additional issues that surface subsequently.

1) The whiting cleanup rule.
2) Reconsideration of select 2015 and 2016 groundfish harvest specifications.

Whiting Cleanup Rule

NMFS outlined the likely content of the whiting cleanup rule in detail at the Council's March 2014 meeting. That information has been reattached here for reference (Agenda Item J.4.a, Attachment 1, November 2014). In summary, this rule is expected to include the following with respect to vessels on Pacific whiting individual fish quota (IFQ) trips

- An allowance for prohibited and protected species to be retained until landing on "maximized retention" trips.
- Disposition procedures for salmon landed at IFQ first receivers on "maximized retention" trips consistent with the groundfish and salmon fishery management plans (FMPs).
- Disposition procedures for protected species landed at IFQ first receivers on "maximized retention" trips consistent with the 2012 biological opinions (BOs).
- Within the definition for a Pacific whiting IFQ trip, a requirement for each landing to be 50% or more Pacific whiting by weight.

Additionally, accompanying changes applicable to all midwater trawling would include: changes in the declarations required for use of midwater trawl gear, and explicit allowances for the use of midwater gear to target other groundfish within the rockfish conservation areas (RCAs) after the start date for the for Shorebased IFQ Pacific whiting fishery. Needs for a number of other regulatory clarifications and consistencies were also identified.

The Council requested that the comment period for the whiting cleanup rule be open during a Council meeting and that the analysis in support of the rule be available for advisory body review. At this time, it appears that this will not occur and that the rule will come to the Executive Director for consistency deeming sometime in the coming months. Under this agenda item, the Council may provide the executive director with guidance on how to proceed with regulatory deeming and in particular with respect to the criteria a whiting trip.

With respect to the criteria for a whiting trip, the current NMFS proposal in the whiting cleanup rule appears to be in line with the original language of Amendment 20, which defined a whiting trip as any trip in which whiting composed over 50% of the catch by weight. However, at its March 2010 Council meeting within the overall framework of Amendment 20, NMFS recommended an alternative interpretation of Council intent which defined a whiting trip as: "a trip in which a vessel registered to a limited entry permit uses legal midwater groundfish trawl gear with a valid declaration for limited entry midwater trawl, Pacific whiting IFQ, as specified at 660.13 (d)(5) during the dates that the midwater whiting season is open" (page 7 of Agenda Item E.6.b, Supplemental REVISED NMFS Report 1, March 2010). At that time, the Council concurred with this interpretation and the supporting rationale. As a result 2010 Council adopted definition, any vessel using midwater gear and declared into the shoreside fishery was allowed to use midwater gear to target any species within the RCAs during the whiting season, including widow and yellowtail rockfish.

Under this agenda item, the Council should provide direction to the Executive Director with respect to its desired intent for purposes of regulatory deeming on this matter. The choice would be whether to stay with the current 2010 definition or to revert to the original Amendment 20 catch percentage definition which NMFS now favors.

Reconsideration of Select 2015 and 2016 Groundfish Harvest Specifications

A potential mis-specification of 2015 and 2016 overfishing limits (OFLs) for English sole, yellowtail rockfish north of $40^{0}10'$ N lat., sharpchin rockfish, and rex sole was discovered with the recent release of the final draft of the data-moderate stock assessments document. The final preferred OFLs for these stocks adopted in the Council process were maximum likelihood estimates, which are the common metric for determining OFLs for assessed stocks. However, the final stock assessment report also provides the 2015 and 2016 OFLs from the Bayesian data-moderate assessments based on the median of the posterior distribution of estimated OFLs. Table 1 in Attachment 2 compares the OFLs (and the subsequent acceptable biological catches [ABCs] and annual catch limits [ACLs]) for these four stocks using the two OFL estimation methods.

Since sharpchin rockfish and rex sole are managed in stock complexes, Table 1 shows the effect of these different OFL (and ABC/ACL) contributions on the 2015 and 2016 harvest specifications for the slope rockfish complexes and the Other Flatfish complex. The ABCs and ACLs depicted in Table 1 assume the same 2015-2016 harvest control rules the Council adopted for these stocks. It is unlikely the potential change in harvest specifications will affect the socioeconomic analysis or corresponding management measures analyzed in the draft environmental impact statement (DEIS) since these stocks are all under-utilized. Since the proposed rule for 2015 and 2016 harvest specifications and management measures is published, any Council action on a reconsideration of harvest specifications can be forwarded as public comment to the National Marine Fisheries Service to affect the final EIS and the final rule. The SSC will provide the recommended OFLs for these stocks at this meeting and the Council can decide their recommended harvest specifications based on SSC advice.

Other issues on which NMFS seeks clarification or on which the Council may wish to provide guidance or comment may arise between the briefing book publication and when this issue comes to the Council floor in November.

Council Action:

1. **Provide guidance or comment on the whiting cleanup rule and in particular on the proposed criteria for a whiting trip.**
2. **Reconsider the 2015 and 2016 OFLs, ABCs, and ACLs for English sole, yellowtail rockfish north of $40^{0}10'$ N lat., sharpchin rockfish, and rex sole, as well as the harvest specifications for the slope rockfish complexes and the Other Flatfish complex.**
3. **Provide other guidance or comment, as appropriate.**

Reference Materials:

1. Agenda Item J.4.a, Attachment 1: Midwater Trawl Restrictions and Prohibited Species Retention for the Shorebased Trawl Individual Fishing Quota (IFQ) Program, March 2014.
2. Agenda Item J.4.a, Attachment 2: Reconsideration of Select 2015 and 2016 Groundfish Harvest Specifications.

Agenda Order:

a. Overview — Jim Seger
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Consider Action and Additional Guidance for Issues Related to Rulemaking, as Necessary

PFMC
10/27/14

Midwater Trawl Restrictions and Prohibited Species Retention for the Shorebased Trawl Individual Fishing Quota (IFQ) Program

NMFS is taking action to address several regulatory issues pertaining to vessels using midwater trawl gear in the shorebased IFQ program. While preparing for a rulemaking to revise the Pacific whiting IFQ fishery primary season, discrepancies and omissions in related regulations were identified. Because the Pacific whiting IFQ fishery primary season date is also used as the start date for midwater non-whiting trawl fishing, it is necessary to revise the regulations before changing the season start date. Action is needed to revise unclear and inconsistent regulatory language, to add regulatory provisions that were inadvertently omitted with the implementation of Amendment 20, and to implement certain terms and conditions of the 2012 Section 7 Endangered Species Act (ESA) biological opinions (BOs). The proposed changes would be implemented through a full rulemaking accompanied by an Environmental Assessment (EA) and are intended to be consistent with prior Council recommendations and the Amendment 20 Environmental Impact Statement. An EA is needed to consider environmental impacts that were not fully considered in previous NEPA documents.

<u>Relative to vessels on Pacific whiting IFQ trips, the regulations would be amended to add the following provisions:</u>

- An allowance for prohibited and protected species to be retained until landing on “maximized retention” trips.
- Disposition procedures for salmon landed at IFQ first receivers on “maximized retention” trips consistent with the groundfish and salmon FMPs.
- Disposition procedures for protected species landed at IFQ first receivers on “maximized retention” trips consistent with the 2012 BOs.
- Within the definition for a Pacific whiting IFQ trip, a requirement for each landing to be 50% or more Pacific whiting by weight.

<u>Relative to all midwater trawling, the regulations would be amended as follows:</u>

- North of 40°10’ N. lat. - declarations for either “limited entry midwater trawl, non-whiting shorebased IFQ” or “limited entry midwater trawl, Pacific whiting shorebased IFQ” would be allowed after the start date for the Shorebased IFQ pacific whiting fishery. Non-whiting vessels would no longer be obligated to also fish in the Pacific whiting fishery.
- The restriction at 660.130(c)(4)(F) allowing midwater trawl only for vessels participating in the primary whiting season would be removed.

- North of 40°10’ N. lat. - Regulations at 660.130 (c)(3) would be revised to clearly state that vessels with declarations for either “limited entry midwater trawl, non-whiting shorebased

IFQ” or “limited entry midwater trawl, Pacific whiting shorebased IFQ” would be allowed to fish within the RCAs after the start date for the Shorebased IFQ Pacific whiting fishery.

<u>To address unclear language and inconsistencies between sections the following minor changes would be made:</u>

- Regulations at 660.130 (c)(3) and (c)(4) (F) would be revised to allow vessels with declarations for either a “limited entry midwater trawl, non-whiting shorebased IFQ” or “limited entry midwater trawl, Pacific whiting shorebased IFQ” to fish north of 40°10’ N. lat.
- Regulations at 660.130 (e)(4) would be revised to clarify that vessels with declarations for either a “limited entry midwater trawl, non-whiting shorebased IFQ” or “limited entry midwater trawl, Pacific whiting shorebased IFQ” would be allowed to fish within the trawl RCAs after the start of the primary season for the Pacific whiting IFQ fishery north of 40°10’ N. lat.
- Regulations at 660.60(d)(1) would update term and be modified for clarity, (d)(2) would add clarity to the effective time and date for automatic actions and revise an inactive internet address, and (e) would be modified to state the overarching management measures that apply to prohibited species.
- Regulations at 660.130(c)(4) would be modified to clearly state that multiple types of midwater trawl could be on a vessel simultaneously and (d)(2) would be modified to clearly stats the sorting requirements that apply to the Pacific whiting fishery
- In regulations at 660.131, the dates when the primary whiting seasons are open would be clearly stated for all sectors, and closed areas applying to all midwater trawl would be moved to 660.130.
- Throughout the regulations, words and phrases defined in sections at 660.11 and 660.111 would be used to replace undefined terms that were primarily in place prior to trawl rationalization.
- Duplicate language in prohibitions at 660.112 (b)(2) would be removed, but retained in 660.130(d).
- In section 660.140 duplicate text would be removed and the sorting and weighing requirements would be clearly stated.

Biological Opinions for ESA Listed Salmon

On January 22, 2013, NMFS requested the reinitiation of the ESA Section 7 consultation for listed salmonids to address changes in the fishery. The trawl rationalization program has been the primary change in the management structure of the groundfish trawl fisheries from that considered under previous consultations. The BOs prepared prior to trawl rationalization considered a distinct midwater trawl fishery with three sectors targeting only Pacific whiting and a bottom trawl fishery targeting multiple non-whiting groundfish species. Fishing behavior has changed over the first three years of the IFQ program, with fishermen using midwater trawl gear to harvest non-whiting species, particularly north of 40°10' north latitude, and increasing numbers of fishermen are using fixed gears to harvest their trawl allocations. The consultation is scheduled to be completed before implementation of the 2015-2016 Biennial Harvest Specifications and Management Measures.

PFMC
10/22/14

RECONSIDERATION OF SELECT 2015 AND 2016 GROUNDFISH HARVEST SPECIFICATIONS

The Council adopted 2015 and 2016 harvest specifications for groundfish stocks and stock complexes with final action in June 2014. Subsequent to that action, a potential mis-specification of overfishing limits (OFLs) for English sole, yellowtail rockfish north of 40°10’ N lat., sharpchin rockfish, and rex sole was discovered. The OFLs adopted for these four stocks and analyzed in the Proposed Harvest Specifications and Management Measures for the 2015-2016 Pacific Coast Groundfish Fishery and Amendment 24 to the Pacific Coast Groundfish Fishery Management Plan Draft Environmental Impact Statement (DEIS) were based on maximum likelihood estimates, the common metric for determining OFLs for assessed stocks. However, the Scientific and Statistical Committee (SSC) recommended that the 2015 and 2016 OFLs from the Bayesian data-moderate assessments be based on the median of the posterior distribution of estimated OFLs. Table 1 compares the OFLs (and the subsequent acceptable biological catches (ABCs) and annual catch limits (ACLs)) for these four stocks using the two OFL estimation methods.

The Council has an opportunity to correct the harvest specifications for these four stocks pending final SSC advice on the OFLs. Any Council action to modify 2015 and 2016 harvest specifications for the affected stocks and stock complexes in Table *1* will be transmitted as public comment to the National Marine Fisheries Service to affect the final EIS and final rule.

Table 1. Comparison of 2015 and 2016 harvest specifications adopted by the Council for English sole, yellowtail rockfish north of 40°10' N lat., sharpchin rockfish, and rex sole relative to those harvest specifications based on SSC-endorsed methods for calculating OFLs (stocks in bold are those newly assessed stocks with harvest specifications under consideration for a correction).

Stock	Council-adopted Specifications						Specifications Based on SSC-endorsed Methods					
	Harvest Specifications Based on OFLs Calculated as Maximum Likelihood Estimates						Harvest Specifications Based on OFLs Calculated as Medians of the Posterior Distribution					
	2015			2016			2015			2016		
	OFL	ABC	ACL	OFL	ABC	ACL	OFL	ABC	ACL	OFL	ABC	ACL
English Sole	**12,092**	**11,040**	**11,040**	**8,493**	**7,754**	**7,754**	**10,792**	**9,853**	**9,853**	**7,890**	**7,204**	**7,204**
Yellowtail N. of 40°10'	**12,281**	**11,213**	**11,213**	**11,647**	**10,634**	**10,634**	**7,218**	**6,590**	**6,590**	**6,949**	**6,344**	**6,344**
STOCK COMPLEXES												
Slope Rockfish North	1,804	1,669	1,669	1,818	1,683	1,683	1,831	1,693	1,693	1,844	1,706	1,706
Aurora	*17.4*	*16.6*	*16.6*	*17.5*	*16.7*	*16.7*	*17.4*	*16.6*	*16.6*	*17.5*	*16.7*	*16.7*
Bank	*17.2*	*14.4*	*14.4*	*17.2*	*14.4*	*14.4*	*17.2*	*14.4*	*14.4*	*17.2*	*14.4*	*14.4*
Blackgill	*4.7*	*3.9*	*3.9*	*4.7*	*3.9*	*3.9*	*4.7*	*3.9*	*3.9*	*4.7*	*3.9*	*3.9*
Redbanded	*45.3*	*37.7*	*37.7*	*45.3*	*37.7*	*37.7*	*45.3*	*37.7*	*37.7*	*45.3*	*37.7*	*37.7*
Rougheye/Blackspotted	*201.9*	*184.3*	*184.3*	*206.8*	*188.8*	*188.8*	*201.9*	*184.3*	*184.3*	*206.8*	*188.8*	*188.8*
Sharpchin	***305.6***	***279.0***	***279.0***	***297.6***	***271.7***	***271.7***	***332.8***	***303.8***	***303.8***	***323.2***	***295.1***	***295.1***
Shortraker	*18.7*	*15.6*	*15.6*	*18.7*	*15.6*	*15.6*	*18.7*	*15.6*	*15.6*	*18.7*	*15.6*	*15.6*
Splitnose	*1,000.6*	*956.6*	*956.6*	*1,018.2*	*973.4*	*973.4*	*1,000.6*	*956.6*	*956.6*	*1,018.2*	*973.4*	*973.4*
Yellowmouth	*192.4*	*160.5*	*160.5*	*192.4*	*160.5*	*160.5*	*192.4*	*160.5*	*160.5*	*192.4*	*160.5*	*160.5*
Slope Rockfish South	806	698	687	807	699	689	813	705	693	814	705	695
Aurora	*74.3*	*70.7*	*70.7*	*74.3*	*70.7*	*70.7*	*74.3*	*70.7*	*70.7*	*74.3*	*70.7*	*70.7*
Bank	*503.2*	*419.7*	*419.7*	*503.2*	*419.7*	*419.7*	*503.2*	*419.7*	*419.7*	*503.2*	*419.7*	*419.7*
Blackgill	*137.0*	*125.1*	*113.8*	*140.0*	*127.8*	*117.2*	*137.0*	*125.1*	*113.8*	*140.0*	*127.8*	*117.2*
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-	-	-
Redbanded	*10.4*	*8.7*	*8.7*	*10.4*	*8.7*	*8.7*	*10.4*	*8.7*	*8.7*	*10.4*	*8.7*	*8.7*
Rougheye/Blackspotted	*4.1*	*3.8*	*3.8*	*4.2*	*3.9*	*3.9*	*4.1*	*3.8*	*3.8*	*4.2*	*3.9*	*3.9*
Sharpchin	***76.4***	***69.8***	***69.8***	***74.4***	***67.9***	***67.9***	***83.2***	***76.0***	***76.0***	***80.8***	***73.8***	***73.8***
Shortraker	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Yellowmouth	*0.8*	*0.7*	*0.7*	*0.8*	*0.7*	*0.7*	*0.8*	*0.7*	*0.7*	*0.8*	*0.7*	*0.7*
Other Flatfish	11,298	8,620		9,948	7,496		11,453	8,749	8,749	9,645	7,243	7,243
Butter sole	*4.6*	*3.2*	*3.2*	*4.6*	*3.2*	*3.2*	*4.6*	*3.2*	*3.2*	*4.6*	*3.2*	*3.2*
Curlfin sole	*8.2*	*5.7*	*5.7*	*8.2*	*5.7*	*5.7*	*8.2*	*5.7*	*5.7*	*8.2*	*5.7*	*5.7*
Flathead sole	*35.0*	*24.3*	*24.3*	*35.0*	*24.3*	*24.3*	*35.0*	*24.3*	*24.3*	*35.0*	*24.3*	*24.3*
Pacific sanddab	*4,801.0*	*3,331.9*	*3,331.9*	*4,801.0*	*3,331.9*	*3,331.9*	*4,801.0*	*3,331.9*	*3,331.9*	*4,801.0*	*3,331.9*	*3,331.9*
Rex sole	***5,609.0***	***4,672.3***	***4,672.3***	***4,259.0***	***3,547.7***	***3,547.7***	***5,764.0***	***4,801.4***	***4,801.4***	***3,956.0***	***3,295.3***	***3,295.3***
Rock sole	*66.7*	*46.3*	*46.3*	*66.7*	*46.3*	*46.3*	*66.7*	*46.3*	*46.3*	*66.7*	*46.3*	*46.3*
Sand sole	*773.2*	*536.6*	*536.6*	*773.2*	*536.6*	*536.6*	*773.2*	*536.6*	*536.6*	*773.2*	*536.6*	*536.6*

GROUNDFISH ADVISORY SUBPANEL REPORT ON GROUNDFISH MANAGEMENT ONGOING RULEMAKING

The Groundfish Advisory Subpanel (GAP) heard a report from Mr. Frank Lockhart about ongoing rulemaking. The GAP offers the following comments and recommendations.

The GAP endorses the National Marine Fisheries Service (NMFS) interpretations related to midwater trawl fisheries. We believe it will help clarify the rules regarding targeted midwater trawling for widow and yellowtail and that is helpful for sound management of our fisheries.

Specifically, the GAP agrees with NMFS' approach to the whiting season start date. Final council action was taken on this issue more than two years ago. The GAP urges NMFS to move forward expeditiously.

The GAP endorses the Scientific and Statistical Committee's position on fixing mis-specified overfishing limits. Specifically, the GAP supports using the values calculated as medians of the posterior distribution, as given in Agenda Item J.4.a, Attachment 2, Table 1.

The GAP urges NMFS to be open and transparent on the salmon biological opinion.

PFMC
11/18/14

GROUNDFISH MANAGEMENT TEAM REPORT ON ONGOING RULEMAKING

The Groundfish Management Team (GMT) reviewed the documents under this agenda item and received informational briefings from Mr. Jim Seger, Mr. John DeVore, and Mr. Frank Lockhart. We thank all of them for being available to talk to the GMT and answer questions.

Reconsideration of Select 2015 and 2016 Groundfish Harvest Specifications

With the recent publication of the final version of the data-moderate stock assessments documentation, a discrepancy of the 2015 and 2016 overfishing limits (OFLs) for five underutilized stocks was identified (Agenda Item J.4.a, Attachment 2). Table 1 below shows the species involved, what the Pacific Fishery Management Council (Council) adopted, what the Scientific and Statistical Committee (SSC) is now recommending (Agenda Item J.4.b, Supplemental SSC Report), and the difference between the two. The GMT compared the SSC recommended OFLs to recent years' total mortality levels (Table 2) from the West Coast Groundfish Observer Program (WCGOP) annual groundfish mortality reports. Based on recent years' total mortalities, the SSC recommended rates (vs. what the Council adopted) should not impact the socio-economic analysis or corresponding management measures analyzed for the 2015-2016 biennial harvest specifications and management measures draft environmental impact statement (EIS). If this change to these specific harvest specifications is adopted by the Council, the GMT does not believe that this should cause any additional delays to final harvest specifications and management measures final rulemaking.

Table 1. Species whose harvest specifications are being reconsidered, with the Council's adopted OFL, the SSC's recommended OFL, and the difference between the two, in mt.

	2015			2016		
Species	**Council Adopted**	**SSC Recommend.**	**Difference**	**Council Adopted**	**SSC Recommend.**	**Difference**
English Sole	12,092	10,792	-1,300	8,493	7,204	-603
Yellowtail Rockfish N of 40° 10'	12,281	7,218	-5,603	11,647	6,949	-4,698
Sharpchin Rockfish N of 40° 10'	305.6	332.8	27.2	297.6	323.2	25.6
Sharpchin Rockfish S of 40° 10'	76.4	83.2	6.8	74.4	80.8	6.4
Rex Sole	5,609	5,764	155	4,259	3,956	-303

Table 2. Recent years' (2011-2013) total mortality (in mt) of species whose harvest specifications are being reconsidered.

Species	2015 SSC Recommended OFL	2013	2012	2011
English Sole	10,792	357	224	205
Yellowtail Rockfish N of 40° 10'	7,218	1,424	1,570	1,352
Sharpchin Rockfish N of 40° 10'	332.8	12.5	13.7	6.5
Sharpchin Rockfish S of 40° 10'	83.2	0.9	0.3	0.4
Rex Sole	5,764	566	444	444

Whiting Clean-up Rule

The GMT reviewed Agenda Item J.4.a, Attachment 1 relative to shorebased trawl individual fishing quota program regulatory updates that affect midwater trawl vessels and prohibited species retention. Further, the GMT discussed the details with representatives from the National Marine Fisheries Service (NMFS) West Coast Region (WCR) including Mr. Lockhart. We appreciate their time in helping the GMT understand the details of the proposed action.

2012 Section 7 Endangered Species Act Biological Opinions

The proposed rule will implement the terms and conditions contained in the 2012 biological opinions for seabirds and non-salmonids. The GMT believes these provisions will include shorebased disposition provisions for eulachon, green sturgeon, marine mammals, and seabirds. NMFS indicated their intent to communicate and coordinate with the states prior to proposing the disposition requirements. The GMT believes similar outreach might be necessary with the shorebased processors, depending on the requirements.

Regulations Regarding Midwater Non-Whiting Strategies

Based on our discussions with the WCR, under this rule, those vessels declaring midwater non-whiting will be required to sort prohibited and protected species at sea. That is, consistent with Amendment 20, the maximized retention requirements would only be allowed for those trips where Pacific whiting is greater than 50 percent (i.e., a midwater whiting declaration).

The proposed rule will continue to link the midwater non-whiting fishery to the Pacific whiting primary season dates, based on the history of past Council actions. **The GMT recommends that future Council action be taken, perhaps under the 2017-2018 harvest specifications and management measures process, to designate separate midwater non-whiting season dates in regulation.** Future regulations would then clearly reflect that these are two separate fisheries - even if the season dates for both fisheries are the same. This is particularly important given that the Pacific whiting clean up rule will establish differential regulations by declaration and target strategy.

Pacific Whiting Bycatch Reduction Areas

The current NMFS regulatory interpretation is that the Pacific whiting bycatch reduction area (BRA), if implemented, would apply to midwater gears regardless of declaration and target strategy (i.e., whiting trips and yellowtail/widow trips). Past Council discussion indicated the desire to have the BRA apply only to the Pacific whiting fishery given that the 2009-2010 EIS analysis only disclosed the impacts to Pacific whiting fishery operations. **The GMT recommends that if the BRAs are to apply to midwater non-whiting trips, that the Environmental Assessment (EA) discloses the impacts. Furthermore, the GMT recommends that the regulations provide for differential application of the BRA.** That is, separate implementation of the BRA for midwater Pacific whiting declarations from implementation of the BRA for midwater non-whiting declarations. **If such action is not within the scope of the proposed rule, it should be added to future management measure considerations.**

Pacific Whiting Season Start Date

The GMT reviewed Agenda Item J.4.b, Supplemental NMFS Report 1 relative to past Council action on the Pacific whiting season start date and discussed the details with representatives from the NMFS WCR including Mr. Lockhart. The GMT notes that the NMFS interpretation of Council action would shorten the northern California season by 45 days (i.e., changing from April 1 to May 15). Further, the Groundfish Fishery Management Plan restriction that no more than 5 percent of the shorebased individual fishing quota program allocation may be taken before the start of the primary season would also only apply to the area south of 40° 30' N. latitude since the northern California season date would be the same as the area north of 42° N. latitude.

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11/18/14

Season Date Change
for midwater trawl fishery (whiting and non-whiting) -
NMFS interpretation

As NMFS begins implementation of the season date change, NMFS would like to provide our interpretation of the Council final action for Council guidance, if necessary.

Several documents are provided in Appendix 1 at the end of this document as background material, including: the Council preliminary and final motions, excerpts from regulation, and excerpts from the Pacific Coast Groundfish Fishery Management Plan (FMP). The Council took final action on the season date change in November 2012, with preliminary action in March 2012, and discussion in November 2011. The Council final action referred to its preliminary action, so both are provided in Appendix 1.

NMFS Interpretation

Based on the rationale described below and because the Mothership Coop Program and Catcher/Processor Coop Program (collectively, the at-sea sectors) would continue to have a primary whiting season start date of May 15, the description of the proposed action to be used for analysis and rulemaking is:

Description of Proposed Action

- Modifying the primary season opening date for the shorebased whiting fishery and the shorebased non-whiting midwater trawl fishery to May 15 north of 40°30′ N. lat. to the U.S./Canada border.
    - The resulting change for both components of the Shorebased IFQ Program (whiting and non-whiting midwater) would be the following:

North of 42° N. lat.—	*June 15 → May 15*
Between 42°-40°30′ N. lat.—	*April 1 → May 15*
South of 40°30′ N. lat.—	*April 15 (no change)*

- No change to the 5% allocation provision where no more than 5% of the Shorebased IFQ Program allocation may be taken and retained south of 42° N. lat. before the start of the primary Pacific whiting season north of 42° N. lat. The 5% allocation language, specified in the FMP at 6.3.2.2 and in regulation at 660.55(i)(2), would apply to the fishery south of 40°30′ N. lat. Language in the FMP at 6.8.1 on the California early season would remain unchanged.

Questions & Rationale

As NMFS is beginning the rulemaking process for the whiting season date change and based on the Council's motion and background information, some questions have come up.

1. Was the Council aware in Nov 2012 that the action also affected the non-whiting midwater trawl fishery?
2. Did the Council intend to only change the season date to the extent it would not require an FMP amendment (i.e., only change the dates north of 40°30′ N. lat., not coastwide)?

NMFS believes the answer to both of these questions is yes based on the rationale described under Questions 1 and 2 below.

Question 1

Regarding the non-whiting midwater trawl fishery[1], the analysis in front of the Council at the time discussed the non-whiting midwater fishery (Agenda Item I.5.a, Attachment 6, Nov 2012). Based on this information, NMFS understanding is that the Council and stakeholders were aware that the whiting season date change would also affect the start of the season for the non-whiting midwater trawl fishery. The November 2012 analysis available before the Council's final motion explained potential impacts of this season date change from the non-whiting midwater fishery, summarized in Table 2-2, p.8, including earlier use of midwater gear to target widow and yellowtail and potential increase in total salmon bycatch.

Question 2

The final motion speaks to "May 15 for all sectors" which alludes to the IFQ fishery coastwide moving to a May 15 start, including the area south of 40°30' N. lat. The November 2012 analysis available before the Council's final motion mentioned that the season date change would be coastwide, acknowledging that it would then be outside the regulatory framework for season date changes described in 660.131(b)(2) which applies to areas north of 40°30' N. lat. but within the socioceconomic framework contained in the FMP[2] (Agenda Item I.5.a, Attachment 6, Nov 2012, p.6-9). However, the Council final action confirmed the preliminary action which stated, "*<u>Use a single May 15 start date for all whiting sectors including California fisheries</u> and eliminate the 5 percent California early season whiting fishery cap, <u>to the extent that a fishery management plan (FMP) amendment is not required</u>.*" (emphasis added)

An FMP amendment would be required to eliminate all California early seasons and create a coastwide season date. FMP section 6.8.1 (Seasons) describes the use of seasons for the different whiting sectors by stating, "*Each of these sectors is managed with its own season. The*

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[1] NMFS is working on more clarity in regulations for the non-whiting midwater trawl fishery through the "whiting clean-up" rule (see Agenda Item J.4.a, Attachment 1, Nov 2014 for details and Agenda Item J.1.b, Supplemental NMFS Report 1, Nov 2014 for a schedule).

[2] The socioceconomic framework contained in the FMP requires a full rulemaking process including two decision meetings for the Council (preliminary and final actions).

shorebased sector also includes an early season for waters off California, to allow vessels in that area to access whiting when it is migrating through waters off California."

In addition, creating the same coastwide season start date brings in to question the utility of keeping FMP and regulatory language on a 5% early season allocation where no more than 5% of the Shorebased IFQ Program allocation may be taken and retained south of 42° N. lat. before the start of the primary Pacific whiting season north of 42° N. lat. An FMP amendment would be required to remove FMP allocation language at 6.3.2.2 (Sector allocations of Pacific whiting) which requires that, "…*No more than five percent of the shoreside whiting sector's allocation may be taken and retained south of 42° N latitude prior to the start of the shore-based whiting season north of 42° N latitude (in waters off Oregon and Washington).*" The corresponding regulations at 660.55(i)(2) would also need to be removed.

The Council final action confirmed the preliminary action which stated, "*Use a single May 15 start date for all whiting sectors including California fisheries and eliminate the 5 percent California early season whiting fishery cap, <u>to the extent that a fishery management plan (FMP) amendment is not required</u>.*" (emphasis added) Because a coastwide season start date would require an FMP amendment, NMFS will only change the Shorebased IFQ Program season date for the whiting and nonwhiting midwater trawl fisheries to May 15 north of 40°30′ N. lat. to the U.S./Canada border.

APPENDIX 1: Background materials

Preliminary Action

Preliminary Preferred Action (PPA) - March 2012 (excerpt from Council meeting minutes, p. 36-37)

Agenda Item F.8 Trawl Rationalization Trailing Actions and Allocation Amendments and Actions

Motion 24 to adopt the following preliminary preferred actions and Council direction:

…

8. Whiting season opening date and southern allocation - PPA = Alt (1) (page 12, Agenda Item F.8.a - Attachment 1)

…

Agenda Item F.8.a - Attachment 1 stated:

Whiting Season Rule (Stand Alone or as Part of PIE 2 or Gear Rule)

8. Whiting season opening date and southern allocation (Preliminary NEPA Determination: EA)

Under a rationalized fishery, the previous rationale for varying start dates among areas and whiting sectors may no longer apply. As a first step, at its November 2011 meeting, the Council adopted for consideration the GAP and Trawl Rationalization Regulatory Evaluation Committee (TRREC) option of moving the whiting season start date for all sectors and areas to May 15, consistent with the start date for the at-sea fishery. The GAP recommendation, adopted as guidance by the Council, also stated:

> The GAP also supports reviewing the overall whiting fishery management regime, including consideration of moving towards a year round fishery. If this adds significant workload, it should remain a priority for the TRREC to address for implementation in the Program Improvements and Enhancements (PIE) 3 rule or beyond.

Only the issue of moving the whiting season date to May 15 is part of the current action. The following are the options for consideration.

Status quo: No Action. The current regulations for the start date and southern allocation are as follows.

660.131(B)(2) Different primary season start dates. North of 40°30’ N. lat., different starting dates may be established for the catcher/processor sector, the mothership sector, and in the Pacific whiting IFQ fishery for vessels delivering to IFQ first receivers north of 42°N. lat. and vessels delivering to IFQ first receivers between 42° through 40°30’ N. lat. . . .

(iii) Primary whiting season start dates and duration. After the start of a primary season for a sector of the whiting fishery, the season remains open for that sector until the sector allocation of whiting or non-whiting groundfish (with allocations) is reached or projected to be reached and the fishery season for that sector is closed by NMFS. The starting dates for the primary seasons for the whiting fishery are as follows:

(A) Catcher/processor sector—May 15.

(B) Mothership sector—May 15.

(C) Shorebased IFQ Program, Pacific whiting IFQ fishery.

(1) North of 42°N. lat.—June 15;

(2) Between 42°–40°30′N. lat.—April 1; and

(3) South of 40°30′N. lat.—April 15.

660.55 (f)(2) . . . No more than 5 percent of the Shorebased IFQ Program allocation may be taken and retained south of 42° N. lat. before the start of the primary Pacific whiting season north of 42° N. lat. . . . .

Alternative [1] (recommendation by the GAP endorsed by the Council, Nov 2011):

Use a single May 15 start date for all whiting sectors including California fisheries and eliminate the 5 percent California early season whiting fishery cap, to the extent that a fishery management plan (FMP) amendment is not required. This change would be implemented through the two-meeting process already authorized under the framework of the Pacific Coast Groundfish FMP.

Final Action

Final Preferred Alternative - November 2012 (excerpt from Council meeting minutes, p.39)

Agenda Item I.5.d - Trawl Rationalization Trailing Actions and Updates

Motion 17 for the Council to adopt the following final preferred alternatives:

…

• Whiting season start date: May 15 for all sectors; removal of California early season (PPA).

…

Relevant Regulations

50 CFR 660.55 Allocations. (emphasis added)

(i) Pacific whiting allocation. The allocation structure and percentages for Pacific whiting are described in the PCGFMP.

(1) Annual treaty tribal Pacific whiting allocations are provided in §660.50, subpart C.

(2) The fishery harvest guideline for Pacific whiting is allocated among three sectors, as follows: 34 percent for the C/P Coop Program; 24 percent for the MS Coop Program; and 42 percent for the Shore based IFQ Program. <u>No more than 5 percent of the Shore based IFQ Program allocation may be taken and retained south of 42° N. lat. before the start of the primary Pacific whiting season north of 42° N. lat.</u> Specific sector allocations for a given calendar year are found in Tables 1a through c and 2a through c of this subpart. Set-asides for other species for the at-sea whiting fishery for a given calendar year are found in Tables 1D and 2D of this subpart.

50 CFR 660.131 Pacific whiting fishery management measures. (emphasis added)

(b) Pacific whiting seasons-

(2) Different primary season start dates. <u>North of 40°30' N. lat., different starting dates may be established for the catcher/processor sector, the mothership sector, and in the Pacific whiting IFQ fishery</u> for vessels delivering to IFQ first receivers north of 42° N. lat. and vessels delivering to IFQ first receivers between 42° through 40°30' N. lat.

referred to as "framework"

(i) Procedures. The primary seasons for the whiting fishery north of 40°30' N. lat. generally will be established according to the procedures of the PCGFMP for developing and implementing harvest specifications and apportionments. The season opening dates remain in effect unless changed, generally with the harvest specifications and management measures.

(ii) Criteria. The start of a primary season may be changed based on a recommendation from the Council and consideration of the following factors, if applicable: Size of the harvest guidelines for whiting and bycatch species; age/size structure of the whiting population; expected harvest of bycatch and prohibited species; availability and stock status of prohibited species; expected participation by catchers and processors; the period between when catcher vessels make annual processor obligations and the start of the fishery; environmental conditions; timing of alternate or competing fisheries; industry agreement; fishing or processing rates; and other relevant information.

(iii) Primary whiting season start dates and duration. After the start of a primary season for a sector of the whiting fishery, the season remains open for that sector until the sector allocation of whiting or non-whiting groundfish (with allocations) is reached or projected to be reached and the fishery season for that sector is closed by NMFS. The starting dates for the primary seasons for the whiting fishery are as follows:

(A) Catcher/processor sector—May 15.
(B) Mothership sector—May 15.
(C) Shorebased IFQ Program, Pacific whiting IFQ fishery.
(1) North of 42° N. lat.—June 15;
(2) Between 42°-40°30' N. lat.—April 1; and
(3) South of 40°30' N. lat.—April 15.

Groundfish FMP (May 2014 version)

6.3.2.2 Sector allocations of Pacific Whiting (emphasis added)

Projected total mortalities of Pacific whiting in recreational, research, and non-whiting fisheries are first set aside (these deductions are decided in the annual process for specifying Pacific whiting harvest specifications and management measures based on the best available information at the time of the decision), then a yield amount is set-aside to accommodate tribal whiting fisheries. In some years the whiting set-aside may be increased to accommodate other programs, such as EFPs. The nontribal commercial share of whiting is allocated to LE whiting trawl sectors as follows: 42 percent for the shoreside whiting sector, 24 percent for the at-sea mothership whiting sector, and 34 percent for the at-sea catcher-processor whiting sector. No more than five percent of the shoreside whiting sector's allocation may be taken and retained south of 42° N latitude prior to the start of the shore-based whiting season north of 42° N latitude (in waters off Oregon and Washington).

6.8.1 Seasons (emphasis added)

… Designation and adoption of seasons must be made through either a specifications-and-management-measures rulemaking (Section 6.2 C) or a full rulemaking (Section 6.2 D).

Seasons have been used to manage the commercial Pacific whiting trawl and LE fixed gear fisheries. The non-tribal whiting fishery is divided into three sectors: catcher boats that deliver to shorebased processing plants, catcher vessels that deliver to motherships at sea, and at-sea catcher-processors. Each of these sectors is managed with its own season. The shorebased sector also includes an early season for waters off California, to allow vessels in that area to access whiting when it is migrating through waters off California. …

In addition to the whiting and sablefish seasons, intended to constrain the directed catch of the target stocks within a particular period, commercial fisheries may be constrained by season to protect overfished species.

…

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON GROUNDFISH MANAGEMENT ONGOING RULEMAKING

Subsequent to the adoption of 2015 and 2016 harvest specifications for groundfish, it was discovered that the overfishing limits (OFLs) for yellowtail rockfish north of 40°10' N. lat., sharpchin rockfish, rex sole, and English sole were mis-specified. To correct this error, the Scientific and Statistical Committee recommends using the values calculated as medians of the posterior distribution, as given in Agenda Item J.4.a, Attachment 2, Table 1.

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11/17/14

ECONOMIC DATA COLLECTION PROGRAM REPORT ON FISHERY STATUS AND OVERVIEW ON SOCIAL SCIENCE RESEARCH

The Amendment 20 trawl rationalization program included an element requiring program participants to submit economic data. Additionally, there has been a complementary effort to collect sociological information from participants, albeit on a voluntary basis. At this meeting, the Council will receive a status report from the Northwest Fisheries Science Center (NWFSC) on the results of the Economic Data Collection (EDC) Program and an overview of efforts to collect sociological information. This economic and sociological information is expected to be valuable in evaluating program performance.

Attached are four EDC reports based on the economic information collected by the program (Agenda Item J.5.b, NWFSC Reports 1-4). Hard copies of the introductions and overviews for each report are provided, and the entire reports are provided in electronic format only. Dr. Todd Lee and Ms. Erin Steiner will provide a presentation on the status and results from the EDC efforts.

Also attached is a report from the NWFSC social sciences group on their efforts and preliminary results (Agenda Item J.5.b, NWFSC Report 5). The social science group presentation on the Council floor will be brief but a more extensive video overview is available on the internet (please see http://bit.ly/1uGtEXi for the video and Agenda Item J.5.b, Supplemental NWFSC Report 6 for a hard copy of the slides presented in that video). Ms. Suzanne Russell from the NWFSC will be on hand to respond to questions regarding the collection and analysis of sociological information.

Council Task:

Council Discussion.

Reference Materials:

1. Agenda Item J.5.b, NWFSC Report 1: Economic Data Collection Program First Receiver and Shorebased Processor Report **(entire report available on web site and briefing book CD only).**
2. Agenda Item J.5.b, NWFSC Report 2: Economic Data Collection Program Catcher Vessel Report **(entire report available on web site and briefing book CD only).**
3. Agenda Item J.5.b, NWFSC Report 3: Economic Data Collection Program Catcher-Processor Report **(entire report available on web site and briefing book CD only).**
4. Agenda Item J.5.b, NWFSC Report 4: Economic Data Collection Program Mothership Report **(entire report available on web site and briefing book CD only).**
5. Agenda Item J.5.b, NWFSC Report 5: The Pacific Groundfish Fishery Social Study: An Initial Theme-Based Report.
6. Agenda Item J.5.b, Supplemental NWFSC Report 6: The Pacific Groundfish Fishery Social Study: An Overview of Initial Theme-Based Results – Slides Presented in Video

Agenda Order:

a. Agenda Item Overview — Jim Seger
b. Northwest Fishery Science Center Reports — Todd Lee, Erin Steiner, Suzanne Russell
c. Reports and Comments of Advisory Bodies and Management Entities
d. Public Comment
e. Council Discussion

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Agenda Item J.5.b
NWFSC Report 1
(Full Version Electronic Only)
November 2014

Economic Data Collection Program

First Receiver and Shorebased Processor Report (2009-2012)

Draft Report for PFMC Review

Do Not Cite

Marie Guldin, Abigail Harley, Erin Steiner, Todd Lee

Northwest Fisheries Science Center[1]

October 22, 2014

[1] For questions or comments, please contact the EDC Program at nwfsc.edc@noaa.gov.

2012 Economic Data Collection (EDC)
West Coast Groundfish Trawl Catch Share Program

DRAFT

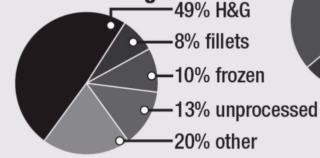
FIRST RECEIVERS & SHOREBASED PROCESSORS

ECONOMIC SUMMARY*

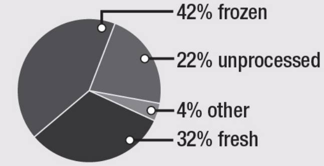
Company Average
20 processors
$20.8M revenue
$17.2M variable costs
$3.6M variable cost net revenue
$1M fixed costs
$2.5M total cost net revenue

PRODUCT TYPES

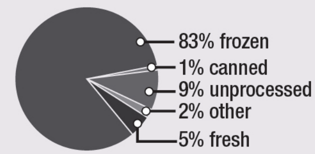
Pacific whiting



Non-whiting groundfish



Other species



NOAA FISHERIES
Northwest Fisheries Science Center

PRODUCTION

	N (companies)	1000 MT	Value
Pacific whiting	10	37.2	$55M
DTS	18	6.5	$53M
Other groundfish	19	4.6	$20M
Crab	19	9.3	$121M
Shrimp	12	11.5	$63M
Halibut	12	0.3	$5M
Salmon	15	1.8	$19M
Other	19	61.5	$77M

69%

Product Recovery Rate
0.64 pacific whiting
0.70 non-whiting groundfish
0.70 other species

Costs
$2.9M labor
$493K capitalized expenditures
$505K utilities
$454K custom processing
$9K monitoring
$2.4M other expenses

98 production workers
$22K production workers compensation

$66K non-production employee compensation

12 non-production employees

AVERAGE COMPANY

Revenue
$21M fish production
$75K offloading
$235K custom processing

SHORESIDE PROCESSING

Value & weight of processed fish
# of processing facilities

Washington
4 facilities
Groundfish:
13,236 MT, $23M
Other Species:
37,743 MT,$57M

Oregon
9 facilities
Groundfish:
25,573 MT, $78M
Other Species:
25,023 MT, $130M

California
11 facilities
Groundfish:
2,126 MT, $19 M
Other Species:
4,923 MT, $56 M

PROCESSORS

receive IFQ groundfish & process fish

Vessel sources

Groundfish:
4308 MT, $3M
Other species:
4532 MT, $6.8M

Non-vessel Sources
Groundfish: 578 MT, $752K
Other species: 772 MT, $2.6M

FISH PURCHASES

NON-PROCESSORS

receive IFQ groundfish & do not process fish

Costs
$21K utilities
$2K monitoring
$86K other expenses

Vessel sources

Groundfish:
50 MT, $65K
Other species:
15 MT, $75K

FISH PURCHASES

$35K variable cost net revenue

*Note that some off-site costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

First Receiver and Shorebased Processor Sector: 2012 Highlights

In 2012, there were twenty Processor and six Non-Processor companies that received IFQ groundfish.

- The sector generated $72 million in income and 1,460 jobs from purchases of fish caught in the trawl catch share program.
- Processors and Non-Processors received about 44% of all fish caught commercially on the West Coast in 2012, which was 33% of the total dollar value of all fish purchased.
- Processors and Non-Processors have facilities in California (23 facilities in total, 11 of which are processing facilities), Oregon (12 facilities in total, 9 of which are processing facilities), and Washington (5 facilities in total, 4 of which are processing facilities).
- Non-Processors had an average revenue per company of $259,202. Average variable costs were $172,744 in 2012 and average fixed costs were $63,508. Average variable cost net revenue per company (revenue minus variable costs) was $34,572.
- Processors employed the most production workers in the month of August, with an average of 130 workers per company. The fewest production workers were employed in March, with an average of 72 workers per company. Processors on average had 12 non-production employees per company.
- Processor annual compensation per position for production workers and non-production employees was $21,706 and $65,865, respectively.
- Processor average revenue per company was approximately $20.8 million, 99% of which was from fish product sales.
- Processor average total cost net revenue (revenue minus variable costs and fixed costs) was $2.5 million. Average variable cost net revenue was $3.6 million.

Infographic created by Su Kim, Scientific Communications Office, Northwest Fisheries Science Center.

Report Contents

Acknowledgments

The Economic Data Collection Program and Economic Data Collection Reports reflect collaboration and coordination of individuals across the West Coast. There are numerous individuals to thank for their contributions to this effort.

We would like to acknowledge the efforts of all the Northwest Fisheries Science Center (NWFSC) economists who provided a wide range of input into survey design, implementation, and analysis. The group worked together in an effort to provide high quality data that can be distributed in a timely and secure fashion. We thank Su Kim of the NWFSC Scientific Communications Office for producing the Infographic on the second page of this report.

We appreciate the efforts of the Northwest Regional Office for support in the Program development, outreach, and communication efforts. The Permit Office staff was particularly instrumental in ensuring coordination with the mandatory participation requirements.

The Northwest Division of the Office of Law Enforcement (OLE) and the National Oceanic and Atmospheric Administration (NOAA) Office of General Council helped extensively with many aspects of the Program development and enforcement. They continue to cooperate with the EDC Program to ensure compliance. Thanks to the Northwest Fisheries Science Center Scientific Data Management staff for building an extremely useful administrative tracking system and database.

We thank PacFIN and AKFIN staff for providing access to important landings, permit, and vessel data. The staff at ODFW, WDFW, and CDFG also contributed with data used for the fielding of the baseline data collection. Other data and assistance with interpretation of data was provided by the At-sea Hake Observer Program and the West Coast Observer Program.

Finally and very importantly, we thank the members of the West Coast fishing industry who met with us to discuss the survey development and interpretation of the information collected. We appreciate the time and effort of each participant in the program.

Report Introduction

About the Report

The US West Coast groundfish fishery takes place off the coasts of Washington, Oregon and California, and is comprised of over 90 different species of fish. The fish are harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal.[1] In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet.[2] The Economic Data Collection (EDC) Program is a mandatory component of the West Coast Groundfish Trawl Catch Share Program, collecting information annually from all catch share participants: catcher-processors, catcher vessels, motherships, first receivers, and shorebased processors.[3] The EDC information is used to monitor the economic effects of the catch share program, and collects information on operating costs, revenues, and vessel and processing facility characteristics.

This report summarizes information collected from the West Coast first receiver and shorebased processor sector. The EDC reports are also produced for the other sectors,[3] and cover the years 2009 to 2012. The 2009 and 2010 data were collected in 2011 to provide a baseline of pre-catch share information. The EDC reports are updated annually to disseminate the data collected and provide background, analysis, and context to support the interpretation of the data. The reports are also expected to provide a useful catalyst for feedback on the data collected and its analysis. It is envisioned that the scope of these reports will expand, and the methods used will be refined with each annual publication.

The report is composed of two major sections. The first section, First Receiver and Shorebased Processor Overview (beginning on page 8), is an in-depth summary that contains descriptive analyses of the first receiver and shorebased processor sector focusing on activities during 2012. The second section, First Receiver and Shorebased Processor Data Summaries (beginning on page 22), provides tables of all of the data collected from 2009 to 2012, with a detailed discussion of the methods used to collect and analyze the data. The tables summarize responses for each EDC form question, as well as net revenue and economic performance rates. The data that form the basis for this report are confidential and must be aggregated so that individual responses are protected. In cases where there are not enough observations to protect confidentiality, the data are either not shown, or are combined with broader groups of data.

[1] For more information about West Coast Groundfish, see www.westcoast.fisheries.noaa.gov/fisheries/groundfish/.

[2] More information about the West Coast Groundfish Trawl Catch Share Program is available online at www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/.

[3] Please see the EDC website, www.nwfsc.noaa.gov/edc, for links to the forms used to collect the EDC data and for previous year's reports. The website will be updated with the 2009-2012 reports when they are finalized.

More information about EDC Program administration and fielding of the surveys, the EDC forms, data quality controls and quality checks, data processing, and safeguarding confidential information can be found in the EDC Administration and Operations Report.[3]

Background - Economic Data Collection and West Coast Groundfish Trawl Catch Share Program

The economic benefits of the West Coast groundfish trawl fishery and the distribution of these benefits are expected to change under the West Coast groundfish trawl catch share program. To monitor these changes, the Pacific Fishery Management Council (PFMC) proposed the implementation of the mandatory collection of economic data. Using data collected from industry participants, the EDC Program monitors whether the goals of the catch share program have been met.[4]

Many of the PFMC's goals for the catch share program are economic in nature. These goals include: provide for a viable, profitable, and efficient groundfish fishery; increase operational flexibility; minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical; promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry; provide quality product for the consumer; and, increase safety in the fishery.

The EDC program is also intended to help meet the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 2007 requirement to determine whether a catch share program is meeting its goals, and whether there are any necessary modifications of the program to meet those goals. The MSA requires a formal review 5 years after the implementation of a catch share program to which the EDC program will make a valuable contribution.

Monitoring the economic effects of a catch share program requires a variety of economic data and analyses. The primary effects of a catch share program can be captured in two broad types of economic analysis: 1) economic performance measures, and 2) regional economic impact analysis. Both of these require information on the costs and earnings of harvesters and processors.

Economic performance measures include: costs, earnings, and profitability (net revenue); economic efficiency; capacity measures; economic stability; net benefits to society; distribution of economic net benefits; product quality; functioning of the quota market; incentives to reduce bycatch; market power; and, spillover effects in other fisheries. Some of these measures are presented in this report, while others will require more specific and involved analysis using EDC data.

Regional economic impact analysis measures the effects of the program on regional economies. In general, the catch share program will likely affect different regional economies in different ways. Regional

[4] For more information about the EDC program and the West Coast Groundfish Trawl Catch Share Program, please see the Economic Data Collection Program, Administration and Operations Report available at the EDC website: `www.nwfsc.noaa.gov/edc`

economic modeling involves tracking the expenditures of all businesses, households, and institutions within a given geographic region to arrive at the effects on income and employment. On the Pacific coast, the Northwest Fishery Science Center's IO-PAC model is used to estimate regional economic impacts.[5]

5 Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

FIRST RECEIVER AND SHOREBASED PROCESSOR OVERVIEW

Management Context

In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of an individual fishing quota (IFQ) program for the shorebased trawl fleet and cooperative programs for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets. The Shorebased IFQ Program allocated quota to permit owners for 30 different groundfish species and rockfish complexes, and individual bycatch quota for Pacific halibut, based on historical participation levels. Also, 20% of the shoreside Pacific whiting allocation was given to eligible shorebased processors (Table 1).[6] Eligibility and initial allocation percentage were determined by historical participation levels in the fishery based on control dates (1994 to 2004).[7] No quota allocation was given to processors for non-whiting IFQ groundfish.

Table 1: Processor Pacific whiting quota share allocation

Processing Company	Initial Quota Allocation (%)
Trident Seafoods Corporation	4.67
Ocean Gold Seafoods Inc	3.87
Pacific Coast Seafoods Company	3.79
Pacific Shrimp Company	2.85
Point Adams Packing Company	1.99
Ocean Beauty Seafoods LLC	0.87
Bandon Pacific Inc	0.74
Jessies Ilwaco Fish Company	0.65
Pacific Choice Seafoods	0.56
Hallmark Fisheries	0.01

6 `https://www.webapps.nwfsc.noaa.gov/ifq/`

7 `https://www.federalregister.gov/articles/2013/01/02/2012-31546/fisheries-off-west-coast-states-pacific-coast-groundfish-fishery-management-plan-trawl`

Background

A first receiver is defined by groundfish regulations as “a person who receives, purchases, or takes custody, control, or possession of catch onshore directly from a vessel.”[8] A shorebased processor is “a person, vessel, or facility that engages in commercial processing ... at a facility that is permanently fixed to land.” With the implementation of the West Coast Groundfish Trawl Catch Share Program, federal regulations mandate that a first receiver site license is required to receive fish harvested within the Shorebased IFQ Program.[9]

In the first receiver and shorebased processor sector, 39 companies had first receiver site licenses in 2012 (55 licenses in total, as some companies have multiple licenses), 35 of which submitted a complete EDC form. Of these companies, 26 utilized their first receiver site license by purchasing groundfish caught in the catch share program. The first receiver and shorebased processor sector generated $72 million in income and 1,460 jobs from purchases of fish caught in the catch share program.[10]

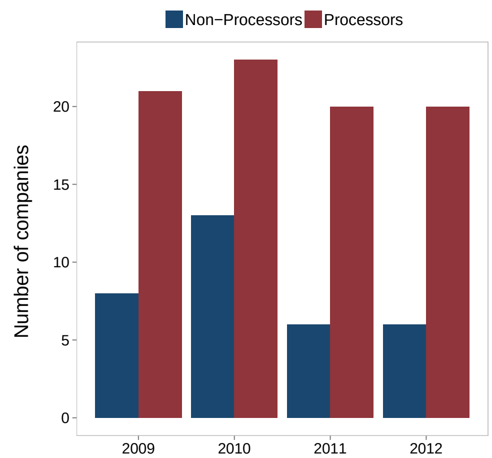


Figure 1: Number of companies characterized as Processors and Non-Processors.

First receiver and shorebased processor operations range from independent catcher vessel owners who unload and truck their own fish, to large multi-facility processing companies with a wide range of product offerings. The unit of analysis in this report is company. Owners of multiple facilities are required to submit a form for each facility. For the ease of analysis and to protect confidentiality, businesses that reported multiple facilities are considered a single company.

Due to the variety of operations, for the purposes of this overview, first receivers and shorebased processors that participated in the Shorebased IFQ Program are separated into two categories:

- **Processors**: companies that purchased IFQ groundfish and process fish.
- **Non-Processors**: companies that purchased IFQ groundfish and do not process fish.

As the purpose of the EDC program is to collect information to monitor the economic effects of the catch share program, this overview only examines those Processors and Non-Processors that participated

8 50 CFR 660.111

9 50 CFR 660.25

10 The values were calculated using the IO-PAC model of the NWFSC. For more information about the IO-PAC model, see Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

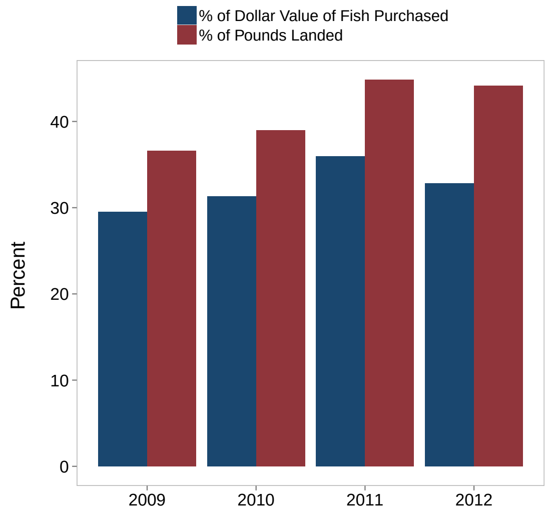


Figure 2: Percent of all West Coast shoreside commerically caught fish received by Processors and Non-Processors.

in the program by purchasing IFQ groundfish. Thus, companies that had a first receiver site license but did not purchase IFQ groundfish are excluded.[11] Henceforth, when this overview refers to Processors and Non-Processors, it is referring only to companies that fall into the above classifications.

In 2012, there were 20 companies classified as Processors and six companies classified as Non-Processors (Figure 1). Since 2009, there have been six new entrants. Nine companies have exited, four of which exited prior to the implementation of the catch share program in 2011.

Processors and Non-Processors received about 44% of all fish caught commercially on the West Coast in 2012, which was 33% of the total dollar value of fish purchased (Figure 2). This included 94% of all groundfish and just under 80% of all shrimp purchased on the West Coast.

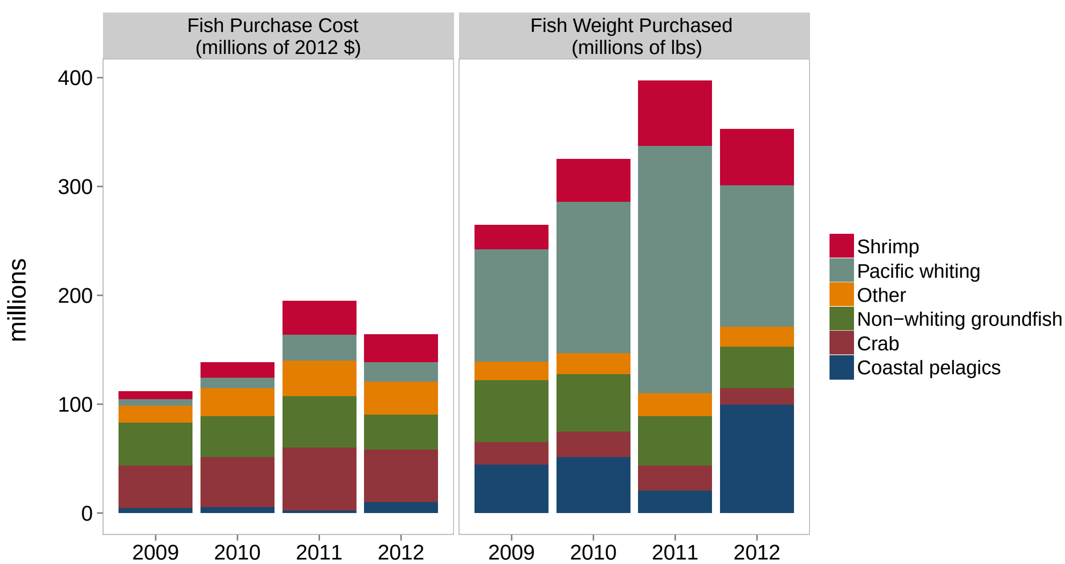


Figure 3: Processor and Non-Processor total fish purchase cost (millions of 2012 $) (left) and purchase weight (millions of lbs) (right) by species group.

[11] The summary statistics in the Data Summaries include all companies that had a first receiver site license regardless of whether they utilized it to purchase IFQ groundfish.

In addition to IFQ groundfish, over 50% of the fish weight purchased and 70% of the dollar value of fish purchased in 2012 were from non-IFQ landings, like crab, shrimp, tuna, and sardines (Figure 3).[12]

Processors and Non-Processors also purchase fish from non-vessel sources, which can include other first receivers, processors, wholesale dealers, brokers, tribes, and aquaculture producers. In 2012, 10% of all fish purchased, 7% of groundfish purchased, and 13% of other species purchased were from non-vessel sources.

There are facilities that receive fish in all three states on the West Coast.[13] In 2012, California had the most facilities (23 facilities), while 12 facilities were located in Oregon and 5 in Washington. The two ports with the highest IFQ landings in 2012 were Astoria and Newport, both in Oregon (Table 2). Both ports received about 60 million pounds of IFQ fish, worth $15.8 and $10.5 million, respectively. Washington received 39 million pounds, worth $9.5 million. All of the California ports combined (including Brookings, OR, to protect confidential data) received a little less than 13 million pounds, worth $9.4 million.

Table 2: Total purchase cost, landings weight, and number of companies purchasing fish for all catch share fisheries by delivery port (2012). Some companies purchase fish in multiple ports, and each company is counted in every port where fish is purchased.

	Purchase Cost (millions of $)	Landings (millions of lbs)	Number of companies
Washington state	9.5	38.8	6
Astoria, OR	15.8	56.8	5
Newport, OR	10.5	58.8	5
Coos Bay, OR	2.8	4.6	3
Brookings, OR/Crescent City, CA/Eureka, CA	4.6	6.9	3
Fort Bragg, CA	1.9	2.6	4
San Francisco, CA	0.4	0.4	6
Monterey, CA	0.6	1.0	3
Morro Bay, CA	1.9	1.7	7

Non-Processors

Many of the companies classified as Non-Processors are independent catcher vessel owners who applied for first receiver site licenses to unload and truck their own fish to shorebased processors or other

[12] Non-IFQ landings also include groundfish caught with fixed gear without a limited entry trawl endorsement.
[13] Facility refers to a specific location and owner. One company can own or lease multiple facilities in multiple states.

buyers. Non-Processors accounted for 0.19% of total pounds received by Processors and Non-Processors combined, which was 0.44% of the dollar value of fish purchased. Average revenue per company associated with all operations (IFQ and non-IFQ) by Non-Processors was $259,202 in 2012.[14] On average, 96% of Non-Processor revenue was from sales of unprocessed fish.

Costs are divided into two categories: variable costs and fixed costs. Variable costs vary with the level of fish production, and generally include items such as fish inputs, additives, labor, and utilities. Fixed costs do not vary directly with the level of production, and generally include items such as plant facility costs and processing equipment.[15]

Average variable costs were $172,744 in 2012 and average fixed costs were $63,508. Non-Processor variable costs make up about 68% of total costs. The largest expense was the cost of fish (74%), followed by utilities (9%) and packing materials (2%). Average variable cost net revenue per company was $34,572.

Processors

Processors produce seafood products in facilities all along the West Coast, and the species processed vary by state. In Washington in 2012, coastal pelagics and Pacific whiting were the largest in terms of production volume, while crab and coastal pelagics generated the highest first-wholesale value (Figure 4). Coastal pelagics, Pacific whiting, and shrimp were the largest by volume in Oregon, while crab and shrimp were the highest by first-wholesale value. In California, crab and non-whiting groundfish were the largest by volume, with crab as the highest valued species. While the weight of seafood produced in California was much lower than in Washington and Oregon in 2012, total first-wholesale value from fish in California was similar to Washington due to the high first-wholesale value of crab (Figure 4).

The labor force of production workers at these companies fluctuates throughout the year due to fishing seasons and the portfolio of species being processed. Production workers include on-site workers up through the line-supervisor level who are engaged in processing, assembling, inspecting, packaging, maintenance, and similar activities.[16] In 2012, Processors employed the most production workers in the month of August, with 2,471 total workers and an average of 130 workers per company. The fewest production workers were employed in March, with 1,294 total workers and an average of 72 workers per company. As would be expected, the months with more pounds purchased have larger numbers of production workers. These months of heavy operations seem to be shifting to later in the calendar year, from June in 2009 to August in 2012. The number of production workers also increases in the winter months during crab season (Figure 5).

In addition to production workers, Processors have non-production employees, which includes on-site supervisors and individuals responsible for sales, advertising, credit, collection, record keeping, and similar

[14] Values reported in inflation adjusted 2012 dollars. All averages calculated using non-zero, non-NA responses.
[15] See section 2.3 of the Data Summaries for more details.
[16] See Section 2.2.1 of the Data Summaries for more details.

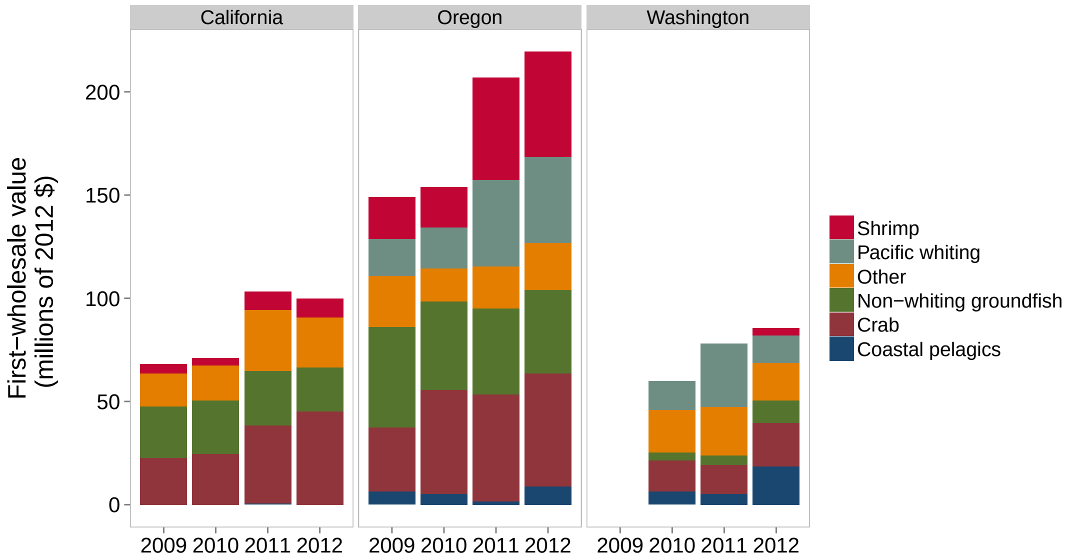


Figure 4: Total first-wholesale value of fish produced by Processors in each state (millions of 2012 $). (Note: If fewer than three companies processed a given species in a given state, the first-wholesale value is suppresed to protect confidential data).

activities.[17] In 2012, Processors had on average 12 non-production employees per company. Generally, non-production employees are employed for the entire calendar year, while many production workers are employed seasonally.

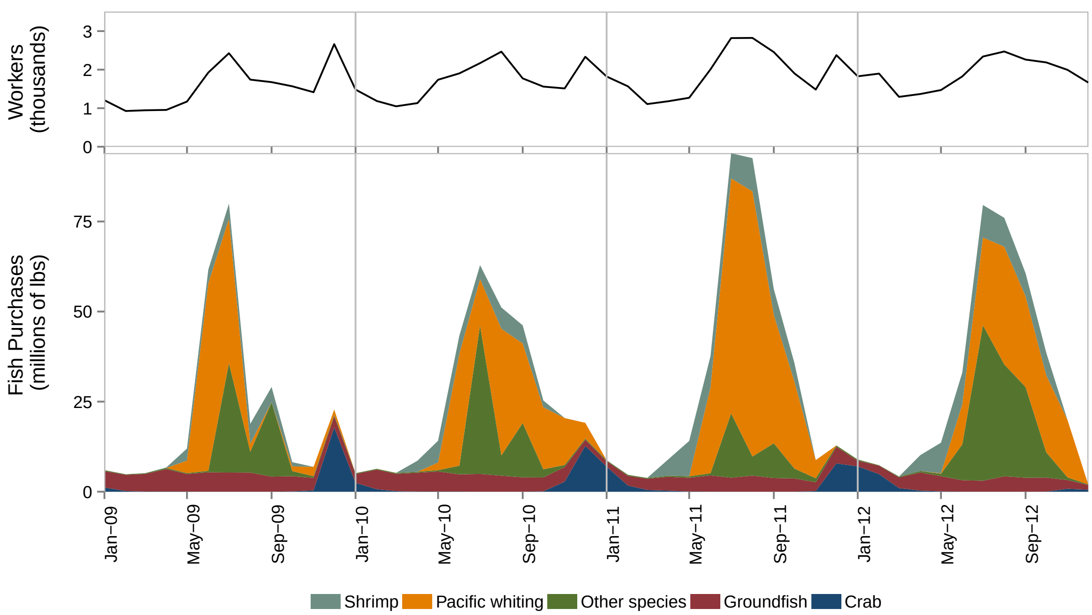


Figure 5: Number of production workers employed by Processors (thousands) (top) and total pounds purchased by Processors in each month by species group (millions of lbs) (bottom).

[17] See Section 2.2.2 of the Data Summaries for more details.

Measures of compensation are calculated using annual labor expenses and extrapolating from employment information given for select weeks of the year.[18] The average hourly compensation for production workers was $13.64 in 2012, which is a decline from $14.60 in 2009. Annual production worker compensation per position was $21,706 in 2012. The average hourly compensation for non-production employees was $33.89, which is similar to 2009 ($33.38). Annual non-production employee compensation per position was $65,865 in 2012.

Processors – Cost and Earnings

Processor earnings are comprised of fish sales, offloading revenue, custom processing revenue, and revenue from leasing or selling quota. Average revenue per company was approximately $20.8 million in 2012. Nearly all of Processor revenue was made up of fish product sales (99%). Average annual first-wholesale price per pound is the ratio of the annual production revenue received by Processors to the annual production weight (Figure 6). Crab, shrimp, and salmon have had the most dramatic increases in first-wholesale price, which seem to be correlated with increases in ex-vessel prices.

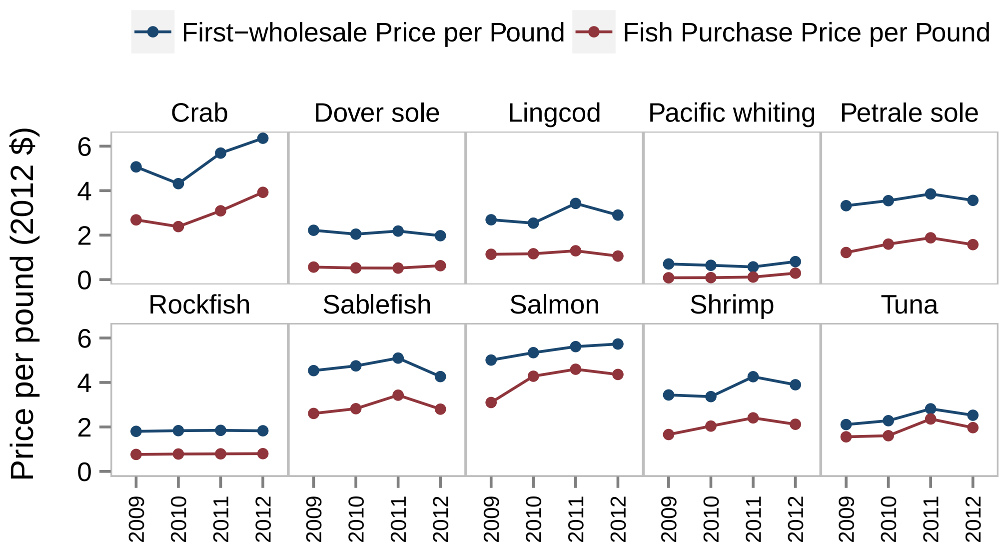


Figure 6: Average annual first-wholesale and fish purchase price per pound for select species (2012 $).

Variable costs made up an average of 94% of a Processor's total costs in 2012 and averaged approximately $17.2 million per company. The largest expense was the cost of fish purchased, primarily from vessels but also from other fish buyers, which averaged 55% of variable costs. The next largest categories of expenses (Figure 7) for Processors were labor (18%), packing materials (3%), utilities (3%), and custom processing (3%). Monitoring costs include shoreside catch monitors. In 2009 and 2010,

[18] See Section 2.2.3 of the Data Summaries for more details on compensation calculations.

all deliveries of Pacific whiting to a first receiver were verified by catch monitors, which were funded entirely by industry. With the implementation of the catch share program in 2011, catch monitors are required to verify all IFQ groundfish deliveries to first receivers. Since 2011, catch monitors have been partially funded by industry. The average cost of monitoring was approximately $9,000 per company in 2012, a 45% decrease from 2009.

Fixed costs include capitalized expenditures on buildings, machinery, and processing equipment, rental or lease of buildings and other structures, and repair and maintenance on facility buildings, machinery, and equipment. Fixed costs made up about 6% of a Processors total annual expenditures in 2012, and averaged $1.03 million.

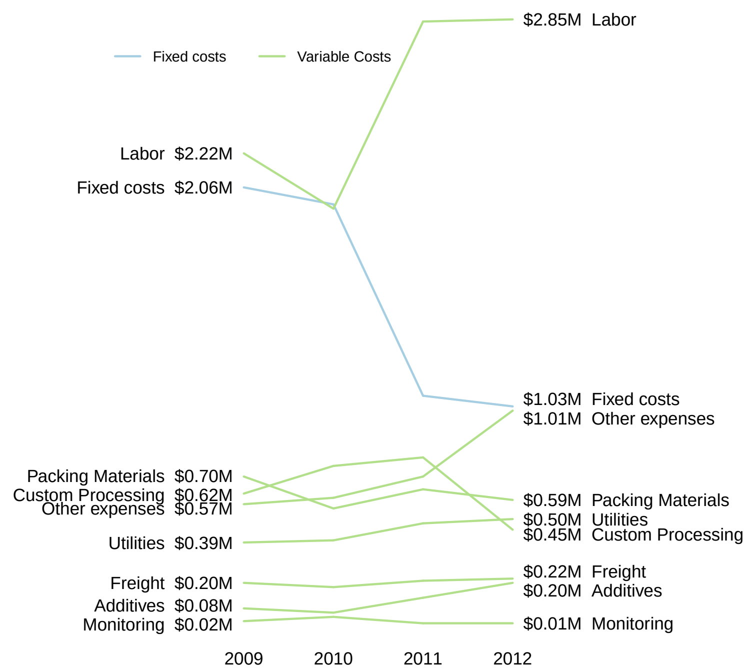


Figure 7: Average fixed and variable costs per company. Fish costs are not displayed on the figure; they averaged $5.8 million in 2009 and $10.5 million in 2012 (2012 $).

Average labor expenses have increased since the implementation of the catch share program (Figure 7), which seems to be driven in part by an increase in average number of workers and hours worked in post-catch share years relative to 2009-10. Average expenses on additives and utilities have gradually increased since 2009. The fall in average fixed costs is largely due to a decrease in capitalized expenditures, as other fixed costs, such as rent and repairs and maintenance, have increased during this period.

The EDC Program measures the net economic benefits of the catch share program by reporting two types of net revenue. The first is variable cost net revenue, which is revenue minus variable costs. The second is total cost net revenue, which is revenue minus both variable and fixed costs.[19] To provide a complete picture of the changes that have occurred, both net revenue figures are presented at two scales. Figure 8 shows the average net revenue per company while Figure 9 shows the industry-wide net revenue. Average net revenue shows the value generated by a typical company, while industry-wide net revenue represents the total value generated by all Processors. Both figures only include revenues and costs associated with the catch share program. It is important to note that the EDC forms attempt to capture only costs that are directly related to facility maintenance and processing operations, and not costs that are related to activities or equipment beyond the facility. Therefore, the net revenue reported here is an overestimate of the true net revenue.[20]

19 See Figure 7 for a description of which costs are considered variable costs and which costs are considered fixed costs.

20 See Section 2.6 of the Data Summaries for more information.

When the fixed and variable costs associated with receiving and processing fish are accounted for, the total cost net revenue for all operations (IFQ and non-IFQ) was an average of $2.5 million for Processors in 2012; that is over a 150% increase from 2009 to 2012 (Figure 8). Considering only the costs that vary directly with fish production, the average variable cost net revenue of Processors was $3.6 million; that is a 24% increase from 2009 to 2012. The rise in average total cost net revenue over the past four years appears to be driven largely by substantial decreases in fixed cost expenditures incurred by Processors. While average revenue has increased 60% since 2009 and average variable costs have increased 70%, fixed costs have decreased 45% from 2009 to 2012.

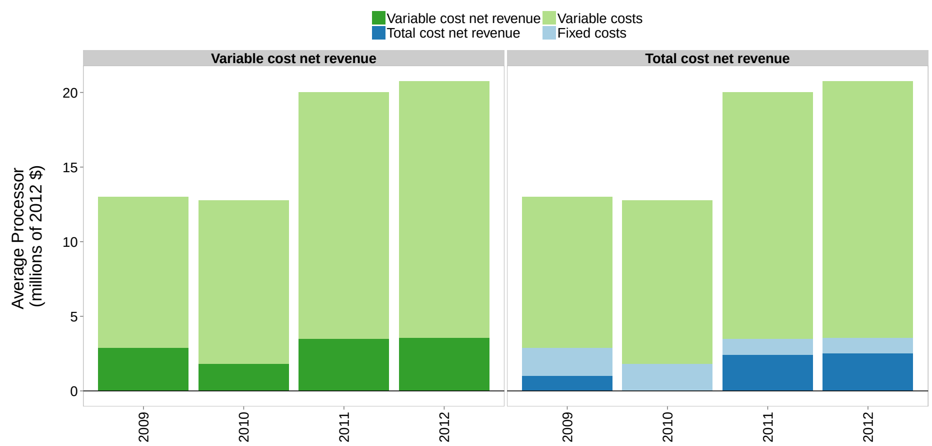


Figure 8: Average variable cost net revenue (revenue minus variable costs) (left), and average total cost net revenue (revenue minus variable costs and fixed costs) (right) per Processor (millions of 2012 $).

The industry-wide total cost net revenue for all Processors in 2012 was $50.5 million and the industry-wide variable cost net revenue was $71.1 million (Figure 9).

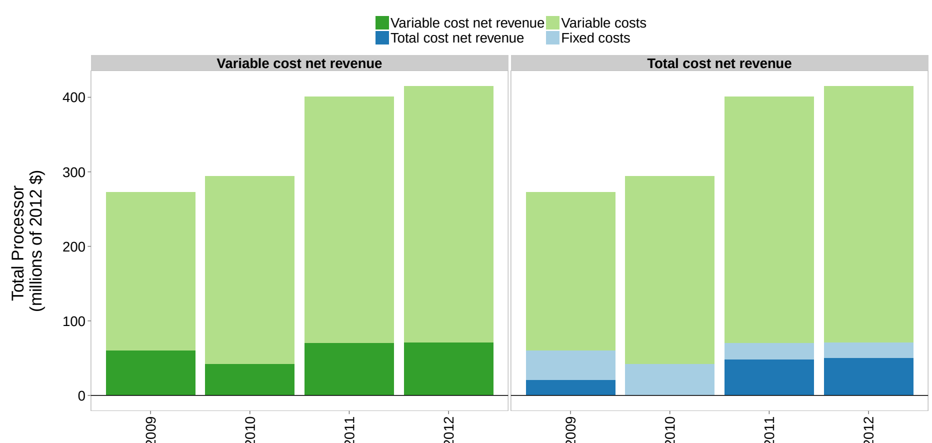


Figure 9: Industry-wide variable cost net revenue (revenue minus variable costs) (left), and industry-wide total cost net revenue (revenue minus variable costs and fixed costs) (right) (millions of 2012 $).

Processors – Production

Shoreside Pacific whiting

The EDC form collects information about seven types of Pacific whiting products: fillets, frozen whole, headed-and-gutted, surimi, roe, unprocessed, and other. Much of the total Pacific whiting produced in 2012 by Processors was headed-and-gutted (49%), a 37% decrease from 2009 (Figure 10). The decrease in headed-and-gutted Pacific whiting since 2009 has led to a larger percent of all other product types except fillets. While filleted Pacific whiting commands the highest first-wholesale price, headed-and-gutted Pacific whiting is the highest valued product in terms of total first–wholesale value generated by Processors.

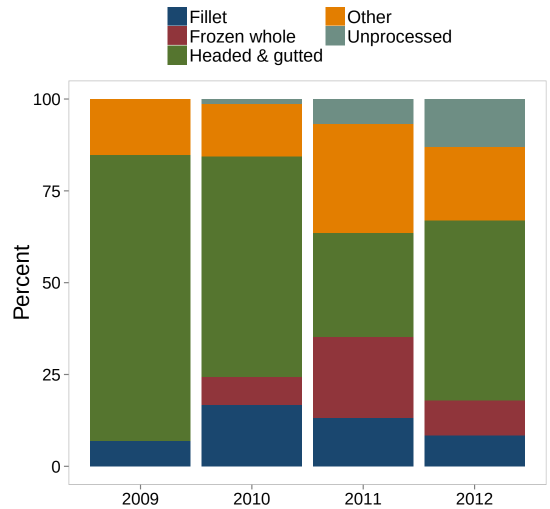


Figure 10: Pacific whiting product types as a percent of industry-wide production volume.
(Note: The other category includes surimi, roe, and unprocessed products, as well as frozen whole in 2009, to protect confidential data.)

The product recovery rate is the proportion of fish retained through the production process (total weight of production divided by total weight of fish purchases). The company average Processor product recovery rate for shoreside Pacific

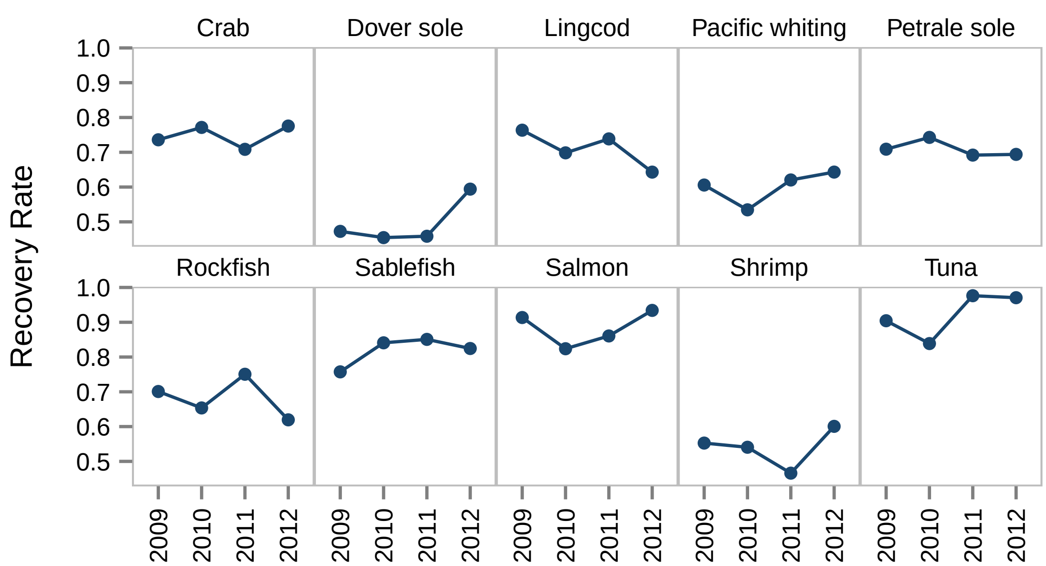


Figure 11: Average annual product recovery rate for select species.

whiting was 0.64 in 2012 (Figure 11). Markup, a measure of value-added, is the ratio of the value of fish sold to the cost of fish purchased. The company average Processor markup for shoreside Pacific whiting was 2.3, which is a 56% decrease from 2009 (Figure 16). While average Pacific whiting ex-vessel prices have been steadily increasing since 2009, the average first-wholesale price for Pacific whiting decreased from 2009 to 2011 (Figure 6).

In 2012, most of the U.S. Pacific whiting exports went to the European Union, followed by Ukraine, Russia, and China, among others.[21]

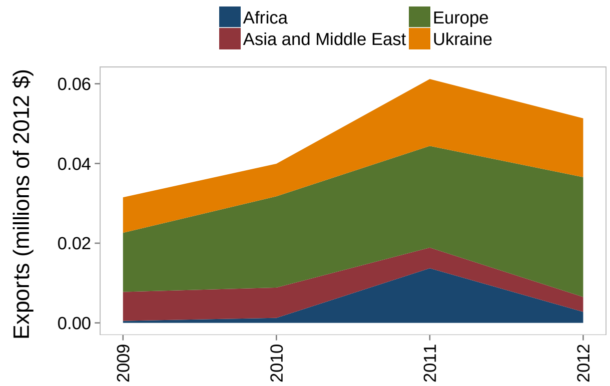


Figure 12: Total exports of fresh and frozen Pacific whiting (including mothership, catcher-processor, and shoreside production) from the West Coast by recipient region (millions of 2012 $).

Non-whiting groundfish

Non-whiting groundfish include flatfish (e.g., petrale sole and dover sole), roundfish (e.g., sablefish and lingcod), and rockfish. Non-whiting groundfish product types requested in the EDC form include processed fresh, frozen, unprocessed, and other. Most of the non-whiting groundfish processed is fresh, expect for sablefish which is mainly frozen (Figure 14).

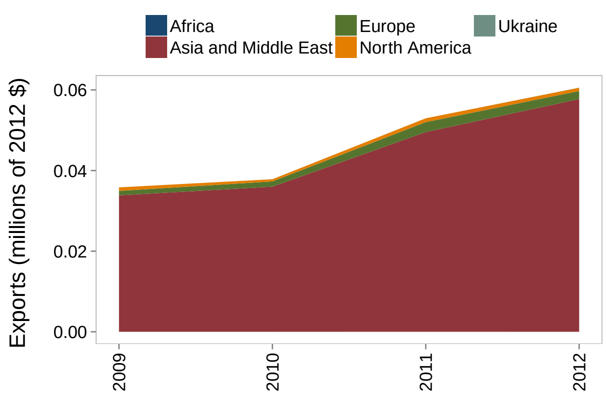


Figure 13: Total exports of sablefish from the West Coast by recipient region (millions of 2012 $).

For dover sole, petrale sole, and rockfish, the percentage processed fresh has decreased since 2009 and was coupled with an increase in unprocessed fish and other products. The opposite trend can be seen for lingcod. There is an international market for sablefish, which may explain why the primary product type is frozen (Figure 13).[22]

The average Processor product recovery rate for non-whiting groundfish has ranged from 0.68 to 0.7 from 2009 to 2012 (Figure 11). The recovery rate for sablefish is higher than other groundfish species. This could be due to the large percentage of frozen product (Figure 14) and that sablefish is a relatively higher valued species (Figure 6). Sablefish is also sometimes purchased dressed from catcher vessels that process on board, which could

[21] www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/index

[22] http://www.fishwatch.gov/seafood_profiles/species/cod/species_pages/sablefish.htm

result in a higher recovery rate. The average Processor markup for non-whiting groundfish was 1.4 in 2012, the same as in 2009 (Figure 16).

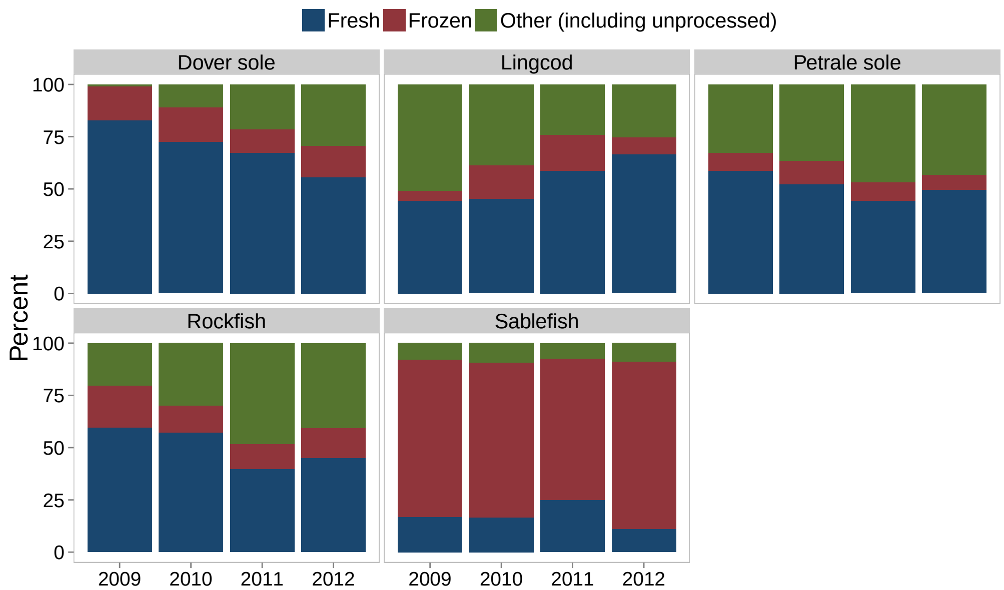


Figure 14: Product types as a percent of industry-wide production volume for select groundfish species.

Other species

The Other species category includes coastal pelagics, salmon, crab, shrimp, shellfish, Pacific and California halibut, Pacific herring, squid, sturgeon, and tuna. Product types requested in the EDC form include processed fresh, frozen, unprocessed, canned,[23] smoked,[24] and other. There has been an increase in the percent of unprocessed crab, salmon, and tuna produced in post-catch share years (Figure 15). This is coupled with a decrease in the percent of processed fresh crab, shrimp, and salmon.

The average Processor product recovery rate for other species has ranged from 0.69 to 0.75 from 2009 to 2012. The average product recovery rates for crab, shrimp, salmon and tuna have all increased from 2009 levels, likely due to the increase in unprocessed product (Figure 11). The average Processor markup for other species was 1.6 in 2012 (Figure 16).

[23] The canned product type is request for coastal pelagics, crab, salmon, shrimp, and sturgeon.

[24] The smoked product type is requested for salmon.

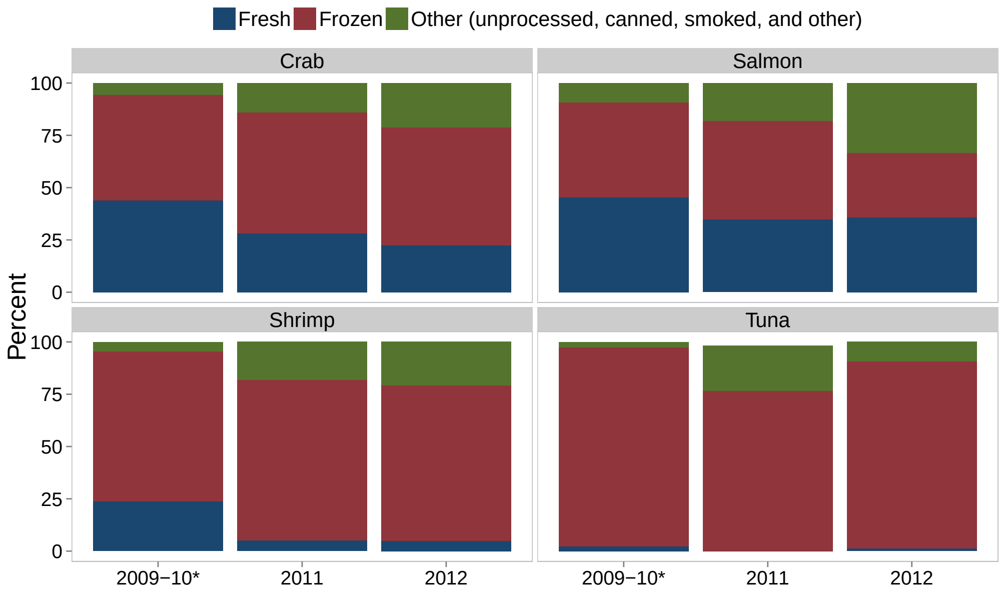


Figure 15: Product types as a percent of industry-wide production volume for select non-whiting, non-groundfish species. (*Note: 2009 and 2010 are combined to protect confidential data).

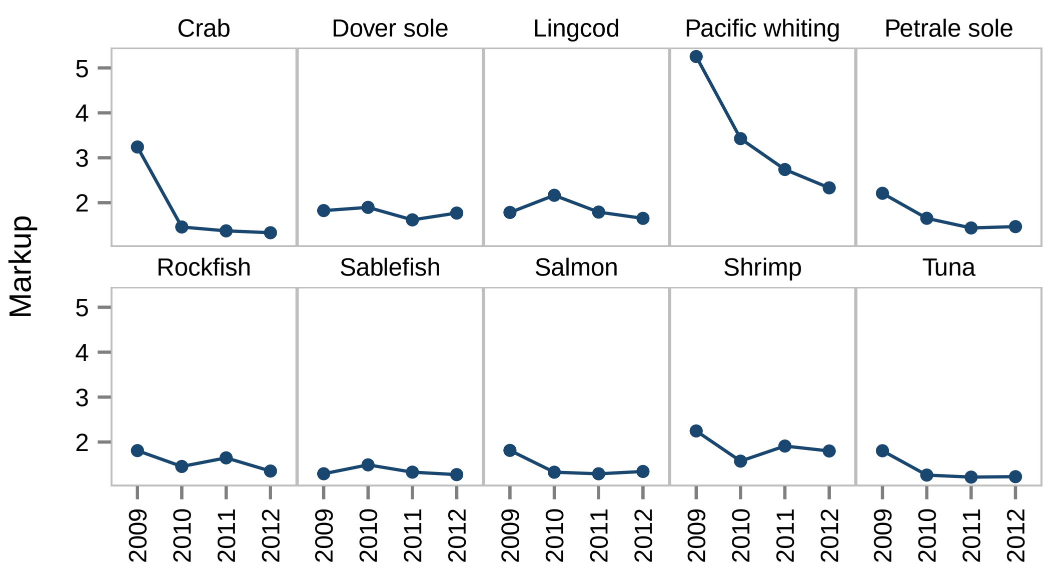


Figure 16: Average annual markup for select species.

FIRST RECEIVER AND SHOREBASED PROCESSOR DATA SUMMARIES

FIRST RECEIVER AND SHOREBASED PROCESSOR DATA SUMMARIES

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1 Introduction

1.1 Background

The US West Coast groundfish fishery takes place off the coasts of Washington, Oregon and California, and is comprised of over 90 different species of fish. The fish are harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal.[1] In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet.[2]

The Economic Data Collection (EDC) program[3] was implemented as part of these new regulations to monitor the economic effects of the catch share program. Annual economic data submissions are required from all fishery participants: catcher vessels, motherships, catcher-processors, and first receivers and shorebased processors §50 CFR 660.114. Baseline, pre-catch share, data were submitted in 2011 for the 2009 and 2010 operating years. Data for the first year the fishery operated under the catch share program (2011) were submitted in 2012, and the 2012 data submitted for this report were collected in 2013.

EDC Program has enhanced the quantity and quality of economic information available for analysis and the management of the West Coast groundfish trawl fishery. While costs and earnings data are available for shorebased catcher vessels starting in 2004[4], this is the first data collection from the first receiver and shorebased processor sector. This report summarizes the 2009-12 EDC first receiver and shorebased processor survey data, and with its companion reports covering the other sectors, is the second in what

[1] For more information about West Coast Groundfish, see www.westcoast.fisheries.noaa.gov/fisheries/groundfish/.

[2] More information about the West Coast Groundfish Trawl Catch Share Program is available online at www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/.

[3] Additional information on the EDC Program, including the EDC data collection forms can be found at www.nwfsc.noaa.gov/edc

[4] Lian, C.E. 2010. West Coast limited entry groundfish trawl cost earnings survey protocols and results for 2004. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-107, 35 p.

is expected to be an annual series of reports. EDC economists will expand and refine the scope and methods used with each new annual publication.

1.2 About the survey participants

First receiver and shorebased processor operations range from independent catcher vessel owners who unload and truck their own fish, to large multi-facility processing companies with a wide range of product offerings. Some respondents who provide information do not own a physical processing facility and thus do not incur many of the costs on the form. In the 2011 EDC First Receiver and Shorebased Processor Report, summary statistics were based on all survey respondents including those that did not process fish. In order for the information contained in this report to be more meaningful, the summary statistics for those companies who process fish and those companies who do not process fish are reported in two separate sections. This report refers to EDC companies that have processing activity as EDC Processors, and refers to EDC companies that have no processing activity as EDC Non-Processors. Table 1.1 shows the numbers of processing and non-processing companies that fill out EDC forms each year.

Table 1.1: EDC Processors and Non-Processors. Number of companies that reported processing activity and number of companies that reported no processing activity by survey year (N = number of companies, % = percent of all companies that submitted a form in survey year).

	2009		2010		2011		2012	
	N	%	N	%	N	%	N	%
EDC Processors	21	100.0%	23	100.0%	24	70.6%	25	75.8%
EDC Non-Processors	—	—	—	—	10	29.4%	8	24.2%

1.3 Understanding the report

Not all business entities with a first receiver license process fish, and much of the survey does not correspond to this type of operation. On 2009 and 2010 forms, a company was permitted to leave most of the form blank if they did not process any groundfish or whiting. This was changed on the 2011 form (and subsequent forms) and all participants are required to answer all questions. Thus, the data available for EDC Processors are from first receivers and shorebased processors who processed groundfish in 2009 and 2010, and from first receivers and shorebased processors who processed groundfish or any other fish from 2011 onward. The data available for EDC Non-Processors in this report are from 2011 and 2012.

The unit of analysis identified in the summary tables is a company. Owners of multiple facilities are required to submit a form for each processing facility. For the ease of analysis and to protect confidentiality, businesses that reported for multiple facilities are considered a single company.

For questions not applicable to a company's particular business operation, the participant is instructed on the form to fill in "Not Applicable" or "NA". For each value displayed in the summary data tables, N is displayed. In most cases, N represents the number of responses to the question that are not "NA" and not zero, unless noted otherwise. If a particular category had only "NA" responses for all participants, a "—" symbol is used. The "—" symbol also represents cases where the information was not requested on the form for that survey year.

Although participants are identified on a calendar year basis, they complete the form using information based on the fiscal year of the entity. Currently data are presented for survey year, and therefore data assigned to a survey year may not overlap completely with the calendar year. Information obtained from outside of the EDC Program are adjusted to match the fiscal year provided on each form.

All data submitted via the EDC Program are confidential under 402(b) of the Magnuson- Stevens Act (16 U.S.C. 1801, et seq.) and under NOAA Administrative Order 216-100. In order to protect these data, a rule of three and a rule of 90-10 are implemented. The rule of three requires a response from at least three companies in order to show a summary statistic. The 90-10 rule requires that no single company's value should comprise over 90 percent of the value displayed. The tables show a "***" for data points where there were less than three companies reporting the information, and/or if one company's responses accounted for greater than 90 percent of the average value. Zeroes are shown if all companies reported zeroes. More information about how confidential data are protected in the EDC Program can be found in the Administration and Operations report.

One change implemented this year is the inclusion of a measure of variance of the data. The stacked dots included in the tables provide information about the coefficient of variation (CV) of the mean. We use the following scoring: ˙represents $CV < 0.5$, ⁚represents $0.5 \leq CV < 1.0$, ⁝represents $1.0 \leq CV < 2.0$, and ⁞represents $2.0 \leq CV$. For 2009-2012, none of the CVs exceeded 2.9.

Unlike the Overview, all numbers reported in the Data Summaries are in nominal dollars.

1.4 Purpose of the data summaries

This report, like the other four EDC reports,[5] has multiple objectives. The first is to provide basic economic data summaries that can be used for a variety of purposes associated with fishery management. Since much of the data collected are confidential under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 2007, the data are summarized as averages or totals for each question on the EDC forms. Thus summarized, the reports make the data available to the public for both research and informational purposes.

Second, the reports provide information about the performance of the catch share program. This includes information that can be used to monitor whether and to what degree the goals of the program are being met. It is expected that additional modeling and analysis will be included in each subsequent year that will provide more detailed information about the performance of the program. These reports will serve as the basis for the 5-year review of the catch share program that is mandated in the MSA, as well as the NMFS National Catch Shares Performance Indicators. Currently, with just two years of catch share EDC data, it may be difficult to draw firm conclusions about the performance of the program. In addition, the catch share program may have a transitional period in the first few years as participants learn about the system and develop new business strategies.

Third, the reports either provide or serve as the basis for economic models that will be used as part of the Pacific Fishery Management Council's (PFMC) biennial specification process for groundfish management. These models include the IO-PAC model,[6] as well as estimates of revenue, costs, and net revenue.

Lastly, and perhaps most importantly, the data reports are expected to provide a useful catalyst for feedback on the data collected and its analysis.

The Administration and Operations report describes the EDC Program administration and fielding of the surveys, the EDC forms, data QA/QC and data processing, and safeguarding confidential information. The other EDC reports provide basic data summaries for the catcher vessel, catcher-processor, and mothership forms.

This first receiver and shorebased processor report and other reports, listed above, comprise the second of an annual series of reports. It is envisioned that over time the scope of these reports will expand,

[5] In addition to the first receiver and shorebased processor report, there are four companion reports:

- Economic Data Collection Program, Administration and Operations Report (September 2014)
- Economic Data Collection Program, Catcher-Processor Report, 2009-2012 (September 2014)
- Economic Data Collection Program, Catcher Vessel Report, 2009-2012 (September 2014)
- Economic Data Collection Program, Mothership Report, 2009-2012 (September 2014)

[6] Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

and the methods used will be refined with each annual publication. As such, the data summaries and analyses may change in subsequent years as improvements are implemented. In general, the report provides summaries as sector totals or means. Future reports will contain additional summaries that describe the variation of the data, either numerically or graphically. They are not contained in this report due to time constraints.

1.5 First receiver and shorebased processor form administration

Completion of EDC forms is mandatory for participants in the catch share program. The regulations for defining who is required to complete an EDC form differs between the baseline data collection (2009 and 2010) and all annual/ongoing data collections for 2011 onward. Under 50 CFR part 660 and section 402(a) of the Magnuson-Stevens Act (16 U.S.C. 1801, et seq.) all owners and lessees of a shorebased processor and all buyers that receive groundfish or whiting harvested with a limited entry trawl permit as listed in the Pacific States Marine Fisheries Commission's state fish ticket database were required to submit an Economic Data Collection (EDC) Form in 2009 and 2010. Beginning in 2011, a first receiver site license was required to land catch share harvested fish. The regulation requires all owners of a first receiver site license in 2011 and beyond, and all owners and lessees of a shorebased processor (as defined under "processor" at 660.11, for purposes of EDC) that received round or headed-and-gutted IFQ species groundfish or whiting from a first receiver in 2011 and beyond to submit an EDC form for that year. Owners of multiple facilities are required to submit a form for each processing facility. A first receiver site license application will not be considered complete until the required EDC form for that license owner associated with that license is submitted.

A calendar year is used to determine which facilities meet the criteria. For example, in 2012 data were collected from all owners of a first receiver site license in 2011. The forms are fielded on this schedule in order to allow participants the time necessary to complete their taxes, which may contain some information that is required on the EDC forms. Participants are identified using contact information provided by the Northwest Regional Office - Permit Office (Permit Office).

If a form has missing information, or the information provided on the form is believed to be incorrect, EDC Program staff attempt to contact the participant to correct the information. On occasion the participant cannot be reached or the participant cannot provide the missing information. In these cases, the missing or inaccurate data are treated on a case by case basis during analysis as documented in the Administration and Operations report. Data are validated and verified with external data sources whenever possible. These data sources include the Permit Office and state fish tickets.

Table 1.2: Survey response rates. Total forms owed, number of forms that were submitted, number of forms that are complete, and number of companies that submitted EDC forms by survey year.

Status	2009	2010	2011	2012
Total forms owed	55	58	52	55
Submitted forms	37	45	51	52
Complete forms	37	45	49	50
Companies that submitted forms	29	37	36	37

2 EDC Processors

This section of the report summarizes information on first receivers and shorebased processors that process fish, EDC Processors. Groundfish regulations (50 CFR 660.11) define a shorebased processor as "a person, vessel, or facility that engages in commericial processing... at a facility that is permanently fixed to land." In 2009 and 2010, only companies that processed groundfish were required to fill out the entire form. In 2011 onward, all companies with a first receiver site license were required to submit the entire form. Thus, there may be some companies that received groundfish all four years of the survey but only process non-whiting, non-groundfish fish. These companies are only included in summary statistics for 2011 onward.

2.1 Facility Value

2.1.1 Appraisal value of facility

Table 2.1: Value from last appraisal of facility (N = number of EDC Processors with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Market value of facility from last appraisal	$1,450,000	4	$1,161,023	5	$1,650,000	3	$1,537,500	4
Replacement value of facility from last appraisal	$4,971,339	5	$4,144,450	6	$6,335,566	3	$6,335,566	3

2.2 Employment

This section provides information about number of employees, number of hours worked, and labor costs. These figures include full, part-time, and temporary employees. Workers involved directly with production and non-production employees are provided separately.

2.2.1 Production workers

Production workers include workers at the facility up through and including the line-supervisor level who are engaged in fabricating, processing, assembling, inspecting, receiving, packing, warehousing, shipping, maintenance, repair, janitorial staff, product development, or transporting product on site. The EDC form asks for production worker employment figures for the week that includes the 12th day of the month, thus the following tables present a weekly snapshot of employment for each month throughout the year.

Table 2.2: Weekly employment: Number of production workers. Number of production workers for the week that includes the 12th of the month. (N = number of EDC Processors with non-zero, non-NA responses).

Month	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
January	64	19	71	21	83	22	84	22
February	49	19	56	21	72	22	87	22
March	50	19	50	21	51	22	60	22
April	53	18	57	20	54	22	63	22
May	65	18	87	20	56	23	68	22
June	107	18	91	21	88	23	81	23
July	128	19	103	21	127	24	108	24
August	92	19	117	21	121	24	113	24
September	93	18	89	20	109	24	101	24
October	83	19	78	20	83	23	102	23
November	79	18	76	20	65	23	88	23
December	140	19	111	21	109	22	74	23

Table 2.3: Weekly employment: Production worker hours. Hours worked by production workers for the week that includes the 12th of the month. (N = number of EDC Processors with non-zero, non-NA responses).

Month	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
January	1,912.9	19	1,582.6	21	2,424.2	22	2,422.1	22
February	990.9	19	1,512.0	21	1,949.7	22	2,219.0	22
March	1,322.4	19	1,337.4	21	1,478.7	22	1,502.8	22
April	1,479.2	18	1,817.3	20	1,786.1	22	1,951.2	22
May	2,482.3	18	3,163.9	20	2,293.5	23	2,112.6	22
June	3,602.6	18	3,100.5	21	3,791.1	23	2,169.2	23
July	6,385.3	19	4,096.0	21	6,146.6	24	4,474.7	24
August	3,397.7	19	4,452.5	21	6,606.3	24	4,746.6	24
September	2,859.1	18	3,119.1	20	5,008.5	24	4,012.8	24
October	4,155.8	19	2,350.3	20	3,143.0	23	4,214.4	23
November	2,705.6	18	2,195.7	20	2,155.0	23	3,329.8	23
December	5,307.2	19	5,688.2	21	4,774.8	22	2,783.4	23

2.2.2 Non-production employees

All non-production employees include those involved in supervision above the line-supervisor level, as well as individuals in the company responsible for sales, advertising, credit, collection, installation, the cafeteria, recordkeeping, clerical and routine office functions, guard services, executive management, purchasing, finance, and legal affairs. Companies that do not track hours for salaried employees are asked to assume a forty-hour workweek. These employment figures are for the week that includes the 12th of March.

Table 2.4: Weekly employment: Non-production employees. Number of non-production employees and hours worked for the week that includes March 12. (N = number of EDC Processors with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Hours Worked	633.8⁝	19	810.1⁝	21	444.2⁝	24	387.5⁝	24
Number of employees	10.2⁝	19	12.5⁝	21	8.7⁚	24	10.0⁝	24

2.2.3 Compensation

Hourly compensation for each EDC Processor is calculated by dividing annual labor expenses (Section 2.3.2) by an estimate of total annual hours worked. The EDC form requests information on number of employees and total hours worked for the week including the 12th day of the month for production workers and for the week including the 12th day in March for non-production employees. Estimates of total annual hours worked for each company are found by assuming that employment information for the week of the 12th is representative of the entire month and by weighting each month equally using the following formula:

$$\sum_{m=1}^{12}(\frac{Hours}{week})_m * \frac{52}{12}$$

Table 2.5: Hourly compensation. Average hourly compensation. (N = number of EDC Processors with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Production workers	$14.14	18	$13.70	20	$12.62	22	$13.72	21
Non-production employees	$31.42	18	$30.71	21	$31.21	24	$33.68	24

Compensation per position for each EDC Processor is calculated by dividing annual labor expenses (Section 2.3.2) by the average numbers of workers across months in year. This assumes that the average number of workers is representative of the total number of positions that year. For non-production workers, it is assumed that number of workers in the week containing March 12th is representative of the number of non-production employee positions in all weeks during the year.

Table 2.6: Compensation per position. Average compensation per position. (N = number of EDC Processors with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Production workers	$21,161	18	$20,421	20	$23,582	22	$21,918	21
Non-production employees	$68,481	18	$69,562	21	$61,746	24	$66,416	24

2.3 Costs

This section of the report describes the cost data that are collected on the EDC first receiver and shorebased processor form. For the purposes of EDC, costs are divided into two categories, variable costs and fixed costs. Variable costs vary with the level of fish production, and generally include items such as fish inputs, additives, labor, and utilities. Fixed costs do not vary with the level of production, and generally include items such as plant facility costs and processing equipment. The designation of a cost as variable or fixed depends on many factors, including the relevant time horizon and use of the data. While some costs would clearly be considered fixed (e.g., the purchase of processing machinery), others are more difficult to categorize as fixed versus variable. For the purposes of this report, we consider the costs listed in Table 2.7 to be fixed, and the costs listed in Tables 2.8, 2.9, 2.10, 2.11, and all tables listed under Section 2.3.3 to be variable. The EDC Program will continue to explore, and possibly improve, the categorization of these costs.

Finally, there are a variety of costs that are associated with running a first receiver or shorebased processing facility that are not requested on the EDC form. This is because it is difficult to determine the share of the costs associated with the facility. These costs include items that can be used for activities other than processing of fish, or are too difficult to allocate to a particular facility in a multi-facility company. These expenses include trucks, and professional fees. In general, the EDC forms attempt to collect costs that are directly related to facility maintenance and processing operations, and not costs that are related to activities or equipment beyond the processing facility (one exception is off-site product freezing and storage). For these reasons, the EDC aggregated measures of costs (variable costs, fixed costs and total costs) underestimate the true costs of operating a business.

2.3.1 Fixed Costs

Buildings and processing equipment costs

Table 2.7: Buildings and processing equipment costs. Capitalized expenditures, rental or lease payments, processing equipment expenses, repair and maintenance expenses. (N = number of EDC Processors with non-zero, non-NA responses).

Cost	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Capitalized expenditures on buildings	$473,992	13	$512,455	13	$333,591	10	$184,646	13
Capitalized expenditures on new and used machinery and equipment	$1,121,078	19	$1,236,055	18	$590,296	17	$299,262	20
Processing equipment	$34,943	14	$34,701	16	$32,752	19	$50,035	15
Rental or lease of buildings, job-site trailers, and other structures	$125,225	19	$125,431	21	$134,588	23	$138,127	24
Repair and maintenance on facility buildings, machinery, and equipment	$249,121	19	$250,135	20	$252,563	24	$257,673	24

2.3.2 Variable Costs

Labor expenses

Labor expenses include wages, bonuses, benefits, payroll taxes, and unemployment insurance.

Table 2.8: Employment expenses. Total annual labor expenses for all employees (includes wages, bonuses, benefits, payroll taxes, and unemployment insurance). (N = number of EDC Processors with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Production workers	$1,647,056	19	$1,402,191	21	$1,903,569	24	$1,982,524	24
Non-production employees	$486,546	18	$481,659	21	$500,361	24	$531,943	25

Quota costs

Not enough processors reported quota costs to be able to display this information.

Utility expenses

Many respondents did not provide expenses on natural gas, either because they did not incur this expense or because that information was not available. (Table 2.9)

Other expenses

Some new categories were added in 2011 reflecting feedback on the baseline surveys. Thus information on these categories of spending is only available for 2011 onward (Table 2.10).

Custom processing

Custom processing is when a third party processes fish that are owned by the respondent. The processing occurs outside the facility responding to the EDC. (Table 2.11).

Table 2.9: Utility expenses. (N = number of EDC Processors with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Electricity	$187,698	19	$180,585	21	$183,988	24	$216,312	23
Natural gas	$85,034	11	$78,814	11	$31,330	11	$33,527	10
Nitrogen gas	—	—	—	—	***	***	***	***
Propane gas	$28,054	15	$49,778	17	$38,555	21	$32,350	21
Water	$76,613	19	$89,340	21	$99,451	24	$109,222	24
Sewer, waste, and byproduct disposal	$40,190	18	$41,913	19	$53,464	22	$72,004	19

Table 2.10: Other expenses. (N = number of EDC Processors with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Cleaning and custodial supplies	—	—	—	—	$19,233	20	$24,192	21
Freight costs for supplies	$187,005	9	$172,357	10	$191,495	8	$204,031	11
Insurance (property, product, and personal liability)	$153,333	19	$136,398	21	$79,973	24	$73,341	24
Licensing fees	—	—	—	—	$13,016	22	$13,942	24
Non-fish ingredients (additives)	$71,679	10	$61,488	11	$123,647	12	$185,735	14
Off-site product freezing and storage	$195,828	16	$216,411	17	$378,661	16	$460,945	18
Offloading	—	—	—	—	$59,344	12	$98,963	15
Packing materials	$660,314	19	$526,656	21	$540,734	24	$514,370	25
Production supplies	$120,589	18	$122,864	20	$56,428	23	$72,021	23
Shoreside monitoring	$15,101	12	$35,150	13	$7,305	16	$8,773	16
Taxes (property and excise)	—	—	—	—	$60,627	22	$65,253	23

Table 2.11: Custom processing. Cost and weight of custom processing activities. (N = number of EDC Processors with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Cost of custom processing of whiting	284,151 ⁝	3	***	***	***	***	***	***
Cost of custom processing of non-whiting groundfish	432,446 ⁝	3	140,182 ⁚	3	***	***	***	***
Cost of custom processing of other (non-whiting, non-groundfish)	453,235 ·	3	326,407 ⁚	4	232,185 ⁝	4	150,706 ⁝	4
Weight of custom processing of whiting	1,290,288 ⁚	3	***	***	***	***	***	***
Weight of custom processing of non-whiting groundfish	1,359,927 ⁝	3	460,725 ⁚	3	***	***	***	***
Weight of custom processing of other (non-whiting, non-groundfish)	2,067,479 ⁝	3	1,401,380 ⁝	4	988,503 ⁚	3	84,518 ·	3

2.3.3 Fish purchases

Respondents are asked to provide the weight and cost of fish received during the survey year. This includes: 1) the weight of fish paid for; 2) the weight of those not paid for due to size or quality reasons; and 3) the weight of fish not paid for due to intra-company transfers.

The cost of fish from vessel or non-vessel sources includes the value of any taxes paid on behalf of delivering vessels. Purchase weight and cost information is requested by categories for different species types and sources. For catch share species, the fish source categories are: 1) Limited Entry (LE) Trawl; 2) LE Fixed Gear; 3) Other vessels; and 4) Non-vessel sources. For non-catch share species, the fish source categories are: 1) Vessel sources; and 2) Non-vessel sources. LE Trawl represents fish acquired directly from a vessel registered to a LE permit with a trawl endorsement and caught with either trawl or fixed gear. LE Fixed Gear represents fish acquired directly from a vessel with a fixed gear endorsement. This does not include fish caught with a fixed gear on a LE permit with a trawl endorsement, i.e., the gear switching provision of the catch share program, which are included under LE trawl. Other vessels are those without either a LE Trawl or LE Fixed Gear endorsement. Non-vessel sources include fish acquired from other entities, including other first receivers, processors, wholesale dealers, brokers, aquaculture producers, and transfers from outside the facility.

Fish that are not paid for are excluded from the tables in this section. This includes fish recorded as having zero value due to size or quality reasons, as well as fish that are received for custom processing. The tables do include post season adjustments and fish purchased that are then custom processed by another processor outside the facility. As stated in the introduction to this report, respondents fill out the EDC form according to their fiscal year, so pounds listed for each species may not have been purchased during the calendar year indicated by the column header, and therefore these values may not align directly to state-fish ticket data.

2.3.4 Total cost and weight of fish purchases by source and species

Table 2.12: Pacific whiting: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	0	0	0	0	0	0	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	0	0	0	0	0	0
LE Trawl	886,836	69,261	12	1,021,302	85,610	12	2,040,278	226,753	10	1,335,643	188,938	9
Non-vessel	—	—	—	—	—	—	***	***	***	***	***	***
Other	289,457	***	4	65,199	5,561	4	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.13: Dover sole: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	169	67	6	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	***	***	***	***	***	***
LE Trawl	234,303	82,044	14	211,602	68,034	13	153,648	65,720	14	144,450	63,990	12
Non-vessel	—	—	—	—	—	—	7,987	4,182	5	14,312	6,507	6
Other	***	***	***	12,498	4,711	4	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.14: Sablefish: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	35,762	108,570	10	36,755	116,945	12	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	24,856	99,215	12	21,584	70,785	10
LE Trawl	57,490	120,059	15	44,236	97,109	16	27,905	83,417	15	36,094	85,956	16
Non-vessel	—	—	—	—	—	—	7,505	19,209	4	8,770	30,758	8
Other	10,157	24,353	4	17,054	36,047	5	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	16,287	86,147	7	11,635	48,040	9

Table 2.15: Thornyheads: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	76	59	6	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	1,342	1,371	8	837	1,417	9
LE Trawl	48,042	24,589	13	43,082	23,340	13	26,373	15,654	16	29,811	17,720	14
Non-vessel	—	—	—	—	—	—	623	303	3	3,062	1,573	4
Other	***	***	***	***	***	***	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	43	27	3	561	445	6

Table 2.16: English sole: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	***	***	***	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	0	0	0	0	0	0
LE Trawl	5,054	1,591	11	3,014	962	11	1,452	690	10	2,415	862	13
Non-vessel	—	—	—	—	—	—	***	503	***	472	206	5
Other	***	***	***	***	***	***	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.17: Petrale sole: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	***	***	***	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	***	***	***	***	***	***
LE Trawl	37,796	30,028	11	14,396	16,591	13	13,711	19,856	12	21,141	32,279	12
Non-vessel	—	—	—	—	—	—	3,377	5,971	5	4,776	7,612	5
Other	3,985	5,070	4	1,638	2,772	4	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	2	2	3	***	***	***

Table 2.18: Rex sole: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	***	***	***	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	0	0	0	0	0	0
LE Trawl	10,707	3,674	14	9,249	3,064	12	7,337	2,714	13	8,118	3,917	13
Non-vessel	—	—	—	—	—	—	729	763	4	710	436	4
Other	***	638	***	902	747	3	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	51	18	3	***	***	***

Table 2.19: Arrowtooth flounder: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	—	—	—	—	—	—	***	***	***	23	3	4
LE Trawl	—	—	—	—	—	—	41,107	4,202	11	42,102	5,298	13
Non-vessel	—	—	—	—	—	—	***	***	***	14,612	2,646	3
Other Vessel	—	—	—	—	—	—	95	10	3	***	***	***

Table 2.20: Lingcod: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	122	101	7	100	83	6	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	34	30	6	75	59	6
LE Trawl	2,361	1,524	15	1,361	924	14	4,566	3,574	17	6,106	4,558	17
Non-vessel	—	—	—	—	—	—	1,559	1,537	6	2,435	2,277	6
Other	836	1,059	3	860	1,004	5	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	124	117	3	798	681	7

Table 2.21: Rockfish: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	1,056	694	6	2,121	1,763	9	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	694	680	9	1,063	1,135	9
LE Trawl	20,628	14,265	18	17,098	8,847	15	28,193	15,169	19	36,150	20,201	17
Non-vessel	—	—	—	—	—	—	20,826	18,102	6	13,071	13,565	6
Other	***	12,834	***	18,717	13,627	5	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	815	753	4	***	8,160	***

Table 2.22: Sanddab: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	—	—	—	—	—	—	0	0	0	0	0	0
LE Trawl	—	—	—	—	—	—	2,845	1,652	8	2,298	1,357	8
Non-vessel	—	—	—	—	—	—	163	145	4	150	108	4
Other Vessel	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.23: Sharks, skates and rays: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	412	90	6	571	155	3	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	224	328	5	528	207	6
LE Trawl	25,275	4,950	12	28,331	7,321	11	25,892	8,032	13	22,861	9,448	13
Non-vessel	—	—	—	—	—	—	***	1,135	***	4,090	1,911	6
Other	***	1,433	***	1,973	1,125	4	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	691	315	5	1,840	609	6

Table 2.24: Crab: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	157,388	287,794	15	311,451	578,488	18	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	31,351	79,416	8	74,132	219,659	11
Vessel	—	—	—	—	—	—	268,766	647,113	19	212,354	631,461	19

Table 2.25: Shrimp: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	261,869	102,169	9	354,908	135,000	11	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	66,735	55,000	6	***	56,951	***
Vessel	—	—	—	—	—	—	528,111	257,000	8	519,355	266,610	11

Table 2.26: Coastal pelagics: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	476,573	53,763	9	462,444	52,975	8	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	3,119	4,583	6	22,358	3,469	5
Vessel	—	—	—	—	—	—	393,676	46,056	11	1,438,992	149,931	9

Table 2.27: Salmon: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	47,415	58,453	9	64,431	150,987	13	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	32,014	83,040	8	17,372	42,604	8
Vessel	—	—	—	—	—	—	84,133	123,378	18	34,038	100,856	16

Table 2.28: Tuna: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	64,646	68,010	10	90,243	112,007	14	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	***	32,054	***	***	***	***
Vessel	—	—	—	—	—	—	61,038	121,115	16	113,282	174,597	17

Table 2.29: California halibut: Total purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	1,179	5,685	5	1,464	6,820	8	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	857	4,977	4	144	650	3
Vessel	—	—	—	—	—	—	1,367	6,357	7	1,075	5,169	7

2.3.5 Mean cost and weight of fish purchases by source and species

Table 2.32: Pacific whiting: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear			0			0	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—			0			0
LE Trawl	73,903⁝	5,772⁝	12	85,108⁝	7,134⁝	12	204,028:	22,675:	10	148,405:	20,993:	9
Non-vessel	—	—	—	—	—	—	***	***	***	***	***	***
Other	72,364⁝	***	4	16,300⁝	1,112⁝	4	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.33: Dover sole: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	28⁞	11⁞	6	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	***	***	***	***	***	***
LE Trawl	16,736⁞	5,860⁞	14	16,277⁞	5,233⁞	13	10,975⁞	4,694⁞	14	12,038⁞	5,333⁞	12
Non-vessel	—	—	—	—	—	—	1,597⁞	836⁞	5	2,385⁞	1,085⁞	6
Other	***	***	***	3,124⁞	1,178⁞	4	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.34: Sablefish: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	3,576	10,857	10	3,063	9,745	12	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	2,071	8,268	12	2,158	7,079	10
LE Trawl	3,833	8,004	15	2,765	6,069	16	1,860	5,561	15	2,256	5,372	16
Non-vessel	—	—	—	—	—	—	1,876	4,802	4	1,096	3,845	8
Other	2,539	6,088	4	3,411	7,209	5	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	2,327	14,358	7	1,293	5,338	9

Table 2.35: Thornyheads: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	13	10	6	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	168	171	8	93	157	9
LE Trawl	3,696	1,891	13	3,314	1,795	13	1,648	978	16	2,129	1,266	14
Non-vessel	—	—	—	—	—	—	208	101	3	766	393	4
Other	***	***	***	***	***	***	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	14	9	3	93	74	6

Table 2.36: English sole: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	***	***	***	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—			0			0
LE Trawl	459⁝	145⁚	11	274⁝	87⁝	11	145⁝	69⁝	10	186⁝	66⁝	13
Non-vessel	—	—	—	—	—	—	***	101⁝	***	94⁝	41⁝	5
Other	***	***	***	***	***	***	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.37: Petrale sole: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	***	***	***	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	***	***	***	***	***	***
LE Trawl	3,436	2,730	11	1,107	1,276	13	1,143	1,655	12	1,762	2,690	12
Non-vessel	—	—	—	—	—	—	675	1,194	5	955	1,522	5
Other	996	1,267	4	409	693	4	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	1	1	3	***	***	***

Table 2.38: Rex sole: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	***	***	***	***	***	***	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—			0			0
LE Trawl	765⁞	262⁞	14	771⁞	255⁞	12	564⁞	209⁞	13	624⁞	301⁞	13
Non-vessel	—	—	—	—	—	—	182⁞	191⁞	4	178⁞	109⁚	4
Other	***	213⁚	***	301⁚	249⁚	3	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	17⁞	6⁞	3	***	***	***

Table 2.39: Arrowtooth flounder: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	—	—	—	—	—	—	***	***	***	6⁝	1⁝	4
LE Trawl	—	—	—	—	—	—	3,737⁝	382⁝	11	3,239⁝	408⁝	13
Non-vessel	—	—	—	—	—	—	***	***	***	4,871⁚	882⁚	3
Other Vessel	—	—	—	—	—	—	32⁚	3⁚	3	***	***	***

Table 2.40: Lingcod: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	17	14	7	17	14	6	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	6	5	6	12	10	6
LE Trawl	157	102	15	97	66	14	269	210	17	359	268	17
Non-vessel	—	—	—	—	—	—	260	256	6	406	379	6
Other	279	353	3	172	201	5	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	41	39	3	114	97	7

Table 2.41: Rockfish: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	176	116	6	236	196	9	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	77	76	9	118	126	9
LE Trawl	1,146	792	18	1,140	590	15	1,484	798	19	2,126	1,188	17
Non-vessel	—	—	—	—	—	—	3,471	3,017	6	2,178	2,261	6
Other	***	2,567	***	3,743	2,725	5	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	204	188	4	***	1,166	***

Table 2.42: Sanddab: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	—	—	—	—	—	—			0			0
LE Trawl	—	—	—	—	—	—	356	206	8	287	170	8
Non-vessel	—	—	—	—	—	—	41	36	4	37	27	4
Other Vessel	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.43: Sharks, skates and rays: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
Fixed Gear	69	15	6	190	52	3	—	—	—	—	—	—
LE Fixed Gear	—	—	—	—	—	—	45	66	5	88	34	6
LE Trawl	2,106	413	12	2,576	666	11	1,992	618	13	1,759	727	13
Non-vessel	—	—	—	—	—	—	***	284	***	682	318	6
Other	***	478	***	493	281	4	—	—	—	—	—	—
Other Vessel	—	—	—	—	—	—	138	63	5	307	101	6

Table 2.44: Crab: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	10,493	19,186	15	17,303	32,138	18	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	3,919	9,927	8	6,739	19,969	11
Vessel	—	—	—	—	—	—	14,146	34,059	19	11,177	33,235	19

Table 2.45: Shrimp: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	29,097⁚	11,352⁚	9	32,264⁞	12,273⁚	11	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	11,123⁞	9,167⁞	6	***	8,136⁞	***
Vessel	—	—	—	—	—	—	66,014⁚	32,125⁚	8	47,214⁚	24,237⁚	11

Table 2.46: Coastal pelagics: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	52,953	5,974	9	57,805	6,622	8	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	520	764	6	4,472	694	5
Vessel	—	—	—	—	—	—	35,789	4,187	11	159,888	16,659	9

Table 2.47: Salmon: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	5,268	5,845	9	4,956	11,614	13	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	4,002	10,380	8	2,171	5,325	8
Vessel	—	—	—	—	—	—	4,674	6,854	18	2,127	6,303	16

Table 2.48: Tuna: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	6,465⁝	6,801⁝	10	6,446⁝	8,000⁝	14	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	***	6,411⁝	***	***	***	***
Vessel	—	—	—	—	—	—	3,815⁝	7,570⁝	16	6,664⁝	10,270⁝	17

Table 2.49: California halibut: Average purchase weight (hundreds of lbs) and cost (hundreds of dollars) by source. (N = number of EDC Processors with non-zero, non-NA responses).

Source	2009			2010			2011			2012		
	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N	Weight	Cost	N
All	236	1,137	5	183	853	8	—	—	—	—	—	—
Non-vessel	—	—	—	—	—	—	214	1,244	4	48	217	3
Vessel	—	—	—	—	—	—	195	908	7	154	738	7

2.4 Depreciation

Depreciation in the following table includes depreciation for all capital investments on buildings and new and used machinery and equipment taken during the survey year. Depreciation is excluded from the calculations of both fixed and variable costs (Section 2.3) and net revenue (Section 2.6). It is collected for use in the IO-PAC model.

Table 2.52: Depreciation (N = number of EDC Processors with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Depreciation	$386,975 ⁝	17	$306,519 ⁝	19	$236,575 ⁝	22	$349,399 ⁝	22

2.5 Revenue

Participants are asked to provide revenue from production of purchased fish as well as from custom processing, and the sale or lease of quota and permits. Beginning with the 2011 form, revenue from offloading fees is also collected.

2.5.1 Revenue from custom processing, offloading, and sale or lease of quota and permits

Participants are asked to provide revenue from a variety of other activities, including revenue from custom processing, sale and lease of quota shares and pounds, and from 2011 onward, offloading. The 2009 and 2010 EDC form did not ask for information regarding offloading fees so these data are not available. Not enough processors reported quota revenue to be able to display this information.

Table 2.53: Other revenue (N = number of EDC Processors with non-zero, non-NA responses).

Revenue Source	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Custom processing of whiting	***	***	***	***	***	***	$118,719	4
Custom processing of non-whiting groundfish	***	***	***	***	$166,019	4	$212,913	5
Custom processing of other (non-whiting, non-groundfish)	$63,199	6	$76,157	6	$121,126	4	$250,224	5
Offloading	—	—	—	—	$115,749	10	$64,466	13

2.5.2 Production activities

The product weight and value from production activities free-on-board (FOB) plant are requested for each survey year. Free-on-board plant indicates that the buyer both takes responsibility and liability for the product and pays shipping costs. These production values exclude freight charges, revenue from products made in previous years, products made from custom processing performed for another company, and any additional payments received that covered shipping, handling, or storage costs associated with sale beyond the plant. The total value of fish production does include products made in that survey year and held in inventory at the end of the year, products shipped to other facilities in the same company, products made from custom processing performed by another facility, and any post-season adjustments.

The same species categories are provided as in the fish purchase section, this time divided into product categories that include processed fresh, frozen, unprocessed, and other, as well as additional categories for whiting. There is also a category for non-species specific products such as fishmeal, fish oil, and bait.

2.5.3 Total value and weight of fish production by product type and species

Table 2.54: Pacific whiting: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fillet	54,019	59,138	3	82,036	96,337	4	187,356	122,030	3	68,745	68,662	3
Frozen	***	***	***	37,531	12,523	4	311,854	90,636	6	78,237	41,235	6
H&G	603,552	339,776	9	295,112	167,287	9	400,671	240,410	8	402,165	264,844	7
Roe	0	0	0	0	0	0	0	0	0	0	0	0
Surimi	***	***	***	***	***	***	***	***	***	***	***	***
Unprocessed	***	***	***	6,432	720	5	95,991	***	3	106,204	***	3
Other	54,506	***	3	***	***	***	364,580	186,318	5	60,703	32,172	4

Table 2.55: Dover sole: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	63,851	143,096	12	55,536	138,122	12	36,070	120,146	11	36,311	126,875	12
Frozen	12,699	27,242	10	12,667	19,901	11	6,053	16,094	10	9,966	24,994	10
Unprocessed	520	272	5	6,714	2,863	7	11,450	3,384	8	14,552	4,040	9
Other	***	***	***	***	***	***	0	0	0	***	***	***

Table 2.56: Sablefish: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	12,332	50,176	11	12,692	65,830	14	16,361	52,263	12	6,722	34,255	13
Frozen	55,277	271,145	11	55,994	301,307	13	42,310	303,057	12	47,138	261,924	13
Unprocessed	5,605	15,736	3	6,732	19,653	4	4,545	18,360	9	4,841	14,310	9
Other	***	***	***	***	***	***	0	0	0	675	3,644	4

Table 2.57: Thornyheads: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	1,937	2,326	5	3,162	3,663	7	***	***	***	***	***	***
Frozen	17,973	42,158	7	20,343	45,064	7	11,314	38,626	8	13,876	50,553	9
Unprocessed	849	1,044	3	2,850	1,928	4	5,181	4,755	9	5,453	5,304	9
Other	0	0	0	***	***	***	***	***	***	***	***	***

Table 2.58: English sole: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	2,106	4,487	11	1,041	2,329	11	697	2,222	9	911	3,084	9
Frozen	809	981	6	434	471	4	156	382	5	611	674	8
Unprocessed	217	145	3	226	99	5	213	102	6	326	143	8
Other	0	0	0	0	0	0	0	0	0	0	0	0

Table 2.59: Petrale sole: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	14,468	49,962	11	4,644	18,441	14	4,330	23,794	11	7,393	38,741	10
Frozen	2,066	6,333	7	1,011	3,034	8	854	3,577	6	1,042	4,329	7
Unprocessed	8,045	12,251	7	3,238	5,982	6	4,560	10,144	11	7,136	17,321	12
Other	0	0	0	0	0	0	***	***	***	0	0	0

Table 2.60: Rex sole: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	3,744	6,091	11	1,819	3,634	9	2,220	4,777	9	1,827	4,540	8
Frozen	2,654	3,984	7	3,247	4,119	6	1,633	2,656	7	2,024	3,850	8
Unprocessed	448	324	6	424	210	6	567	286	8	500	433	6
Other	0	0	0	***	***	***	0	0	0	***	***	***

Table 2.61: Arrowtooth flounder: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	—	—	—	—	—	—	7,238	8,117	8	5,676	5,961	9
Frozen	—	—	—	—	—	—	***	8,454	***	13,943	12,066	9
Unprocessed	—	—	—	—	—	—	***	***	***	***	728	***
Other	—	—	—	—	—	—	0	0	0	***	***	***

Table 2.62: Lingcod: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	909	3,416	13	706	2,960	13	1,904	7,579	8	3,111	12,160	10
Frozen	100	597	5	250	508	5	561	1,928	6	374	1,312	6
Unprocessed	784	975	6	411	674	6	492	1,279	10	856	1,882	11
Other	***	***	***	***	***	***	***	***	***	***	***	***

Table 2.63: Rockfish: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	11,256	30,422	16	9,699	25,847	16	10,772	30,317	12	13,603	42,787	11
Frozen	3,773	7,493	8	2,168	4,041	8	3,285	6,023	8	4,383	8,544	10
Unprocessed	3,452	4,192	7	5,072	5,396	7	11,629	13,973	14	12,450	11,951	13
Other	***	***	***	0	0	0	1,621	2,908	3	***	***	***

Table 2.64: Sanddab: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	—	—	—	—	—	—	97	449	5	237	1,218	6
Frozen	—	—	—	—	—	—	691	2,199	7	407	1,891	7
Unprocessed	—	—	—	—	—	—	1,388	1,401	5	800	1,017	8
Other	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.65: Sharks, skates and rays: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	1,838	2,166	8	351	580	10	318	891	6	1,089	693	5
Frozen	11,296	15,203	8	9,099	16,907	6	9,258	19,197	8	8,806	23,371	9
Unprocessed	***	***	***	4,211	2,224	4	7,218	5,133	9	5,671	3,317	9
Other	***	***	***	0	0	0	***	***	***	0	0	0

Table 2.66: Crab: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	***	***	***	***	***	***	***	***	***	***	***	***
Fresh	56,521	231,212	13	97,635	345,984	16	60,411	342,387	15	51,159	343,392	15
Frozen	58,970	293,675	13	117,445	497,747	15	109,316	626,288	16	116,610	751,954	16
Unprocessed	4,261	9,483	5	4,744	10,613	4	17,225	45,351	8	42,734	125,173	11
Other	***	36,396	***	***	***	***	***	***	***	427	5,421	3

Table 2.67: Shrimp: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	0	0	0	0	0	0	***	***	***	***	***	***
Fresh	30,190	46,139	7	24,692	34,653	7	11,781	36,415	6	12,345	39,203	5
Frozen	67,565	191,119	7	97,868	191,568	9	177,372	530,801	10	189,148	562,540	12
Unprocessed	***	***	***	***	***	***	39,885	35,746	4	***	***	***
Other	0	0	0	***	***	***	0	0	0	0	0	0

Table 2.68: Coastal pelagics: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	—	—	—	—	—	—	0	0	0	0	0	0
Fresh	21,233	7,014	3	766	***	3	***	12,666	***	***	***	***
Frozen	149,427	61,256	7	131,402	47,984	7	357,013	116,710	10	1,153,060	366,169	10
Unprocessed	***	***	***	***	***	***	289	744	3	***	***	***
Other	253,965	59,890	3	276,594	64,802	3	***	***	***	0	0	0

Table 2.69: Salmon: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	***	***	***	***	***	***	***	***	***	***	***	***
Fresh	19,571	67,792	7	24,435	106,203	11	34,796	148,404	14	16,312	87,039	10
Frozen	***	***	***	23,344	66,933	9	43,735	93,734	12	13,092	33,877	11
Smoked	***	***	***	***	***	***	***	***	***	***	***	***
Unprocessed	2,513	8,757	3	4,030	16,303	5	16,145	36,785	10	14,192	83,171	12
Other	***	***	***	***	***	***	0	0	0	0	0	0

Table 2.70: Tuna: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	***	***	***	***	***	***	***	***	***	***	***	***
Fresh	1,892	6,328	5	1,566	6,340	8	1,488	6,667	4	1,842	4,945	6
Frozen	79,352	113,395	9	67,260	116,490	12	61,577	161,769	13	112,192	204,911	12
Unprocessed	***	***	***	2,917	4,623	4	17,093	35,650	11	11,800	19,759	8
Other	***	***	***	***	***	***	0	0	0	***	***	***

Table 2.71: California halibut: Total production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	***	***	***	973	8,338	6	411	4,232	5	22	172	3
Frozen	***	***	***	***	***	***	***	***	***	***	***	***
Unprocessed	974	5,044	4	***	***	***	1,474	8,616	6	1,186	6,758	6
Other	0	0	0	***	***	***	0	0	0	0	0	0

2.5.4 Average value and weight of fish production by product type and species

Table 2.74: Pacific whiting: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fillet	18,006	19,713	3	20,509	24,084	4	62,452	40,677	3	22,915	22,887	3
Frozen	***	***	***	9,383	3,131	4	51,976	15,106	6	13,039	6,873	6
H&G	67,061	37,753	9	32,790	18,587	9	50,084	30,051	8	57,452	37,835	7
Roe			0			0			0			0
Surimi	***	***	***	***	***	***	***	***	***	***	***	***
Unprocessed	***	***	***	1,286	180	5	31,997	***	3	35,401	***	3
Other	18,169	***	3	***	***	***	72,916	37,264	5	15,176	8,043	4

Table 2.75: Dover sole: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	5,321	11,925	12	4,628	11,510	12	3,279	10,922	11	3,026	10,573	12
Frozen	1,270	2,724	10	1,152	1,809	11	605	1,609	10	997	2,499	10
Unprocessed	104	54	5	959	409	7	1,431	423	8	1,617	505	9
Other	***	***	***	***	***	***			0	***	***	***

Table 2.76: Sablefish: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	1,121	4,561	11	907	4,702	14	1,363	4,355	12	517	2,635	13
Frozen	5,025	24,650	11	4,307	23,177	13	3,526	25,255	12	3,626	20,148	13
Unprocessed	1,868	5,245	3	1,683	4,913	4	505	2,040	9	538	1,789	9
Other	***	***	***	***	***	***			0	169	911	4

Table 2.77: Thornyheads: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	387	465	5	452	523	7	***	***	***	***	***	***
Frozen	2,568	6,023	7	2,906	6,438	7	1,414	4,828	8	1,542	5,617	9
Unprocessed	283	348	3	713	482	4	576	528	9	606	663	9
Other			0	***	***	***	***	***	***	***	***	***

Table 2.78: English sole: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	191	408	11	95	212	11	77	247	9	101	343	9
Frozen	135	164	6	108	118	4	31	76	5	76	84	8
Unprocessed	72	48	3	45	20	5	36	17	6	41	20	8
Other			0			0			0			0

Table 2.79: Petrale sole: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	1,315	4,542	11	332	1,317	14	394	2,163	11	739	3,874	10
Frozen	295	905	7	126	379	8	142	596	6	149	618	7
Unprocessed	1,149	1,750	7	540	997	6	415	922	11	595	1,443	12
Other			0			0	***	***	***			0

Table 2.80: Rex sole: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	340	554	11	202	404	9	247	531	9	228	568	8
Frozen	379	569	7	541	686	6	233	379	7	253	481	8
Unprocessed	75	54	6	71	35	6	71	36	8	83	87	6
Other			0	***	***	***			0	***	***	***

Table 2.81: Arrowtooth flounder: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	—	—	—	—	—	—	905⁝	1,015⁝	8	631⁝	662⁝	9
Frozen	—	—	—	—	—	—	***	1,208⁝	***	1,549⁝	1,341⁝	9
Unprocessed	—	—	—	—	—	—	***	***	***	***	182⁝	***
Other	—	—	—	—	—	—			0	***	***	***

Table 2.82: Lingcod: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	70	263	13	54	228	13	238	947	8	311	1,216	10
Frozen	20	119	5	50	102	5	94	321	6	62	219	6
Unprocessed	131	162	6	68	112	6	49	128	10	78	188	11
Other	***	***	***	***	***	***	***	***	***	***	***	***

Table 2.83: Rockfish: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	704	1,901	16	606	1,615	16	898	2,526	12	1,237	3,890	11
Frozen	472	937	8	271	505	8	411	753	8	438	854	10
Unprocessed	493	599	7	725	771	7	831	998	14	958	919	13
Other	***	***	***			0	540	969	3	***	***	***

Table 2.84: Sanddab: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	—	—	—	—	—	—	19	90	5	39	203	6
Frozen	—	—	—	—	—	—	99	314	7	58	270	7
Unprocessed	—	—	—	—	—	—	278	280	5	100	127	8
Other	—	—	—	—	—	—	***	***	***	***	***	***

Table 2.85: Sharks, skates and rays: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	230	271	8	35	58	10	53	148	6	218	139	5
Frozen	1,412	1,900	8	1,517	2,818	6	1,157	2,400	8	978	2,597	9
Unprocessed	***	***	***	1,053	556	4	802	642	9	630	415	9
Other	***	***	***			0	***	***	***			0

Table 2.86: Crab: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	***	***	***	***	***	***	***	***	***	***	***	***
Fresh	4,348	17,786	13	6,102	21,624	16	4,027	22,826	15	3,411	22,893	15
Frozen	4,536	22,590	13	7,830	33,183	15	6,832	39,143	16	7,288	46,997	16
Unprocessed	852	1,897	5	1,186	2,653	4	2,153	5,669	8	3,885	11,379	11
Other	***	12,132	***	***	***	***	***	***	***	142	1,807	3

Table 2.87: Shrimp: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned			0			0	***	***	***	***	***	***
Fresh	4,313	6,591	7	3,527	4,950	7	1,964	6,069	6	2,469	7,841	5
Frozen	9,652	27,303	7	10,874	21,285	9	17,737	53,080	10	15,762	46,878	12
Unprocessed	***	***	***	***	***	***	9,971	8,937	4	***	***	***
Other			0	***	***	***			0			0

Table 2.88: Coastal pelagics: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	—	—	—	—	—	—			0			0
Fresh	7,078	2,338	3	255	***	3	***	4,222	***	***	***	***
Frozen	21,347	8,751	7	18,772	6,855	7	35,701	11,671	10	115,306	36,617	10
Unprocessed	***	***	***	***	***	***	96	248	3	***	***	***
Other	84,655	19,963	3	92,198	21,601	3	***	***	***			0

Table 2.89: Salmon: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	***	***	***	***	***	***	***	***	***	***	***	***
Fresh	2,796	9,685	7	2,221	9,655	11	2,485	11,416	14	1,631	8,704	10
Frozen	***	***	***	2,594	7,437	9	3,645	7,811	12	1,190	3,080	11
Smoked	***	***	***	***	***	***	***	***	***	***	***	***
Unprocessed	838	2,919	3	806	3,261	5	1,614	3,678	10	1,183	7,561	12
Other	***	***	***	***	***	***			0			0

Table 2.90: Tuna: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Canned	***	***	***	***	***	***	***	***	***	***	***	***
Fresh	378	1,266	5	196	792	8	372	1,667	4	307	824	6
Frozen	8,817	12,599	9	5,605	9,707	12	4,737	12,444	13	9,349	17,076	12
Unprocessed	***	***	***	729	1,156	4	1,554	3,241	11	1,475	2,470	8
Other	***	***	***	***	***	***			0	***	***	***

Table 2.91: California halibut: Average production weight (hundreds of lbs) and value (hundreds of dollars) by product type. (N = number of EDC Processors with non-zero, non-NA responses).

Product	2009			2010			2011			2012		
	Weight	Value	N	Weight	Value	N	Weight	Value	N	Weight	Value	N
Fresh	***	***	***	162	1,390	6	82	846	5	7	57	3
Frozen	***	***	***	***	***	***	***	***	***	***	***	***
Unprocessed	244	1,261	4	***	***	***	246	1,436	6	198	1,126	6
Other			0	***	***	***			0			0

2.6 Net Revenue and Economic Profit

Net returns from operating a first receiver and shorebased processor are presented in this section. The level of net returns not only indicates whether an operation is a viable ongoing business, but also the size of net benefit that is created from society's perspective. Two different measures of net returns are examined. They differ in the types of costs that are taken into account, and therefore, their interpretation and use. The first is a monetary, financial measure that attempts to track a first receiver or shorebased processor's net cash flow, which we call *net revenue*. It is calculated as revenue minus monetary costs. The only costs that are included are those that are actually paid or associated with a financial transaction. The second measure attempts to track the broader economic performance of a business and includes all costs regardless of whether there is a cash or financial transaction. Costs are measured by their true resource costs, which may or may not be equal to monetary outlays. This measure is called *economic profit*[1].

One difference between net revenue and economic profit is the treatment of facility capital costs. Net revenue only includes costs that are actually paid, which includes items such as facility repair, maintenance, and upgrades. Economic profit would also include the opportunity cost of owning the facility, a capital asset. By owning a facility, the owner foregoes other investment opportunities that would provide a rate of return. This is called the opportunity cost of capital[2], and is typically approximated by the market rate of return associated with businesses of comparable risk, multiplied by the market value of the facility.

Both net revenue and economic profit are useful measures for fishery management. Net revenue attempts to measure the annual financial well-being of receiving/processing operations. It can be used to determine if there is a monetary gain or loss, or how changes in fishery management may affect the level of monetary gain or loss. Economic profit is a better indicator of the long-term viability of fishery operations since it includes all costs, and values the costs at their opportunity cost. It can be used to estimate whether there are incentives or disincentives to invest in capital, or enter and leave the fishery. It is also a better measure of the net benefit of the fishery to the nation.

Calculations of net revenue are included in this report. The cost categories used in net revenue, based on those reported in the EDC forms, are discussed below. Currently, calculations of economic profit are beyond the scope of the report. Economic profit relies on opportunity costs, which may be different from some of the costs reported on the EDC forms, so additional methods and analyses are required. The EDC Program economists will continue to work on developing measures of economic profit so that it may be included in future reports.

[1] Whitmarsh D., James C., Pickering H., Neiland A. 2000. The profitability of marine commercial fisheries: a review of economic information needs with particular reference to the UK. Marine Policy, Vol. 24(3), pp. 257-263

[2] See Boardman, Anthony, David Greenberg, and Aidan Vining. Cost-Benefit Analysis: Concepts and Practice, Prentice Hall, NJ. 2000. pp. 31-32.

2.6.1 Net revenue

Net revenue is calculated two ways: using only variable costs, and using variable costs plus fixed costs (total costs)[3]. The first calculation is called *variable cost net revenue*, while the second is called *total cost net revenue*. Variable cost net revenue is useful to examine changes in fishery operations that are not so great as to affect fixed costs. For example, the cost of processing an additional metric ton of fish is better represented by only considering variable costs. Total cost net revenue is usually a better summary measure of financial gain or loss for an entire year, season, or fishery.

There are several caveats associated with the net revenue calculations in this report. As noted in the Section 2.3, there are a variety of costs that are associated with running a facility that are not requested by the EDC form because it is difficult to determine the share of the cost associated with the facility. These costs include items that can be used for activities other than processing fish, or are too difficult to allocate to a particular facility in a multi-facility company. These expenses include office space, vehicles and transport trucks, storage of equipment, and professional fees. In general, the EDC forms attempt to only capture costs that are directly related to facility maintenance and processing operations, and not costs that are related to activities or equipment outside of the facility. Therefore, the EDC calculated net revenue is an overestimate of the true net revenue. The difference is likely much greater for total cost net revenue than variable cost net revenue since most of the excluded costs are fixed costs.

Another caveat is that the EDC forms do not collect information about income taxes or financing costs. This has several implications. The first is that these costs are not included in the net revenue calculations. Therefore, net revenue is greater than it would be otherwise. The second is that in lieu of financing information (principal and interest payments), EDC total cost net revenue uses the total costs associated with facility and equipment purchases, repair, maintenance and improvements. For example, if a processing machine is purchased, the total cost of the machine is used, even though the actual cash outlay, if it were financed, would only be the principal and interest payments made that year. It is likely that many larger capital costs, and perhaps some operating costs, are financed. This would mean that the actual cash outlays in a particular year for those items would be less than what is used in the EDC for the net revenue calculation. Over time, this may balance out to some degree because previously financed or purchased capital and equipment are also not included, except for the year in which they are purchased.[4] Moreover, total cost net revenue is expected to be representative of actual total cost net revenue only when averaged over many years and across facilities because relatively large capital costs occur periodically.

2.6.2 Net revenue

Average net revenue is calculated for all companies that reported processing activity of groundfish in 2009 and 2010 and all companies that reported processing activity of any kind for 2011 onward.

[3] See Section 2.3 for a more complete discussion of variable and fixed costs used in this report

[4] At best it is just a partial balancing out because the interest payments are not accounted in the EDC data

Revenue includes the total value of production and revenue from custom processing and offloading.

The variable and fixed costs do not include costs related to acquiring quota shares or quota pounds.

$$\text{Variable cost net revenue} = \text{Revenue} - \text{Variable costs}$$

$$\text{Total cost net revenue} = \text{Revenue} - (\text{Variable costs} + \text{Fixed costs})$$

Table 2.94: Revenue, costs, and net revenue. (N = number of EDC Processors with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$13,622,628	19	$13,494,632	21	$16,885,551	24	$17,674,005	25
(Variable costs)	$10,614,894	19	$11,568,406	21	$13,889,113	24	$14,578,582	25
Variable cost net revenue	**$3,007,734**	**19**	**$1,926,226**	**21**	**$2,996,438**	**24**	**$3,095,423**	**25**
(Fixed costs)	$1,950,282	19	$1,911,510	21	$1,039,670	24	$878,738	25
Total cost net revenue	**$1,057,452**	**19**	**$14,716**	**21**	**$1,956,768**	**24**	**$2,216,685**	**25**

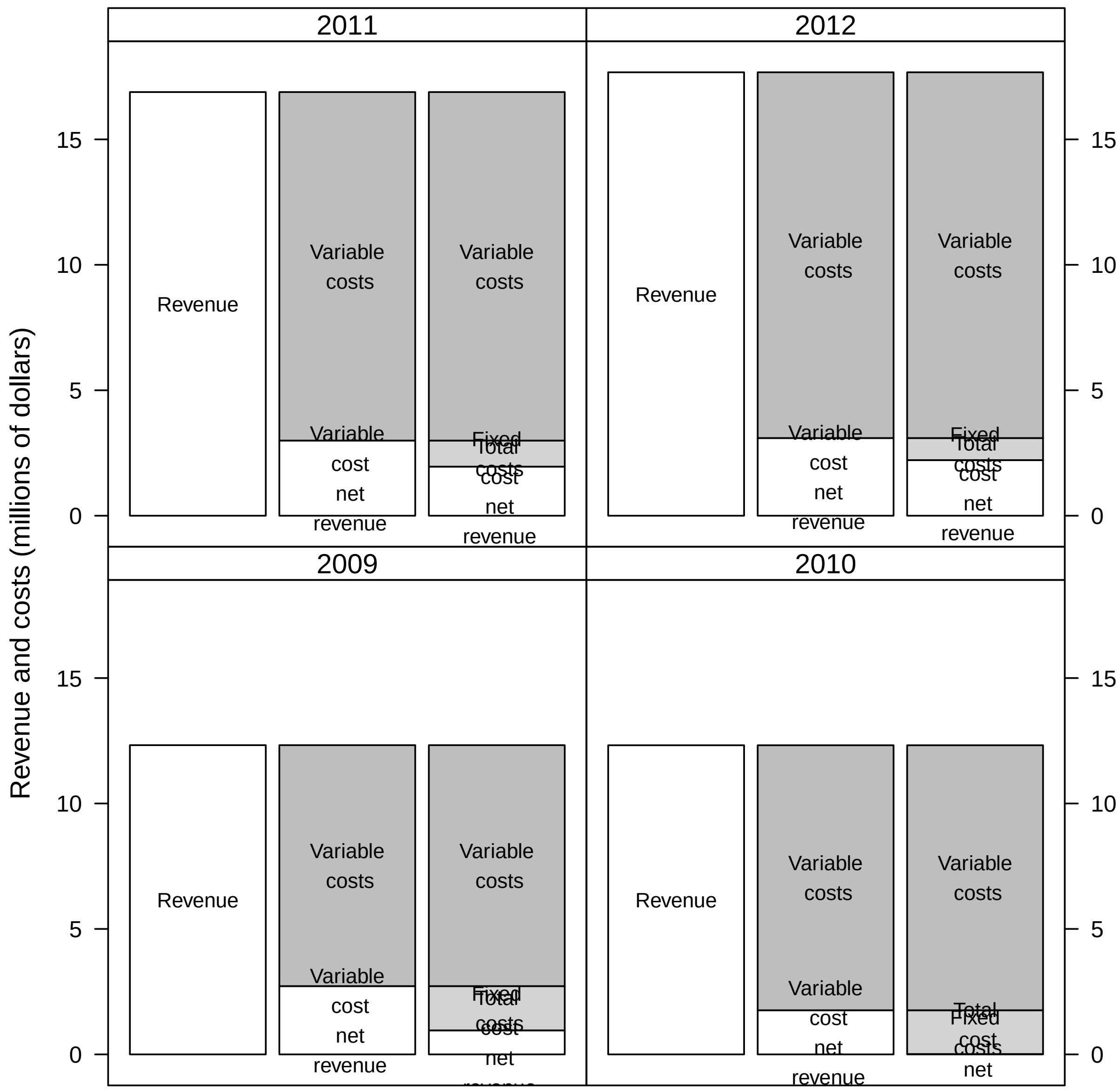

Figure 2.1: EDC Processor average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue on the West Coast. Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

2.6.3 Total cost net revenue rates

The total cost net revenue calculated above in Section 2.6.2 are provided as rates in the following table to provide the total cost net revenue per pound of fish purchased and per pound of fish product produced. The total weights used in these calculations exclude custom processing activities (see Sections 2.3.3 and 2.5.2). Additionally, the same rates are calculated for variable cost net revenue and the components that are used to calculated the two.

Table 2.95: Revenue, costs, and total and variable cost net revenue by pounds produced and pounds of fish purchased (N = number of EDC Processors with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue per production pounds	$1.930	21	$2.019	23	$3.472	24	$3.062	25
Revenue per purchase pounds	$1.417	21	$1.462	23	$1.610	24	$1.548	25
Variable cost per production pounds	$1.612	21	$1.822	23	$2.652	24	$2.557	25
Variable cost per purchase pounds	$1.207	21	$1.307	23	$1.407	24	$1.406	25
Variable cost net revenue per production pounds	$0.317	21	$0.197	23	$0.820	24	$0.505	25
Variable cost net revenue per purchase pounds	$0.210	21	$0.155	23	$0.204	24	$0.143	25
Fixed cost per production pounds	$0.209	21	$0.157	23	$0.190	24	$0.161	25
Fixed cost per purchase pounds	$0.170	21	$0.106	23	$0.069	24	$0.070	25
Total cost net revenue per production pounds	$0.109	21	$0.040	23	$0.630	24	$0.344	25
Total cost net revenue per purchase pounds	$0.041	21	$0.049	23	$0.135	24	$0.073	25

2.7 Cost Per Pound of Fish Purchases

2.7.1 Mean fish purchase cost per pound by source

The mean cost per pound of fish inputs by species e and source of fish s is

$$\frac{\sum_{n=1}^{N} \frac{C_{n,e,s}}{WT_{n,e,s}^{fishinputs}}}{N} \quad \forall e, s$$

where C is the cost of fish inputs, $WT^{fishinputs}$ is the weight of fish inputs, and N is the total number of processors with non-zero, non-NA responses. The mean cost per pound of fish by species and source of fish is calculated for each survey year.

Table 2.96: Mean fish cost per pound: whiting, dover sole, thornyheads, sablefish.

Species: Source	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Dover sole: Fixed Gear	$0.38	6	$0.32	4	—	—	—	—
Dover sole: LE Fixed Gear	—	—	—	—	***	***	$0.92	6
Dover sole: LE Trawl	$0.53	14	$0.31	13	$0.43	14	$0.67	12
Dover sole: Non-vessel	—	—	—	—	$1.75	5	$1.52	6
Dover sole: Other	$1.20	4	$1.12	4	—	—	—	—
Dover sole: Other Vessel	—	—	—	—	$0.42	3	$0.41	5
Pacific whiting: LE Trawl	$0.07	12	$0.08	12	$0.11	10	$0.14	9
Pacific whiting: Non-vessel	—	—	—	—	***	***	$0.54	4
Pacific whiting: Other	$0.11	4	$0.13	4	—	—	—	—
Pacific whiting: Other Vessel	—	—	—	—	***	***	***	***
Sablefish: Fixed Gear	$3.10	10	$3.27	12	—	—	—	—
Sablefish: LE Fixed Gear	—	—	—	—	$4.14	12	$3.37	10
Sablefish: LE Trawl	$1.90	15	$2.04	16	$2.45	15	$2.48	16
Sablefish: Non-vessel	—	—	—	—	$3.68	4	$4.27	8
Sablefish: Other	$6.16	4	$3.12	5	—	—	—	—
Sablefish: Other Vessel	—	—	—	—	$4.79	6	$3.87	9
Thornyheads: Fixed Gear	$0.77	6	$0.89	9	—	—	—	—
Thornyheads: LE Fixed Gear	—	—	—	—	$0.98	8	$1.28	9
Thornyheads: LE Trawl	$0.67	13	$0.51	13	$0.54	16	$0.60	14
Thornyheads: Non-vessel	—	—	—	—	$0.49	3	$0.99	4
Thornyheads: Other	***	***	***	***	—	—	—	—
Thornyheads: Other Vessel	—	—	—	—	$0.74	3	$0.63	6

Table 2.97: Mean fish cost per pound: other groundfish.

Species: Source	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Arrowtooth flounder: LE Fixed Gear	—	—	—	—	$0.12	4	$0.36	4
Arrowtooth flounder: LE Trawl	—	—	—	—	$0.10	11	$0.17	13
Arrowtooth flounder: Non-vessel	—	—	—	—	***	***	$0.19	3
Arrowtooth flounder: Other Vessel	—	—	—	—	$0.11	3	$0.33	4
Lingcod: Fixed Gear	$0.71	7	$0.81	6	—	—	—	—
Lingcod: LE Fixed Gear	—	—	—	—	$1.07	6	$0.79	6
Lingcod: LE Trawl	$0.65	15	$0.72	14	$0.81	17	$0.96	17
Lingcod: Non-vessel	—	—	—	—	$1.99	6	$1.42	6
Lingcod: Other	$3.19	3	$2.07	5	—	—	—	—
Lingcod: Other Vessel	—	—	—	—	$0.89	3	$0.88	7
Rockfish: Fixed Gear	$0.66	6	$0.87	9	—	—	—	—
Rockfish: LE Fixed Gear	—	—	—	—	$1.00	9	$0.82	9
Rockfish: LE Trawl	$0.56	18	$0.53	15	$0.62	19	$0.59	17
Rockfish: Non-vessel	—	—	—	—	$1.19	6	$1.75	6
Rockfish: Other	$1.66	5	$1.36	5	—	—	—	—
Rockfish: Other Vessel	—	—	—	—	$0.74	4	$1.56	7
Sanddab: LE Trawl	—	—	—	—	$0.60	8	$0.63	8
Sanddab: Non-vessel	—	—	—	—	$2.05	4	$0.99	4
Sanddab: Other Vessel	—	—	—	—	***	***	***	***

Table 2.98: Mean fish cost per pound: other groundfish (cont.).

Species: Source	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
English sole: Fixed Gear	***	***	***	***	—	—	—	—
English sole: LE Trawl	$0.70⁝	11	$0.37·	11	$0.47·	10	$0.52⁚	13
English sole: Non-vessel	—	—	—	—	$1.78⁚	5	$1.09⁝	5
English sole: Other	$1.51⁝	3	$1.15⁝	4	—	—	—	—
English sole: Other Vessel	—	—	—	—	***	***	$0.33·	3
Petrale sole: Fixed Gear	$1.07·	4	$1.24·	5	—	—	—	—
Petrale sole: LE Fixed Gear	—	—	—	—	***	***	$1.47·	4
Petrale sole: LE Trawl	$1.00·	11	$1.09·	13	$1.48·	12	$1.55·	12
Petrale sole: Non-vessel	—	—	—	—	$3.01⁚	5	$2.14·	5
Petrale sole: Other	$2.90⁚	4	$2.86⁚	4	—	—	—	—
Petrale sole: Other Vessel	—	—	—	—	$1.41·	3	$1.85·	5
Rex sole: Fixed Gear	***	***	***	***	—	—	—	—
Rex sole: LE Trawl	$0.38·	14	$0.37·	12	$0.45·	13	$0.65⁚	13
Rex sole: Non-vessel	—	—	—	—	$1.36·	4	$2.13⁝	4
Rex sole: Other	$3.29⁝	3	$2.07⁝	3	—	—	—	—
Rex sole: Other Vessel	—	—	—	—	$0.58⁚	3	$0.37·	3
Sharks, skates and rays: Fixed Gear	$0.16·	6	$0.23·	3	—	—	—	—
Sharks, skates and rays: LE Fixed Gear	—	—	—	—	$0.92⁝	5	$0.37·	6
Sharks, skates and rays: LE Trawl	$0.22⁚	12	$0.28⁚	11	$0.31⁚	13	$0.38⁚	13
Sharks, skates and rays: Non-vessel	—	—	—	—	$1.23⁚	4	$0.68⁚	6
Sharks, skates and rays: Other	$2.16⁚	3	$1.32⁝	4	—	—	—	—
Sharks, skates and rays: Other Vessel	—	—	—	—	$0.67⁚	5	$0.41⁚	6

Table 2.99: Mean fish cost per pound: non-groundfish.

Species: Source	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Coastal pelagics: All	$0.68	9	$0.83	8	—	—	—	—
Coastal pelagics: Non-vessel	—	—	—	—	$1.21	6	$0.27	5
Coastal pelagics: Vessel	—	—	—	—	$0.45	11	$0.10	9
Crab: All	$2.55	15	$2.30	18	—	—	—	—
Crab: Non-vessel	—	—	—	—	$4.07	8	$4.64	11
Crab: Vessel	—	—	—	—	$2.44	19	$2.95	19
Salmon: All	$2.94	9	$4.12	13	—	—	—	—
Salmon: Non-vessel	—	—	—	—	$3.63	8	$2.94	8
Salmon: Vessel	—	—	—	—	$4.47	18	$4.71	16
Shrimp: All	$1.57	9	$1.96	11	—	—	—	—
Shrimp: Non-vessel	—	—	—	—	$3.66	6	$3.19	7
Shrimp: Vessel	—	—	—	—	$0.47	8	$1.09	11
Tuna: All	$1.48	10	$1.55	14	—	—	—	—
Tuna: Non-vessel	—	—	—	—	$3.41	5	$3.11	5
Tuna: Vessel	—	—	—	—	$1.92	16	$1.69	17

Table 2.100: Mean fish cost per pound: non-groundfish (cont.).

Species: Source	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
California halibut: All	$4.95	5	$4.25	8	—	—	—	—
California halibut: Non-vessel	—	—	—	—	$4.85	4	$6.99	3
California halibut: Vessel	—	—	—	—	$4.81	7	$4.74	7
Other species: All	$0.56	14	$0.48	14	—	—	—	—
Other species: Non-vessel	—	—	—	—	$0.51	3	$0.69	12
Other species: Vessel	—	—	—	—	$0.49	15	***	***
Pacific halibut: All	$4.19	6	$5.32	8	—	—	—	—
Pacific halibut: Non-vessel	—	—	—	—	$7.84	4	$6.65	4
Pacific halibut: Vessel	—	—	—	—	$6.13	8	$5.84	7
Shellfish: All	$2.56	4	$3.21	4	—	—	—	—
Shellfish: Non-vessel	—	—	—	—	$2.87	6	$1.85	4
Shellfish: Vessel	—	—	—	—	—	—	***	***
Squid: All	$0.76	6	$0.59	9	—	—	—	—
Squid: Non-vessel	—	—	—	—	$1.43	4	$0.83	3
Squid: Vessel	—	—	—	—	$0.20	4	$0.18	3
Sturgeon: Non-vessel	—	—	—	—	$4.29	4	$3.70	5
Sturgeon: Vessel	—	—	—	—	$2.52	4	$2.43	4

2.8 Revenue Per Pound from Fish Products Produced

2.8.1 Mean production revenue per pound by product type

The mean revenue per pound of fish output by species e and product type o is

$$\frac{\sum_{n=1}^{N} \frac{R_{n,e,o}}{WT_{n,e,o}^{fishoutputs}}}{N} \quad \forall e, o$$

where R is the revenue of fish outputs, $WT^{fishoutputs}$ is the weight of fish outputs, and N is the total number of processors with non-zero, non-NA responses. The mean revenue per pound of fish by species and source of fish is calculated for each survey year.

Table 2.101: Mean revenue per pound: whiting, dover sole, thornyheads, sablefish.

Species: Product	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Dover sole: Fresh	$2.38	12	$2.45	12	$3.29	11	$3.33	12
Dover sole: Frozen	$2.98	10	$3.61	11	$2.58	10	$2.59	10
Dover sole: Other	***	***	***	***	—	—	***	***
Dover sole: Unprocessed	$1.62	5	$0.81	7	$1.05	8	$0.50	8
Pacific whiting: Fillet	$1.18	3	$0.98	4	$0.70	3	$1.10	3
Pacific whiting: Frozen	***	***	$0.26	4	$0.31	6	$0.35	6
Pacific whiting: Headed-and-gutted	$0.61	9	$0.58	9	$0.62	8	$0.75	7
Pacific whiting: Other	$0.21	3	***	***	$0.43	5	$0.38	4
Pacific whiting: Surimi	***	***	***	***	***	***	***	***
Pacific whiting: Unprocessed	***	***	$0.10	4	***	***	***	***
Sablefish: Fresh	$4.83	11	$5.30	14	$5.10	12	$6.34	13
Sablefish: Frozen	$4.88	11	$5.05	13	$6.80	12	$4.99	13
Sablefish: Other	***	***	***	***	—	—	$4.11	4
Sablefish: Unprocessed	$2.83	3	$2.86	4	$3.80	9	$3.18	8
Thornyheads: Fresh	$1.45	5	$1.09	7	$1.94	3	$1.46	3
Thornyheads: Frozen	$4.52	7	$2.25	7	$2.94	8	$3.26	9
Thornyheads: Other	—	—	***	***	***	***	***	***
Thornyheads: Unprocessed	$1.57	3	$1.01	4	$1.05	9	$1.88	8

Table 2.102: Mean revenue per pound: other groundfish.

Species: Product	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Arrowtooth flounder: Fresh	—	—	—	—	$0.91	8	$1.04	9
Arrowtooth flounder: Frozen	—	—	—	—	$0.89	7	$1.16	9
Arrowtooth flounder: Other	—	—	—	—	—	—	***	***
Arrowtooth flounder: Unprocessed	—	—	—	—	***	***	$0.61	4
Lingcod: Fresh	$3.42	13	$2.75	13	$3.97	8	$4.86	10
Lingcod: Frozen	$7.31	5	$2.37	5	$4.84	6	$2.86	6
Lingcod: Other	***	***	***	***	$3.02	3	$2.00	3
Lingcod: Unprocessed	$10.47	6	$2.23	6	$2.58	10	$1.86	10
Rockfish: Fresh	$2.65	16	$2.29	16	$2.81	12	$3.38	11
Rockfish: Frozen	$2.53	8	$2.34	8	$2.80	8	$2.30	10
Rockfish: Other	***	***	—	—	$2.11	3	***	***
Rockfish: Unprocessed	$1.14	7	$1.12	7	$1.39	14	$1.22	13
Sanddab: Fresh	—	—	—	—	$3.26	5	$4.39	6
Sanddab: Frozen	—	—	—	—	$4.82	7	$4.47	7
Sanddab: Other	—	—	—	—	***	***	***	***
Sanddab: Unprocessed	—	—	—	—	$1.08	5	$1.42	8
Sharks, skates and rays: Fresh	$1.95	8	$1.48	10	$2.57	6	$1.29	5
Sharks, skates and rays: Frozen	$1.51	8	$1.76	6	$2.34	8	$1.99	9
Sharks, skates and rays: Other	***	***	—	—	***	***	—	—
Sharks, skates and rays: Unprocessed	***	***	$1.82	4	$0.77	8	$0.82	8

Table 2.103: Mean revenue per pound: other groundfish (cont.).

Species: Product	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
English sole: Fresh	$2.63	11	$2.72	11	$3.20	9	$3.54	9
English sole: Frozen	$1.73	6	$1.69	4	$2.65	5	$2.27	8
English sole: Unprocessed	$0.73	3	$0.66	5	$1.33	6	$0.81	7
Petrale sole: Fresh	$4.29	11	$4.70	14	$5.91	11	$6.35	10
Petrale sole: Frozen	$2.67	7	$3.02	8	$3.96	6	$4.08	7
Petrale sole: Other	—	—	—	—	***	***	—	—
Petrale sole: Unprocessed	$1.83	7	$2.40	6	$2.91	11	$2.42	12
Rex sole: Fresh	$1.78	11	$2.31	9	$2.74	9	$2.29	8
Rex sole: Frozen	$1.54	7	$1.39	6	$1.63	7	$2.47	8
Rex sole: Other	—	—	***	***	—	—	***	***
Rex sole: Unprocessed	$0.86	6	$0.74	6	$0.70	8	$0.85	5

Table 2.104: Mean revenue per pound: non-groundfish.

Species: Product	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Coastal pelagics: Fresh	***	***	***	***	***	***	$0.36:	3
Coastal pelagics: Frozen	$1.15⁝	7	$0.98⁝	7	$0.99⁝	10	$0.39·	10
Coastal pelagics: Other	$0.23·	3	$0.23·	3	***	***	—	—
Coastal pelagics: Unprocessed	***	***	***	***	$2.19:	3	***	***
Crab: Canned	***	***	***	***	***	***	***	***
Crab: Fresh	$7.41⁝	13	$3.35·	16	$5.53:	15	$5.43:	15
Crab: Frozen	$5.48·	13	$4.48·	15	$6.23·	16	$7.67:	16
Crab: Other	$7.86:	3	***	***	***	***	$12.87:	3
Crab: Unprocessed	$4.15:	5	$3.00·	4	$4.71:	8	$3.46·	11
Salmon: Canned	***	***	***	***	***	***	***	***
Salmon: Fresh	$4.92·	7	$5.29·	11	$6.59·	13	$5.77·	10
Salmon: Frozen	$3.48·	6	$3.72·	9	$3.79:	12	$4.70:	11
Salmon: Other	***	***	***	***	—	—	—	—
Salmon: Smoked	***	***	***	***	***	***	***	***
Salmon: Unprocessed	$4.26·	3	$4.89·	5	$5.07·	10	$6.33·	11
Shrimp: Canned	—	—	—	—	***	***	***	***
Shrimp: Fresh	$3.07:	7	$3.24:	7	$3.09·	6	$3.08·	5
Shrimp: Frozen	$3.92:	7	$3.49:	9	$4.00:	10	$3.89:	12
Shrimp: Other	—	—	***	***	—	—	—	—
Shrimp: Unprocessed	***	***	***	***	$6.38⁝	4	$5.87:	3
Tuna: Canned	***	***	***	***	***	***	***	***
Tuna: Fresh	$2.99⁝	5	$3.47:	8	$6.07:	4	$3.85⁝	6
Tuna: Frozen	$1.86:	9	$1.98:	12	$2.65:	13	$2.67:	12
Tuna: Other	***	***	***	***	—	—	***	***
Tuna: Unprocessed	***	***	$2.50:	4	$2.87:	11	$2.35·	8

Table 2.105: Mean revenue per pound: non-groundfish (cont.).

Species: Product	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
California halibut: Fresh	$8.25	3	$8.32	6	$9.24	5	$10.98	3
California halibut: Frozen	***	***	***	***	***	***	***	***
California halibut: Other	—	—	***	***	—	—	—	—
California halibut: Unprocessed	$5.60	4	$5.04	3	$5.60	6	$6.17	6
Other species: Other	$1.79	10	$1.43	10	$1.19	12	$1.74	10
Pacific halibut: Fresh	$5.74	5	$6.60	6	$9.79	8	$9.76	4
Pacific halibut: Frozen	$5.94	4	$8.49	4	$11.26	4	$9.51	5
Pacific halibut: Other	***	***	***	***	***	***	—	—
Pacific halibut: Unprocessed	***	***	***	***	$8.14	4	$6.61	5
Shellfish: Fresh	***	***	***	***	$9.19	3	***	***
Shellfish: Frozen	$7.03	3	$4.84	3	***	***	***	***
Shellfish: Unprocessed	$3.40	3	$3.52	3	$3.18	5	$2.62	4
Squid: Fresh	***	***	***	***	***	***	—	—
Squid: Frozen	***	***	$1.17	6	$1.36	6	$0.88	4
Squid: Other	—	—	***	***	—	—	—	—
Squid: Unprocessed	***	***	—	—	***	***	***	***
Sturgeon: Fresh	$4.53	4	$4.82	4	$6.78	5	$7.40	5
Sturgeon: Frozen	***	***	$4.14	3	***	***	$18.41	3
Sturgeon: Other	***	***	—	—	—	—	—	—
Sturgeon: Unprocessed	—	—	—	—	$6.22	3	$8.48	3

2.9 Product Recovery Rates

The average product recovery rate by species e is

$$\frac{\sum\limits_{n=1}^{N} \frac{\sum\limits_{o=1}^{O} WT_{e,o}^{fishoutputs}}{\sum\limits_{s=1}^{S} WT_{e,s}^{fishinputs}}}{N} \quad \forall e$$

where N is the total number of processors with non-zero, non-NA responses, O is the number of product types, and S is number of sources. The average product recovery rate by species or species group is calculated for each survey year. The weight of fish purchased include fish received from trawl vessel, fixed gear vessel, other vessel, and non-vessel sources. Fish purchased and produced may include pre-product types, listed on the EDC form as "unprocessed".

2.9.1 Average product recovery rates

Table 2.106: Average product recovery rate (N = number of EDC Processors with non-zero, non-NA responses).

Species	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Arrowtooth flounder	—	—	—	—	0.58:	10	0.55·	11
California halibut	1.00·	3	0.96·	5	0.88·	8	0.92·	7
Coastal pelagics	0.76:	4	0.93·	7	0.93·	11	0.91·	9
Crab	0.74·	10	0.77·	17	0.74·	18	0.78·	20
Dover sole	0.47:	13	0.45:	12	0.46:	13	0.57:	14
English sole	0.56·	11	0.60:	13	0.54:	11	0.50:	11
Lingcod	0.76·	15	0.70·	14	0.71·	17	0.66·	17
Pacific halibut	0.90·	5	0.91·	7	0.88·	9	0.90·	8
Pacific herring	—	—	—	—	***	***	***	***
Pacific whiting	0.61·	12	0.53·	13	0.62·	10	0.64·	10
Petrale sole	0.71·	11	0.74·	13	0.72·	12	0.71·	14
Rex sole	0.60·	11	0.72·	12	0.56·	9	0.64·	11
Rockfish	0.70·	16	0.65·	16	0.74·	21	0.64:	16
Sablefish	0.76·	15	0.84·	16	0.86·	15	0.84·	18
Salmon	0.91·	7	0.82·	9	0.87·	14	0.93·	16
Sanddab	—	—	—	—	0.70·	9	0.65·	8
Sharks, skates and rays	0.64·	12	0.63·	12	0.59:	13	0.56:	13
Shellfish	1.00·	3	1.00·	4	0.98·	4	0.99·	5
Shrimp	0.55:	9	0.54:	8	0.48·	9	0.60:	12
Squid	0.62:	4	0.96·	8	0.91·	7	0.87·	3
Sturgeon	—	—	—	—	0.62·	5	0.65·	6
Thornyheads	0.58:	13	0.73·	13	0.76·	15	0.67·	14
Tuna	0.90·	8	0.84·	14	0.98·	15	0.98·	17
Other species	0.67·	8	0.59:	8	0.64:	9	0.41:	8

2.10 Markup

The average markup by species e is

$$\frac{\sum_{n=1}^{N} \frac{\sum_{o=1}^{O} R_{e,o}}{\sum_{s=1}^{S} C_{e,s}}}{N} \quad \forall e$$

where R is the revenue of fish outputs, C is the cost of fish inputs, N is the total number of processors with non-zero, non-NA responses, O is the number of product types, and S is number of sources. The average markup by species or species group is calculated for each survey year. The costs of fish include fish received from all sources. The fish purchases can include pre-processed product types. The production value includes production of unprocessed and processed products.

2.10.1 Average markup

Table 2.107: Average markup. (N = number of EDC Processors with non-zero, non-NA responses).

Species	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Arrowtooth flounder	—	—	—	—	2.47⁚	11	2.70˙	12
California halibut	1.17˙	5	3.47⁝	7	1.18˙	8	1.32˙	8
Coastal pelagics	2.89⁚	9	2.41˙	8	3.16⁝	13	2.54˙	11
Crab	3.24⁝	15	1.46˙	18	1.41˙	19	1.34˙	22
Dover sole	1.82˙	13	1.90˙	14	1.62˙	14	1.80˙	15
Echinoderms	***	***	***	***	***	***	***	***
English sole	2.38⁚	11	2.07⁚	13	1.91˙	12	2.09˙	13
Lingcod	1.78⁚	15	2.16⁝	16	1.76˙	17	1.64˙	18
Pacific halibut	1.25˙	6	1.08˙	8	1.05˙	10	1.08˙	7
Pacific herring		0		0	***	***	***	***
Pacific whiting	5.25⁚	12	3.43˙	13	2.74˙	10	2.33˙	10
Petrale sole	2.21⁚	11	1.65˙	15	1.46˙	14	1.46˙	15
Rex sole	2.15˙	12	2.12˙	12	2.22˙	11	1.95⁚	13
Rockfish	1.81⁝	18	1.46˙	19	1.65˙	22	1.35˙	19
Sablefish	1.29˙	16	1.49˙	18	1.33˙	20	1.30˙	20
Salmon	1.81⁚	8	1.33˙	12	1.28˙	18	1.31˙	18
Sanddab	—	—	—	—	2.13˙	10	4.24⁚	11
Sharks, skates and rays	3.34⁝	12	2.59⁚	13	2.43⁚	15	1.93⁚	15
Shellfish	1.60˙	4	1.62˙	4	1.40˙	6	1.65˙	5
Shrimp	2.25⁚	9	1.57˙	11	2.10˙	11	1.78˙	14
Squid	1.75⁚	5	2.45⁚	8	***	***	1.33˙	4
Sturgeon	—	—	—	—	1.24˙	6	1.32˙	6
Thornyheads	1.72˙	13	1.76˙	14	2.10˙	16	2.21˙	15
Tuna	1.81⁚	10	1.26⁚	14	1.27˙	18	1.23˙	18
Other species	7.36⁝	10	5.46⁝	10	2.33⁚	12	1.76⁚	10

3 EDC Non-Processors

This section of the report summarizes information on first receivers that report no processing activity. These companies have first receiver site licenses but do not process any fish. For the purposes of this report, such first receivers are called "EDC Non-Processors." In 2009 and 2010, only entities that processed groundfish were required to fill out the entire form. In 2011 onward, all entities with a first receiver site license were required to submit the entire form. Thus, this section will only report summary statistics for 2011 onward.

3.1 Facility Value

3.1.1 Appraisal value of facility

Table 3.1: Value from last appraisal of facility (N = number of EDC Non-Processors with non-zero, non-NA responses).

	2011		2012	
	Mean	N	Mean	N
Market value of facility from last appraisal	$267,000	3	$267,000	3
Replacement value of facility from last appraisal	***	***	***	***

3.2 Employment

This section describes the employment information for EDC Non-Processors. Refer to Section 2.2 for more details on employment information collected on the EDC form.

3.2.1 Production workers

Table 3.2: Weekly employment: Number of production workers. Number of production workers for the week that includes the 12th of the month (N = number of EDC Non-Processors with non-zero, non-NA responses).

Month	2011		2012	
	Mean	N	Mean	N
January	15	4	14	3
February	15	4	11	3
March	16	4	10	3
April	15	5	14	3
May	15	5	21	3
June	15	5	16	3
July	20	5	20	3
August	18	5	24	3
September	23	5	23	3
October	16	5	26	3
November	18	5	23	3
December	16	5	14	3

Table 3.3: Weekly employment: Production worker hours. Hours worked by production workers for the week that includes the 12th of the month (N = number of EDC Non-Processors with non-zero, non-NA responses).

Month	2011		2012	
	Mean	N	Mean	N
January	510.1⁚	4	322.2·	3
February	510.8⁚	4	248.1⁚	3
March	509.6⁚	4	214.4⁚	3
April	463.1⁚	5	275.1·	3
May	621.5⁝	5	408.2·	3
June	711.4⁝	5	378.3·	3
July	705.3⁚	5	489.9⁚	3
August	683.3⁚	5	672.8⁚	3
September	819.2⁚	5	598.6·	3
October	601.3⁚	5	778.2⁚	3
November	758.6⁚	5	536.9⁚	3
December	600.4⁝	5	234.4⁚	3

3.2.2 Non-production employees

Table 3.4: Weekly employment: Non-production employees. Number of non-production employees and hours worked for the week that includes March 12 (N = number of EDC Non-Processors with non-zero, non-NA responses).

	2011		2012	
	Mean	N	Mean	N
Hours Worked	92.1 ⁚	7	64.7 ⁚	5
Number of employees	3.4 ⁝	7	2.2 ·	5

3.2.3 Compensation

Hourly compensation for each EDC Non-Processor is calculated by dividing annual labor expenses (Section 2.3.2) by an estimate of total annual hours worked. The EDC form requests information on number of employees and total hours worked for the week including the 12th day of the month for production workers and for the week including the 12th day in March for non-production employees. Estimates of total annual hours worked for each company are found by assuming that employment information for the week of the 12th is representative of the entire month and by weighting each month equally using the following formula:

$$\sum_{m=1}^{12} (\frac{Hours}{week})_m * \frac{52}{12}$$

Table 3.5: Hourly compensation. Average hourly compensation. (N = number of EDC Non-Processors with non-zero, non-NA responses).

	2011		2012	
	Mean	N	Mean	N
Production workers	$11.95	4	$10.68	3
Non-production employees	$8.68	5	$14.09	4

Compensation per position for each EDC Non-Processor is calculated by dividing annual labor expenses (Section 2.3.2) by the average numbers of workers across months in year. This assumes that the average number of workers is representative of the total number of positions that year. For non-production workers, it is assumed that number of workers in the week containing March 12th is representative of the number of non-production employee positions in all weeks during the year.

Table 3.6: Compensation per position. Average compensation per position. (N = number of EDC Non-Processors with non-zero, non-NA responses).

	2011		2012	
	Mean	N	Mean	N
Production workers	$17,400	4	$14,462	3
Non-production employees	$13,046	5	$18,179	4

3.3 Costs

This section of the report describes the cost data that are collected on the EDC first receiver and shorebased processor form for companies that report no processing activities. There were not enough responses to summarize fixed costs by various categories (e.g. capitalized expenditures on builidngs, rental or lease of job-site trailers, and other structures) and maintain data confidentiality. Thus, fixed costs are only reported at an aggregated level. This information is contained in Table 3.23. Refer to Section 2.3 for more information on what comprises fixed costs and variable costs.

There are a variety of costs that are associated with running a first receiver or shorebased processing facility that are not requested on the EDC form. This is because it is difficult to determine the share of the costs associated with the facility. These expenses include trucks, and professional fees. In general, the EDC forms attempt to collect costs that are directly related to facility maintenance and processing operations, and not costs that are related to activities or equipment beyond the facility (one exception is off-site product freezing and storage). For these reasons, the EDC aggregated measures of costs (variable costs, fixed costs and total costs) underestimate the true costs of operating a business.

3.3.1 Variable Costs

Labor expenses

Table 3.7: Employment expenses. Total annual labor expenses for all employees (includes wages, bonuses, benefits, payroll taxes, and unemployment insurance). (N = number of EDC Non-Processors with non-zero, non-NA responses).

Expense	2011		2012	
	Mean	N	Mean	N
Production workers	$280,497	5	$216,574	3
Non-production employees	$36,396	5	$44,736	4

Quota costs

Not enough Non-Processors reported quota costs to be able to display this information.

Other expenses

Utility expenses include electricty, natural gas, propane gas, water, and sewer, waste and byproduct disposal expenses.

Table 3.8: Other expenses (N = number of EDC Non-Processors with non-zero, non-NA responses).

Expense	2011		2012	
	Mean	N	Mean	N
Cleaning and custodial supplies	$3,252	4	$1,502	5
Freight costs for supplies		0	***	***
Insurance (property, product, and personal liability)	$4,139	5	$16,492	4
Licensing fees	$1,268	8	$951	7
Non-fish ingredients (additives)	***	***		0
Offloading	$12,483	4	***	***
Packing materials	$51,634	5	$27,851	5
Production supplies	$1,833	3	$1,127	3
Shoreside monitoring	$484	6	$1,572	5
Taxes (property and excise)	$3,444	5	$10,696	4
Utilities	$12,806	15	$14,088	13

3.3.2 Fish purchases

The following tables describe fish purchases by EDC Non-Processors. There were not enough responses to summarize fish purchases for each species requested on the EDC form. Thus, fish purchase information for these companies is aggregated to the following five species groups: **groundfish, sablefish, rockfish, crab, and other species.**

Respondents are asked to provide the weight and cost of fish received during the survey year. This includes: 1) the weight of fish paid for; 2) the weight of those not paid for due to size or quality reasons; and 3) the weight of fish not paid for due to intra-company transfers.

The cost of fish from vessel or non-vessel sources includes the value of any taxes paid on behalf of delivering vessels. Purchase weight and cost information is requested by categories for different species types and sources. For catch share species, the fish source categories are: 1) Limited Entry (LE) Trawl; 2) LE Fixed Gear; 3) Other vessels; and 4) Non-vessel sources. For non-catch share species, the fish source categories are: 1) Vessel sources; and 2) Non-vessel sources. LE Trawl represents fish acquired directly from a vessel registered to a LE permit with a trawl endorsement and caught with either trawl or fixed gear. LE Fixed Gear represents fish acquired directly from a vessel with a fixed gear endorsement. This does not include fish caught with a fixed gear on a LE permit with a trawl endorsement, i.e., the gear switching provision of the catch share program, which are included under LE trawl. Other vessels are those without either a LE Trawl or LE Fixed Gear endorsement. Non-vessel sources include fish acquired from other entities, including other first receivers, processors, wholesale dealers, brokers, aquaculture producers, and transfers from outside the facility.

Fish that are not paid for are excluded from the tables in this section. This includes fish recorded as having zero value due to size or quality reasons, as well as fish that are received for custom processing. The tables do include post season adjustments and fish purchased that are then custom processed by another processor outside the facility. As stated in the introduction to this report, respondents fill out the EDC form according to their fiscal year, so pounds listed for each species may not have been purchased during the calendar year indicated by the column header, and therefore these values may not align directly to state-fish ticket data.

3.3.3 Total cost and weight of fish purchases by source and species group

Table 3.9: Groundfish (excluding rockfish and sablefish): Total purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	***	16,694	***	***	***	***
LE Trawl	103,402	151,535	3	369,041	181,452	3
Non-vessel	***	***	***	0	0	0
Other Vessel	***	***	***	0	0	0

Table 3.10: Rockfish: Total purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	***	***	***	***	***	***
LE Trawl	102,162	59,490	3	108,716	56,726	3
Non-vessel	***	***	***	0	0	0
Other Vessel	***	***	***	0	0	0

Table 3.11: Sablefish: Total purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	556,826	***	3	***	***	***
LE Trawl	***	***	***	13,561	10,967	3
Non-vessel	0	0	0	0	0	0
Other Vessel	0	0	0	0	0	0

Table 3.12: Crab: Total purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
Non-vessel	0	0	0	0	0	0
Vessel	200,162	558,369	4	***	***	***

Table 3.13: Other: Total purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	0	0	0	0	0	0
LE Trawl	0	0	0	0	0	0
Non-vessel	***	***	***	***	***	***
Vessel	***	1,787,342	***	***	***	***
Other Vessel	0	0	0	0	0	0

3.3.4 Mean cost and weight of fish purchases by source and species group

Table 3.14: Groundfish (excluding rockfish and sablefish): Average purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	***	5,565	***	***	***	***
LE Trawl	34,467	50,512	3	123,014	60,484	3
Non-vessel	***	***	***			0
Other Vessel	***	***	***			0

Table 3.15: Rockfish: Average purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	***	***	***	***	***	***
LE Trawl	34,054	19,830	3	36,239	14,181	3
Non-vessel	***	***	***			0
Other Vessel	***	***	***			0

Table 3.16: Sablefish: Average purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear	185,609 ⋮	***	3	***	***	***
LE Trawl	***	***	***	4,520 ˙	3,656 ⁚	3
Non-vessel			0			0
Other Vessel			0			0

Table 3.17: Crab: Average purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
Non-vessel			0			0
Vessel	50,041 ⁝	139,592 ⁝	4	***	***	***

Table 3.18: Other: Average purchase weight and cost by source and species group (N = number of EDC Non-Processors with non-zero, non-NA responses).

Source	2011			2012		
	Weight	Cost	N	Weight	Cost	N
LE Fixed Gear			0			0
LE Trawl			0			0
Non-vessel	***	***	***	***	***	***
Vessel	***	446,835⁝	***	***	***	***
Other Vessel			0			0

3.4 Depreciation

Depreciation in the following table includes depreciation for all capital investments on buildings, and new and used machinery and equipment during the EDC data collection year for EDC Non-Processors.

Table 3.19: Depreciation (N = number of EDC Non-Processors with non-zero, non-NA responses).

	2011		2012	
	Mean	N	Mean	N
Depreciation	$69,747 :	5	$63,866 :	3

3.5 Revenue

3.5.1 Revenue from offloading

There were not enough responses from EDC Non-Processors to report revenue from custom processing and from the sale or lease of quota pounds or quota shares. Thus the following table shows revenue from offloading only.

Table 3.20: Other revenue (N = number of EDC Non-Processors with non-zero, non-NA responses).

Revenue Source	2011		2012	
	Mean	N	Mean	N
Offloading	$235,090 ⁚	3	$196,851 ⁝	4

3.5.2 Production activities

The following tables show production and sales for EDC Non-Processors. As these companies do not process fish, all production activities are listed under the product category Unprocessed. Refer to Section 2.5.2 for more details about production information collected by EDC forms.

3.5.3 Total value and weight of fish production by product type and species group

Table 3.21: Total production value and weight by species group. Product type is unprocessed for all. (N = number of EDC Non-Processors with non-zero, non-NA responses).

Product	2011			2012		
	Weight	Value	N	Weight	Value	N
Crab	191,049	569,489	3	***	***	***
Groundfish (excluding rockfish and sablefish)	175,042	296,319	6	***	***	***
Rockfish	139,180	233,690	6	***	***	***
Sablefish	620,953	2,251,078	6	***	***	***
Other	1,498,127	3,929,715	4	***	***	***

3.5.4 Average value and weight of fish production by product type and species

Table 3.22: Mean production value and weight by species group. Product type is unprocessed for all. (N = number of EDC Non-Processors with non-zero, non-NA responses).

Product	2011			2012		
	Weight	Value	N	Weight	Value	N
Crab	63,683	189,830	3	***	***	***
Groundfish (excluding rockfish and sablefish)	29,174	49,386	6	***	***	***
Rockfish	23,197	38,948	6	***	***	***
Sablefish	103,492	375,180	6	***	***	***
Other	374,532	982,429	4	***	***	***

3.6 Net Revenue and Economic Profit

Measures of net revenue earned by EDC Non-Processors are presented in this section. Refer to Section 2.6 for more details on the different measures of net revenue and several caveats concerning these measures.

3.6.1 Net revenue

Average net revenue is calculated based on information from EDC Non-Processors for 2011 onward.

Revenue includes the total value of production and revenue from custom processing and offloading.

The variable and fixed costs do not include costs related to acquiring quota shares or quota pounds.

$$\text{Variable cost net revenue} = \text{Revenue} - \text{Variable costs}$$

$$\text{Total cost net revenue} = \text{Revenue} - (\text{Variable costs} + \text{Fixed costs})$$

Table 3.23: Revenue, costs, and net revenue. (N = number of EDC Non-Processors with non-zero, non-NA responses).

Expense	2011		2012	
	Mean	N	Mean	N
Revenue	$952,522	9	$530,578	6
(Variable costs)	$801,283	10	$418,097	8
Variable cost net revenue	**$66,706**	**9**	**-$3,893**	**6**
(Fixed costs)	$87,901	7	$130,413	5
Total cost net revenue	**-$15,781**	**7**	**-$184,139**	**4**

3.6.2 Total cost net revenue rates

Table 3.24: Revenue, costs, and total and variable cost net revenue by pounds produced and pounds of fish purchased (N = number of EDC Non-Processors with non-zero, non-NA responses).

Expense	2011		2012	
	Mean	N	Mean	N
Revenue per production pounds	$3.521	7	$2.294	4
Revenue per purchase pounds	$4.617	7	$1.414	4
Variable cost per production pounds	$2.510	7	$2.206	4
Variable cost per purchase pounds	$2.775	8	$1.358	6
Variable cost net revenue per production pounds	$1.011	7	$0.088	4
Variable cost net revenue per purchase pounds	$1.926	7	$0.119	4
Fixed cost per production pounds	$0.770	5	***	***
Fixed cost per purchase pounds	$1.319	5	$0.377	3
Total cost net revenue per production pounds	$0.481	5	***	***
Total cost net revenue per purchase pounds	$1.212	5	***	***

3.7 Cost Per Pound of Fish Purchases

3.7.1 Mean fish purchase cost per pound by species and source of fish

The mean cost per pound of fish inputs by species e and source of fish s is

$$\frac{\sum_{n=1}^{N} \frac{C_{n,e,s}}{WT_{n,e,s}^{fishinputs}}}{N} \quad \forall e, s$$

where C is the cost of fish inputs, $WT^{fishinputs}$ is the weight of fish inputs, and N is the total number of Non-Processors with non-zero, non-NA responses. The mean cost per pound of fish by species and source of fish is calculated for each survey year.

Table 3.25: Mean fish cost per pound (N = number of EDC Non-Processors with non-zero, non-NA responses).

Species: Source	2011		2012	
	Mean	N	Mean	N
Crab: Non-vessel		0		0
Crab: Vessel	4.22	4	2.82	3
Groundfish (excluding rockfish and sablefish): LE Fixed Gear	1.83	3	***	***
Groundfish (excluding rockfish and sablefish): LE Trawl	2.31	3	0.94	3
Groundfish (excluding rockfish and sablefish): Non-vessel	***	***		0
Groundfish (excluding rockfish and sablefish): Other Vessel	***	***		0
Other: LE Fixed Gear		0		0
Other: LE Trawl		0		0
Other: Non-vessel	***	***	0.56	3
Other: Other Vessel		0		0
Other: Vessel	2.45	4	***	***
Rockfish: LE Fixed Gear	***	***	***	***
Rockfish: LE Trawl	0.75	3	0.85	3
Rockfish: Non-vessel	***	***		0
Rockfish: Other Vessel	***	***		0
Sablefish: LE Fixed Gear	2.36	3	***	***
Sablefish: LE Trawl	1.23	3	1.05	3
Sablefish: Non-vessel		0		0
Sablefish: Other Vessel		0		0

3.8 Revenue Per Pound from Fish Products Produced

3.8.1 Mean production revenue per pound by product type

The mean revenue per pound of fish output by species e and product type o is

$$\frac{\sum_{n=1}^{N} \frac{R_{n,e,o}}{WT_{n,e,o}^{fishoutputs}}}{N} \quad \forall e, o$$

where R is the revenue of fish outputs, $WT^{fishoutputs}$ is the weight of fish outputs, and N is the total number of Non-Processors with non-zero, non-NA responses. The mean revenue per pound of fish by species and source of fish is calculated for each survey year.

Table 3.26: Mean fish revenue per pound (N = number of EDC Non-Processors with non-zero, non-NA responses).

Species: Product	2011		2012	
	Mean	N	Mean	N
Crab: Unprocessed	5.40	3	***	***
Groundfish (excluding rockfish and sablefish): Unprocessed	2.94	6	***	***
Rockfish: Unprocessed	2.05	6	2.78	3
Sablefish: Unprocessed	6.44	6	3.43	3
Other: Unprocessed	4.87	4	1.80	3

3.9 Markup

The average markup by species e is

$$\frac{\sum_{n=1}^{N} \frac{\sum_{o=1}^{O} R_{e,o}}{\sum_{s=1}^{S} C_{e,s}}}{N} \quad \forall e$$

where R is the revenue of fish outputs, C is the cost of fish inputs, N is the total number of Non-Processors with non-zero, non-NA responses, O is the number of product types, and S is number of sources. The average markup by species or species group is calculated for each survey year.

3.9.1 Average markup

Table 3.27: Average markup. (N = number of EDC Non-Processors with non-zero, non-NA responses).

Species Group	2011		2012	
	Mean	N	Mean	N
Crab	1.10	3	***	***
Groundfish (excluding rockfish and sablefish)	1.44	6	***	***
Rockfish	1.53	5	1.77	3
Sablefish	3.17	6	1.39	3
Other	1.28	3	1.27	3

Appendix A Cost Disaggregation

In order to conduct economic analyses of specific fisheries it is important to have costs broken out by fishery. However, processors participating in multiple fisheries incur costs that are aggregated across fisheries. These are called joint costs in the economics and accounting literature. They may include fixed costs (e.g., new processing equipment), or variable costs (e.g., ice). The former are joined by the nature of the costs, while the latter are joined due to observational limitations. It is difficult to assign fixed costs to a particular fishery because the level of the cost does not vary with processor participation (at least over the short run).

Some variable costs can be tracked by fishery, but would be costly to do so. For example, although a processor could theoretically set up a system to track expenditures on production supplies by fishery, doing so is rare among the EDC Processors.

Research is currently being conducted at the Northwest Fisheries Science Center to determine the "best" method of cost allocation relative to certain criteria. For the purposes of this report, five different methods were explored: 1) cost allocation by weight of pounds purchased; 2) cost allocation by cost of pounds purchased; 3) cost allocation by weight of pounds produced; 4) cost allocation by value of pounds processed; and 5) cost allocation by valued added (values of fish sales less the cost of purchasing that fish). The fisheries considered in this analysis are the broad categories of 1) Shoreside Pacific whiting; 2) Non-whiting groundfish; and 3) Other.

To understand the potential implications of the assumptions associated with the five methods of cost disaggregation, the output of the different methods were examined by looking at the effect on average variable cost net revenue (VCNR) and total cost net revenue (TCNR).

Cost disaggregation was only performed using data from EDC Processors; data from EDC Non-Processors is excluded from this analysis.

Table A.1: Sensitivity analysis. Shoreside Pacific Whiting fishery average variable cost net revenue (VCNR) and total cost net revenue (TCNR) by cost disaggregation method (N = number of EDC Processors with non-zero, non-NA responses).

Method	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Purchase Weight: VCNR	$987,043	12	$220,049	13	$638,806	10	$587,249	10
Purchase Cost: VCNR	$2,002,777	12	$1,255,968	13	$2,724,258	10	$1,954,082	10
Production Weight: VCNR	$1,159,427	12	$679,903	13	$1,016,445	10	$758,231	10
Production Value: VCNR	$1,688,769	12	$1,001,181	13	$2,293,774	10	$1,691,866	10
Value Added: VCNR	$1,311,066	12	$635,882	13	$1,700,846	10	$1,353,579	9
Purchase Weight: TCNR	-$687,224	12	-$1,221,490	13	-$392,276	10	$75,642	10
Purchase Cost: TCNR	$457,023	12	$543,201	13	$2,038,965	10	$1,674,041	10
Production Weight: TCNR	-$401,075	12	-$483,919	13	$69,529	10	$289,710	10
Production Value: TCNR	-$65,695	12	-$98,902	13	$1,524,661	10	$1,363,896	10
Value Added: TCNR	-$571,405	12	-$797,261	13	$811,840	10	$893,352	9

Table A.2: Sensitivity analysis. Non-whiting groundfish fishery average variable cost net revenue (VCNR) and total cost net revenue (TCNR) by cost disaggregation method (N = number of EDC Processors with non-zero, non-NA responses).

Method	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Purchase Weight: VCNR	$234,139	18	$672,226	20	$501,936	22	$513,577	21
Purchase Cost: VCNR	-$77,962	18	$609,413	20	$376,895	22	$492,206	21
Production Weight: VCNR	$480,986	18	$764,184	20	$590,689	22	$632,767	21
Production Value: VCNR	$209,616	18	$535,166	20	$431,484	22	$488,912	21
Value Added: VCNR	$488,076	17	$406,909	19	$503,728	20	$441,548	21
Purchase Weight: TCNR	$58,882	18	$534,078	20	$407,513	22	$389,965	21
Purchase Cost: TCNR	-$300,402	18	$401,195	20	$258,678	22	$355,083	21
Production Weight: TCNR	$350,354	18	$626,543	20	$504,147	22	$519,657	21
Production Value: TCNR	$57,649	18	$342,811	20	$324,968	22	$358,561	21
Value Added: TCNR	$376,587	17	$210,746	19	$392,642	20	$312,931	21

Table A.3: Sensitivity analysis. Other fishery average variable cost net revenue (VCNR) and total cost net revenue (TCNR) by cost disaggregation method (N = number of EDC Processors with non-zero, non-NA responses).

Method	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Purchase Weight: VCNR	$2,057,722	19	$1,004,397	21	$2,195,085	24	$2,295,930	25
Purchase Cost: VCNR	$1,711,881	19	$422,936	21	$1,440,766	24	$1,767,149	25
Production Weight: VCNR	$1,714,992	19	$632,147	21	$1,956,378	24	$2,127,418	25
Production Value: VCNR	$1,637,760	19	$651,373	21	$1,570,096	24	$1,874,802	25
Value Added: VCNR	$1,638,193	19	$1,019,037	21	$1,870,834	23	$2,104,057	25
Purchase Weight: TCNR	$1,435,706	19	$261,546	21	$1,746,663	24	$1,858,993	25
Purchase Cost: TCNR	$1,053,398	19	-$704,327	21	$870,077	24	$1,248,935	25
Production Weight: TCNR	$978,848	19	-$283,109	21	$1,465,663	24	$1,664,425	25
Production Value: TCNR	$1,044,330	19	-$251,231	21	$1,023,605	24	$1,370,071	25
Value Added: TCNR	$1,081,394	19	$316,898	21	$1,347,423	23	$1,632,364	25

Appendix B IO-PAC Model Tables

This appendix reports the EDC data for first receivers and shorebased processors that are used in the IO-PAC model[1]. All EDC respondents (Processors and Non-Processors) are included in the following tables. The average markup (Table B.3) for the IO-PAC model was calculated by dividing the total value of production (Table B.1) by the total cost of all fish put into production (Table B.2). The costs of fish include fish received from trawl vessel, fixed gear vessels, other vessel, and non-vessel sources. The fish purchased can include pre-processed product types. The production value includes production of unprocessed and processed products.

B.1 Total production revenue by IO-PAC species

Table B.1: Total value fish production by IO-PAC species.

Species	2009 N=23	2010 N=25	2011 N=33	2012 N=33
	$	$	$	$
CPS	13,396,491	12,545,432	13,680,660	46,529,967
Crab	77,290,802	106,290,143	105,680,501	123,366,966
Dover and thornyhead	22,181,823	21,461,591	18,414,955	21,560,600
Halibut	4,320,134	3,306,679	4,172,459	4,835,874
HMS	22,224,997	23,268,080	29,383,902	29,724,711
Sablefish	33,844,434	39,059,711	39,619,038	31,530,635
Salmon	12,952,484	20,823,765	28,614,202	21,403,507
Shrimp	28,982,683	29,515,017	60,878,886	64,158,030
Whiting	46,650,415	33,100,501	71,134,044	55,101,571
Other groundfish	19,543,517	14,435,068	18,521,831	21,340,056

[1] Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

B.2 Total fish purchase cost by IO-PAC species

Table B.2: Total cost of fish purchases by IO-PAC species.

Species	2009 N=23	2010 N=25	2011 N=33	2012 N=33
	$	$	$	$
CPS	5,773,335	5,942,997	5,583,202	19,862,760
Crab	38,959,169	72,652,739	73,211,227	85,329,849
Dover and thornyhead	11,446,179	9,926,232	8,824,865	9,409,895
Halibut	2,985,559	2,582,359	3,657,804	4,741,880
HMS	11,944,324	17,882,023	20,213,013	26,442,970
Sablefish	25,304,216	25,022,614	31,012,456	23,637,344
Salmon	6,169,633	16,260,063	20,955,055	14,349,348
Shrimp	11,968,654	16,219,329	31,428,611	32,418,598
Whiting	12,748,568	9,117,094	24,842,072	20,620,032
Other groundfish	9,778,066	9,412,786	10,758,306	13,638,683

B.3 Markup

B.4 Other IO-PAC inputs

The IO-PAC model uses inputs from the following summary tables, which show the total value and number of respondents for each category. In the tables below, the "N" in the table caption represents the total number of first receivers who reported processing in 2009 and 2010, and the total number of first receivers that reported information in 2011 (see section 1.3). The "N" listed next to the totals reported by row represents the number of non-zero, non-NA responses for that category.

Table B.3: Average industry markup by IO-PAC species.

Species	2009 N=23 Average	2010 N=25 Average	2011 N=33 Average	2012 N=33 Average
CPS	2.32	2.11	2.45	2.34
Crab	1.98	1.46	1.44	1.45
Dover and thornyhead	1.94	2.16	2.09	2.29
Halibut	1.45	1.28	1.14	1.02
HMS	1.86	1.30	1.45	1.12
Sablefish	1.34	1.56	1.28	1.33
Salmon	2.10	1.28	1.37	1.49
Shrimp	2.42	1.82	1.94	1.98
Whiting	3.66	3.63	2.86	2.67
Other groundfish	2.00	1.53	1.72	1.56

Table B.4: Total Production Employee Hours.

	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
January	39,777.9	20	37,202.0	23	55,372.2	26	54,252.1	25
February	20,656.1	20	35,202.8	23	44,937.6	26	49,561.8	25
March	27,517.3	20	31,669.4	23	34,569.8	26	33,703.8	25
April	28,784.0	19	40,923.3	22	41,610.5	27	43,750.9	25
May	47,476.4	19	67,121.1	22	55,858.1	28	47,702.6	25
June	68,213.1	19	69,531.0	23	90,752.2	28	51,026.5	26
July	126,217.1	20	90,689.0	23	151,045.4	29	108,862.1	27
August	68,666.9	20	99,673.2	23	161,966.5	29	115,936.9	27
September	55,218.8	20	69,529.4	22	124,299.8	29	98,102.9	27
October	82,422.9	20	50,173.8	22	75,294.7	28	99,266.6	26
November	51,296.2	19	46,631.3	22	53,358.9	28	78,196.6	26
December	106,558.7	20	125,508.7	23	108,047.4	27	64,721.6	26

Table B.5: Total Number of Production Employees.

	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
January	1,495	20	1,765	23	1,895	26	1,890	25
February	1,212	20	1,471	23	1,640	26	1,950	25
March	1,233	20	1,340	23	1,183	26	1,341	25
April	1,243	19	1,411	22	1,267	27	1,435	25
May	1,462	19	1,977	22	1,358	28	1,558	25
June	2,195	19	2,138	23	2,099	28	1,913	26
July	2,730	20	2,436	23	3,153	29	2,658	27
August	2,059	20	2,750	23	3,004	29	2,794	27
September	2,011	20	2,059	22	2,732	29	2,492	27
October	1,905	20	1,840	22	1,998	28	2,417	26
November	1,552	19	1,711	22	1,582	28	2,093	26
December	2,881	20	2,560	23	2,476	27	1,733	26

Table B.6: Total Number and Hours of Non-Production Employees.

	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Hours Worked	12,286.4	21	17,246.4	22	11,305.9	31	9,623.8	29
Number of employees	200.0	21	268.0	22	232.0	31	251.0	29

Table B.7: Total Employee Expenses.

Employment Expenses	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Production workers	$33,997,783	21	$32,378,076	23	$47,088,146	29	$48,230,310	27
Non-production employees	$9,018,992	20	$10,395,436	22	$12,190,655	29	$13,477,516	29

Table B.8: Total Expenditures on Buildings and Equipment.

Capital Expenditures	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Capitalized expenditures on buildings	$6,162,592	14	$6,661,913	13	$3,335,907	10	$2,534,717	16
Capitalized expenditures on new and used machinery and equipment	$21,984,534	21	$24,371,908	20	$10,401,956	22	$6,347,698	22
Expenses on processing equipment	$490,838	15	$558,311	17	$629,867	21	$754,358	16
Expenses on rental or lease of buildings, job-site trailers, and other structures	$2,586,591	22	$2,718,740	23	$3,157,235	26	$3,374,004	26
Expenses on repair and maintenance on facility buildings, machinery, and equipment	$5,061,722	22	$5,354,384	23	$6,240,589	30	$6,276,637	29

Table B.9: Total Utility Expenses.

Sum of Utilities Expenses	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Electricity	$3,706,575	22	$4,010,386	23	$4,526,426	30	$5,075,940	28
Natural gas	$1,137,666	12	$1,047,859	12	$345,217	12	$335,271	10
Nitrogen gas	—	—	—	—	***	***	***	***
Propane gas	$455,315	16	$891,484	19	$822,756	23	$685,002	23
Water	$1,535,981	22	$1,987,467	23	$2,413,399	27	$2,648,876	27
Sewer, waste, and byproduct disposal	$754,150	20	$948,087	20	$1,217,320	25	$1,417,258	22

Table B.10: Total Other Expenses.

Sum of Other Expenses	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Cleaning and custodial supplies	—	—	—	—	$397,674	24	$515,531	26
Freight costs for supplies	$1,692,815	10	$1,735,573	11	$1,531,957	8	$2,253,004	12
Insurance (property, product, and personal liability)	$3,009,296	20	$2,966,941	22	$1,940,059	29	$1,826,144	28
Licensing fees	—	—	—	—	$296,498	30	$341,258	31
Non-fish ingredients (additives)	$716,795	10	$676,366	11	$1,486,449	13	$2,600,295	14
Off-site product freezing and storage	$3,203,129	17	$3,804,195	18	$6,068,260	17	$8,297,012	18
Offloading	—	—	—	—	$762,062	16	$1,504,792	17
Packing materials	$13,286,417	22	$12,164,947	24	$13,235,794	29	$12,998,500	30
Production supplies	$2,267,970	19	$2,574,746	23	$1,303,346	26	$1,659,855	26
Shoreside monitoring	$181,209	12	$456,947	13	$119,793	22	$148,222	21
Taxes (property and excise)	—	—	—	—	$1,351,010	27	$1,543,594	27

Table B.11: Total Custom Processing.

Custom Processing	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Cost of custom processing of whiting	852,453	3	***	***	***	***	***	***
Cost of custom processing of non-whiting groundfish	1,297,339	3	420,546	3	***	***	***	***
Cost of custom processing of other (non-whiting, non-groundfish)	1,359,705	3	1,305,629	4	928,741	4	602,824	4
Weight of custom processing of whiting	3,870,863	3	***	***	***	***	***	***
Weight of custom processing of non-whiting groundfish	4,079,781	3	1,382,174	3	***	***	***	***
Weight of custom processing of other (non-whiting, non-groundfish)	6,202,438	3	5,605,518	4	2,965,509	3	253,555	3

Table B.12: Total Other Revenue.

Other Revenue	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Custom processing of whiting	***	***	***	***	***	***	474,876	4
Custom processing of non-whiting groundfish	***	***	89,854	3	667,714	5	1,070,067	6
Custom processing of other (non-whiting, non-groundfish)	379,196	6	483,527	7	1,063,806	5	1,572,122	6
Offloading	—	—	—	—	1,862,756	13	1,625,459	17

Appendix C Future Improvements

There are several ways in which the EDC Program will continue to improve the data collection administration and operations with regards to first receivers and shorebased processors.

- There are several points in which the identification of buyers and shorebased processors can be improved. In past data collections, there were two issues with identifying shorebased processors and buyers.
  - First, initially, under the catch share program, the buyer of a fish could use the first receiver site license of an offloader to buy groundfish. This meant that there was no first receiver site license for the true buyer and therefore no way to identify this buyer. Recent changes to the regulations[1] now require that all buyers have a first receiver site license for all physical locations where they purchase, take custody, or control of an IFQ landing. The name of the buyer should in all cases now match the name on the first receiver permit and that on the e-ticket. The implementation of these regulations should improve EDC data quality and catch-share performance monitoring for the 2013 survey year and beyond.
  - The second issue is the identification of shorebased processors. The first receiver site license program, and previously, the state run licensing program for commercial seafood buyers, can be used for all buyers of seafood, but there is currently no method for identifying processors that do not have a first receiver site license and receive round or headed-and-gutted IFQ species groundfish or whiting from a first receiver.

C.1 Cost allocation

The EDC program continues the process of developing methods for cost allocation for processors, with further economic analysis and interviews with participants needed. In addition to exploration of other methods for cost disaggregation, the EDC Program has tentatively chosen the following species groups to provide narrower fishery categories for cost disaggregation in the future:

- Whiting

[1] For more detailed information see: Compliance Guide Pacific Coast Groundfish Trawl Rationalization Program: Changes for 2012 and beyond Federal Register: 76 FR 74725, December 1, 2011

- Catch share groundfish
- Fixed gear groundfish
- Open access groundfish
- Crab
- Shrimp
- Salmon
- Coastal pelagics, and highly migratory species including tuna and herring
- Halibut, including Pacific and California
- Other, including squid, echinoderms, shellfish, sturgeon, and “other”

C.2 Processor types

In this report, EDC Processors and Non-Processors are examined separately. In subsequent reports, the EDC Program will attempt to further partition the entities into groups that will aid in the analysis and interpretation of the data. Some options are partitions based on the species or groups of species processed, or partitions based on more refined categories for types of operations. Input from participants and fishery managers would be helpful in determining which partitions would be most useful.

Agenda Item J.5.b
NWFSC Report 2
(Full Version Electronic Only)
November 2014

Economic Data Collection Program

Catcher Vessel Report (2009-2012)

Draft Report for PFMC Review

Do Not Cite

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Northwest Fisheries Science Center[1]

October 22, 2014

[1] For questions or comments, please contact the EDC Program at nwfsc.edc@noaa.gov.

2012 Economic Data Collection (EDC)

West Coast Groundfish Trawl

Catch Share Program

DRAFT

CATCHER VESSELS

FISHERY PARTICIPATION

		Vessels	Days at Sea	Landings (1000 MT)
CATCH SHARE FISHERIES	*At-sea Pacific whiting*	16	38.8	40.7
CATCH SHARE FISHERIES	*Shoreside Pacific whiting*	24	55.8	65.8
CATCH SHARE FISHERIES	*DTS trawl*	58	40.7	12.3
	Non-whiting, non-DTS trawl	50	24.6	5.7
	Fixed gear with trawl endorsement	27	33.3	1.0
	Fixed gear with fixed gear endorsement	10	22.6	0.3
	Crab	61	36.3	2.1
	Shrimp	39	46.1	11.8
	Halibut	6	27.7	0.1
	Salmon	12	23.7	0.0
	Tuna	15	11.8	0.1
	Alaska	30	108.5	117.8

ECONOMIC SUMMARY*

Vessel Average

110 vessels
$406K revenue
$220K variable cost
$186K variable cost net revenue
$140K fixed cost
$45K total cost net revenue

$4K variable cost net revenue per day

Fleet-wide Totals

110 vessels
$58M revenue
$26M variable cost net revenue
$7M total cost net revenue

NOAA FISHERIES
Northwest Fisheries SCIENCE CENTER

ALASKA PARTICIPATION

Alaska: $57M
30 vessels, typically 24 trips to AK per year

AT-SEA PARTICIPATION

At-sea: $9.3M
16 vessels

SHORESIDE PARTICIPATION

Total value of catch share groundfish landings
Vessel homeports

Washington: $9.5M
16 vessels

Astoria: $15.8M
37 vessels

Newport: $10.5M
23 vessels

Coos Bay $2.8M
18 vessels

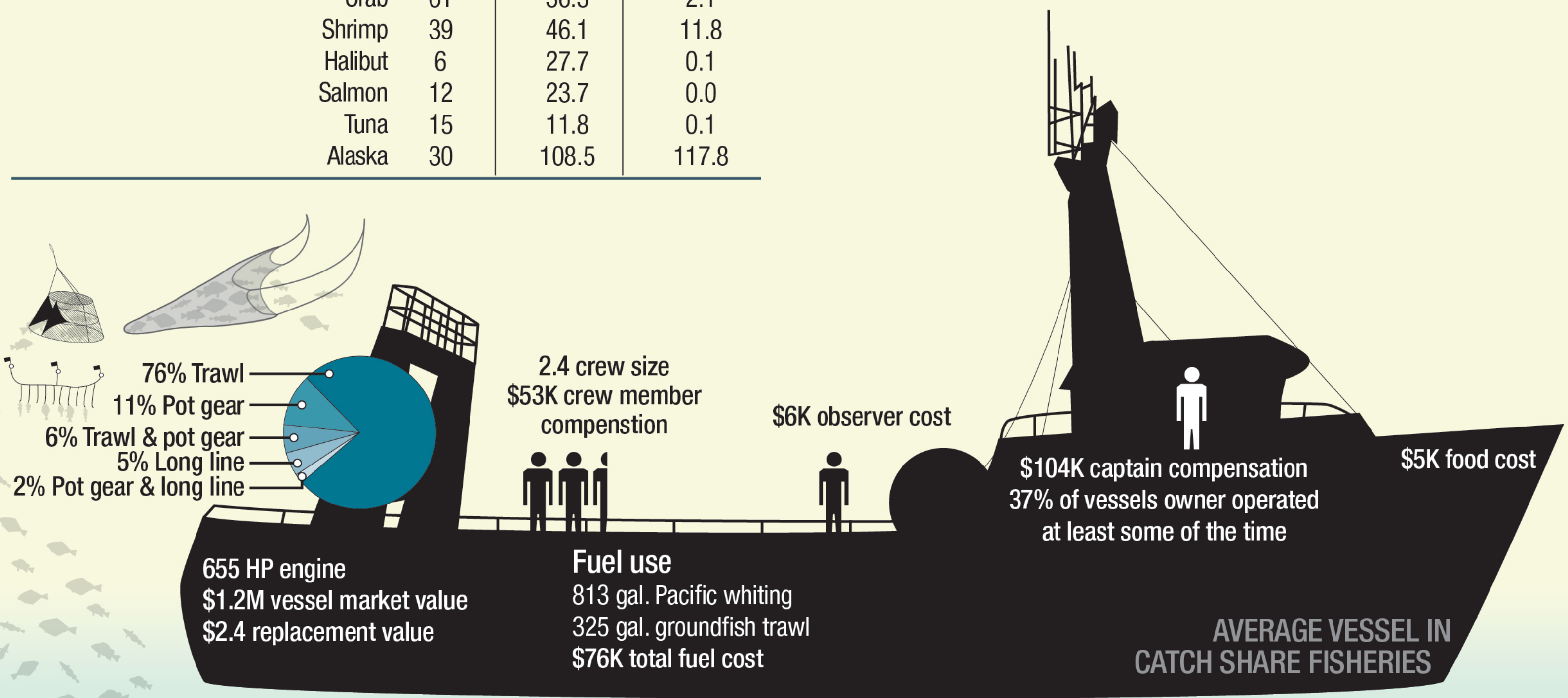
Brookings: / Crecent City: / Eureka: — $4.6M
15 vessels

Fort Bragg: $1.9M
6 vessels

San Francisco: $0.4M
6 vessels

Monterey: $0.6M
4 vessels

Morro Bay: $1.9M
11 vessels



69 ft average length

29% are < 60 ft | 42% are 60-80 ft | 29% are > 80 ft

*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

Catcher Vessel Sector: 2012 Highlights

In 2012, the second year of the catch share program, there were 110 catcher vessels that participated in the West Coast Groundfish Trawl Catch Share program.

- Catcher vessels spent an average of 61 days fishing in the West Coast Groundfish Trawl Catch Share Program (the catch share program).
- Catcher vessels spent an average of 66 additional days fishing in non-catch share fisheries.
- West Coast catcher vessels deliver to ports in Washington, Oregon, California, and at-sea; the two ports with the highest landings in 2012 were Astoria and Newport, both in Oregon.
- An average of 2.4 crew members worked aboard each West Coast catcher vessel, each earning an average payment of $52,900.
- 37 percent of vessels are owner-operated at least some of the time.
- The average first wholesale revenue per vessel from participation in the catch share fishery was $406,000.
- Average variable cost net revenue (ex-vessel revenue minus variable costs) per vessel was $186,000 from participation in catch share program, and the fleet-wide variable cost net revenue was $26 million.
- Average total cost net revenue (ex-vessel revenue minus variable costs and fixed costs) per vessel was $45,000 and the fleet-wide total cost net revenue was $7.1 million.

Infographic created by Su Kim, Scientific Communications Office, Northwest Fisheries Science Center.

Report Contents

Acknowledgments

The Economic Data Collection Program and Economic Data Collection Reports reflect collaboration and coordination of individuals across the West Coast. There are numerous individuals to thank for their contributions to this effort.

We would like to acknowledge the efforts of all the Northwest Fisheries Science Center (NWFSC) economists who provided a wide range of input into survey design, implementation, and analysis. The group worked together in an effort to provide high quality data that can be distributed in a timely and secure fashion. We thank Su Kim of the NWFSC Scientific Communications Office for producing the Infographic on the second page of this report.

We appreciate the efforts of the Northwest Regional Office for support in the Program development, outreach, and communication efforts. The Permit Office staff was particularly instrumental in ensuring coordination with the mandatory participation requirements.

The Northwest Division of the Office of Law Enforcement (OLE) and the National Oceanic and Atmospheric Administration (NOAA) Office of General Council helped extensively with many aspects of the Program development and enforcement. They continue to cooperate with the EDC Program to ensure compliance. Thanks to the Northwest Fisheries Science Center Scientific Data Management staff for building an extremely useful administrative tracking system and database.

We thank PacFIN and AKFIN staff for providing access to important landings, permit, and vessel data. The staff at ODFW, WDFW, and CDFG also contributed with data used for the fielding of the baseline data collection. Other data and assistance with interpretation of data was provided by the At-sea Hake Observer Program and the West Coast Observer Program.

Finally and very importantly, we thank the members of the West Coast fishing industry who met with us to discuss the survey development and interpretation of the information collected. We appreciate the time and effort of each participant in the program.

Report Introduction

About the Report

The US West Coast groundfish fishery takes place off the coasts of Washington, Oregon and California, and is comprised of over 90 different species of fish. The fish are harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal.[1] In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet.[2] The Economic Data Collection (EDC) Program is a mandatory component of the West Coast Groundfish Trawl Catch Share Program, collecting information annually from all catch share participants: catcher-processors, catcher vessels, motherships, first receivers, and shorebased processors.[3] The EDC information is used to monitor the economic effects of the catch share program, and collects information on operating costs, revenues, and vessel and processing facility characteristics.

This report summarizes information collected from the West Coast catcher vessel fleet. The EDC reports are also produced for the other sectors,[3] and cover the years 2009 to 2012. The 2009 and 2010 data were collected in 2011 to provide a baseline of pre-catch share information. The EDC reports are updated annually to disseminate the data collected and provide background, analysis, and context to support the interpretation of the data. The reports are also expected to provide a useful catalyst for feedback on the data collected and its analysis. It is envisioned that the scope of these reports will expand, and the methods used will be refined with each annual publication.

The report is composed of two major sections. The first section, Catcher Vessel Overview (beginning on page 9), is an in-depth summary that contains descriptive analyses of the at-sea and shorebased catcher vessel fleet focusing on activities during 2012. The second section, Catcher Vessel Data Summaries (beginning on page 35), provides tables of all of the data collected from 2009 to 2012, with a detailed discussion of the methods used to collect and analyze the data. The tables summarize responses for each EDC form question, as well as net revenue and economic performance rates. The data that form the basis for this report are confidential and must be aggregated so that individual responses are protected. In cases where there are not enough observations to protect confidentiality, the data are either not shown, or are combined with broader groups of data. More information about EDC Program administration and fielding of the surveys, the EDC forms, data quality controls and quality checks,

[1] For more information about West Coast Groundfish, see `www.westcoast.fisheries.noaa.gov/fisheries/groundfish/`.

[2] More information about the West Coast Groundfish Trawl Catch Share Program is available online at `www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/`.

[3] Please see the EDC website, `www.nwfsc.noaa.gov/edc`, for links to the forms used to collect the EDC data and for previous year's reports. The website will be updated with the 2009-2012 reports when they are finalized.

data processing, and safeguarding confidential information can be found in the EDC Administration and Operations Report.[3]

Background - Economic Data Collection and West Coast Groundfish Trawl Catch Share Program

The economic benefits of the West Coast groundfish trawl fishery and the distribution of these benefits are expected to change under the West Coast groundfish trawl catch share program. To monitor these changes, the Pacific Fishery Management Council (PFMC) proposed the implementation of the mandatory collection of economic data. Using data collected from industry participants, the EDC Program monitors whether the goals of the catch share program have been met.[4]

Many of the PFMC's goals for the catch share program are economic in nature. These goals include: provide for a viable, profitable, and efficient groundfish fishery; increase operational flexibility; minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical; promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry; provide quality product for the consumer; and, increase safety in the fishery.

The EDC program is also intended to help meet the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 2007 requirement to determine whether a catch share program is meeting its goals, and whether there are any necessary modifications of the program to meet those goals. The MSA requires a formal review 5 years after the implementation of a catch share program to which the EDC program will make a valuable contribution.

Monitoring the economic effects of a catch share program requires a variety of economic data and analyses. The primary effects of a catch share program can be captured in two broad types of economic analysis: 1) economic performance measures, and 2) regional economic impact analysis. Both of these require information on the costs and earnings of harvesters and processors.

Economic performance measures include: costs, earnings, and profitability (net revenue); economic efficiency; capacity measures; economic stability; net benefits to society; distribution of economic net benefits; product quality; functioning of the quota market; incentives to reduce bycatch; market power; and, spillover effects in other fisheries. Some of these measures are presented in this report, while others will require more specific and involved analysis using EDC data.

Regional economic impact analysis measures the effects of the program on regional economies. In general, the catch share program will likely affect different regional economies in different ways. Regional economic modeling involves tracking the expenditures of all businesses, households, and institutions within a given geographic region to arrive at the effects on income and employment. On the Pacific

[4] For more information about the EDC program and the West Coast Groundfish Trawl Catch Share Program, please see the Economic Data Collection Program, Administration and Operations Report available at the EDC website: www.nwfsc.noaa.gov/edc

coast, the Northwest Fishery Science Center's IO-PAC model is used to estimate regional economic impacts.[5]

5 Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

CATCHER VESSEL OVERVIEW

Management context

In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperative programs for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet. The vessels participating in the IFQ program deliver shoreside to buyers and processors with first receiver site licenses and at-sea vessels deliver to mothership vessels.

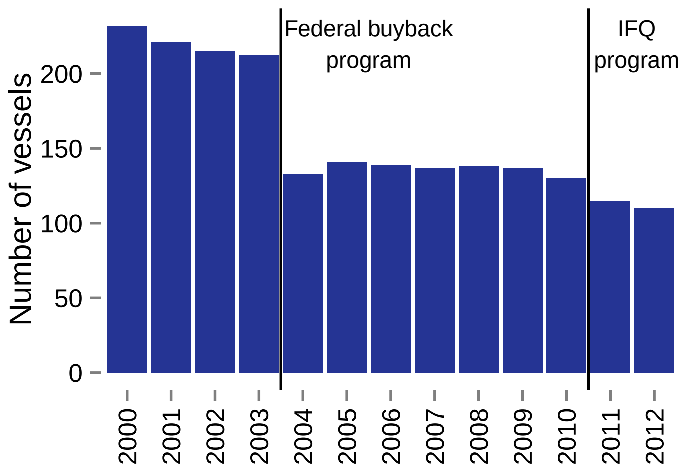


Figure 1: Number of catcher vessels participating in the At-sea and Shoreside limited entry trawl groundfish fisheries (2000-2010) and the number of vessels participating in the West Coast Groundfish Trawl Catch Share Program (2011-2012).

The Pacific Fishery Management Council and the National Marine Fisheries Service are responsible for managing the West Coast Groundfish Trawl fishery. The Pacific Coast Groundfish Fishery Management Plan contains the current rules for managing the fishery, and its amendments give a history of the changes that have occurred. One major milestone was the Limited Entry (license limitation) program, which was established in 1993 and intended to address over-capitalization and restrict further entry into the groundfish fishery. In 2003, there was an industry funded buyback program, designed to further decrease overcapacity in the fishery.[6] The result of the buyback program was a decrease in the number of active vessels from 212 in 2003 to 133 in 2004 (Figure 1). The number of vessels participating in the limited entry trawl fishery ranged from 129 to 141 between 2004 (post-buyback program) and 2010 (pre-catch share program). In 2011, the first year of the catch share program, the number decreased to 115 and then decreased again in 2012 to 110.

Prior to 2011, the fishery was managed with a system that included harvest guidelines, trip and landings limits, area restrictions, seasonal closures, and gear restrictions. Many of these measures were developed

[6] 68 FR 42613, available at `www.federalregister.gov/articles/2003/07/18/03-18344/magnuson-stevens-act-provisions-fishing-capacity-reduction-program-pacific-coast-groundfish-fishery`.

to assist in the rebuilding of 7 species that are caught as targets and/or bycatch by the groundfish fishery that were declared overfished in 2003. The catch share program was designed to alleviate the restrictive, inflexible nature of trip and landings limits, which limited the landings of groundfish species by trip and by two month period. Landings limits tend to encourage discarding, which can be detrimental to the rebuilding of overfished species. In the transition to the catch share program, vessels holding a limited entry permit were allocated individual quota shares. Quota were allocated for 30 different groundfish species and rockfish complexes to permit owners based on historical participation.[7] Annually, the quota shares are converted into quota pounds, which are then used by vessels to harvest fish within the program. The quota shares and quota pounds are transferable both through lease arrangements and sale, and are infinitely divisible.[8] The catch share program allows vessels to catch their quota at any time during the season. One hundred percent at-sea observer coverage – another feature of the program – ensures that all catch, including discards, is counted against a vessel's quota pounds.

An interesting industry-led development after the implementation of the catch share program is the formation of risk pools. Just as all quota for target species are allocated to individuals, so are quota for the overfished species. If an individual is unable to cover catch of overfished species with quota, they are prohibited from fishing. The risk pools mitigate the risk of needing to prematurely end the fishing season by pooling quota of overfished species with other quota owners. The participants in some risk pools are contractually obligated to follow a set of fishing guidelines, and if the guidelines are followed, any catch of overfished species is covered by the pooled risk pool quota and the individual can continue fishing.

There are various ways that quota can be traded. The types of trades most frequently recorded are self trades, other, cash sales, and barter. The "other" category includes cases such as transfers for risk pools and arrangements where there is no predetermined price, but instead the payment will be a percentage of the ex-vessel value of the landed fish. Barter transactions generally refer to a "quota for quota" trade, where an individual trades quota they do not plan to use for quota for an intentionally targeted species or a species for which they need to cover potential catch. In 2012, Pacific whiting quota was traded the most frequently ($0.04 per pound), followed by sablefish ($0.96), petrale sole ($0.40), and thornyheads ($0.06).[9]

Landings and unutilized quota of each catch share species groups are shown in Figure 2, as well as average prices for landings in that group. Trawl sector-specific allocations of the ABC were implemented for all species as part of the catch share program. Prior to the program, only Pacific whiting and sablefish had a sector-specific allocation. Percent utilization was low for many species, with the exception of sablefish, Pacific whiting, and petrale sole (Figure 2).

7 Additional information on the regulations, including the Federal Register notice, can be found at the West Coast Region website: `www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/`.

8 Sales of quota shares were prohibited until January of 2014.

9 Note that the prices are based on a relatively small number of single species trades, which are less common than multispecies trades. See Holland, D.S. and K. Norman. The Anatomy of a Multispecies Individual Fishing Quota (IFQ) "Market" in Development. In review.

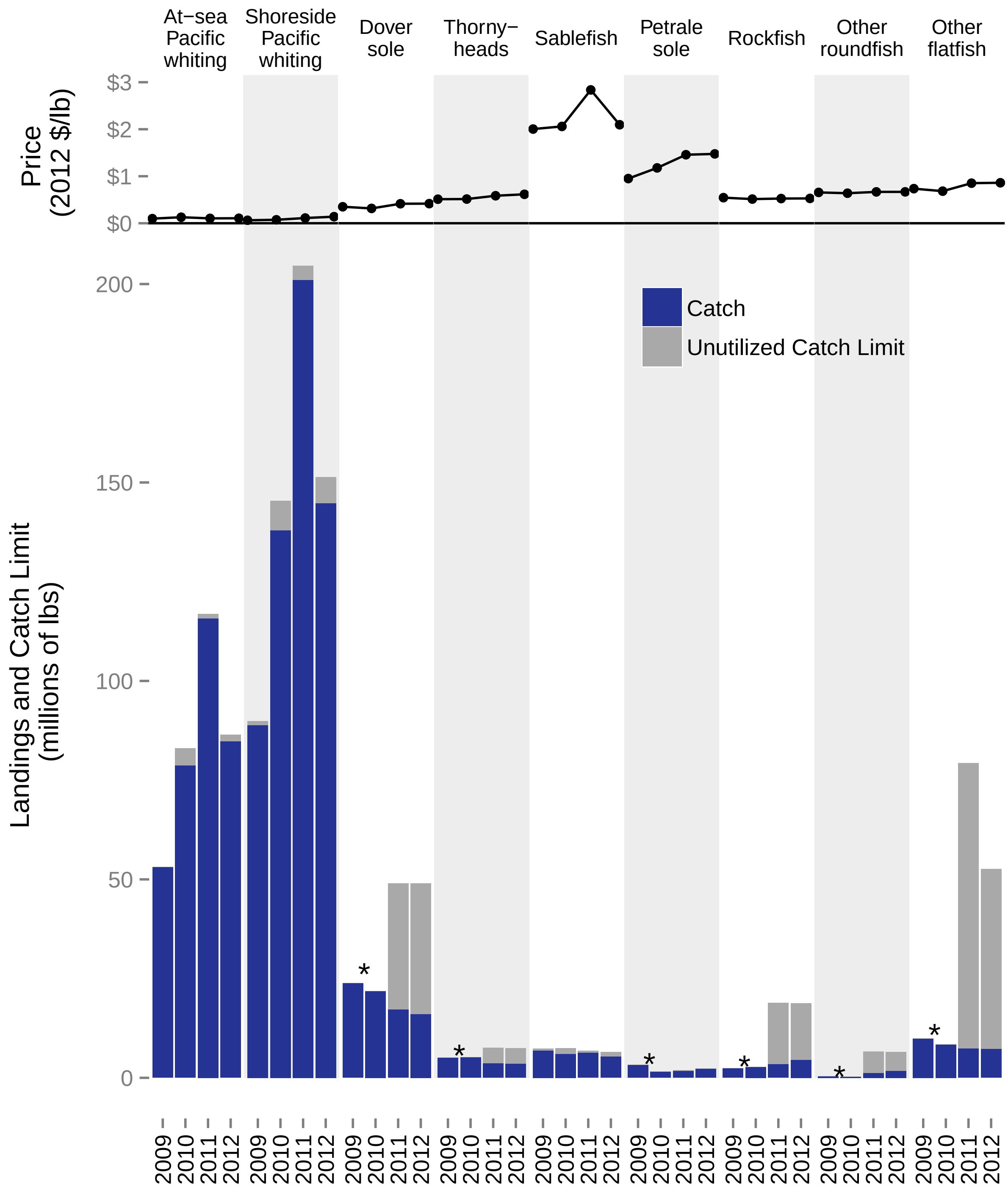


Figure 2: Landings and unutilized trawl sector catch limit and average ex-vessel prices (2012 $), by species group. Pacific whiting includes any reapportionment among sectors that may have occurred during the season. *Unutilized catch limit is not shown for 2009 or 2010 for most groundfish species and species groups because prior to 2011, there was not a trawl-specific allocation of the ABC (Allowable Biological Catch).

Catcher Vessel Sector Description

In 2012, the second year of the catch share program, there were 110 catcher vessels that participated in the program. These include both catcher vessels that deliver shoreside and those that deliver to at-sea motherships. Catcher vessels generated $92.4 million in income and 1,082 jobs from deliveries of fish caught in the catch share program.[10] These vessels caught about 69% of all catch share fish (the catcher-processor sector caught the remainder) and 25% of all fish caught commercially on the West Coast.

The catcher vessels that fished in 2012 ranged from 38 feet to 148 feet in length and employed between one and four crew members. The total number of days spent fishing in the Limited Entry Groundfish Trawl Fishery has decreased from 8,603 in 2009 to 6,446 in 2012. There were 27 vessels that fished in 2010, but did not fish in 2011 or 2012. Of those vessels, 15 stopped fishing on the West Coast completely, and 12 continued fishing in alternative fisheries (e.g., crab and shrimp).

Table 1: Total ex-vessel revenue, landings weight, and number of vessels delivering to each delivery port for all catch share fisheries in 2012. Some vessels make deliveries in multiple ports, and each vessel is counted in every port where catch is delivered. Delivery ports by fishery are not shown to protect confidential information.

	Revenue (millions of $)	Landings (millions of lbs)	Number of vessels
At-sea	9.3	84.6	16
Washington state	9.5	38.8	16
Astoria, OR	15.8	56.8	37
Newport, OR	10.5	58.8	23
Coos Bay, OR	2.8	4.6	18
Brookings, OR/Crescent City, CA/Eureka, CA	4.6	6.9	15
Fort Bragg, CA	1.9	2.6	6
San Francisco, CA	0.4	0.4	6
Monterey, CA	0.6	1.0	4
Morro Bay, CA	1.9	1.7	11

The two ports with the highest catch share landings in 2012 were Astoria and Newport, both in Oregon. Both ports received about 60 million pounds of catch share fish, worth $15.8 and $10.5 million, respectively. Washington received 39 million pounds, worth $9.5 million. All of the California ports combined (including Brookings, OR, to protect confidential data) received a little less than 13 million pounds, worth $9.4 million. Sixteen vessels delivered nearly 85 million pounds of fish to at-sea motherships, worth $9.3 million (Table 1).

[10] Note that these impacts do not include the complementary impacts associated with the shorebased buyers and processors, nor the mothership vessels. Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

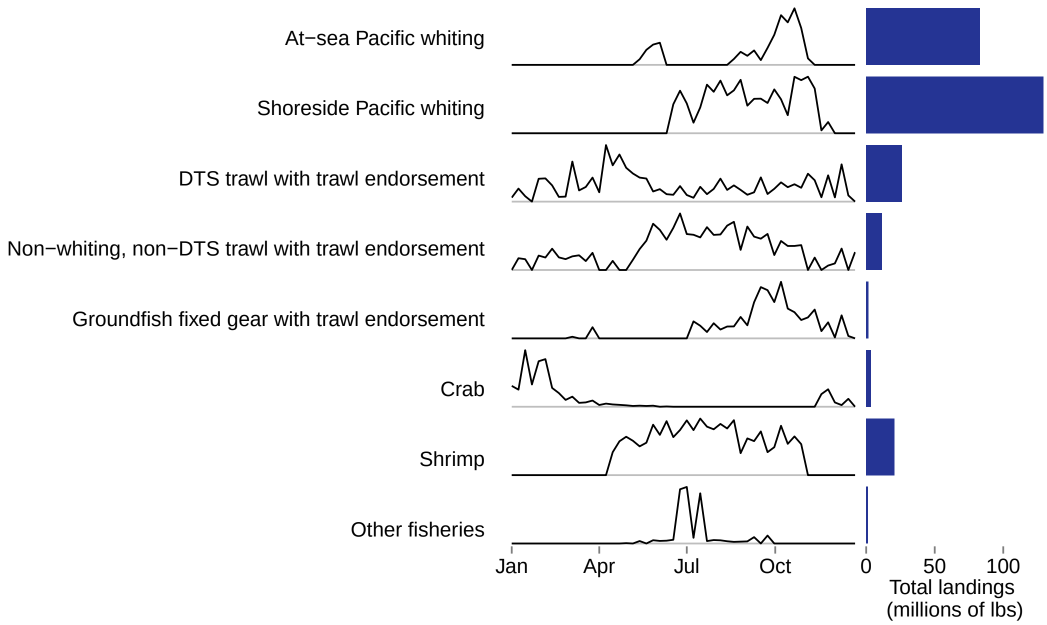


Figure 3: Landings by week (left) and total landings (millions of pounds) (right) in each fishery (2012).

For the purposes of this report, the catch share program is divided into the following five fisheries:

- At-sea Pacific whiting fishery
- Shoreside Pacific whiting fishery
- Dover sole, thornyheads, and sablefish (DTS) trawl with trawl endorsement fishery
- Non-whiting, non-DTS trawl with trawl endorsement fishery
- Groundfish fixed gear with trawl endorsement fishery

Most vessels participate in more than one of these fisheries. Each fishery will be discussed in more detail in the following section.

In addition to the catch share fisheries, most vessels also fish in Alaska or participate in state-managed fisheries (primarily shrimp and crab). A few vessels participate in other federally managed fisheries including the Groundfish fixed gear with fixed gear endorsement, halibut, salmon, and tuna fisheries. Participation in these other fisheries is more common for the shoreside non-whiting vessels, while fishing in Alaska is more common for the at-sea and shoreside Pacific whiting vessels. The Groundfish fixed gear with trawl endorsement fishery is a result of a "gear switching" provision that allows either for vessels with trawl quota to fish with fixed gear (pots or longlines) or for vessels that traditionally fished with fixed gear to lease or purchase trawl quota and fish with fixed gear. Fixed gear is primarily used to target sablefish.

The At-sea and Shoreside Pacific whiting fisheries are the highest volume fisheries, and occur between late May and October (Figure 3). The DTS and non-DTS trawl fisheries occur year-round. The Groundfish fixed gear with trawl endorsement fishery occurs at a higher volume in the second half of the year. The opening of the crab season varies by state, but generally begins in December or January and lasts until March. Shrimp is caught between April and October. Salmon, halibut, and tuna (included in "Other fisheries") are caught in much lower volumes throughout the year.

Economic Indicators

The EDC program measures the net economic benefits of the catch share program by reporting two types of net revenue. The first is variable cost net revenue, which is revenue minus variable costs. The second is total cost net revenue, which is revenue minus both variable and fixed costs.[11] To provide a complete picture of the changes that have occurred, both net revenue figures are presented at two scales. Figure 4 shows the average net revenue per vessel while Figure 5 shows the fleet-wide net revenue. Average net revenue shows the value generated by a typical vessel, while fleet-wide net revenue represents the total value generated by the fishery. Both figures only include revenues and costs associated with the catch share program. It is important to note that the EDC forms attempt to capture only costs that are directly related to vessel fishing operations, and do not include other expenses such as vehicles or office costs that may be related to the fishing business. Therefore, the net revenue reported here is an overestimate of the true net revenue.[12]

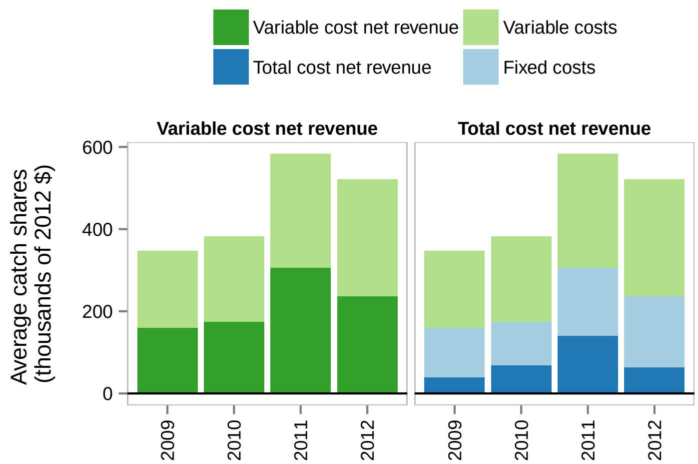


Figure 4: Average variable cost net revenue (ex-vessel revenue minus variable costs), and average total cost net revenue (ex-vessel revenue minus variable costs and fixed costs) per vessel from participation in all of the catch share fisheries combined (thousands of 2012 $).

[11] See Figure 6 for a description of which costs are considered variable costs and which costs are considered fixed costs.
[12] See Section 10 of the Data Summaries for more information.

The trends in both the per vessel average and the fleet-wide net revenue figures are very similar. Both variable cost and total cost net revenue were highest in 2011 and decreased in 2012. Each of the variable cost net revenue figures is higher for the years after the implementation of the catch share program than for the two years prior to the program. In 2012, average total cost net revenue was $45,000, a decrease of 59% from 2011. In 2012, fleet-wide total cost net revenue was $7.1 million[13], a decrease of 56% from 2011. The fleet-wide and vessel average total cost net revenues were at similar levels in 2010 and 2012, while 2011 was substantially greater.

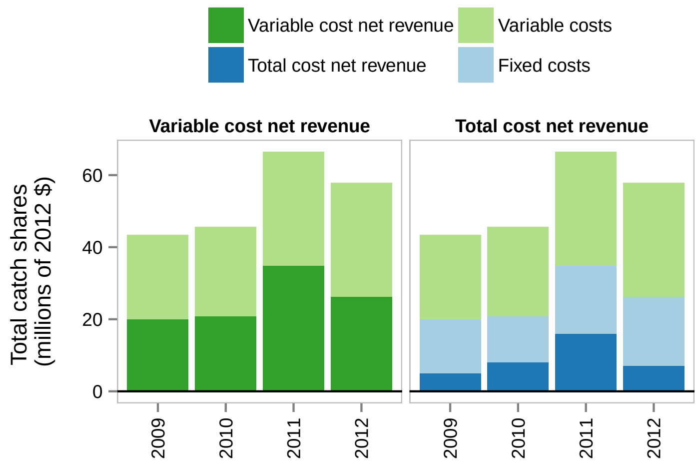


Figure 5: Fleet-wide variable cost net revenue (ex-vessel revenue minus variable costs), and fleet-wide total cost net revenue (ex-vessel revenue minus variable costs and fixed costs) from participation in all of the catch share fisheries combined (millions of 2012 $).

In all four years, the cost categories with the highest variable costs were crew and captain compensation (Figure 6). The highest fixed costs were vessel and on-board equipment. Fixed costs do not vary as directly with the level of fish harvest or production as variable costs. Costs per vessel have increased for nearly all cost categories, with the largest increases coming from equipment, captain and crew compensation, and fuel. In addition to fixed and variable costs, 73 vessels spent an average of $58,028 on the purchase or lease of quota in 2012.

One other change resulting from the implementation of the catch share program was a shift from partial observer coverage funded by the National Marine Fisheries Service (NMFS), to 100% observer coverage with partial industry funding. In 2011, observer costs represented 0.6% of total costs, and increased to 1.1% in 2012.

On the revenue side, there have been increases in ex-vessel prices for most species and a considerable increase in Pacific whiting landings. Sablefish prices increased substantially in 2011, then decreased in 2012 to previous years' levels (Figure 2).

As noted above, most vessels participate in more than one fishery within the catch share program, as well as state and federally-managed fisheries that are not a part of the catch share program. More details about each fishery and the economics of vessels participating in each fishery are included in the fishery specific summaries in the following section.

[13] Values reported in inflation adjusted 2012 dollars. All averages are calculated from non-zero, non-NA responses.

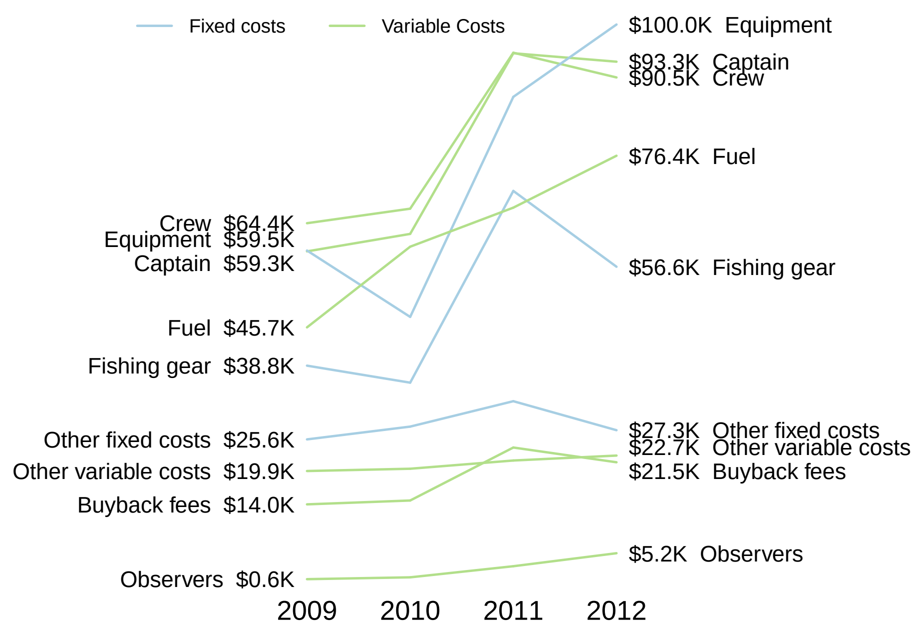


Figure 6: Average fixed and variable costs (2012 $) per vessel in the West Coast Trawl Groundfish Catch Share Program.

Fishery Summaries

At-sea Pacific whiting

Seventeen vessels participated in the At-sea Pacific whiting fishery in 2012. These vessels delivered to five motherships as part of a single fishing cooperative. This fishery targets Pacific whiting (99.8% of total landings by weight) and has very low bycatch (Figure 7). Although the bycatch rate is extremely low, the total weight of bycatch was 1.25 million pounds in 2012. The majority of this catch consisted of rockfish, sharks, skates and rays, and squid. Not all species caught in this fishery must be "covered" with quota, but of the quota species, the most common were widow rockfish (175,000 pounds), rougheye rockfish (119,000 pounds), and yellowtail rockfish (95,000 pounds).

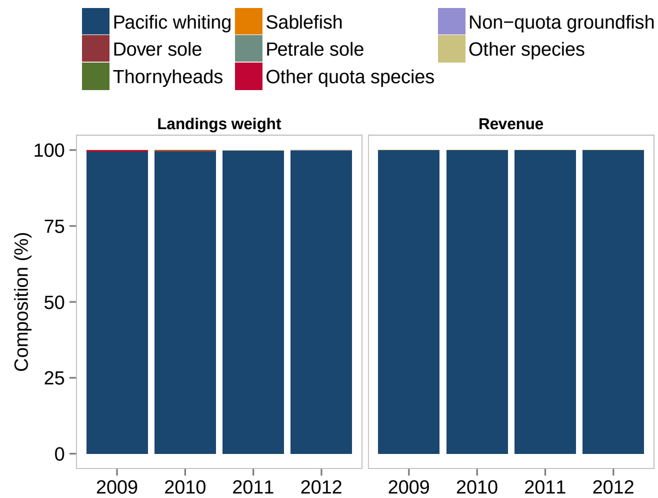


Figure 7: The species composition of catch (left) and revenue (right) in the At-sea Pacific whiting fishery (%).

Participation in the At-sea Pacific whiting fishery resulted in $9.6 million in ex-vessel revenue in 2012 (Figure 8 (top)). Vessels that participated in the At-sea Pacific whiting fishery also earned revenue fishing in the Shoreside Pacific whiting fishery (20.5% of total revenue) and fishing in Alaska (60.8% of total revenue). Nearly all of the participants in the At-sea Pacific whiting fishery also fished in Alaska (Figure 8 (bottom)). In 2009 and 2010 there were some vessels that also fished in the bottom trawl fisheries (DTS trawl with trawl endorsement and Non-whiting, non-DTS trawl with trawl endorsement fisheries), but in 2012, none of the At-sea Pacific whiting vessels participated in these fisheries. Total revenue has increased in 2011-2012, mainly due to an increase in the catch limit for Pacific whiting and Alaska pollock (for those vessels that fish in Alaska).

Average revenue for participants in the At-sea Pacific whiting fishery was $574,507, average variable cost net revenue was $254,119, and average total cost net revenue was $76,987 in 2012 (Figure 9). The revenue and net revenue figures correlate closely to the volume of Pacific whiting allocated to the mothership sector. Average variable cost net revenue for 2011 was higher than the two years prior to the catch shares program. Higher variable costs contributed to a decrease in average total cost net revenue in 2012.

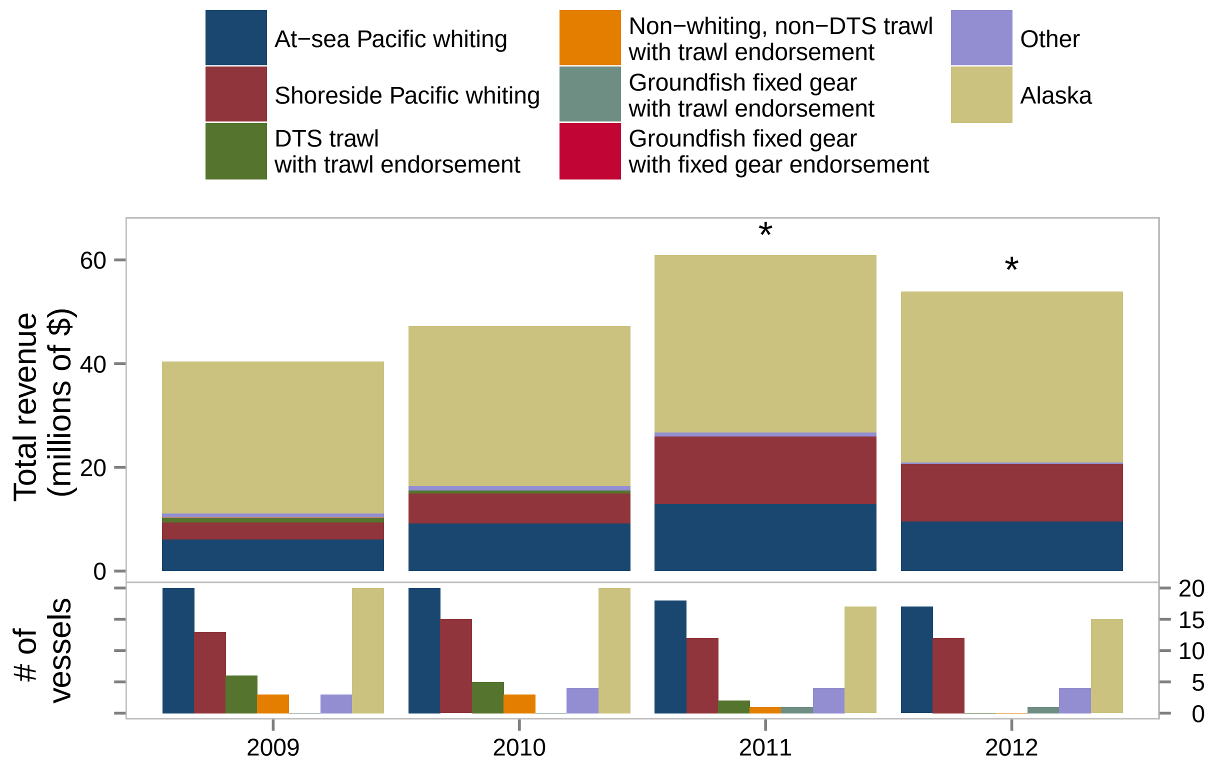


Figure 8: Total ex-vessel revenue earned by vessels that participated in the At-sea Pacific whiting fishery by fishery (millions of 2012 $) (top) and number of vessels that participated in each fishery (bottom). *Some values are suppressed to protect confidential data.

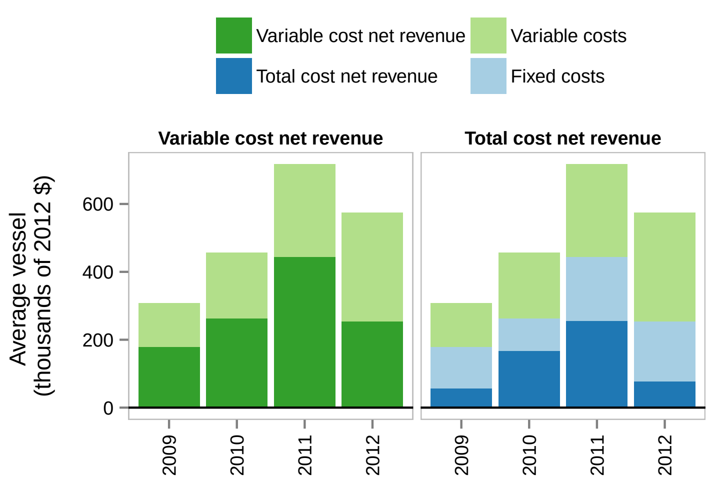


Figure 9: Average variable cost net revenue (ex-vessel revenue minus variable costs) (left), and average total cost net revenue (ex-vessel revenue minus variable costs and fixed costs) (right) from participation in the At-sea Pacific whiting fishery (thousands of 2012 $).

The single largest cost in 2012 was fuel ($116,000 per vessel, on average), followed by crew compensation ($114,000), and equipment ($86,000) (Figure 10). The total amount spent on fuel, crew compensation, and captain compensation nearly doubled between 2009 and 2012. On a per unit basis (not shown in the figure), crew compensation increased from $1.51 per hundred pounds delivered in 2009 to $2.08 per hundred pounds in 2012, and captain compensation increased from $1.01 per hundred pounds delivered in 2009 to $1.5 per hundred pounds in 2012. The expenses on fuel also increased, from $1.17 per hundred pounds delivered to $2.07 per hundred pounds in 2012. The increase in fuel costs can be partly attributed to increases in fuel prices (see Mothership report for a full discussion).

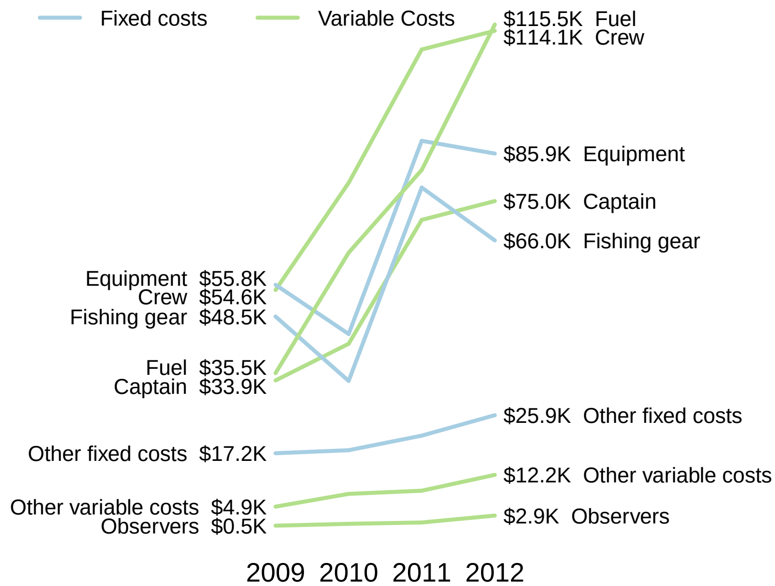


Figure 10: Average fixed and variable costs per vessel in the At-sea Pacific whiting fishery (thousands of 2012 $).

Shoreside Pacific whiting

Twenty-five vessels participated in the Shoreside Pacific whiting fishery in 2012. This fishery targets mainly Pacific whiting (98.7% of total landings by weight, Figure 11). Although the bycatch rate is extremely low, in 2012 the total weight of bycatch was 1.69 million pounds. The majority of the bycatch consisted of rockfish, sharks, skates and rays, and shad. Not all species caught in this fishery must be "covered" with quota, but of the quota species, the most common were yellowtail rockfish (392,000 pounds), widow rockfish (214,000 pounds), and sablefish (102,000 pounds).

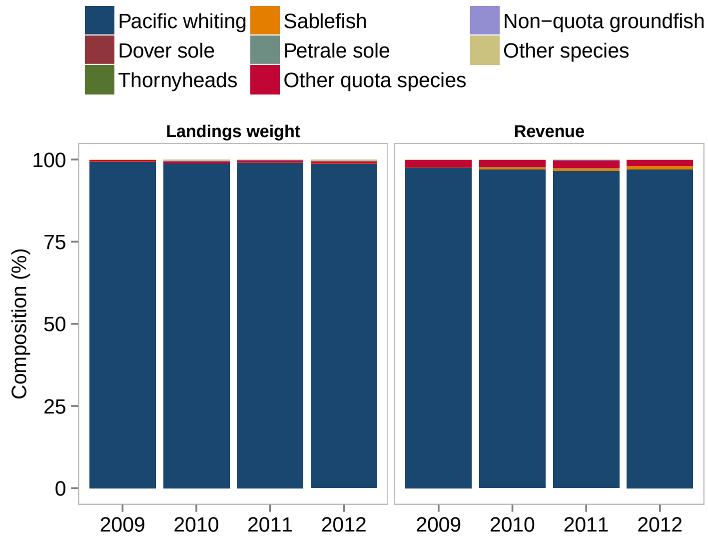


Figure 11: The species composition of catch (left) and revenue (right) in the Shoreside Pacific whiting fishery (%).

Participation in the Shoreside Pacific whiting fishery resulted in $20.1 million in total ex-vessel revenue in 2012 (Figure 12 (top)). Vessels that participated in the Shoreside Pacific whiting fishery also earned revenue from fishing in the At-sea Pacific whiting fishery (12% of total revenue) and fishing in Alaska (43.6% of total revenue). Total revenue has increased, mainly due to an increase in the catch limit for Pacific whiting and Alaska pollock (for those vessels that fish in Alaska). Most Shoreside Pacific whiting vessels either fished in Alaska or in the At-sea Pacific whiting fishery (Figure 12 (bottom)).

The number of vessels participating in the Shoreside Pacific whiting fishery decreased from 2009 (35 vessels) to 25 vessels in 2012. There was also a decrease in the number of those vessels that participated in the DTS trawl and the non-whiting, non-DTS trawl fisheries.

Average revenue for vessels participating in the Shoreside Pacific whiting fishery was $838,095, average variable cost net revenue was $394,483, and average total cost net revenue was $48,317 in 2012 (Figure 13). Average revenue, average variable cost net revenue, and average total cost net revenue increased substantially from 2009-2010 levels (note that average total cost net revenue was negative in 2009). The increase was due to an increase in the catch limit for Pacific whiting, especially in 2011, and steadily increasing ex-vessel prices paid by first receivers to the shoreside fleet.

The single largest cost in 2012 was for vessel and on-board equipment ($221,000 per vessel), followed by crew compensation ($148,000), and captain compensation ($139,000) (Figure 14). The average amount spent on vessel and on-board equipment nearly quadrupled between 2009 and 2012, and fuel, crew compensation, and captain compensation in 2012 were five times the amount spent in 2009 and 2010. On a per unit basis (not shown in the figure), crew compensation increased from $1.13 per hundred

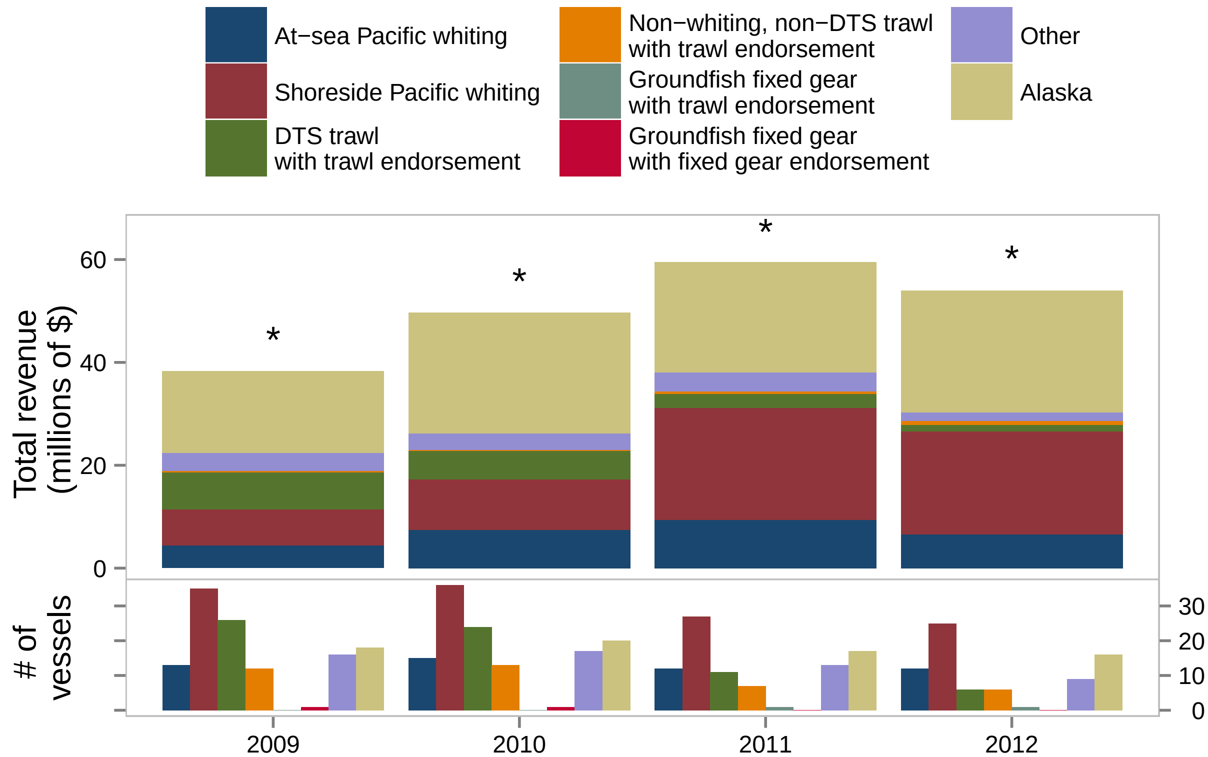


Figure 12: Total ex-vessel revenue earned by vessels that participated in the Shoreside Pacific whiting fishery by fishery (millions of 2012 \$) (top) and number of vessels that participated in each fishery (bottom). *Some values are suppressed to protect confidential data.

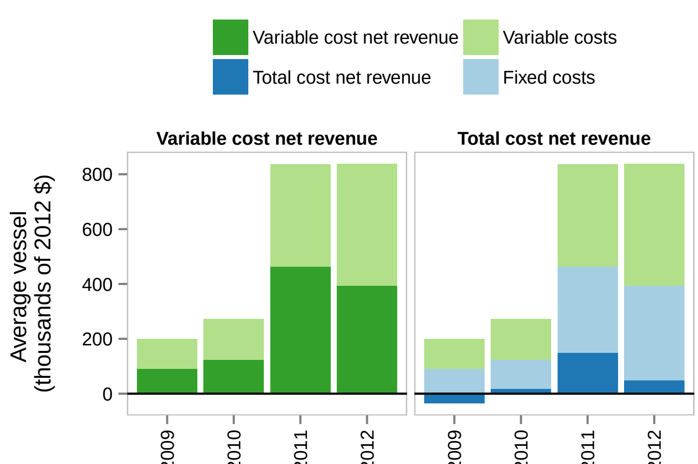


Figure 13: Average variable cost net revenue (ex-vessel revenue minus variable costs) (left), and average total cost net revenue (ex-vessel revenue minus variable costs and fixed costs) (right) from participation in the Shoreside Pacific whiting fishery (thousands of 2012 \$).

pounds delivered in 2009 to $2.5 per hundred pounds in 2012, and captain compensation increased from $1.12 per hundred pounds delivered in 2009 to $2.59 per hundred pounds in 2012. Expenses on fuel also increased, from $1.25 per hundred pounds delivered in 2009 to $2.41 per hundred pounds in 2012. The increase in fuel costs can be partly attributed to increases in fuel prices (see Mothership report for a full discussion).

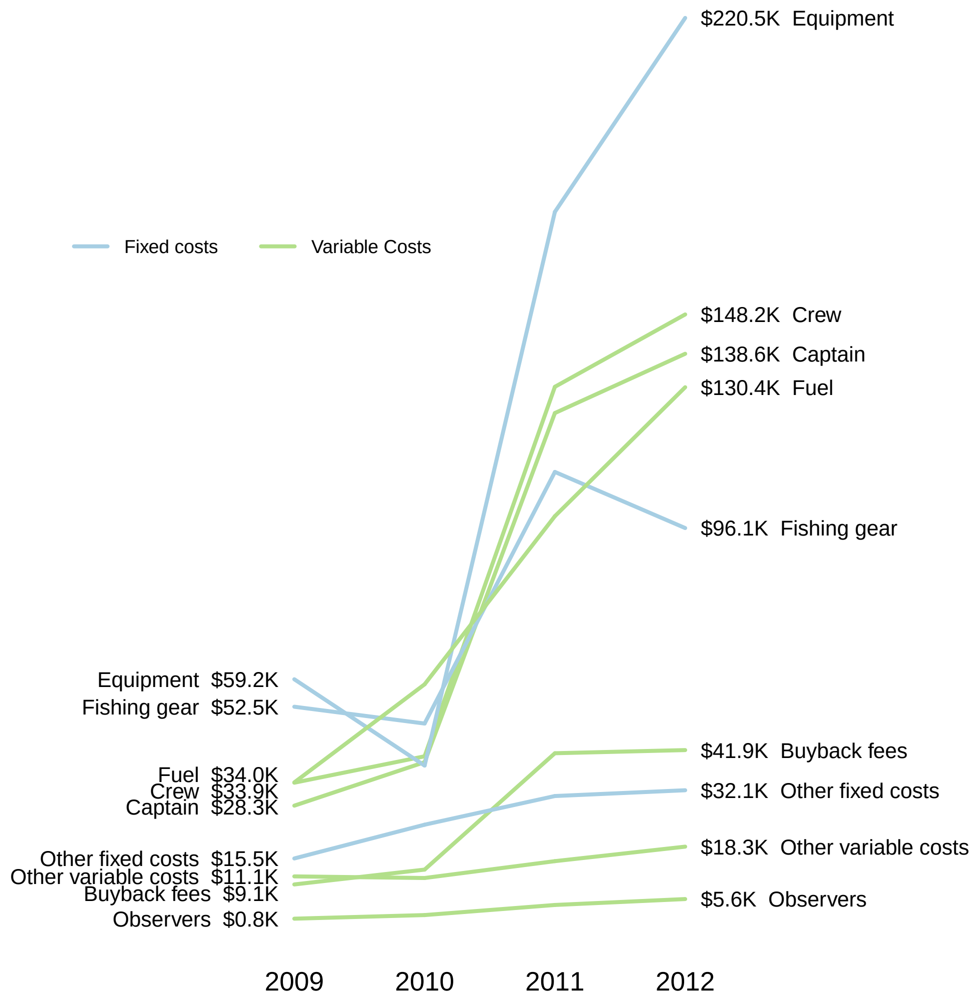


Figure 14: Average fixed and variable costs per vessel in the Shoreside Pacific whiting fishery (thousands of 2012 $).

DTS trawl with trawl endorsement

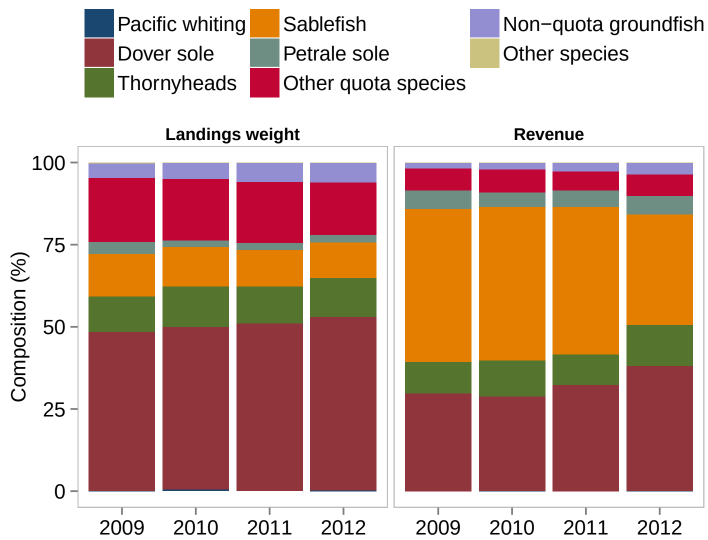


Figure 15: The species composition of catch (left) and revenue (right) in the DTS trawl with trawl endorsement fishery (%).

The DTS trawl with trawl endorsement fishery had more participants than any other fishery in 2012, with 58 vessels. This fishery targets mainly dover sole (53% of catch in 2012), thornyheads (12% of catch), and sablefish (11% of catch) using trawl gear. Sablefish constituted the largest revenue source (33% of revenue in 2012) (Figure 15). The fishery catches smaller amounts of other quota species (including rockfish, 16% of catch), and marginal amounts of other non-quota groundfish and other species. The relative share of landings and revenue of dover sole increased slightly from 2009-2012. The relative share of revenue of sablefish decreased from 2011 to 2012, mainly due to a decrease in price from 2011 to 2012 (Figure 2).

Vessels that participated in the DTS trawl with trawl endorsement fishery also earned revenue from Other fisheries (primarily crab and shrimp), and to a much smaller extent, the Shoreside Pacific whiting fishery, and the Non-whiting, non-DTS trawl with trawl endorsement fishery (Figure 16). Participation in crab, shrimp, and non-whiting, non-DTS trawl makes up around 50% of total revenue. Of the vessels that participated in the DTS trawl with trawl endorsement fishery, 40 vessels also participated in the Other fisheries category. Although some of these vessels fished in Alaska in 2009-2011, there were no vessels in this fishery that went to Alaska in 2012. Total revenue decreased from 2011 to 2012, mainly due to decreasing participation in the At-sea and Shoreside Pacific whiting fisheries and Alaska fishing.

Average revenue for vessels participating in the DTS trawl with trawl endorsement fishery was $271,707, average variable cost net revenue was $119,547, and average total cost net revenue was $36,897 in 2012 (Figure 17). Average variable cost net revenue for both years post-catch shares was higher than the years prior to the catch shares program.

The single largest cost in 2012 was for captain compensation ($64,000 per vessel, on average), followed by vessel and on-board equipment ($47,000), and crew compensation ($35,000) (Figure 18). Unlike the At-sea and Shoreside Pacific whiting fisheries, the DTS trawl with trawl endorsement fishery did not experience the same rise in total and per-unit costs since the implementation of the catch share program. On a per unit basis (not shown in the figure), the one cost category that experienced a large relative increase was expenses on vessel and on-board equipment, increasing from $9.4 per hundred

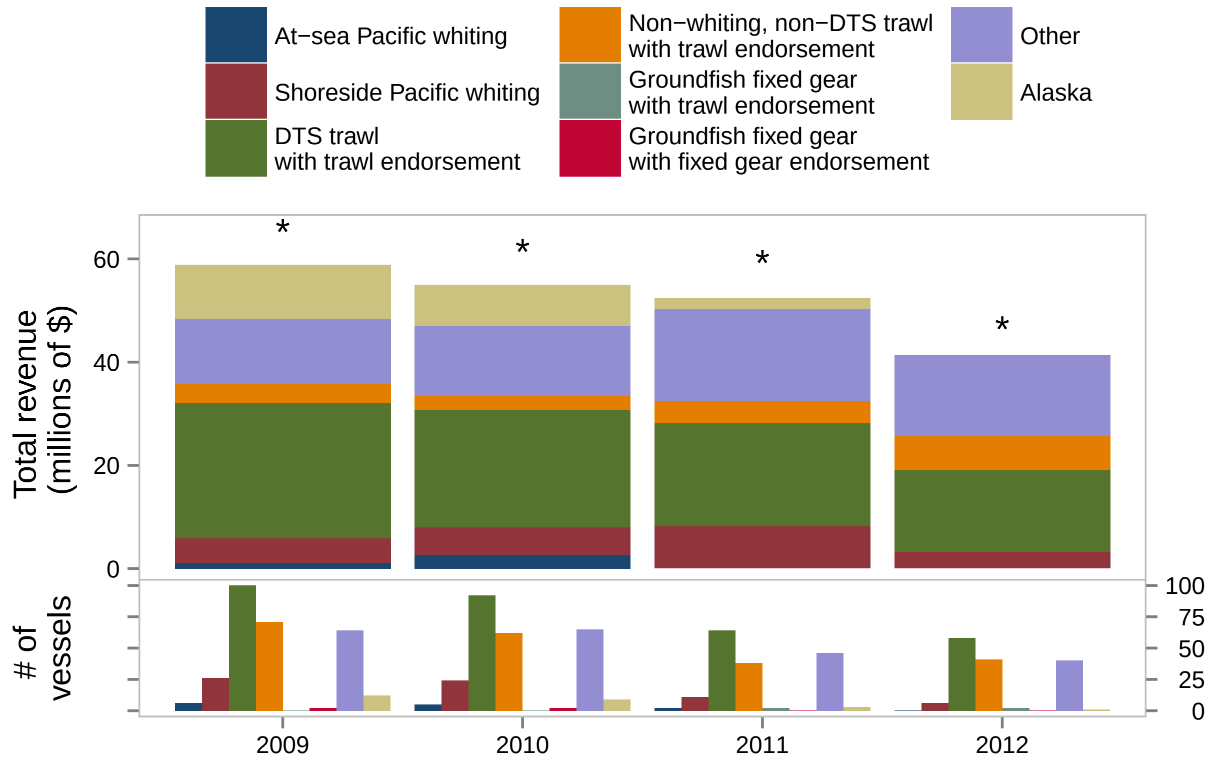


Figure 16: Total ex-vessel revenue earned by vessels that participated in the DTS trawl with trawl endorsement fishery by fishery (millions of 2012 $) (top) and number of vessels that participated in each fishery (bottom). *Some values are suppressed to protect confidential data.

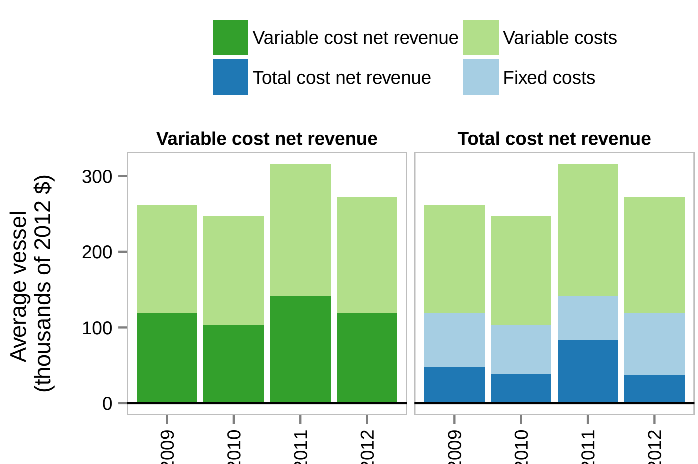


Figure 17: Average variable cost net revenue (ex-vessel revenue minus variable costs) (left), and average total cost net revenue (ex-vessel revenue minus variable costs and fixed costs) (right) from participation in the DTS trawl with trawl endorsement fishery (millions of 2012 $).

pounds in 2009 to $16.5 per hundred pounds in 2012. Compared to 2011 ($11.2 per hundred pounds), expenses on fuel per hundred pounds were particularly low in 2012 ($7.72 per hundred pounds).

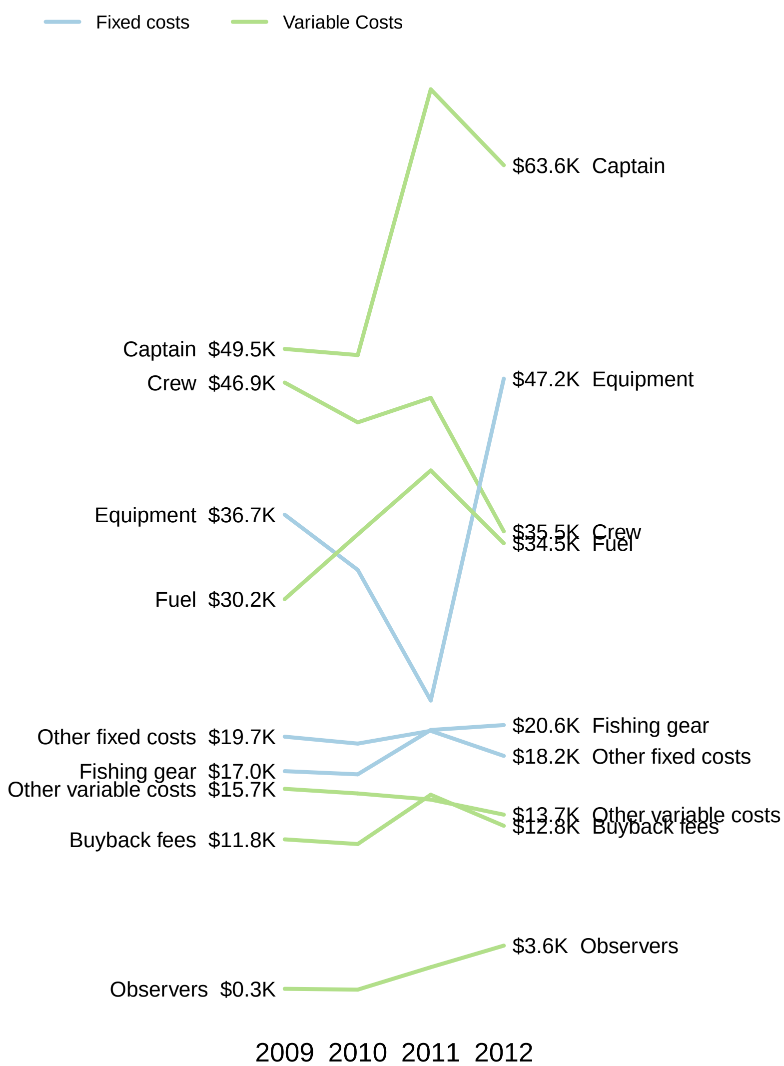


Figure 18: Average fixed and variable costs per vessel in the DTS trawl with trawl endorsement fishery (thousands of 2012 $).

Non-whiting, non-DTS trawl with trawl endorsement

Fifty vessels participated in the Non-whiting, non-DTS trawl with trawl endorsement fishery in 2012. The Non-whiting, non-DTS trawl with trawl endorsement fishery is a significantly lower volume groundfish fishery (Figure 3) than the other catch share fisheries. This fishery catches mostly dover sole (15% of catch in 2012), petrale sole (13% of catch), and other quota species, primarily rockfish (57% of catch). Non-quota groundfish are also caught in relatively large volumes (Figure 19).

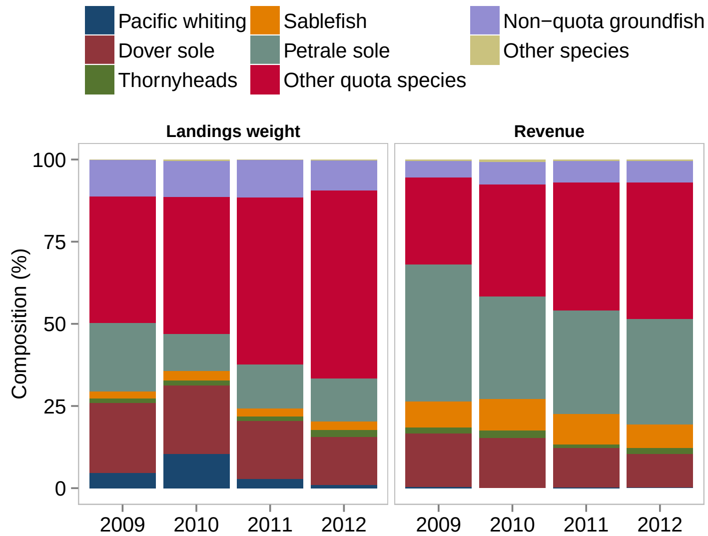


Figure 19: The species composition of catch (left) and revenue (right) in the Non-whiting, non-DTS trawl with trawl endorsement fishery (%).

Participation in the Non-whiting, non-DTS trawl with trawl endorsement fishery makes up a minor portion of total revenue for participants in that fishery (Figure 20). They also participate in the Shoreside Pacific whiting, DTS trawl with trawl endorsement, and Other fisheries. A few vessels fish in Alaska as well, although participation in Alaska fisheries decreased in 2012 (Figure 20).

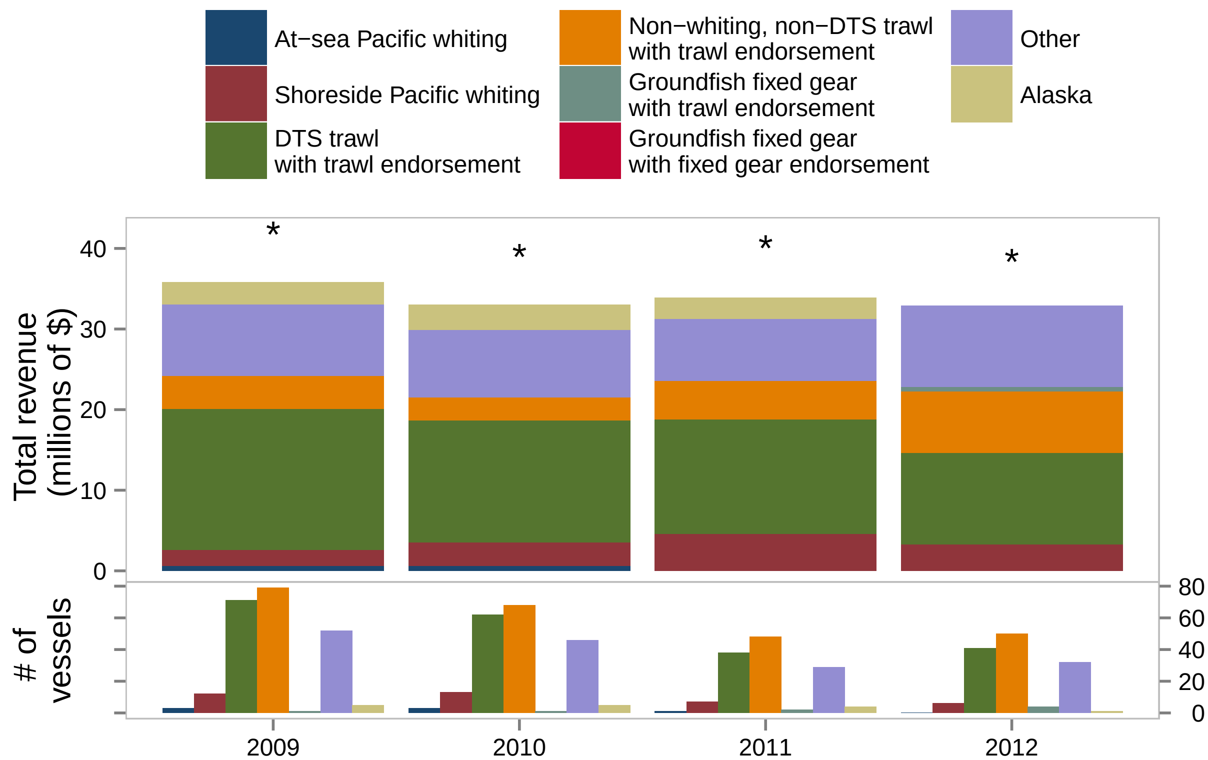


Figure 20: Total ex-vessel revenue (2012 $) earned by vessels that participated in the Non-whiting, non-DTS trawl with trawl endorsement fishery by fishery (top) and number of vessels that participated in each fishery (bottom). *Some values are suppressed to protect confidential data.

Average revenue for vessels participating in the Non-whiting, non-DTS trawl with trawl endorsement fishery was $151,737, average variable cost net revenue was $65,709, and average total cost net revenue was $33,837 in 2012 (Figure 17). Both net revenue measures were greater in the post-catch shares years.

The largest expense in 2012 was for crew compensation ($28,000 per vessel, on average), followed by captain compensation ($26,800), and fuel ($18,300 each). While all cost categories experienced an increase from 2009 to 2011, crew compensation, captain compensation, and fuel, and equipment increased the most. On a per-unit of deliveries basis (not shown in the figure), all cost categories were relatively constant over the time period except fuel, which increased from $0.13 per hundred pounds delivered in 2011 to $0.62 per hundred pounds delivered in 2012.

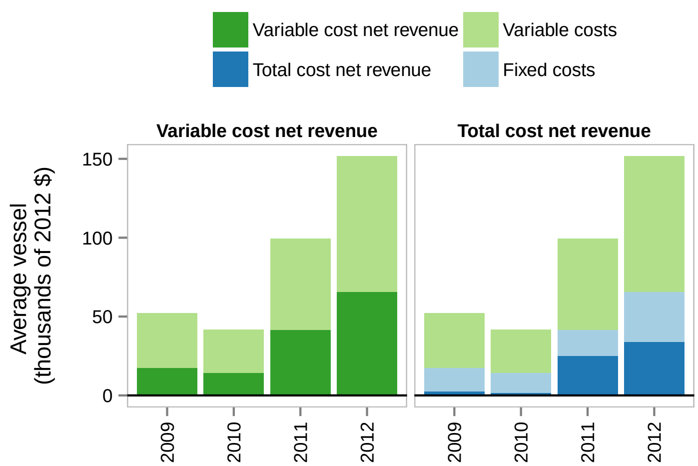


Figure 21: Average variable cost net revenue (ex-vessel revenue minus variable costs) (left), and average total cost net revenue (ex-vessel revenue minus variable costs and fixed costs) (right) from participation in the Non-whiting, non-DTS trawl with trawl endorsement fishery (thousands of 2012 $).

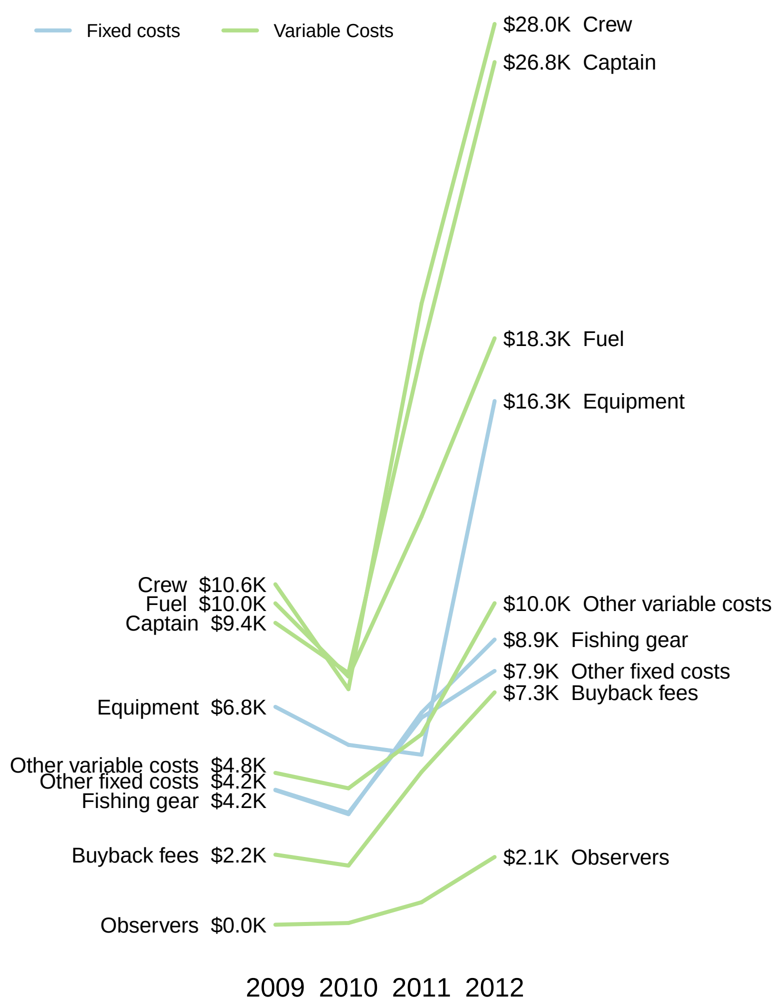


Figure 22: Average fixed and variable costs per vessel in the Non-whiting, non-DTS trawl with trawl endorsement fishery (thousands of 2012 $).

Groundfish fixed gear with trawl endorsement

In the first year of the catch share program, 26 vessels caught sablefish allocated to the trawl fishery using fixed gear. In 2012, there was one additional vessel, for a total of 27 vessels. This fishery targets almost exclusively sablefish (95% of catch in 2012) (Figure 23). In 2009 and 2010, the only vessels in the Groundfish fixed gear with trawl endorsement fishery were a small number of vessels participating in an exempted fishing permit program sponsored by the Nature Conservancy (Figure 24).[14]

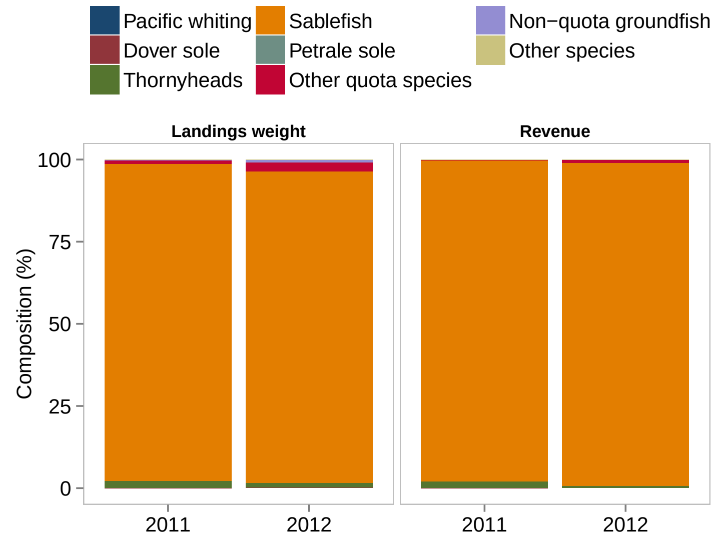


Figure 23: The species composition of catch (left) and revenue (right) in the Groundfish fixed gear with trawl endorsement fishery (%). The data for 2009 and 2010 are not shown because they represent a small group of vessels participating in an exempted fishery permit program.

Unlike the other fisheries, this fishery uses fixed gear (either fish pots or longlines). The number of vessels fishing with pots increased from 2011 to 2012, from 18 to 21, while the number of vessels fishing with longlines remained at 9 vessels. In general, the vessels fishing with fish pots are vessels that have historically fished with trawl gear and have switched to using fish pots to harvest groundfish. The vessels fishing with longline gear participate primarily in the Limited Entry Fixed Gear sablefish fishery and have acquired a limited entry trawl permit and quota in order to target sablefish allocated to the trawl fishery.

[14] For more information, see: `www.opc.ca.gov/2010/05/central-coast-groundfish-project/`

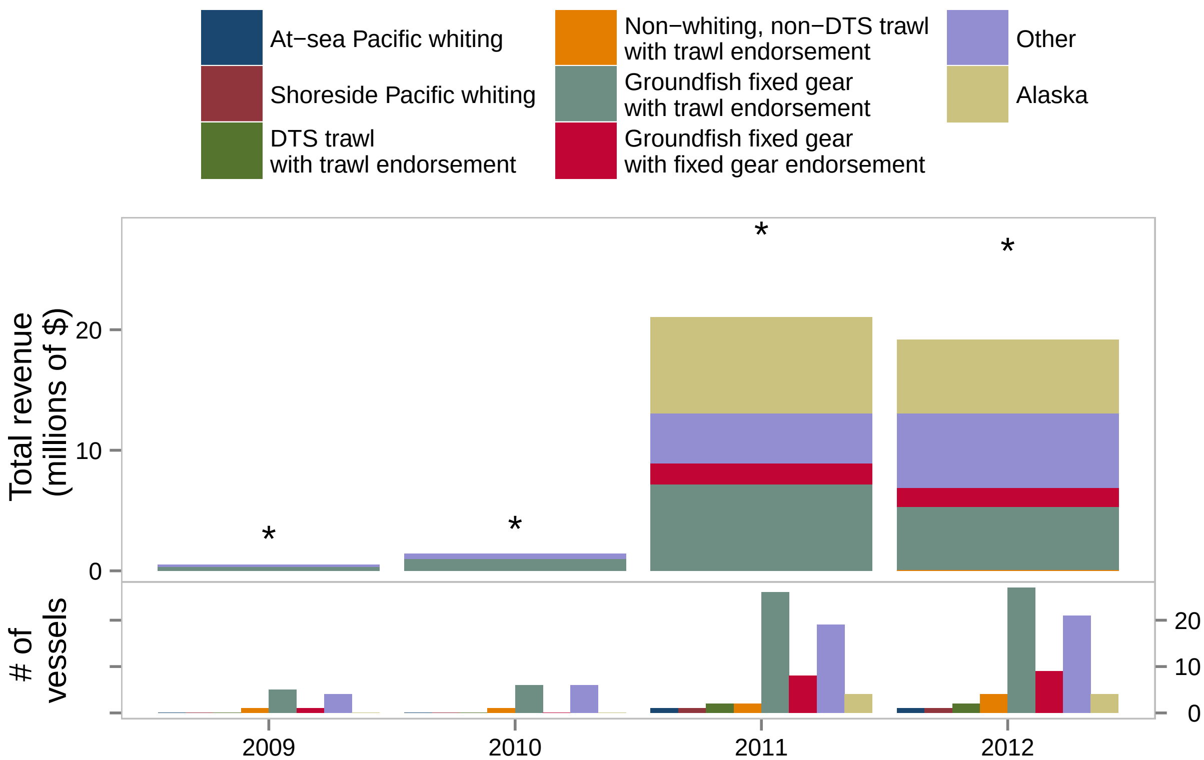


Figure 24: Total ex-vessel revenue earned by vessels that participated in the Groundfish fixed gear with trawl endorsement fishery by fishery (millions of 2012 $) (top) and number of vessels that participated in each fishery (bottom). *Some values are suppressed to protect confidential data.

Vessels that participated in the Groundfish fixed gear with trawl endorsement fishery also earned revenue from fishing in Alaska, and fishing in Other fisheries (Figure 24 (top)). Participation in other fisheries (particularly crab, shrimp, and non-whiting, non-DTS trawl with trawl endorsement fisheries) makes up around 50 percent of total revenue. Of the vessels that participated in the Groundfish fixed gear with trawl endorsement fishery, 21 vessels also participated in the Other fisheries category (Figure 24 (bottom)).

Average revenue for vessels participating in the Groundfish fixed gear with trawl endorsement fishery was $194,551, average variable cost net revenue was $94,575, and average total cost net revenue was $31,420 in 2012 (Figure 25). Average revenue was highest in 2011 due to high sablefish prices (Figure 2), but higher fixed and variable costs resulted in a decrease in average net revenue in 2012.

The largest cost in 2012 was crew compensation ($36,000 per vessel, on average), followed by vessel and on-board equipment ($30,000), and fishing gear ($23,000) (Figure 26). Unlike the trawl fisheries, fixed gear vessels have the additional cost of bait. In 2012, the average expense on bait was $10,000 per vessel. Average expenses across nearly all cost categories decreased from 2011 to 2012. On a per unit basis (not shown in the figure), equipment expenses decreased from $9.17 per hundred pounds delivered in 2011 to $0.40 per hundred pounds delivered. Compared to equipment, per-unit expenses in

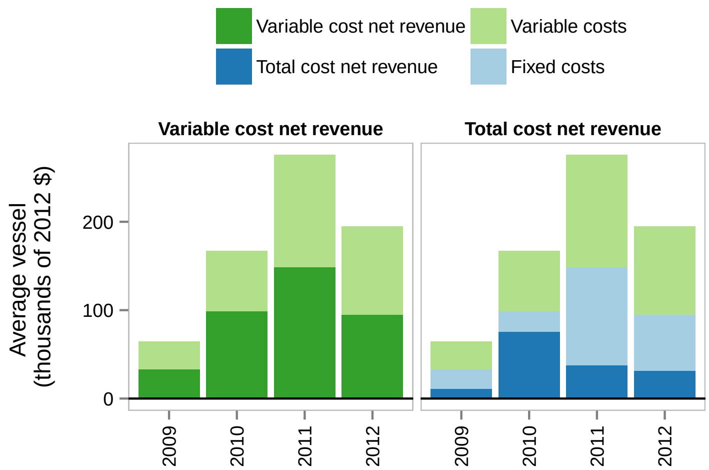


Figure 25: Average variable cost net revenue (ex-vessel revenue minus variable costs) (left), and average total cost net revenue (ex-vessel revenue minus variable costs and fixed costs) (right) from participation in the Groundfish fixed gear with trawl endorsement fishery (thousands of 2012 $).

the other cost categories remained relatively constant from 2011 to 2012.

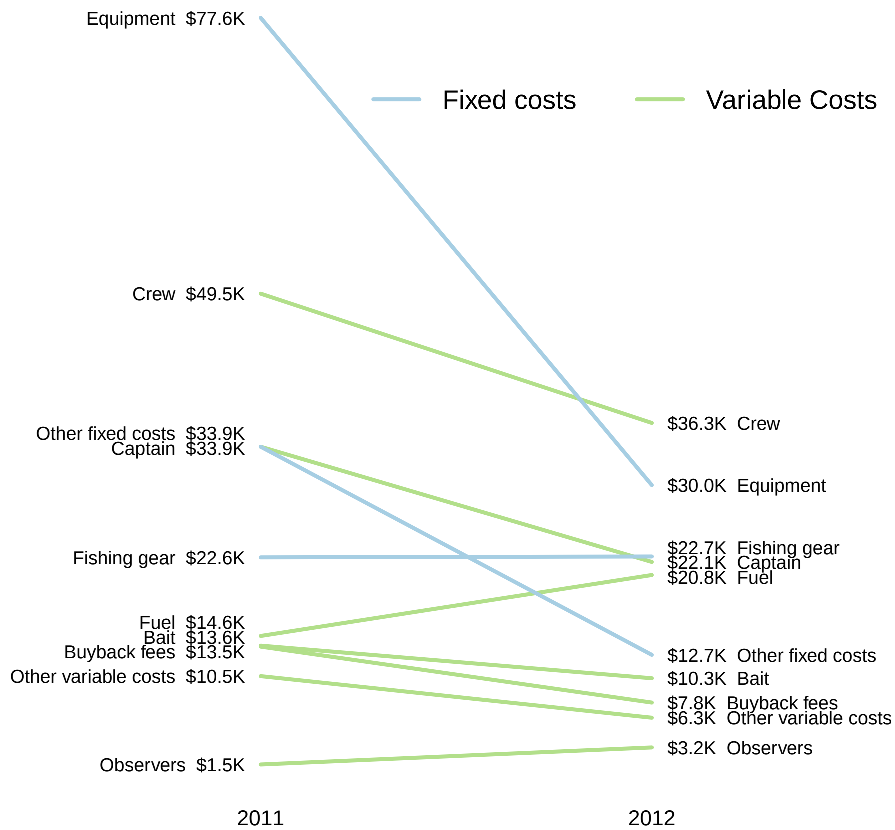


Figure 26: Average fixed and variable costs per vessel in the Groundfish fixed gear with trawl endorsement fishery (thousands of 2012 $). The costs for 2009 and 2010 are not shown here because they were collected from a small group of vessels participating in a exempted fishing permit fishery.

CATCHER VESSEL DATA SUMMARIES

CATCHER VESSEL DATA SUMMARIES

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1 Introduction

1.1 Background

The US West Coast groundfish fishery takes place off the coasts of Washington, Oregon and California, and is comprised of over 90 different species of fish. The fish are harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal.[1] In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet.[2] The Economic Data Collection (EDC) program[3] was implemented as part of these new regulations to monitor the economic effects of the catch share program. Annual economic data submissions are required from all fishery participants: catcher vessels, motherships, catcher-processors, and first receivers and shorebased processors §50 CFR 660.114. Baseline, pre-catch share, data were submitted in 2011 for the 2009 and 2010 operating years. Data for the first year the fishery operated under the catch share program (2011) were submitted in 2012, and the 2012 data submitted for this report were collected in 2013.

This report summarizes the 2009-12 EDC catcher vessel survey data. The EDC Program has enhanced the quantity and quality of economic information available for analysis and the management of the West Coast groundfish trawl fishery. Prior to the EDC Program, voluntary cost and earnings surveys were available for 64% of the shoreside catcher vessels with limited entry groundfish permits with trawl endorsements (trawl fleet) (2003-2004 collection[4]) and 57% of the fleet for the 2007-2008 collection[5]. Moreover, no cost and earnings data were available for catcher vessels that delivered to

[1] For more information about West Coast Groundfish, see www.westcoast.fisheries.noaa.gov/fisheries/groundfish/.

[2] More information about the West Coast Groundfish Trawl Catch Share Program is available online at www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/.

[3] Additional information on the EDC Program, including the EDC data collection forms can be found at www.nwfsc.noaa.gov/edc

[4] Lian, C.E. 2010. West Coast limited entry groundfish trawl cost earnings survey protocols and results for 2004. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-107, 35 p.

[5] Lian, C.E. 2012. West Coast limited entry groundfish cost earnings survey: Protocol and results for 2008. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-121, 62 p

motherships.

1.2 Understanding the report

It is important to remember that the information presented in this report is for all vessels that were required to complete the EDC form, as described above. Throughout the report, these vessels are referred to as EDC vessels. The EDC vessel include: 1) vessels that have historically participated in the trawl fishery and currently still participate; 2) vessels that no longer participate in the trawl fishery but still have a limited entry trawl permit; and 3) vessels that have not historically had a limited entry trawl permit, but have now obtained one to participate in the gear switching program (use of fixed gear is allowed under the program).

The unit of analysis identified in the summary tables varies by the information summarized. There are three different units of analysis, "entities", "vessels", and "participants". An "entity" is defined as a unique combination of an owner or lessee and vessel, whereas a "vessel" refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel. Therefore multiple forms could be submitted for one vessel, because there were multiple owners or lessees. Finally, "participants" refers to the individuals who actually completed the report. Each summary table clearly states whether the count of individuals represents entities or vessels.

For each value displayed in the summary data tables, N is displayed. In most cases, N represents the number of responses to the question that are not "NA" and not zero, unless noted otherwise. For example, in Table 9.1, for the 94 vessels that had expenses on ice, the mean expense in 2012 was $6,500. Therefore to calculate the average expense for ice for the entire fleet, one would need to multiply the mean by 94 and then divide by the total number of vessels (127).

The one major difference between the baseline forms (2009 and 2010) and 2011-current forms is that vessels that did not fish during the survey period were only required to fill out the first few pages of the form during the baseline collection. The vessels that did not fish in 2009 and 2010 only provided the vessel name, vessel ID, home port, length of the vessel, fuel capacity, and horsepower of main engines, contact information, and permit numbers. Starting with the 2011 forms, all participants are required to complete the entire form, in order to capture information such as capital investments, and earnings from lease or sale of quota or permits.

One last guideline when interpreting the aggregated data are the use of fiscal year. Although participants are identified on a calendar year basis, they complete the form using information based on the fiscal year of the entity. Currently data are presented for survey year, and therefore data assigned to a survey year may not overlap completely with the calendar year. Information obtained from outside of the EDC Program are adjusted to match the fiscal year provided on each form. For the four years of data collected from catcher vessels, 90% of entities used a fiscal year that is the same as the calendar year.

The superscripts included in the tables provide information about the coefficient of variation of the mean. We use the following scoring: ·represents $CV < 0.5$, :represents $0.5 \leq CV < 1.0$, ⁝represents $1.0 \leq CV < 2.0$, and ⁞represents $2.0 \leq CV$. For 2009-2012, none of the CVs exceeded 2.6.

All data submitted via the EDC Program are confidential under 402(b) of the Magnuson-Stevens Act (16 U.S.C. 1801, et seq.) and under NOAA Administrative Order 216-100. In order to protect these data, a rule of three and a rule of 90-10 are implemented. The rule of three requires a response from at least three entities in order to show a summary statistic. The 90-10 rule requires that no single entity's response should comprise over 90 percent of all relevant responses. The tables show a "***" for data points where there were less than three entities reporting the information, and/or if one entity's responses accounted for greater than 90 percent of the average value. Zeroes are shown if all entities only reported zeroes and/or NAs. More information about how confidential data are protected in the EDC Program can be found in the Administration and Operations Report. Additionally, "—" is used to denote fields where the question was not asked on the form in that survey year.

Unlike the Overview, all numbers reported in the Data Summaries are in nominal dollars.

1.3 Purpose of the data summaries

This report, like the other four EDC reports[6], has multiple objectives. The first is to provide basic economic data summaries that can be used for a variety of purposes associated with fishery management. Since much of the data collected are confidential under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 2007, the data are summarized as averages or totals for each question on the EDC forms. Thus summarized, the reports make the data available to the public for both research and informational purposes.

Second, to provide information about the performance of the catch share program. This includes information that can be used to monitor whether and to what degree the goals of the program are being met. It is expected that additional modeling will provide increased detail about program impacts. These reports will serve as the basis for the 5-year review of the catch share program that is mandated in the MSA, as well as the NOAA Fisheries National Catch Shares Performance Indicators. Currently, with just two years of catch share EDC data, it may be difficult to draw firm conclusions about the performance

[6] In addition to the catcher vessel report, there are four companion reports:

- Economic Data Collection Program, Administration and Operations Report Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, Mothership Report, 2009-2012 Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, Catcher Processor Report, 2009-2012 Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, First Receiver and Shorebased Processor Report, 2009-2012 Draft Report for PFMC Review (November 2014)

of the program. In addition, the catch share program may have a transitional period in the first few years as participants learn about the system and develop new business strategies.

Third, the reports either serve as the basis for economic models that are used as part of the Pacific Fishery Management Council's (PFMC) biennial specification process for groundfish management. These models include the IO-PAC model[7], as well as estimates of revenue, costs, and net revenue.

Lastly, and perhaps most importantly, the data reports are expected to provide a useful catalyst for feedback on the data collected and its analysis.

The Administration and Operations Report describes the EDC Program administration and fielding of the surveys, the EDC forms, data quality controls and quality checks and data processing, and safeguarding confidential information. The other EDC reports provide basic data summaries of the catcher vessel, mothership, and first receiver and shorebased processor forms.

This catcher vessel report and other reports comprise what an annual series of reports. It is envisioned that over time, the scope of these reports will expand, and the methods used will be refined with each annual publication. As such, the data summaries and analyses may change in subsequent years as improvements are implemented.

1.4 Catcher vessel form administration

Completion of EDC forms is mandatory for participants in the catch share program. Any owner, lessee, or charterer of a catcher vessel registered to a limited entry groundfish permit with a trawl endorsement (limited entry trawl permit) is required to complete an EDC form §660.114(b)(1). For a permit owner, a limited entry trawl permit application (including MS/CV-endorsed limited entry trawl permit) will not be considered complete until the required EDC form for that permit owner associated with that permit is submitted, as specified at §660.25(b)(4)(i). For a vessel owner, participation in the groundfish fishery (including, but not limited to, changes in vessel registration, vessel account actions, or if own QS permit, issuance of annual QP or IBQ pounds) will not be authorized until the required EDC form for that owner for that vessel is submitted, as specified, in part, at §660.25(b)(4)(v) and §660.140(e). For a vessel lessee or charterer, participation in the groundfish fishery (including, but not limited to, issuance of annual QP or IBQ pounds if own QS or IBQ) will not be authorized, until the required EDC form for their operation of that vessel is submitted.

A calendar year is used to determine which vessels meet the criteria. For example, in 2013, data were collected from all owners, lessees, and charters of a catcher vessel registered to a limited entry trawl permit during 2012. The forms are fielded on this schedule in order to allow participants the time necessary to complete their taxes, which may contain some information that is required on the EDC

[7] Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

forms. Participants are identified using contact information provided by the Northwest Regional Office - Permit Office (Permit Office).

If a form has missing information, or the information provided on the form is believed to be incorrect, EDC Program staff attempt to contact the participant to correct the information. On occasion, the participant cannot be reached or the participant cannot provide the missing information. In these cases, the missing or inaccurate data are treated on a case-by-case basis during analysis as documented in the Administration and Operations Report. Data are validated and verified with external data sources whenever possible. These data sources include the Permit Office, state fish tickets, the At-Sea Hake Observer Program data, and the Coast Guard.

1.5 About the survey participants

The EDC catcher vessel participants are identified as any owner, lessee, or charterer of a vessel with a limited entry trawl permit. This includes catcher vessels that deliver Pacific whiting to motherships at-sea (at-sea whiting fishery), catcher vessels that deliver whiting to shorebased facilities (shorebased whiting fishery), and catcher vessels that delivery non-whiting groundfish to shorebased facilities (non-whiting groundfish fishery). Additionally, the non-whiting groundfish fishery can be further classified into two additional fisheries, characterized by the composition of target species groups. These fisheries are the DTS fishery which includes dover sole, thornyheads, and sablefish and the near-shore fishery (includes all non-whiting, non-DTS species groups). In addition to these fisheries, many vessels also participate in one or both of the state fisheries for shrimp and crab. The other prevalent activity is fishing in Alaska.

The individuals that complete the forms are as diverse as the types of fisheries in which the vessels participate. This adds to the complexity of developing the EDC forms, because the questions on the forms must be understood by fishermen, family members, accountants, bookkeepers, and chief financial officers, to name a few. Often times, the forms are completed by multiple individuals since different people manage different parts of the business. For example, the captain of the vessel might know best how much fuel the vessel uses on a daily basis, but the bookkeeper might have the best information about how much was spent on fuel during the year.

2 Survey Response Rates

For the 2012Catcher Vessel EDC forms, 98.7% of all required forms are complete[1]. This is an increase from the 2009 and 2010 collection, when 88.1% and 92.0% were complete, respectively. Over the three years of the data collection, there has been no entity[2] that was unable to renew a limited entry groundfish permit due to a missing or incomplete EDC. This means that the remaining forms that were received incomplete or never received correspond to participants that are no longer in any West Coast federal fishery. Table 2.2 shows that in 2012, the complete EDCs represented 100.0% of all landings value associated with EDC vessels.

Table 2.1: Form status. Number of complete forms, number of incomplete forms, and number of forms that were never received (N = number of forms, % = percent of all forms due in survey year)

Form status	2009		2010		2011		2012	
	N	%	N	%	N	%	N	%
Complete	148	88.1%	149	92.0%	166	96.5%	154	98.7%
Incomplete	6	3.6%	1	0.6%	2	1.2%	—	—
Not received	14	8.3%	12	7.4%	4	2.3%	2	1.3%

1 For explanation of the term complete, please refer to the Administration and Operations Report section regarding regulations for complete EDC forms

2 An "entity" is defined as a unique combination of an owner or lessee and vessel, whereas a "vessel" refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.

Table 2.2: Form response rates as a function of total revenue. The total ex-vessel revenue (millions of $) on the West Coast associated with vessels that were required to submit an EDC form, by form status. If two forms were required for one vessel and one was submitted for one entity, and the other was incomplete, the shoreside landings revenue was attributed to both forms and is therefore counted twice in the table (% = percent of total ex-vessel revenue associated with EDC vessels in survey year. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number of individuals who owned or leased the vessel.).

Form status	2009		2010		2011		2012	
	Total	%	Total	%	Total	%	Total	%
Complete	$54.9	96.7%	$60.3	99.0%	$96.8	99.5%	$88.2	100.0%
Incomplete	$1.1	2.0%	$0.3	0.5%	$0.5	0.5%	$0	0.0%
Not received	$0.8	1.4%	$0.3	0.5%	$0	0.0%	$0	0.0%

For most of the forms, there is a one-to-one relationship between a vessel, vessel owner, and vessel operator. In these cases there are no lessees of the vessel and one form is submitted for the vessel each year. More than one form is submitted for a particular vessel when the vessel is leased by a third party, or when the vessel is sold during the survey year. The most common occurrence with two forms submitted for one vessel is when the owner of the vessel submits one form and the lessee of the vessel submits another form. Generally, only the lessee operated the vessel during the fiscal year, but occasionally both the owner and the lessee will operate the vessel (Table 2.3).

Table 2.3: Information about forms, entities, and vessels. Number of required forms, number of entities that harvested fish, number of vessels that harvested fish by location, number of vessels that were leased, number of lease contracts, number of vessels that were fished by more than one entity, and number of vessels that were sold during the annual survey qualifying period. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number of individuals who owned or leased the vessel.

Activity	2009	2010	2011	2012
Number of required forms	168	162	172	156
Number of entities that harvested fish	133	130	143	131
Number of vessels that harvested fish on the West Coast or Alaska	132	129	138	130
Number of vessels that harvested fish on the West Coast	130	126	133	127
Number of vessels that harvested fish in Alaska	31	31	34	28
Number of vessels that were leased	10	8	9	7
Number of lease contracts	11	9	9	7
Number of vessels that were fished by more than one entity	***	***	5	***
Number of vessels sold	***	5	8	3

3 Vessel Participation on the West Coast and in Alaska

Participants provide the total number of days spent fishing by fishery on the West Coast and in Alaska. Participants are instructed to count partial days as full days when recording days at sea on the forms. The West Coast fisheries categories on the EDC form are whiting with trawl gear, non-whiting groundfish with trawl gear, groundfish with fixed gear, shrimp, crab, halibut (both Pacific and California), salmon, tuna, and other. The days spent fishing in all Alaskan fisheries is also requested. In the 2009-2012 data collection, participants provided the total number of days spent chartering or doing research. Starting in 2012, the participants provide separate days at sea for chartering and research in Alaska and chartering and research on the West Coast. Most vessels that participate in the catch share fisheries are also involved in other fishing activities.

Although these data provide most of the information necessary for examining vessel participation, several of the days at sea need to be further split into subfisheries using information from state fish tickets obtained from the PacFIN database, data collected by the At-Sea Hake Observer Program (A-SHOP) obtained from the NORPAC database, and EDC data (ex-vessel revenue from at-sea deliveries). The whiting fishery is split into at-sea Pacific whiting and shoreside Pacific whiting, the non-whiting groundfish with trawl gear is further split into dover-thornyhead-sablefish (DTS) with trawl gear and non-whiting, non-DTS groundfish with trawl gear, and the fixed gear fishery is split into groundfish caught with a trawl permit, and groundfish caught with a fixed gear permit.

Allocation of the reported days at sea into the subfisheries is a two step process. First, ex-vessel revenue is used to categorize each delivery into a subfishery (at-sea Pacific whiting, shoreside Pacific whiting, DTS, non-whiting, non-DTS). Fish ticket data are used to designate each unique delivery to a fishery by compiling data from the start date of the vessel's fiscal year through one full year. A delivery is assigned to a particular fishery based on the species or species group that resulted in the highest revenue for that delivery. For example, if a fish ticket for a particular vessel on a specific day had a mix of rockfish and Pacific whiting, and the Pacific whiting landings accounted for the majority of the revenue, then all days associated with that trip are designated as "Pacific whiting fishery".

DTS revenue is identified using the landings of the species dover sole, thornyheads, and sablefish. Blackgill rockfish is also included because it is also a deep-water species which is commonly caught in combination with the other three species. In almost all cases, the daily deliveries where blackgill rockfish had the highest revenue, sablefish yielded the next highest revenue. Gear and permit are also used to distinguish trawl trips from fixed gear trips and trips with a limited entry permit with a trawl endorsement and trips with a limited entry permit with a fixed gear endorsement.

Once each landing/delivery is classified into a subfishery, the reported days at sea are distributed to the subfisheries proportional to the weight of landings/deliveries in each subfishery.

Landings weight was explored as an alternative to using revenue to classify deliveries by fishery. We compared the results of using the highest revenue method versus the highest landings weight method for designating the fishery. The two methods resulted in identification of the same fishery for 95% of all cases. Given that there were few differences in identification of the fisheries, revenue was selected over landings weight because it is assumed to represent the target species more accurately.

In 2009 through 2011, relatively few entities[1] participated in the halibut, salmon, tuna, and other fisheries. These fisheries are grouped together into an "Other" category. Additionally, groundfish that was caught without a limited entry groundfish permit is also included in the "Other" category. The number of entities that participated in each of these fisheries ranged from zero, for salmon in 2009, to 14, for tuna in 2012. In 2012, there were more vessels that participated in the salmon and tuna fisheries (14 vessels in each) than in the previous years. Most of these participants' information cannot be shown due to confidentiality restrictions.

In 2009-2011, participants were asked to provide the total number of days they participated in chartering or research. Beginning in 2012, this category was replaced with two new categories, 1.) "West Coast chartering, research, or tendering", and 2.)"Alaska chartering, research, or tendering". This was done to clarify why a vessel would have trips to Alaska but not have any fishing revenues, and emphasizes to the participant that they should provide both West Coast and Alaska activities.

[1] An entity is defined as a unique combination of an owner or lessee and vessel, whereas a "vessel" refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.

Table 3.1: Average days at sea. Average days at sea by activity for EDC vessels (N = number of EDC vessels with non-zero, non-NA responses). The Other fishery includes salmon, tuna, halibut, and groundfish caught without a limited entry permit.

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
At-sea Pacific whiting	20.5	20	26.8	20	31.5	18	37.2	16
Shoreside Pacific whiting	31.5	35	37.1	36	51.2	26	55.8	24
DTS trawl with trawl endorsement	55.4	99	51.1	92	45.6	63	40.7	58
Non-whiting, non-DTS trawl with trawl endorsement	18.9	78	15.0	68	17.2	48	24.6	50
Groundfish fixed gear with trawl endorsement	17.3	5	61.3	6	31.2	26	33.2	27
Groundfish fixed gear with fixed gear endorsement	23.8	4	23.7	3	17.5	8	22.7	10
Crab	39.3	56	37.9	57	37.9	65	36.3	61
Shrimp	29.7	31	36.3	36	42.7	41	46.1	39
Alaska	102.4	31	111.8	31	128.6	34	101.1	28
Other fisheries	13.6	24	18.9	27	12.0	27	21.1	29
Chartering or research on the West Coast or Alaska	30.0	10	31.8	11	40.5	13	—	—
Chartering or research in Alaska	—	—	—	—	—	—	46.0	5
Chartering or research on the West Coast	—	—	—	—	—	—	46.3	7

Table 3.2: Total days at sea. Total days at sea for EDC vessels (N = number of EDC vessels with non-zero, non-NA responses). The Other fishery includes salmon, tuna, halibut, and groundfish caught without a limited entry permit.

Activity	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
At-sea Pacific whiting	410	20	536	20	566	18	595	16
Shoreside Pacific whiting	1,104	35	1,335	36	1,331	26	1,340	24
DTS trawl with trawl endorsement	5,487	99	4,698	92	2,874	63	2,361	58
Non-whiting, non-DTS trawl with trawl endorsement	1,474	78	1,023	68	826	48	1,231	50
Groundfish fixed gear with trawl endorsement	86	5	368	6	810	26	897	27
Groundfish fixed gear with fixed gear endorsement	95	4	71	3	140	8	227	10
Crab	2,199	56	2,159	57	2,463	65	2,216	61
Shrimp	919	31	1,308	36	1,750	41	1,798	39
Alaska	3,173	31	3,465	31	4,372	34	2,830	28
Other fisheries	327	24	510	27	325	27	612	29
Chartering or research on the West Coast or Alaska	300	10	350	11	526	13	—	—
Chartering or research in Alaska	—	—	—	—	—	—	230	5
Chartering or research on the West Coast	—	—	—	—	—	—	324	7

3.1 Trips to Alaska

The number of trips that were made between the West Coast and Alaska provide additional insight into the patterns of participation. Table 3.3 show the number of one-way trips taken by vessels.

Table 3.3: Trips to Alaska. Count of vessels by number of one-way trips between the West Coast and Alaska. (N = number of EDC vessels).

Number of one-way trips	2009	2010	2011	2012
	N	N	N	N
1	***	5	3	***
2	23	20	25	24
3	***	***	***	***
4	5	6	***	3

3.2 Vessel participation in multiple fisheries

A key characteristic of vessels on the West Coast is participation in multiple fisheries. In 2012, only 7.6% of all entities[2] participated in one fishery. There are several reason why a vessel would participate in several fisheries. These reasons include maintaining employment throughout different seasonal fisheries and diversification of participation to protect individuals or communities from variability in the abundance of target species. Figures 3.1 - 3.4 provide additional insight into the portfolio of fisheries in which the EDC vessels participate.

Table 3.4: Participation in multiple fisheries. Number of entities that participated in one or more fisheries by year (N = number of entities, % = percent of total entities in survey year. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.)

Number of fisheries	2009		2010		2011		2012	
	N	%	N	%	N	%	N	%
1	9	6.8%	5	3.8%	19	13.3%	10	7.6%
2	37	27.8%	43	33.1%	52	36.4%	47	35.9%
3	49	36.8%	42	32.3%	43	30.1%	47	35.9%
4	29	21.8%	29	22.3%	21	14.7%	21	16.0%
5	6	4.5%	9	6.9%	6	4.2%	4	3.1%
6	3	2.3%	***	***	***	***	***	***

[2] An entity is defined as a unique combination of an owner or lessee and vessel, whereas a "vessel" refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.

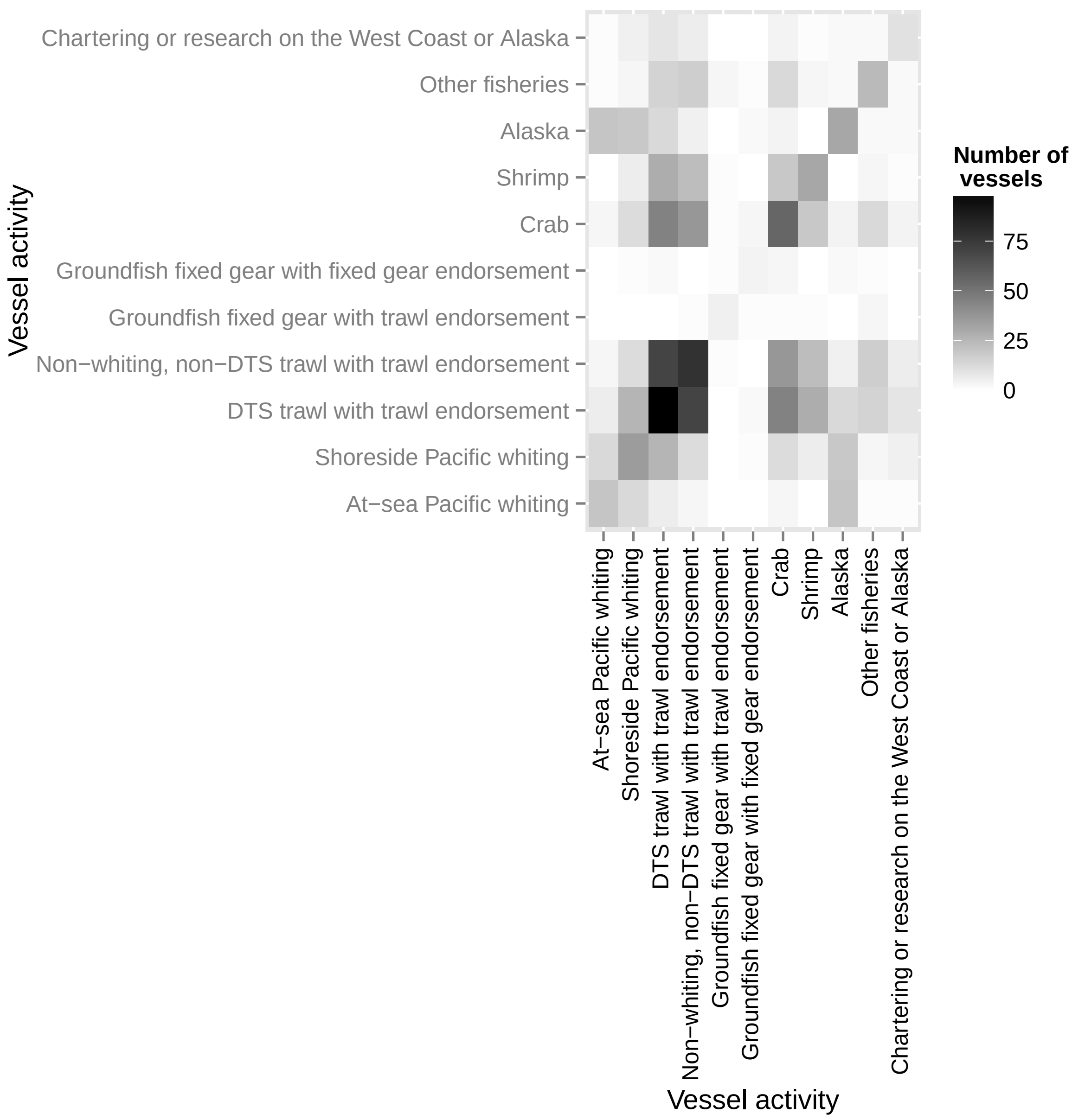

Figure 3.1: Participation in multiple fisheries - 2009. Frequency of participation in multiple fisheries during 2009 fiscal year.

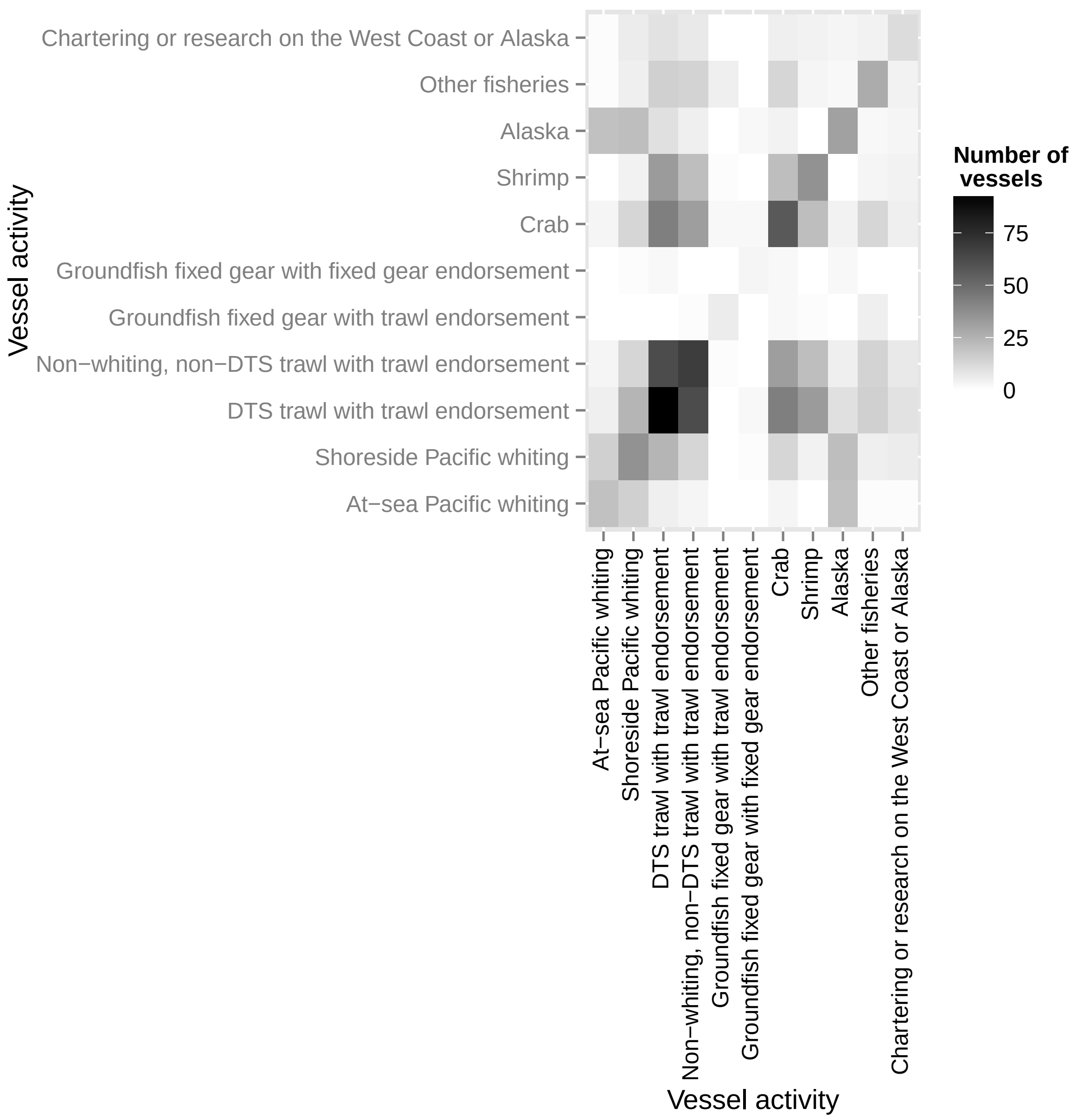

Figure 3.2: Participation in multiple fisheries - 2010. Frequency of participation in multiple fisheries during 2010 fiscal year.

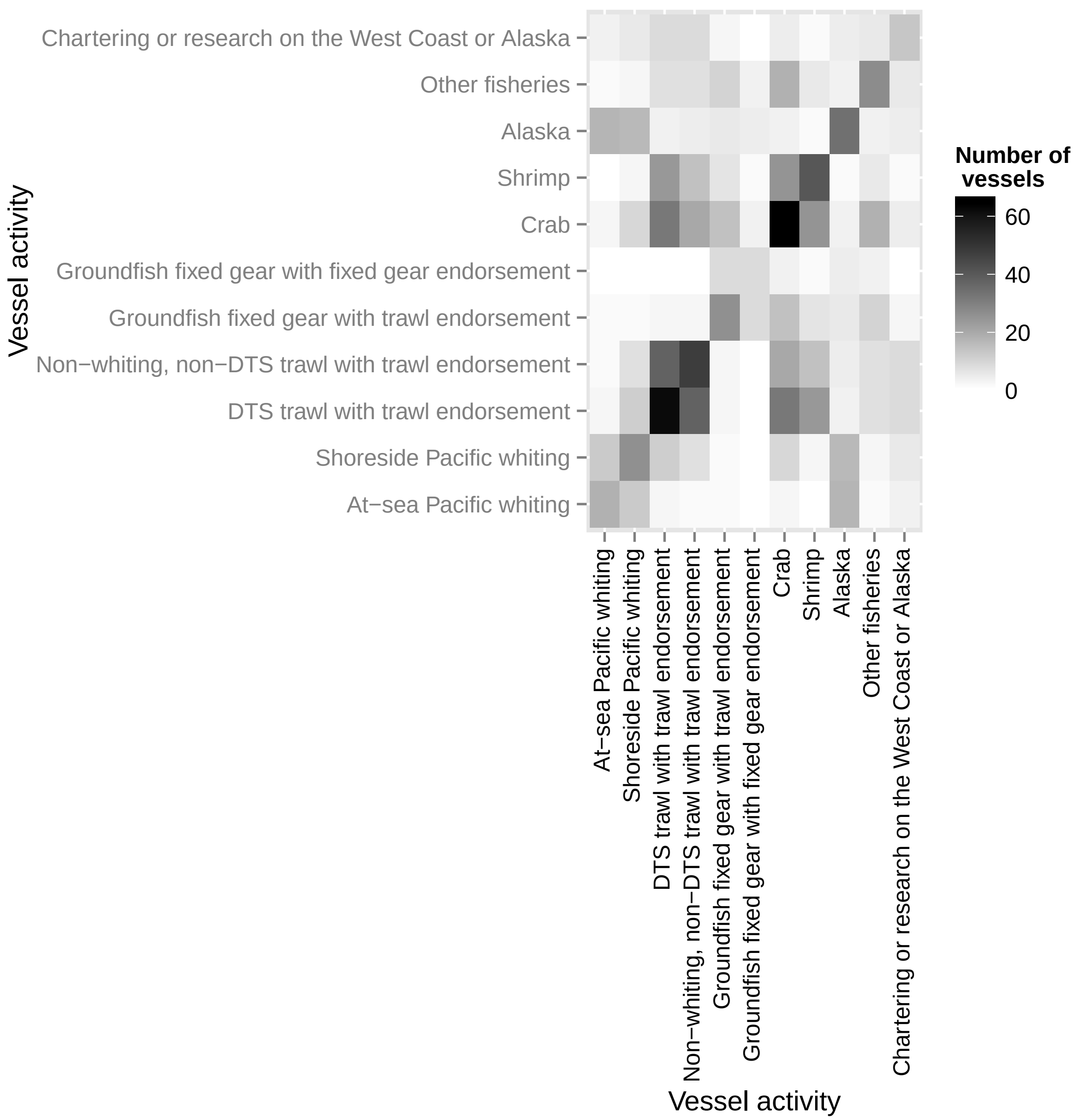

Figure 3.3: Participation in multiple fisheries - 2011. Frequency of participation in multiple fisheries during 2011 fiscal year.

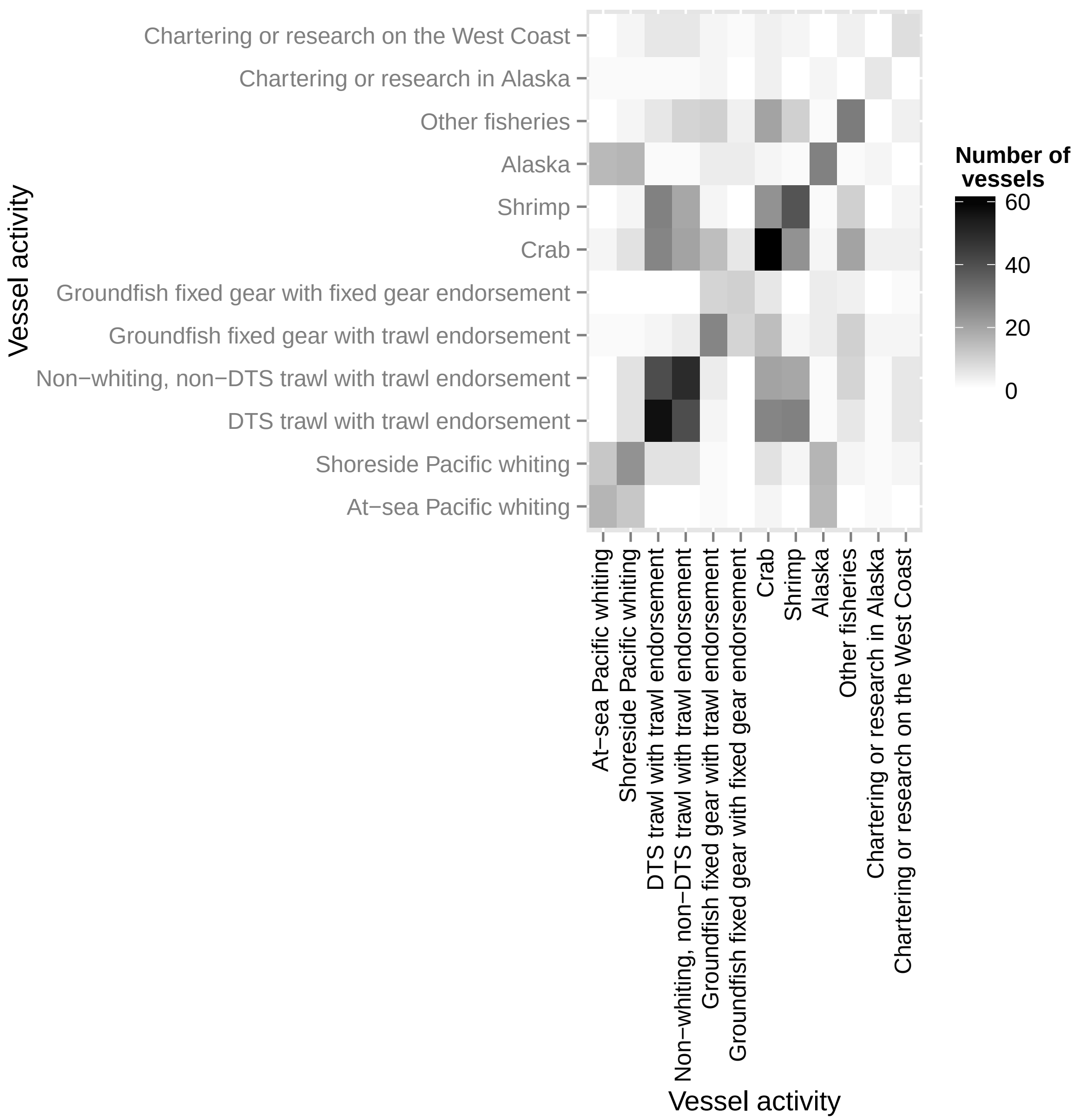

Figure 3.4: Participation in multiple fisheries - 2012. Frequency of participation in multiple fisheries during 2012 fiscal year.

4 Home Port

Vessel home port information will be particularly useful for understanding how the catch share program may affect communities. Among other uses, home port is commonly used as a method for assigning economic activity to communities. Table 4.1 shows the number of entities by home port. There are many measures of home port, including the home port listed on Coast Guard registrations and the port where the vessel made the most landings. In this table, the home port provided by participants on the EDC form is summarized. Home ports provided on the EDC forms are mapped to the IO-PAC port groupings[1]. These port groupings are also consistent with those used in the PFMC's biennial groundfish management specification process. The ports with the highest concentration of EDC entities are Newport, Astoria, and the Puget Sound region.

In addition to understanding where vessels call their home port, it is important to examine how the home port relates to particular fisheries. Tables 4.2 through 4.14 show the average days at sea by home port and fishery. This provides information about how changes in management for a particular fishery could affect specific port communities. For example, changes in the shoreside Pacific whiting fishery could have a strong effect on Coos Bay, but a change in the at-sea Pacific whiting fishery might not have a noticeable effect in that port.

[1] Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

Table 4.1: Vessel home port. Number of entities by home port reported on EDC form (N = number of entities, % = percent of total entities in survey year. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel).

Home port	2009		2010		2011		2012	
	N	%	N	%	N	%	N	%
Alaska	***	***	***	***	3	2.1%	***	***
Astoria	20	15.0%	20	15.4%	26	18.2%	23	17.6%
Brookings	7	5.3%	7	5.4%	8	5.6%	9	6.9%
Coos Bay	20	15.0%	19	14.6%	19	13.3%	19	14.5%
Crescent City	7	5.3%	7	5.4%	7	4.9%	6	4.6%
Eureka	9	6.8%	9	6.9%	9	6.3%	7	5.3%
Fort Bragg	7	5.3%	7	5.4%	7	4.9%	8	6.1%
Monterey	3	2.3%	***	***	***	***	3	2.3%
Morro Bay	6	4.5%	4	3.1%	6	4.2%	5	3.8%
Newport	23	17.3%	23	17.7%	25	17.5%	21	16.0%
Puget Sound	14	10.5%	14	10.8%	17	11.9%	13	9.9%
San Francisco	6	4.5%	8	6.2%	7	4.9%	7	5.3%
South and central WA coast	4	3.0%	4	3.1%	4	2.8%	4	3.1%
Tillamook	6	4.5%	6	4.6%	4	2.8%	5	3.8%

Table 4.2: At-sea Pacific whiting fishery days at sea by home port. Average number of days vessels fished in the At-sea Pacific whiting fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska	***	***	***	***		0		0
Puget Sound	28.0:	7	32.2·	7	34.8·	7	43.8:	6
Astoria	***	***	***	***	***	***	***	***
Newport	17.2·	9	24.8·	9	29.6·	9	28.5:	8
Brookings	***	***	***	***		0		0
San Francisco	***	***	***	***	***	***	***	***

Table 4.3: Shoreside Pacific whiting fishery days at sea by home port. Average number of days vessels fished in the Shoreside Pacific whiting fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska	***	***	***	***		0		0
Puget Sound	29.5:	7	40.4:	9	58.2·	4	51.2:	5
South and central WA coast	***	***	***	***	***	***	***	***
Astoria	49.7:	3	61.2:	3	44.9:	3	***	***
Tillamook	***	***	***	***		0		0
Newport	24.8·	14	32.9·	14	48.0·	15	52.3:	13
Coos Bay	22.4:	4	***	***	***	***	***	***
Brookings	***	***	***	***	***	***	***	***
Crescent City	***	***	***	***		0		0
Eureka	***	***	***	***		0		0

Table 4.4: DTS trawl with trawl endorsement fishery days at sea by home port. Average number of days vessels fished in the DTS trawl with trawl endorsement fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska		0		0		0	***	***
Puget Sound	63.9	5	42.8	4	34.3	3	***	***
South and central WA coast	91.2	4	93.4	3	***	***	58.7	3
Astoria	70.5	17	68.6	17	58.6	16	53.9	14
Tillamook	72.6	4	46.2	4	***	***	***	***
Newport	40.8	18	39.7	16	22.1	7	26.4	6
Coos Bay	44.5	16	41.9	16	43.6	9	40.2	9
Brookings	54.3	7	57.0	7	45.4	6	45.8	5
Crescent City	49.2	7	41.8	6	22.0	3	29.1	4
Eureka	58.6	9	53.6	8	45.4	8	46.2	6
Fort Bragg	57.6	7	47.4	7	35.4	6	30.9	5
San Francisco	***	***	***	***	***	***	***	***
Monterey	***	***	***	***	***	***	***	***
Morro Bay	***	***	***	***		0		0

Table 4.5: Non-whiting, non-DTS trawl with trawl endorsement fishery days at sea by home port. Average number of days vessels fished in the Non-whiting, non-DTS trawl with trawl endorsement fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska		0	***	***		0		0
Puget Sound	14.9	5	13.0	4	25.0	3	***	***
South and central WA coast	28.1	3	***	***	***	***	54.3	3
Astoria	23.9	16	20.1	14	24.4	15	39.5	15
Tillamook	***	***	***	***	***	***	***	***
Newport	14.0	9	9.3	6	6.5	6	4.6	7
Coos Bay	20.6	11	16.2	11	15.3	7	24.9	8
Brookings	***	***	3.0	5	1.8	3	1.2	3
Crescent City	2.2	6	2.3	5	***	***	***	***
Eureka	6.9	9	4.5	6	3.3	3	***	***
Fort Bragg	9.1	7	10.9	6	13.2	4	13.6	4
San Francisco	21.4	4	15.4	4	19.7	3	22.7	4
Monterey	***	***	***	***		0	***	***
Morro Bay	***	***	***	***		0		0

Table 4.6: Groundfish fixed gear with trawl endorsement fishery days at sea by home port. Average number of days vessels fished in the Groundfish fixed gear with trawl endorsement fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska		0		0	***	***		0
Puget Sound		0		0	34.2	4	43.1	5
Astoria		0		0	45.2	4	41.6	7
Tillamook	***	***	***	***	***	***		0
Newport		0		0	31.4	3	45.4	3
Coos Bay		0		0	***	***	***	***
Brookings		0		0	***	***	***	***
Fort Bragg		0		0	***	***	***	***
San Francisco		0	***	***	***	***	***	***
Monterey		0		0		0	***	***
Morro Bay	21.4	4	82.0	3	34.6	6	32.0	4

Table 4.7: Groundfish fixed gear with fixed gear endorsement fishery days at sea by home port. Average number of days vessels fished in the Groundfish fixed gear with fixed gear endorsement fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska		0		0	***	***		0
Puget Sound		0		0	***	***	28.6:	4
Astoria	***	***	***	***	***	***	***	***
Tillamook	***	***	***	***		0		0
Newport	***	***	***	***	***	***	***	***
Coos Bay		0		0	***	***	***	***
Brookings		0		0	***	***	***	***
Morro Bay	***	***		0	***	***	***	***

Table 4.8: Crab fishery days at sea by home port. Average number of days vessels fished in the Crab fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska		0		0		0	***	***
Puget Sound	***	***	***	***	***	***	***	***
South and central WA coast	***	***	47.7	3	25.7	3	***	***
Astoria	59.3	6	52.0	5	43.0	9	50.3	9
Tillamook	***	***	***	***	***	***	***	***
Newport	30.3	10	28.1	10	35.6	11	23.1	10
Coos Bay	33.9	10	34.4	9	32.9	11	31.7	12
Brookings	25.4	5	14.0	5	14.3	6	21.0	3
Crescent City	41.2	5	33.8	6	34.3	7	34.0	5
Eureka	63.6	7	63.6	7	59.5	6	37.5	6
Fort Bragg	27.0	3	36.5	4	49.0	4	53.8	4
San Francisco	25.7	3	37.5	4	42.5	4	37.6	4
Monterey	***	***		0		0		0
Morro Bay	***	***	***	***	47.0	3	***	***

Table 4.9: Shrimp fishery days at sea by home port. Average number of days vessels fished in the Shrimp fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska		0		0		0	***	***
Puget Sound	***	***	***	***		0		0
South and central WA coast		0	***	***		0	***	***
Astoria	45.3	3	45.8	5	51.6	7	60.5	4
Tillamook	***	***	***	***	***	***	***	***
Newport	8.8	5	***	***	41.5	6	67.4	5
Coos Bay	34.8	10	35.8	13	38.8	12	43.4	11
Brookings	***	***	31.2	4	52.5	4	34.4	5
Crescent City	29.8	4	49.8	4	42.3	6	40.2	6
Eureka	28.5	4	26.5	4	28.5	4	35.5	4
Morro Bay	***	***		0		0		0

Table 4.10: Other fisheries fishery days at sea by home port. Average number of days vessels fished in the Other fisheries fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Puget Sound		0		0		0		0
South and central WA coast	***	***	***	***		0		0
Astoria	30.6	3	36.5	3	11.6	4	***	***
Tillamook		0	***	***	***	***	***	***
Newport	18.1	4	12.2	7	***	***	13.1	5
Coos Bay	2.2	5	9.1	3	9.3	6	10.6	7
Brookings	***	***		0	17.8	3	21.4	3
Crescent City		0	***	***		0	***	***
Eureka	***	***	***	***		0		0
Fort Bragg	***	***	***	***	***	***	53.0	3
San Francisco	26.7	3	42.5	4	20.0	3	30.8	4
Monterey	***	***	***	***		0		0
Morro Bay	6.8	3	3.3	3	11.6	3	19.7	3

Table 4.11: Alaska fishery days at sea by home port. Average number of days vessels fished in the Alaska fishery by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska	***	***	***	***	***	***		0
Puget Sound	106.5	11	126.8	11	145.1	14	116.0	10
Astoria	***	***	***	***	***	***	***	***
Tillamook	***	***	***	***	***	***	***	***
Newport	107.9	13	120.2	13	112.1	13	90.8	11
Coos Bay	***	***	***	***	***	***	***	***
Brookings	***	***	***	***	***	***	***	***
San Francisco	***	***	***	***	***	***	***	***

Table 4.12: Chartering or research on the West Coast or Alaska fishery days at sea by home port. Average number of days vessels fished in the Chartering or research on the West Coast or Alaska fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska		0		0	***	***		0
Puget Sound		0	***	***	35.7	3		0
Astoria	***	***	***	***	***	***		0
Tillamook		0	***	***		0		0
Newport	35.5	4	36.0	4	48.8	4		0
Coos Bay	21.2	4	***	***	***	***		0
Brookings	***	***	***	***	***	***		0
Fort Bragg		0		0	***	***		0

Table 4.13: Chartering or research in Alaska fishery days at sea by home port. Average number of days vessels fished in the Chartering or research in Alaska fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Astoria		0		0		0	43.3	3
Puget Sound		0		0		0	***	***
Tillamook		0		0		0	***	***

Table 4.14: Chartering or research on the West Coast fishery days at sea by home port. Average number of days vessels fished in the Chartering or research on the West Coast fishery on the West Coast by home port reported on EDC form. (N = number of EDC vessels with non-zero, non-NA responses).

Home port	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Astoria		0		0		0	***	***
Brookings		0		0		0	***	***
Monterey		0		0		0	***	***
Newport		0		0		0	29.3:	3
Tillamook		0		0		0	***	***

5 Vessel Physical Characteristics

5.1 Average market value, replacement value, vessel length, fuel capacity, and horsepower of main engines

Physical vessel characteristics are shown below in Table 5.1. Survey participants were asked to provide basic information about the vessel and its physical characteristics, including market value, replacement value, vessel length, horsepower of main engines, and fuel capacity from the most recent marine survey. Marine surveys are done on a regular basis and are often required for insurance, financing, and other purposes.

The market value is the marine surveyor's estimate of what the vessel could be sold for in its current condition, and the replacement value is the estimate of what it would cost to replace the current vessel with a new vessel.

Table 5.1: Average vessel characteristics. Average market value, replacement value, horsepower, fuel capacity and length (N = number of EDC vessels with non-zero, non-NA responses).

Vessel characteristic	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Market value ($)	1,067,907	123	1,145,910	121	1,175,649	138	1,087,132	134
Replacement value ($)	1,976,306	121	2,030,050	120	2,229,211	135	2,191,176	130
Vessel length (feet)	73	140	73	143	72	153	69	148
Vessel fuel capacity (gallons)	12,440	139	12,153	142	12,142	154	11,440	142
Horsepower of main engines	650	140	636	143	635	151	624	142

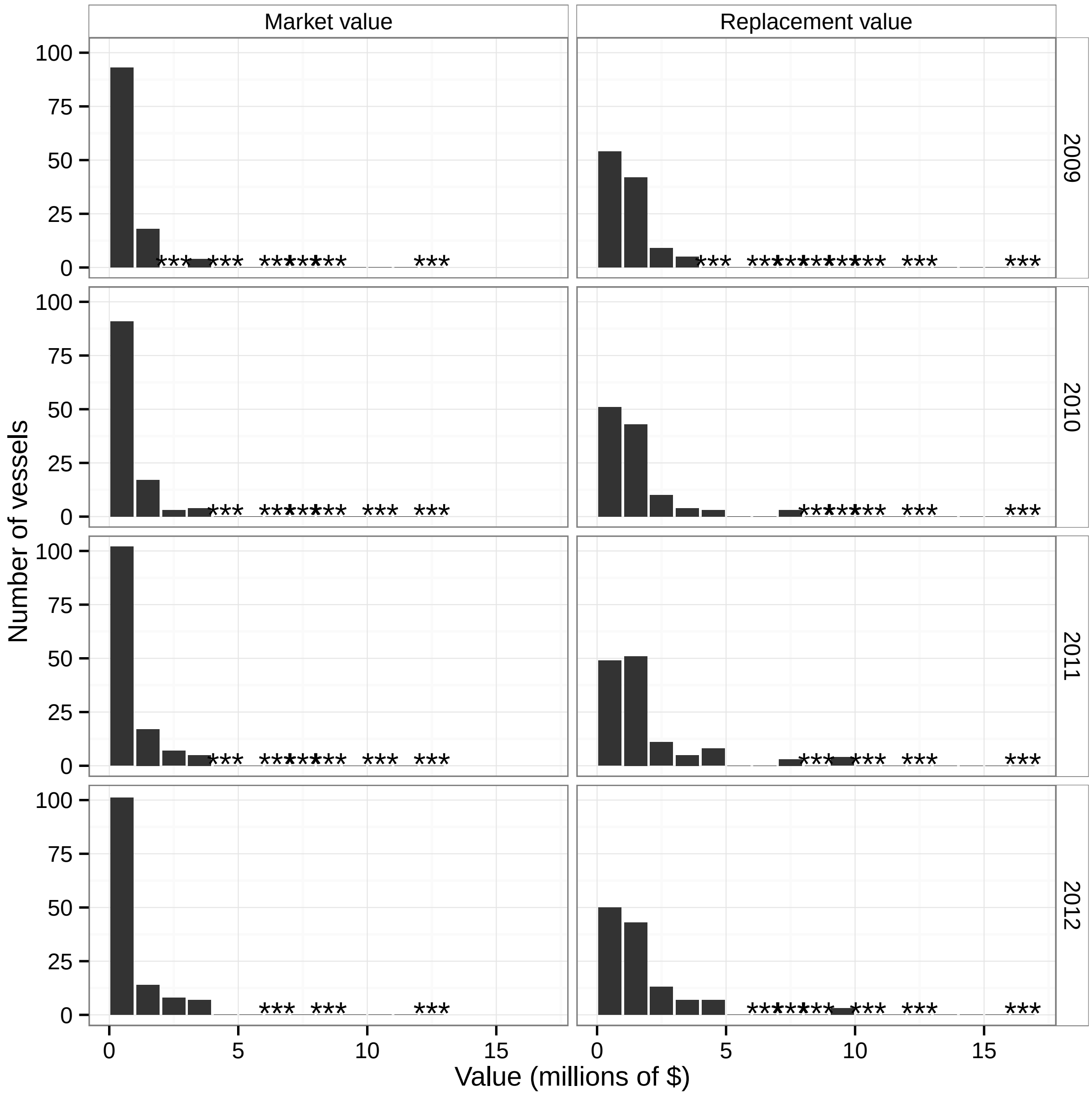

Figure 5.1: Histogram of market value and replacement value (millions of dollars) of all vessels that completed a survey. *** indicate that values were suppressed for confidentiality reasons.

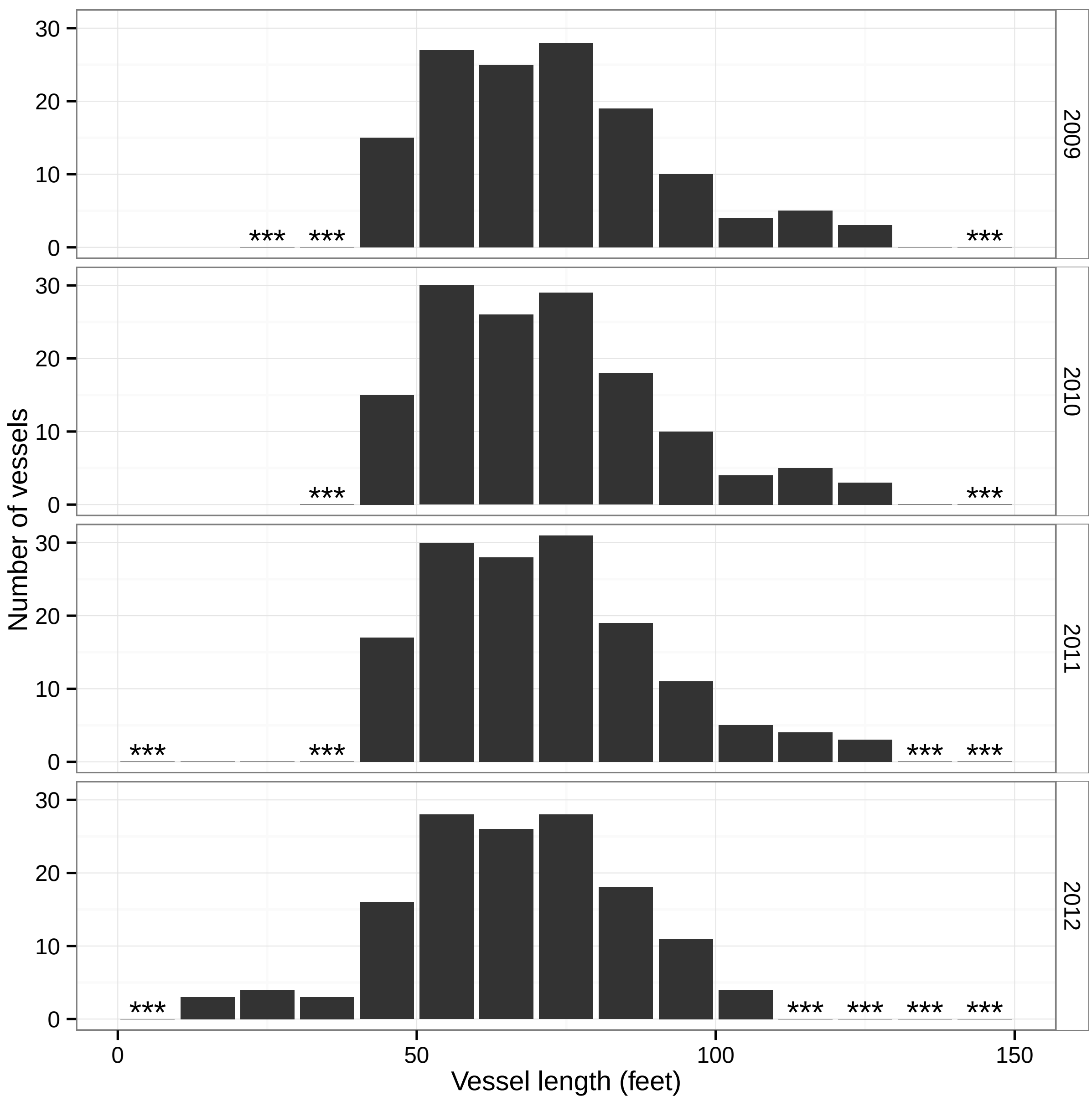

Figure 5.2: Histogram of vessel length (feet) of all vessels that completed a survey. *** indicate that values were suppressed for confidentiality reasons.

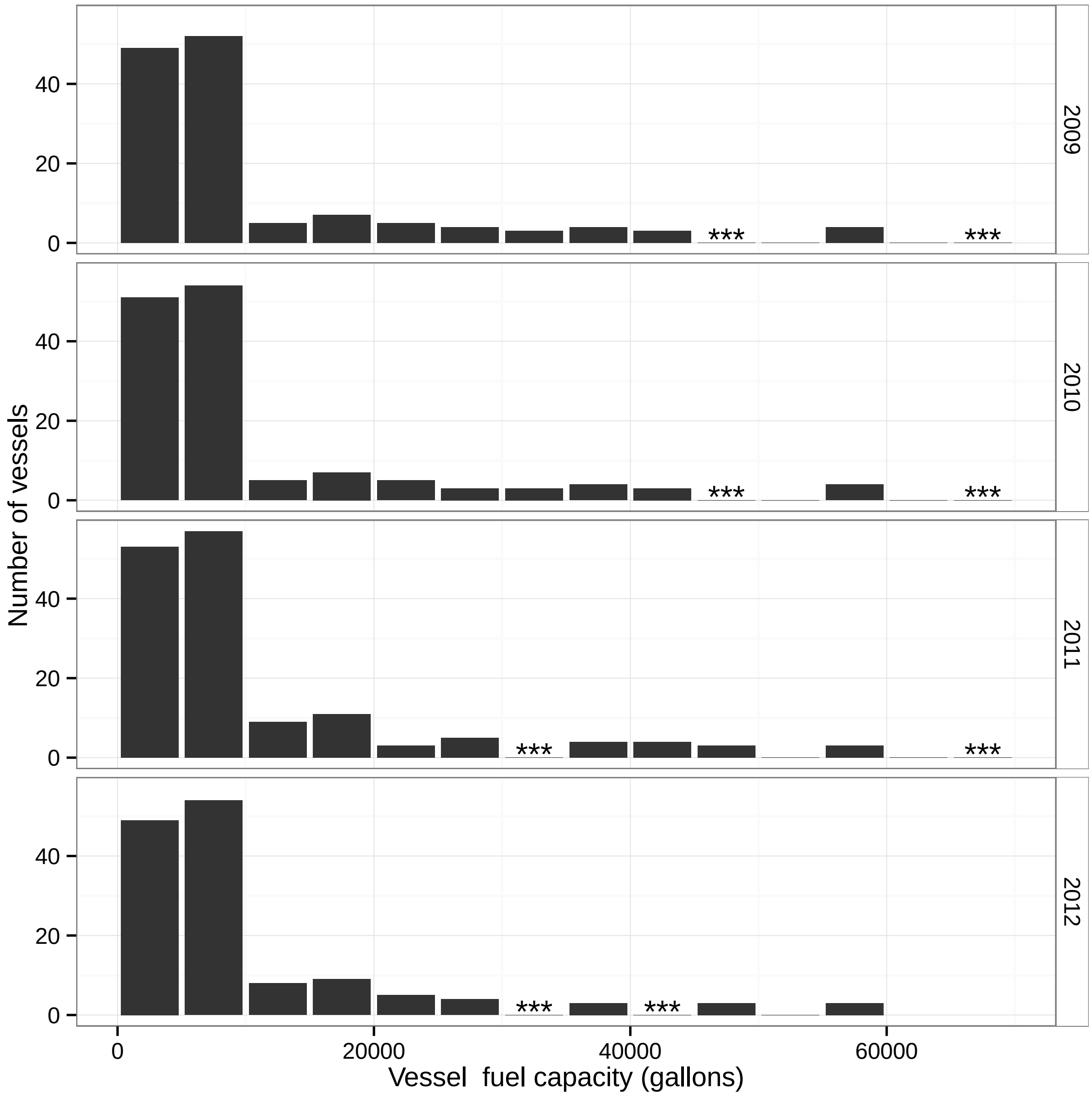

Figure 5.3: Histogram of vessel fuel capacity (thousands of gallons) of all vessels that completed a survey. *** indicate that values were suppressed for confidentiality reasons.

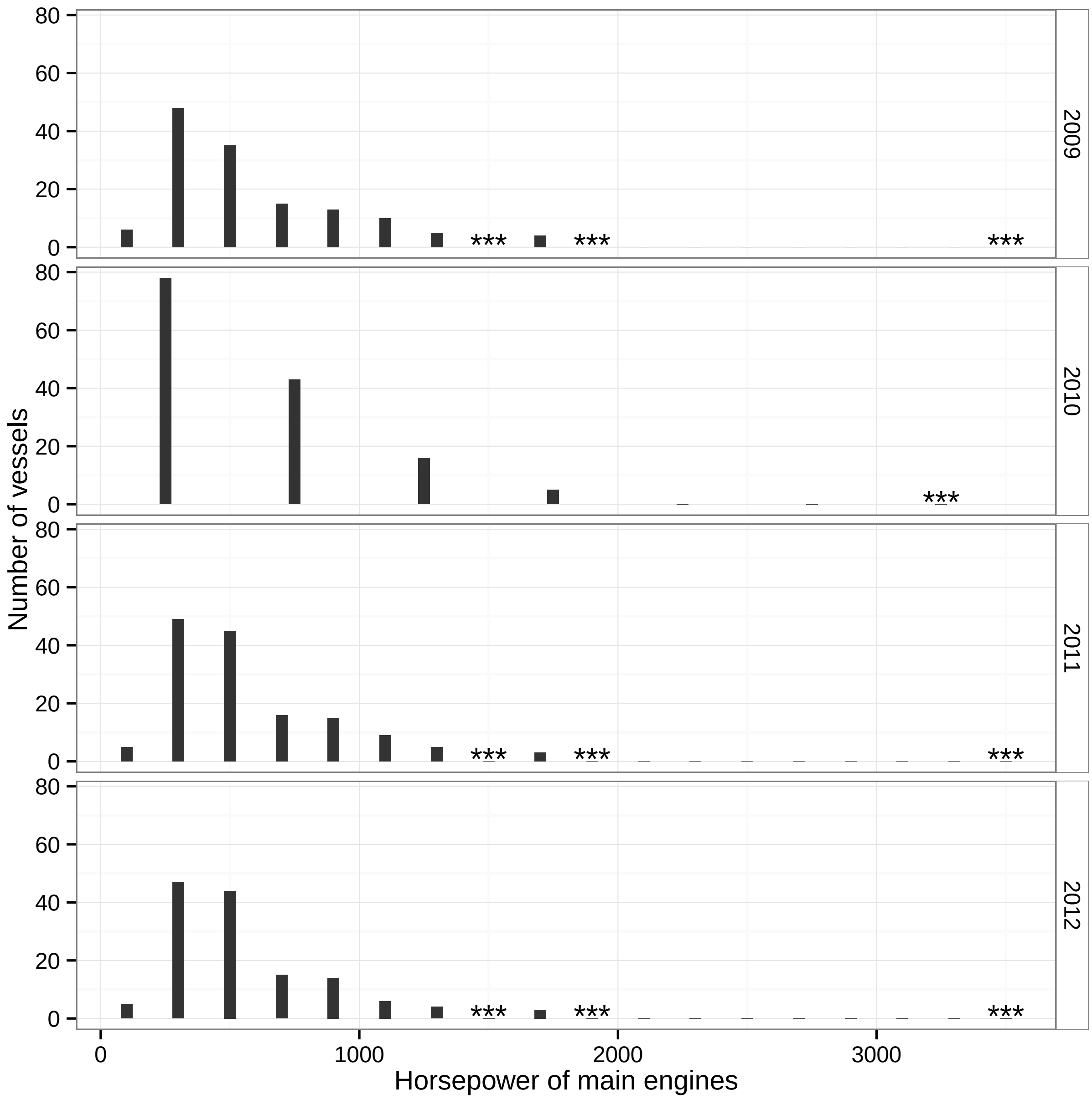

Figure 5.4: Histogram of horsepower of main engines of all vessels that completed a survey. *** indicate that values were suppressed for confidentiality reasons.

The participants provide information about whether the vessel was hauled out (vessel was removed from the water for maintenance and repairs). Each year about half of all active fishing vessels are hauled out. The information shown below in Table 5.2 provides context that may be used to explain major costs associated with vessel repair and maintenance.

Table 5.2: Haul outs. Number of EDC vessels (N) that hauled the vessel during their fiscal year (% percent of vessels in survey year).

Haul out	2009		2010		2011		2012	
	N	%	N	%	N	%	N	%
YES	85	64.4%	65	50.4%	87	62.6%	82	63.1%
NO	47	35.6%	64	49.6%	52	37.4%	48	36.9%

Table 5.3: Catcher vessels that processed at-sea. Number of EDC vessels (N) that processed or headed and gutted fish on-board the vessel (% percent of vessels in survey year).

Processed at-sea	2009		2010		2011		2012	
	N	%	N	%	N	%	N	%
YES	6	4.5%	7	5.4%	15	10.8%	17	13.1%
NO	126	95.5%	122	94.6%	121	87.1%	113	86.9%
No response	0	0 %	0	0 %	3	2.2%	—	—

5.2 Vessel characteristics by whether the vessel fished on the West Coast and in Alaska, only fished on the West Coast, only fished in Alaska, or did not fish

Table 5.4: Average horsepower. Average horsepower of EDC vessels that did not fish on the West Coast or Alaska, fished on the West Coast and Alaska, fished only in Alaska, and fished only on the West Coast. (N = number of entities with non-zero, non-NA responses).

Characteristic	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fished on the West Coast and Alaska	1,257·	29	1,253·	30	1,147⁚	29	1,105⁚	29
Fished only on the West Coast	453·	101	447·	98	454·	105	469·	99
Fished only in Alaska	1,233·	3	***	***	994·	7	1,043·	3
Did not fish	797⁚	17	640⁚	20	765⁚	20	686⁚	15

Table 5.5: Average replacement value. Average replacement value (millions of $) of vessels that did not fish on the West Coast or Alaska, fished on the West Coast and Alaska, fished only in Alaska, and fished only on the West Coast. In 2009 and 2010 there was no question specifically for Alaska and if the vessel did not fish in 2009 and 2010, the owner was not required to provide the market value of the vessel (N = number of entities with non-zero, non-NA responses. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fished on the West Coast and Alaska	$4.69⁚	29	$4.93⁚	30	$4.49⁚	28	$4.72⁚	29
Fished only on the West Coast	$1.05⁚	90	$1.06⁚	89	$1.34⁚	93	$1.43⁚	91
Fished only in Alaska	$3.41⁚	3	***	***	$5.30⁚	7	$4.47⁚	3
Did not fish	***	***	***	***	$2.22⁝	15	$1.13⁝	9

Table 5.6: Average market value Average market value (millions of $) of vessels that did not fish on the West Coast or Alaska, fished on the West Coast and Alaska, fished only in Alaska, and fished only on the West Coast. In 2009 and 2010 there was no question specifically for Alaska and if the vessel did not fish in 2009 and 2010, the owner was not required to provide the replacement value of the vessel (N = number of entities with non-zero, non-NA responses. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fished on the West Coast and Alaska	$3	29	$3	30	$3	29	$3	29
Fished only on the West Coast	$0	92	$0	90	$1	94	$1	94
Fished only in Alaska	$2	3	***	***	$3	7	$2	3
Did not fish	***	***	***	***	$1	16	$1	10

Table 5.7: Average vessel fuel capacity Average vessel fuel capacity (gallons) of vessels that did not fish on the West Coast or Alaska, fished on the West Coast and Alaska, fished only in Alaska, and fished only on the West Coast. In 2009 and 2010 there was no question specifically for Alaska (N = number of entities with non-zero, non-NA responses. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fished on the West Coast and Alaska	29,592	29	30,577	30	24,983	29	24,402	29
Fished only on the West Coast	6,654	101	6,807	98	7,314	105	7,616	99
Fished only in Alaska	14,513	3	***	***	25,479	7	18,637	3
Did not fish	19,404	16	12,807	19	15,876	20	11,857	15

Table 5.8: Average vessel length. Average length (feet) of vessels that did not fish on the West Coast or Alaska, fished on the West Coast and Alaska, fished only in Alaska, and fished only on the West Coast. In 2009 and 2010 there was no question specifically for Alaska (N = number of entities with non-zero, non-NA responses. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fished on the West Coast and Alaska	96 $^{\cdot}$	29	97 $^{\cdot}$	30	93 $^{\cdot}$	29	90 $^{\cdot}$	29
Fished only on the West Coast	65 $^{\cdot}$	101	66 $^{\cdot}$	98	66 $^{\cdot}$	105	66 $^{\cdot}$	99
Fished only in Alaska	89 $^{\cdot}$	3	***	***	91 $^{\cdot}$	7	95 $^{\cdot}$	3
Did not fish	80 $^{\cdot}$	17	72 $^{\cdot}$	20	73 $^{\cdot}$	23	54 $^{:}$	21

6 Vessel Fuel Use, Speed, and Crew Size

Participants are asked to estimate the average daily fuel use while fishing. On average, more fuel is used per day in the Pacific whiting fishery than any other fishery.

6.1 Fuel use

6.1.1 Average fuel use per day by fishery

Table 6.1: Daily fuel use. Average daily fuel use (gallons per day) by fishery (N = number of EDC vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Pacific whiting	800.9	40	805.5	40	822.9	34	813.7	30
Groundfish with trawl gear	298.6	105	304.4	99	322.8	81	318.1	73
Groundfish with fixed gear	155.6	8	143.3	9	141.5	26	168.0	24
Crab	173.6	56	178.0	56	168.0	66	183.1	65
Halibut	271.4	7	206.3	6	141.1	7	202.7	6
Salmon	***	***	38.8	4	70.0	5	48.1	9
Shrimp	240.9	36	229.4	36	218.9	43	238.1	41
Tuna	128.9	15	120.1	14	77.9	8	101.5	12
Steaming between West Coast and Alaska	895.5	31	860.5	33	809.8	32	810.9	30

6.1.2 Average fuel use per day by fishery and vessel length class

Table 6.2: Pacific whiting fishery fuel use. Average fuel use (gallons per day) of vessels that fished in the Pacific whiting fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	918 :	31	921 :	31	920 :	28	880 :	25
Medium vessel (> 60 ft, <= 80 ft)	399 ·	9	407 ·	9	396 ·	5	481 ·	5
Small vessel (< 60 ft)		0		0	***	***		0

Table 6.3: Groundfish with trawl gear fishery fuel use. Average fuel use (gallons per day) of vessels that fished in the groundfish with trawl gear fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	522 ·	21	516 ·	20	543 ·	16	541 :	12
Medium vessel (> 60 ft, <= 80 ft)	288 ·	48	289 ·	49	286 ·	45	304 ·	42
Small vessel (< 60 ft)	182 ·	36	189 ·	30	230 :	20	208 :	19

Table 6.4: Groundfish with fixed gear fishery fuel use. Average fuel use (gallons per day) of vessels that fished in the groundfish with fixed gear fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	***	***	***	***	***	***	***	***
Medium vessel (> 60 ft, <= 80 ft)	***	***	***	***	200 :	7	231 ·	8
Small vessel (< 60 ft)	91 ·	6	84 ·	7	116 :	18	102 ·	14

Table 6.5: Crab fishery fuel use. Average fuel use (gallons per day) of vessels that fished in the crab fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	342 ·	6	350 ·	6	303 ·	7	324 ·	7
Medium vessel (> 60 ft, <= 80 ft)	235 ·	20	239 ·	21	224 ·	26	250 ·	27
Small vessel (< 60 ft)	99 :	30	99 ·	29	95 :	33	93 :	31

Table 6.6: Halibut fishery fuel use. Average fuel use (gallons per day) of vessels that fished in the halibut fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	***	***		0		0		0
Medium vessel (> 60 ft, <= 80 ft)	***	***	363 ·	3	258 :	3	272 :	4
Small vessel (< 60 ft)	100 :	4	50 ·	3	54 ·	4	***	***

Table 6.7: Salmon fishery fuel use. Average fuel use (gallons per day) of vessels that fished in the salmon fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)		0		0		0		0
Medium vessel (> 60 ft, <= 80 ft)		0		0		0		0
Small vessel (< 60 ft)	***	***	39 :	4	70 :	5	48 :	9

Table 6.8: Shrimp fishery fuel use. Average fuel use (gallons per day) of vessels that fished in the shrimp fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	350·	4	340·	5	285·	5	306·	8
Medium vessel (> 60 ft, <= 80 ft)	263·	21	239·	21	239·	25	257·	22
Small vessel (< 60 ft)	160·	11	153·	10	156·	13	151·	11

Table 6.9: Tuna fishery fuel use. Average fuel use (gallons per day) of vessels that fished in the tuna fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)		0		0		0		0
Medium vessel (> 60 ft, <= 80 ft)	251:	3	***	***	***	***	168·	3
Small vessel (< 60 ft)	98:	12	98·	12	75·	7	79·	9

Table 6.10: Steaming between West Coast and Alaska fishery fuel use. Average fuel use (gallons per day) of vessels that steamed between West Coast and Alaska by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	939:	28	917:	29	921:	26	963:	23
Medium vessel (> 60 ft, <= 80 ft)	488·	3	450·	4	321:	4	327:	5
Small vessel (< 60 ft)		0		0	***	***	***	***

6.1.3 Average total fuel use

Table 6.11: Average total fuel use. Average total fuel use (gallons) per entity. (N = number of EDC vessels with non-zero, non-NA responses. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.)

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Other fuel use on West Coast	336⁚	7	280⁚	6	***	***	125⁚	4
Total diesel	25,549⁚	129	27,768⁚	126	24,573⁚	133	27,785⁝	128

6.2 Speed while fishing or steaming

Participants are also asked to provide the average speed of the vessel while fishing. This value was only required for trawl fisheries, and therefore no speed is provided for halibut, crab, or groundfish with fixed gear.

6.2.1 Average speed by fishery

Table 6.12: Average speed. Average speed (knots) by fishery (N = number of EDC vessels with non-zero, non-NA responses).

Fishery	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Pacific whiting	3.1˙	40	3.1˙	40	3.3˙	34	3.1˙	30
Groundfish with trawl gear	2.6⁚	105	2.6⁚	99	2.8⁚	80	2.7⁝	72
Salmon	***	***	2.5˙	4	2.5˙	5	3.0⁚	9
Shrimp	2.0˙	36	1.9˙	36	2.7⁝	42	2.7⁝	40
Tuna	5.0˙	15	5.2˙	15	5.5˙	9	5.3˙	12
Steaming between West Coast and Alaska	9.0˙	31	9.0˙	32	8.9˙	32	8.8˙	30

6.2.2 Average speed by fishery and vessel length class

Table 6.13: Pacific whiting fishery fishing speed. Average speed (knots) of vessels that fished in the Pacific whiting fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	3.1	31	3.1	31	3.3	28	3.1	25
Medium vessel (> 60 ft, <= 80 ft)	2.9	9	2.9	9	3.8	5	3.2	5
Small vessel (< 60 ft)		0		0	***	***		0

Table 6.14: Groundfish with trawl gear fishery fishing speed. Average speed (knots) of vessels that fished in the groundfish with trawl gear fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	2.6	21	2.6	20	2.6	16	2.5	12
Medium vessel (> 60 ft, <= 80 ft)	2.4	48	2.4	49	2.9	44	3.0	41
Small vessel (< 60 ft)	2.8	36	2.9	30	2.6	20	2.1	19

Table 6.15: Salmon fishery fishing speed. Average speed (knots) of vessels that fished in the salmon fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)		0		0		0		0
Medium vessel (> 60 ft, <= 80 ft)		0		0		0		0
Small vessel (< 60 ft)	***	***	2.5	4	2.5	5	3.0	9

Table 6.16: Shrimp fishery fishing speed. Average speed (knots) of vessels that fished in the shrimp fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	1.9·	4	2.0·	5	1.9·	5	1.9·	8
Medium vessel (> 60 ft, <= 80 ft)	1.8·	21	1.9·	21	3.0⁝	25	3.2⁝	22
Small vessel (< 60 ft)	2.3:	11	1.9·	10	2.2:	12	2.3:	10

Table 6.17: Tuna fishery fishing speed. Average speed (knots) of vessels that fished in the tuna fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)		0		0	***	***		0
Medium vessel (> 60 ft, <= 80 ft)	5.7·	3	5.7·	3	***	***	5.8·	3
Small vessel (< 60 ft)	4.9·	12	5.1·	12	5.1·	7	5.1·	9

Table 6.18: Steaming between West Coast and Alaska fishery fishing speed. Average speed (knots) of vessels that steamed between West Coast and Alaska by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	9.0·	28	9.1·	28	9.0·	26	8.8·	23
Medium vessel (> 60 ft, <= 80 ft)	9.0·	3	8.8·	4	8.5·	4	8.4·	5
Small vessel (< 60 ft)		0		0	***	***	***	***

6.3 Crew size

The EDC forms collect crew size by fishery. The values provided in Table 6.19 exclude the captain. These data provide information about the total number of jobs or positions on vessels; they do not reflect the total number of individuals who served as crew members. The EDC Program is currently exploring the state commercial fish license systems to determine whether it would be feasible to collect the license numbers on the EDC forms.

6.3.1 Average crew size by fishery

Table 6.19: Average crew size. Average crew size (excluding captain) by fishery (N = number of EDC vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Pacific whiting	2.6 ▪	41	2.6 ▪	41	2.7 ▪	34	2.8 ▪	30
Groundfish with trawl gear	2.0 ▪	105	2.0 ▪	99	2.0 ▪	81	2.1 ▪	73
Groundfish with fixed gear	1.9 ▮	8	2.0 ▮	8	2.6 ▪	26	2.8 ▮	24
Crab	2.8 ▪	56	2.9 ▪	57	2.9 ▪	66	3.0 ▪	63
Halibut	1.8 ▮	7	1.6 ▮	6	1.9 ▮	7	2.1 ▮	6
Salmon	***	***	1.7 ▪	3	1.8 ▪	4	1.4 ▪	7
Shrimp	2.0 ▪	37	2.0 ▪	37	2.0 ▪	43	2.1 ▪	41
Tuna	1.5 ▪	15	1.6 ▪	14	1.5 ▪	7	1.6 ▪	11
Steaming between West Coast and Alaska	2.9 ▪	31	2.9 ▪	33	3.1 ▪	31	2.9 ▪	30

6.3.2 Average crew size by fishery and vessel length class

Table 6.20: Pacific whiting fishery crew size. Average crew size (not including captain) on vessels that fished in the Pacific whiting fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	2.7 ▪	31	2.7 ▪	31	2.9 ▪	27	2.8 ▪	25
Medium vessel (> 60 ft, <= 80 ft)	2.2 ▪	10	2.2 ▪	10	2.2 ▪	6	2.6 ▪	5
Small vessel (< 60 ft)		0		0	***	***		0

Table 6.21: Groundfish with trawl gear fishery crew size. Average crew size (not including captain) on vessels that fished in the groundfish with trawl gear fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	$2.3^{\cdot}$	21	$2.3^{\cdot}$	20	$2.4^{\cdot}$	16	$2.3^{\cdot}$	12
Medium vessel (> 60 ft, <= 80 ft)	$2.1^{\cdot}$	49	$2.1^{\cdot}$	50	$2.1^{\cdot}$	45	$2.1^{\cdot}$	42
Small vessel (< 60 ft)	$1.8^{\cdot}$	35	$1.8^{\cdot}$	29	$1.8^{\cdot}$	20	$1.9^{\cdot}$	19

Table 6.22: Groundfish with fixed gear fishery crew size. Average crew size (not including captain) on vessels that fished in the groundfish with fixed gear fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	***	***	***	***	***	***	***	***
Medium vessel (> 60 ft, <= 80 ft)	***	***	***	***	$3.6^{\cdot}$	7	$3.5^{\cdot}$	8
Small vessel (< 60 ft)	$1.3^{:}$	6	$1.5^{:}$	6	$2.1^{\cdot}$	18	$2.1^{:}$	14

Table 6.23: Crab fishery crew size. Average crew size (not including captain) on vessels that fished in the crab fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	$3.6^{\cdot}$	6	$3.3^{\cdot}$	6	$3.5^{\cdot}$	7	$3.5^{\cdot}$	7
Medium vessel (> 60 ft, <= 80 ft)	$3.4^{\cdot}$	21	$3.4^{\cdot}$	22	$3.3^{\cdot}$	26	$3.3^{\cdot}$	26
Small vessel (< 60 ft)	$2.3^{\cdot}$	29	$2.4^{\cdot}$	29	$2.4^{\cdot}$	33	$2.5^{\cdot}$	30

Table 6.24: Halibut fishery crew size. Average crew size (not including captain) on vessels that fished in the halibut fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	***	***		0		0		0
Medium vessel (> 60 ft, <= 80 ft)	***	***	1.7 $^{\cdot}$	3	2.2 $^{\cdot}$	3	2.8 $^{\cdot}$	4
Small vessel (< 60 ft)	1.6 $^{:}$	4	1.5 $^{:}$	3	1.6 $^{:}$	4	***	***

Table 6.25: Salmon fishery crew size. Average crew size (not including captain) on vessels that fished in the salmon fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)		0		0	***	***		0
Medium vessel (> 60 ft, <= 80 ft)		0		0		0		0
Small vessel (< 60 ft)	***	***	1.7 $^{\cdot}$	3	1.7 $^{\cdot}$	3	1.4 $^{\cdot}$	7

Table 6.26: Shrimp fishery crew size. Average crew size (not including captain) on vessels that fished in the shrimp fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	2.1 $^{\cdot}$	4	2.1 $^{\cdot}$	5	2.0 $^{\cdot}$	5	2.1 $^{\cdot}$	8
Medium vessel (> 60 ft, <= 80 ft)	2.0 $^{\cdot}$	22	2.0 $^{\cdot}$	22	2.1 $^{\cdot}$	25	2.0 $^{\cdot}$	22
Small vessel (< 60 ft)	1.8 $^{\cdot}$	11	1.7 $^{\cdot}$	10	1.9 $^{\cdot}$	13	2.1 $^{\cdot}$	11

Table 6.27: Tuna fishery crew size. Average crew size (not including captain) on vessels that fished in the tuna fishery on the West Coast by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)		0		0		0		0
Medium vessel (> 60 ft, <= 80 ft)	1.8 ·	4	1.7 ·	3	***	***	1.3 ·	3
Small vessel (< 60 ft)	1.5 ·	11	1.6 ·	11	1.4 ·	6	1.8 ·	8

Table 6.28: Steaming between West Coast and Alaska fishery crew size. Average crew size (not including captain) on vessels that steamed between West Coast and Alaska by size class of vessel (large vessel > 80 ft, 60 ft < medium vessels <= 80 ft, and small vessels <= 60 ft) (N = number of EDC vessels with non-zero, non-NA responses).

Vessel length category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Large vessel (> 80 ft)	2.9 ·	28	2.9 ·	29	3.0 ·	25	2.8 ·	23
Medium vessel (> 60 ft, <= 80 ft)	3.0 ·	3	3.0 ·	4	3.2 ·	4	2.6 ·	5
Small vessel (< 60 ft)		0		0	***	***	***	***

7 At-Sea Deliveries and Shoreside Landings

Vessels in the catch share fishery participate in both shorebased and at-sea fisheries. The only fishery for which vessels deliver at-sea is the whiting fishery. There is also a shorebased whiting fleet. Information about the weight of landings or deliveries is not requested on the EDC forms because this information can be obtained from other sources.

Landings and deliveries information are primarily obtained from state fish ticket data and the At-Sea Hake Observer Program database, respectively, accessed through PacFIN. The weight of landings and deliveries made while fishing in Alaska are obtained from the EDC forms. Species composition is available for West Coast fisheries, but not for Alaska fisheries. Alaska landings weights are provided here because they are used for cost disaggregation in section 9.

Table 7.1: Total landings and deliveries in West Coast at-sea and shoreside fisheries and Alaska (round metric tons) (N = number of EDC vessels with non-zero, non-NA responses)

Location of delivery	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Alaska	94,821	31	103,625	31	135,276	33	105,575	28
At-sea	30,927	20	33,965	20	50,220	18	39,060	16
Shoreside	77,531	124	91,828	121	123,128	127	99,863	123
Total landings	203,279	132	229,419	129	308,624	138	244,497	130

7.1 At-sea deliveries

The at-sea fisheries on the West Coast target Pacific whiting. There is very little bycatch in this fishery (Table 7.2).

Table 7.2: Total at-sea deliveries (metric tons) by species group (N = number of EDC vessels with non-zero, non-NA responses).

Species group	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Arrowtooth flounder	1	20	3	19	7	18	2	16
Coastal pelagics	***	***	0	13	10	10	11	15
Crab	—	—	—	—	***	***	—	—
Dover sole	—	—	1	11	0	7	0	6
English sole	—	—	***	***	***	***	***	***
Lingcod	1	14	0	7	0	8	0	10
Pacific cod	***	***	—	—	***	***	0	3
Pacific halibut	0	14	1	12	0	6	0	7
Pacific herring	0	12	***	***	***	***	***	***
Pacific whiting	30,666	20	33,756	20	49,946	18	40,515	16
Rex sole	—	—	2	11	2	9	0	10
Rockfish	201	20	114	20	93	18	78	16
Sablefish	0	6	5	14	2	14	1	9
Salmon	1	19	2	19	4	18	6	16
Sharks, skates and rays	9	20	51	20	109	18	45	16
Shrimp	0	3	0	3	0	4	0	12
Squid	8	20	21	20	20	18	27	16
Thornyheads	—	—	0	9	2	8	1	11
Other flatfish	***	***	***	***	0	3	0	7
Other groundfish	—	—	—	—	0	5	0	5
Other shellfish	0	5	0	13	***	***	0	3
Other species	***	***	10	19	24	18	3	16
Total deliveries	30,927	20	33,965	20	50,220	18	40,690	16

7.2 Shoreside landings

Pacific whiting makes up the largest part of the total catch by weight in the shoreside groundfish trawl fisheries, (Table 7.3). The next most common species by weight are dover sole, sablefish, and thornyheads. Between 2009 and 2012, there were 1 species grouped into the other groundfish species category. By weight, the most common were sand sole, starry flounder, and rock sole.

Table 7.3: Total shoreside landings (metric tons) by species group of groundfish (N = number of EDC vessels with non-zero, non-NA responses)

Species group	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Arrowtooth flounder	3,489	91	3,033	91	2,279	83	2,295	88
Dover sole	10,888	107	10,011	104	7,665	90	7,288	91
English sole	240	102	148	98	110	70	118	72
Lingcod	102	113	71	101	251	86	355	90
Pacific cod	66	43	88	42	263	42	396	28
Pacific whiting	44,792	37	59,090	44	88,081	62	65,708	66
Petrale sole	1,554	107	730	101	789	73	1,070	76
Rex sole	509	109	422	104	364	81	371	83
Rockfish	969	121	1,140	113	1,499	104	1,946	105
Sablefish	3,133	118	2,816	110	2,949	109	2,717	108
Sanddab	287	53	152	40	141	30	148	32
Sharks, skates and rays	1,261	110	1,300	106	1,313	91	1,314	90
Thornyheads	2,338	109	2,404	108	1,617	93	1,621	101
Other flatfish	72	61	102	55	101	59	98	51
Other groundfish	89	37	116	57	92	47	85	51
Total landings	69,789	121	81,622	117	107,512	115	85,530	111

Table 7.4: Total shoreside landings (metric tons) by species group of non-groundfish (N = number of EDC vessels with non-zero, non-NA responses)

Species group	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
California halibut	43	7	54	8	48	5	38	4
Coastal pelagics	3	33	4	26	24	30	34	30
Crab	2,383	72	2,303	71	2,560	87	2,050	76
Echinoderms	0	8	0	5	***	***	0	8
Pacific halibut	2	16	***	***	14	22	16	24
Pacific herring	0	6	48	12	1	11	0	5
Salmon	2	30	16	35	34	32	38	37
Sharks, skates and rays	2	27	29	42	10	53	21	41
Shrimp	5,709	34	7,515	40	12,808	42	11,738	39
Squid	186	62	112	48	23	44	24	42
Sturgeon	0	3	***	***	—	—	—	—
Tuna	103	18	138	15	59	9	101	17
Other shellfish	2	29	2	30	1	32	2	25
Other species	21	56	13	57	12	62	117	63
Total landings	8,456	115	10,238	115	15,621	114	14,178	119

7.3 Shoreside landings by species group

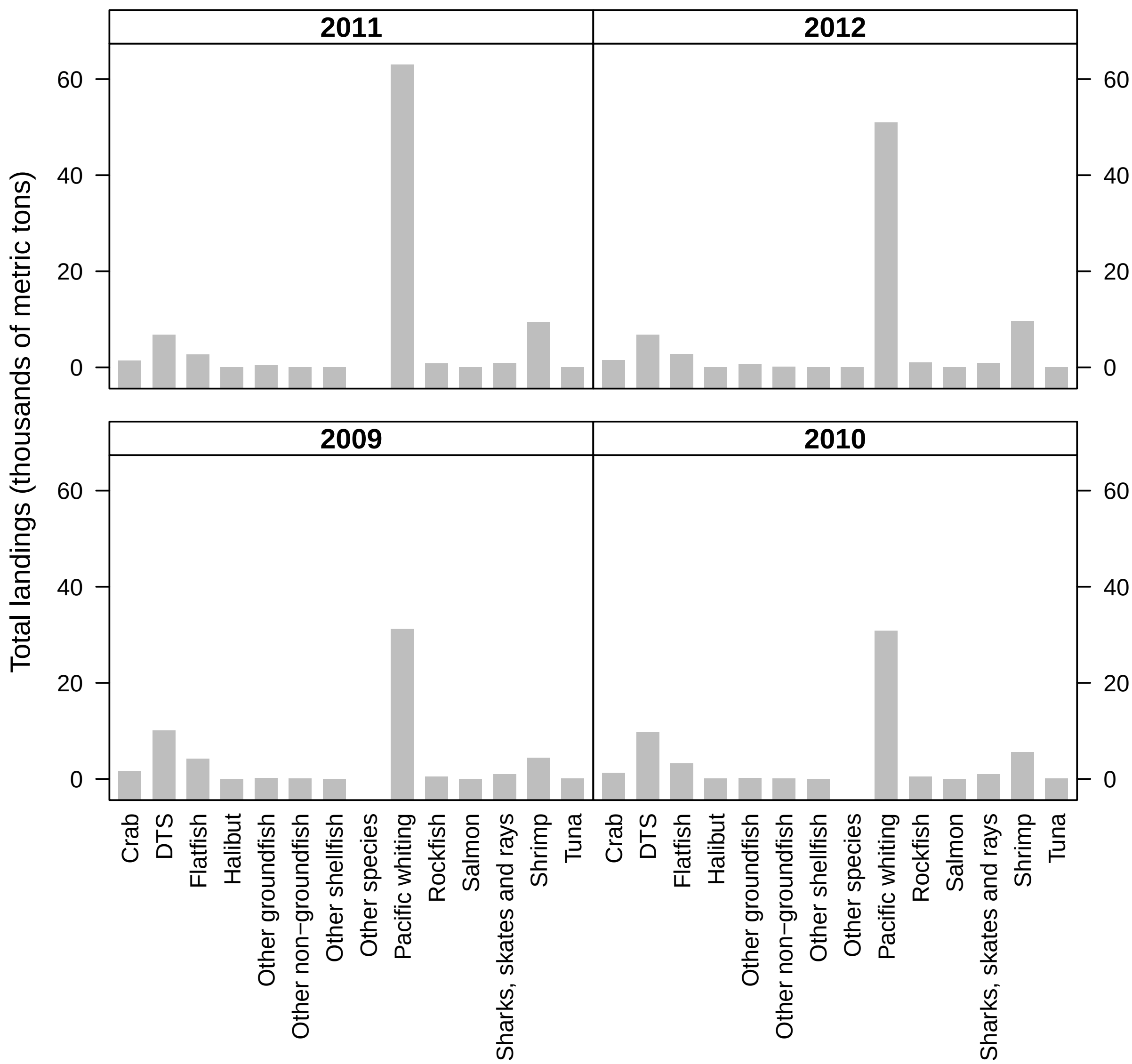

Figure 7.1: Total landings by species group (thousands of metric tons).

8 Revenues

There are several sources of earnings for vessels on the West Coast. The primary source is revenue from sale of fish. Ex-vessel revenue is available for all shoreside deliveries, but is not available for at-sea deliveries. EDC data are used for all at-sea delivery revenues. Additionally, the EDC has information about revenue from sale or lease of permits, quota shares, and quota pounds, and from other activities like chartering and research. The full suite of earnings sources can be found in Table 8.1.

In 2009-2011, participants were asked to provide the total revenue from chartering or research. Beginning in 2012, this category was replaced with two new categories, 1.) “West Coast chartering, research, or tendering”, and 2.)“Alaska chartering, research, or tendering”.

8.1 All revenue sources

Table 8.1: Average annual revenue. Annual average revenue (thousands of $) for all categories (N = number of EDC vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska shoreside landings and at-sea deliveries	$1,227	31	$1,321	31	$1,841	34	$1,836	28
At-sea deliveries	$345	20	$465	20	$576	18	$568	16
Lease of other permits	***	***	***	***	$142	6	***	***
Lease of quota pounds		0	***	***	$67	48	$73	41
Lease of quota shares		0		0	$60	11	$83	12
Lease of West Coast limited entry trawl permits	***	***	***	***	$82	7	$39	6
Leasing the vessel	—	—	—	—	—	—	***	***
Sale of other permits	$136	3	$85	3	$181	5	***	***
Sale of quota pounds	***	***	***	***	$190	17	$163	20
Sale of quota shares	***	***		0	***	***	***	***
Sale of West Coast limited entry trawl permits		0	$403	3	***	***	***	***
Salmon disaster payments	$26	16	$2	3	***	***		0
Shoreside deliveries	$404	126	$427	122	$666	127	$636	125
Other	$89	16	$117	9	$135	11	$103	8
Chartering or leasing the vessel	$117	11	$157	11	$180	13	—	—
Chartering, research, or tendering in Alaska	—	—	—	—	—	—	$303	3
Chartering, research, or tendering on the West Coast	—	—	—	—	—	—	$163	10
Average total revenue	$744	134	$828	130	$1,242	138	$1,156	132

8.2 Ex-vessel revenue

Table 8.2: Total ex-vessel revenue by species group from shoreside landings of groundfish (N=number of EDC vessels with non-zero, non-NA responses)

Species group	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Arrowtooth flounder	$753	91	$645	91	$493	83	$626	88
Dover sole	$7,995	107	$6,709	104	$6,878	90	$6,707	91
English sole	$160	102	$100	98	$76	70	$88	72
Lingcod	$164	113	$129	101	$411	86	$583	90
Pacific cod	$64	43	$86	42	$322	42	$521	28
Pacific whiting	$6,462	37	$9,184	44	$20,911	62	$19,706	66
Petrale sole	$3,114	107	$1,830	101	$2,486	73	$3,441	76
Rex sole	$365	109	$286	104	$272	81	$285	83
Rockfish	$1,099	121	$1,196	113	$1,695	104	$2,265	105
Sablefish	$12,957	118	$12,270	110	$18,134	109	$12,568	108
Sanddab	$255	53	$149	40	$173	30	$172	32
Sharks, skates and rays	$527	110	$614	106	$861	91	$1,038	90
Thornyheads	$2,508	109	$2,618	108	$2,043	93	$2,184	101
Other flatfish	$108	61	$149	55	$176	59	$179	51
Other groundfish	$25	37	$32	57	$28	47	$25	51
Total revenue	$36,557	121	$35,996	117	$54,959	115	$50,388	111

Table 8.3: Total ex-vessel revenue by species group from shoreside landings of non-groundfish species (N=number of vessels with non-zero, non-NA responses)

Species group	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
California halibut	$376	7	$466	8	$481	5	$388	4
Coastal pelagics	$0	33	***	***	$8	30	$3	30
Crab	$9,704	72	$9,565	71	$14,229	87	$14,762	76
Echinoderms	$0	8	***	***	***	***	$0	8
Pacific halibut	***	***	***	***	$151	22	***	***
Pacific herring	$0	6	***	***	$0	11	$0	5
Salmon	$0	30	$68	35	$91	32	$292	37
Sharks, skates and rays	$0	27	$1	42	$0	53	$1	41
Shrimp	$4,040	34	$5,568	40	$14,207	42	$12,540	39
Squid	$15	62	$9	48	$1	44	$1	42
Sturgeon	$0	3	$0	1	—	—	—	—
Tuna	$229	18	$346	15	$234	9	$343	17
Other shellfish	$3	29	$2	30	$1	32	$3	25
Other species	$2	56	$7	57	$3	62	$21	63
Total revenue	$14,380	115	$16,067	115	$29,665	114	$28,514	119

Table 8.4: Total ex-vessel revenue by species group in the at-sea fishery. Revenue data are only available at an annual basis and are not reported by species. It is assumed that all at-sea revenue is derived from Pacific whiting (N=number of vessels with non-zero, non-NA responses).

Species group	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Pacific whiting	$5,834,567	20	$8,807,537	20	$12,705,603	18	$9,591,051	16

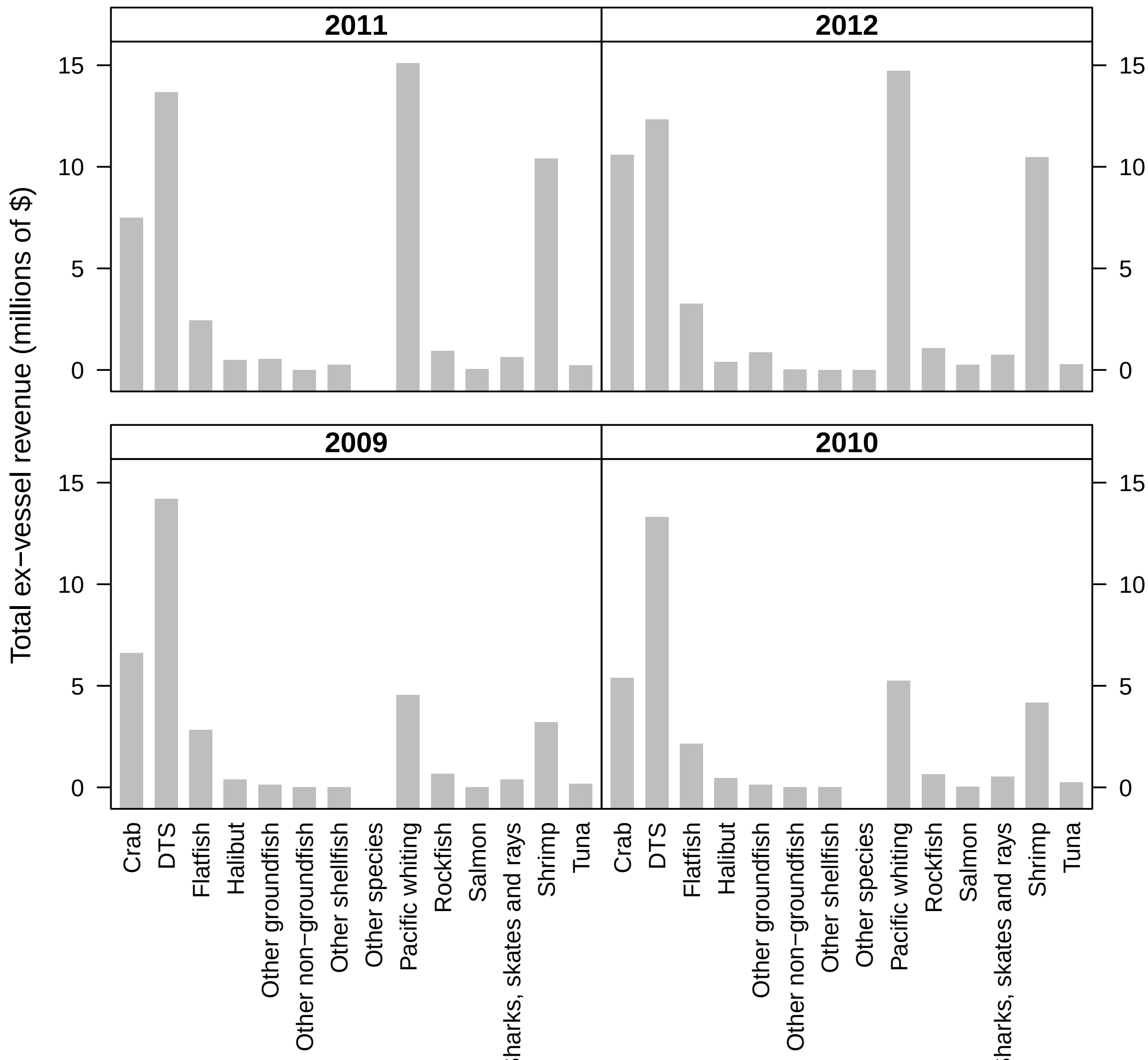

Figure 8.1: Total ex-vessel shoreside revenue (millions of $).

9 Costs

This section of the report describes the cost data that are collected on the EDC catcher vessel form. It reports on variable costs, fixed costs, and total costs, and how those costs are disaggregated to estimate the proportion of each cost that was incurred for West Coast fisheries.

For the purposes of the EDC, costs are divided into two categories, variable costs and fixed costs. Variable costs vary with the level of fishery participation, and generally include items such as fuel and crew payments. Fixed costs do not vary with the level of fishery participation, and generally include items such as vessel capital improvements. The designation of a cost as variable or fixed depends on many factors, including the relevant time horizon and use of the data. While some costs would clearly be considered fixed (e.g., the purchase of a new engine), others are more difficult to categorize as fixed versus variable. For the purposes of this report, we consider the costs listed in Tables 9.2, 9.3 and 9.4 to be fixed, and the costs listed in Table 9.1 to be variable. The EDC Program will continue to explore, and possibly improve, the categorization of these costs.

The cost section of the EDC form collects both "capitalized expenditures" and "expenses" for vessel improvements and maintenance, fishing gear, and processing equipment. This is because certain costs may be treated for tax accounting purposes as either capitalized or expensed. Capitalized expenditures are depreciated over a number of years. Expensed items are fully deducted as a cost for the year in which they occur. In an effort to reduce the reporting burden and errors, these data are collected as they are reported in the business' accounting system.

In order to conduct economic analyses of specific fisheries it is important to have costs broken out by fishery. For some costs, it may be feasible for participants to break out or track costs at the fishery level. However, for most costs this is impossible, or would require additional burden to do so. During the EDC form development process, a key issue was the determination of which costs could reasonably be broken out by fishery or groups of fisheries. Each cost item was assigned to one or more fishery-group category based on how they are commonly tracked by industry members: 1) used on West Coast fisheries only (West Coast Only); 2) used on the West Coast and in other fisheries (Shared); and 3) used in all fisheries (All) regardless of whether they are used on the West Coast.

Some costs that are required for economic analysis are not asked for on the EDC forms because they are available through other sources, or can be calculated through fish ticket or permit office data. These include fish landings taxes and fees.

Finally, there are a variety of costs that are associated with running a catcher vessel that are not requested on the form because it is difficult to determine the share of the cost associated with the vessel. These costs include items that can be used for activities other than fishing, or are too difficult to allocate to a particular vessel in a multi-vessel company. These expenses include office space, pickup trucks, storage of equipment, professional fees, and marketing. In general, the EDC forms attempt to capture costs that are directly related to vessel maintenance and fishing operations, and not costs that are related to activities or equipment off the vessel. For these reasons, the EDC aggregated measures of costs (variable costs, fixed costs, and total costs) underestimate the true costs of operating a business.

9.1 Variable Costs

Variable costs were collected for all West Coast activities, including chartering or research. Unlike fixed costs, variable costs are directly related to fishing operations, and therefore it was possible for vessels to separate expenses for activities on the West Coast from other activities. In all three years, the crew compensation made up the largest portion of total variable expenses, followed by captain compensation, and fuel and lubrication (Table 9.1). Together, these expenses made up 88.4% of all variable costs on the West Coast in 2012.

Table 9.1: Variable expenses. Average variable expenses on the West Coast for EDC vessels (thousands of $) (N = number of EDC vessels with non-zero, non-NA responses).

Expense category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Bait	$9.9	57	$10.8	55	$15.0	70	$17.3	69
Captain	$79.2	120	$83.7	117	$140.9	121	$141.8	115
Communication	$2.3	106	$2.6	101	$2.5	127	$2.4	123
Crew	$90.4	116	$98.9	113	$142.8	105	$154.5	97
Fishing association dues	$4.4	69	$4.4	66	$6.0	91	$7.6	84
Food	$5.6	112	$5.8	107	$6.3	102	$7.3	89
Freight	$0.8	14	$1.0	16	$2.5	20	$1.1	22
Fuel and lubrication	$52.7	130	$72.1	124	$80.7	131	$93.4	127
Ice	$6.7	94	$6.0	93	$6.0	98	$6.5	94
License fees	—	—	—	—	$3.3	126	$3.8	123
Observers	$5.5	12	$6.8	15	$3.2	102	$5.7	102
Offloading	$6.7	42	$7.6	41	$7.4	53	$11.3	38
Supplies	$9.0	94	$10.6	87	$6.0	97	$6.8	97
Travel	$2.1	31	$2.2	30	$1.9	24	$2.2	24
Trucking of fish		0	$3.5	3	$5.2	5	$4.5	6
Average total variable costs	$234.5	130	$267.2	126	$360.5	132	$384.2	127

9.2 Fixed costs

9.2.1 Costs on vessel and on-board equipment, fishing gear, and processing equipment

Survey participants are asked to provide capitalized expenditures (Table 9.2) and expenses (Table 9.3) for the survey year associated with the following categories:

- New and used vessel and on-board equipment: Includes all electronics, safety equipment, and machinery not used to harvest fish, but not fishing gear or processing equipment
- Fishing gear: Includes nets, doors, traps, pots, cables, and fishing machinery used for the West Coast fisheries
- Processing Equipment: Includes any equipment used to process or head and gut fish on-board the vessel

Table 9.2: Capitalized expenditures on vessel and on-board equipment, fishing gear, and processing equipment. Average capitalized expenditures (thousands of $) on vessel and on-board equipment, fishing gear, and processing equipment (N = number of EDC vessels with non-zero, non-NA responses).

Expenditure category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Vessel and on-board equipment in all fisheries	$84.4⁝	75	$55.5⁝	73	$86.2⁝	98	$141.4⁝	89
Fishing gear shared between the West Coast and other fisheries	$75.5⁚	17	$65.9⁝	20	$93.1⁚	25	$91.1⁚	16
Fishing gear used only on the West Coast	$26.2⁝	67	$25.8⁝	62	$41.5⁝	91	$27.1⁝	79
Processing equipment shared between the West Coast and other fisheries		0		0	***	***		0
Processing equipment used only on the West Coast	***	***	***	***	$3.7⁝	4	***	***
Average total capitalized expenditures	$98.2⁝	97	$78.5⁝	91	$120.5⁝	121	$160.2⁝	101

Table 9.3: Expenses on vessel and on-board equipment, fishing gear, and processing equipment. Average expenses (thousands of $) on vessel and on-board equipment, fishing gear, and processing equipment (N = number of EDC vessels with non-zero, non-NA responses).

Expense category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Vessel and on-board equipment	$70.2	119	$65.2	113	$93.3	115	$94.3	112
Fishing gear repair and maintenance shared between the West Coast and other fisheries	$60.2	29	$58.0	30	$104.1	30	$121.6	25
Fishing gear repair and maintenance used only on the West Coast	$22.0	104	$22.9	95	$25.4	106	$36.2	102
Processing equipment shared between the West Coast and Alaska		0	***	***	***	***	$13.7	3
Average total costs on vessel and on-board equipment, fishing gear, and processing equipment	$94.6	131	$88.9	127	$125.9	132	$135.5	128

9.2.2 Other fixed costs

Table 9.4: Other fixed expenses. Average fixed expenses (thousands of $) on all other categories (N = number of EDC vessels with non-zero, non-NA responses).

Expense category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Insurance premium payments	$35.1	120	$36.6	119	$38.3	128	$38.2	122
Lease of vessel	$86.4	12	$108.7	10	$95.2	10	$65.2	8
Moorage	$5.7	129	$6.3	123	$6.1	135	$6.7	128
Average total other fixed costs	$45.3	132	$48.2	129	$48.7	137	$46.8	129

Table 9.5: Depreciation. Average depreciation (thousands of $) taken during the survey year (N = number of EDC vessels with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Depreciation	$86.7⁝	85	$76.5⁝	80	$109.8⁝	95	$104.2⁝	87

9.3 Fixed costs on the West Coast only

As described above, not all costs reported on the EDC forms are for West Coast only operations. Therefore, cost disaggregation was required both to estimate total costs and net revenues on the West Coast and for individual fisheries. Research is currently being conducted to establish a method for allocating vessel level costs to the fishery level. This research explores allocating costs based on three variables, ex-vessel revenue, landings weight (including at-sea deliveries), and days at sea. The analyses below use a "mixed method" which chooses for each cost category the variable for disaggregation that is conceptually consistent with prior expectations from economic theory. A full description of the cost disaggregation method and a sensitivity analysis comparing cost disaggregation by the three variables, and the "mixed" method can be found in the appendix.

Calculation of the costs on vessel and on-board equipment, fishing gear, and processing equipment on the West Coast required first allocating a share of the total shared capitalized expenditures and expenses to the West Coast and then summing the capitalized expenditures and expenses (Table 9.6). The same cost disaggregation methods were also used to calculate the West Coast share of other fixed costs (Table 9.7).

Table 9.6: West Coast costs on vessel and on-board equipment, fishing gear, and processing equipment. Average capitalized expenditures and expenses (thousands of $) on vessel and on-board equipment, fishing gear, and processing equipment vessel and on-board equipment, fishing gear, and processing equipment on the West Coast (N = number of EDC vessels with non-zero, non-NA responses).

Cost category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Vessel and on-board equipment	$70.0⁝	122	$57.0⁝	118	$108.9⁝	120	$137.6⁝	121
Fishing gear	$44.3⁝	125	$45.7⁝	119	$82.2⁝	127	$69.9⁝	122
Processing equipment	***	***	***	***	$16.1⁝	6	$10.6⁚	3
Average total costs on vessel and on-board equipment, fishing gear, and processing equipment	$109.5⁝	130	$99.5⁝	124	$180.2⁝	131	$198.5⁝	127

Table 9.7: West Coast other fixed expenses. Average other fixed expenses (thousands of $) on the West Coast (N = number of EDC vessels with non-zero, non-NA responses).

Expense category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Insurance premium payments (hull and machinery, protection and indemnity, and pollution insurance)	$23.8	117	$25.0	115	$26.6	122	$28.6	119
Lease of vessel	$22.6	12	$48.1	10	$35.5	10	$30.0	7
Moorage	$3.8	127	$4.1	120	$4.3	131	$5.1	125
Average total other fixed costs	$27.2	130	$30.6	126	$31.6	132	$33.7	126

9.4 Summary of West Coast costs

Table 9.8: Summary of costs on the West Coast. Average capitalized expenditures and expenses (thousands of $) on vessel and on-board equipment, fishing gear, and processing equipment, other fixed costs, and all variable costs on the West Coast (N = number of EDC vessels with non-zero, non-NA responses).

Cost category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Total costs on vessel and on-board equipment, fishing gear, and processing equipment	$109.5	130	$99.5	124	$169.5	131	$194.5	127
Total variable costs	$234.5	130	$267.2	126	$360.5	132	$384.2	127
Total other fixed costs	$27.2	130	$30.6	126	$31.6	132	$33.7	126
Average total costs	$371.1	130	$395.7	126	$556.1	133	$612.1	127

9.5 Quota and permit costs on the West Coast

Table 9.9: Quota and permit costs. Average costs related to lease and purchase of quota shares, quota pounds, and limited entry groundfish permits (N = number of EDC vessels with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Purchase of trawl limited entry permit	$28,934⁝	8	***	***	***	***	$133˙	3
Lease of trawl limited entry permit	$17,693⁚	8	$14,119⁚	8	$27,405⁝	10	$19,284⁝	9
Purchase of fixed gear limited entry permit		0		0	***	***		0
Lease of fixed gear limited entry permit		0		0	***	***	$101,363⁚	5
Purchase of quota shares		0		0	***	***	***	***
Lease of quota shares		0	***	***	$22,072⁚	3	$10,622⁚	4
Purchase of quota pounds		0	***	***	$16,659⁝	16	$17,614⁝	15
Lease of quota pounds	$19,112˙	3	$63,480⁚	3	$88,224⁝	63	$67,748⁝	58
Average total quota and permit costs	$22,650⁝	19	$33,377⁝	21	$102,424⁝	79	$63,182⁝	78

9.6 Landings taxes and buyback fees

Costs associated with landings taxes were not requested on the catcher vessel forms because it can be calculated based on gross shoreside landings information. These costs were calculated according to the table provided on page 14 of Leonard and Watson (2011)[1] . Unlike in the description in Leonard and Watson (2011), moorage was requested on the EDC forms.

Table 9.10: Landings taxes. Average taxes ($) paid by vessels (N = number of EDC vessels with non-zero, non-NA responses).

Expense	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Buyback taxes	$15,286.9	123	$16,739.5	120	$26,712.7	126	$20,936.2	122
Washington fish taxes	$3,139.1	19	$3,050.6	24	$5,123.8	32	$5,543.1	25
Average total taxes	$15,771.8	123	$17,349.6	120	$27,793.4	127	$22,072.0	122

[1] Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

10 Net Revenue and Economic Profit

Net returns from operating a vessel are presented in this section. The level of net returns not only indicates whether a vessel is a viable ongoing business, but also the size of net benefit that is created from society's perspective. Two different measures of net returns are examined. They differ in the types of costs that are taken into account, and therefore, their interpretation and use. The first is a monetary, financial measure that attempts to track a vessel's net cash flow, which we call *net revenue*. It is calculated as revenue minus monetary costs. The only costs that are accounted for are those that are actually paid or associated with a financial transaction. The second measure attempts to track the broader economic performance of a vessel and includes all costs regardless of whether there is a cash or financial transaction. Costs are measured by their true resource costs, which may or may not be equal to monetary outlays. This measure is called *economic profit*[1]. The distinction between the two measures is probably most easily understood through a few examples relevant to fisheries.

Labor costs for the net revenue measure are the total payments to the crew and captain. If work is performed that is not paid for, then it is not included as a cost. This commonly occurs in commercial fishing when the owner of a vessel is also the captain, but does not does not draw a captain's wage. In this case, the net revenue is higher than it would be if the captain drew a wage or hired a captain. In the end, the vessel owner-captain is not necessarily any worse off since s/he is the residual claimant to the net revenue. However, the net revenue would be higher than a comparable vessel that hired a captain.[2] Economic profit, on the other hand, accounts for the cost associated with an owner's time that is used as a captain. This is called an opportunity cost in the economics literature[3], and is typically approximated by the wage of a comparably productive captain[4].

A second example of the difference between net revenue and economic profit is the treatment of vessel capital costs. Again, net revenue only includes costs that are actually paid, which includes items such as vessel repair, maintenance, and upgrades. Economic profit would also include the opportunity cost of owning the vessel, a capital asset. By owning a vessel, the owner foregoes other investment

1 Whitmarsh D., James C., Pickering H., Neiland A. 2000. The profitability of marine commercial fisheries: a review of economic information needs with particular reference to the UK. Marine Policy, Vol. 24(3), pp. 257-263

2 The same would also be true when a vessel owner does not receive a wage for work performed to repair or maintain a vessel or gear.

3 See Boardman, Anthony, David Greenberg, and Aidan Vining. Cost-Benefit Analysis: Concepts and Practice, Prentice Hall, NJ. 2000. pp. 31-32.

4 A more accurate measure would be the owner-captain's most valued wage off the vessel.

opportunities that would provide a rate of return. This is called the opportunity cost of capital, and is typically approximated by the market rate of return associated with businesses of comparable risk, multiplied by the market value of the vessel.

Both net revenue and economic profit are useful measures for fishery management. Net revenue attempts to measure the annual financial well-being of vessel operations. It can be used to determine if there is a monetary gain or loss, or how changes in fishery management may affect the level of monetary gain or loss. Economic profit is a better indicator of the long-term viability of fishery operations since it includes all costs, and values the costs at their opportunity cost. It can be used to estimate whether there are incentives or disincentives to invest in capital, or enter and leave the fishery. It is also a better measure of the net benefit of the fishery to the nation.

Calculations of net revenue are included in this report. The cost categories used in net revenue, based on those reported in the EDC forms, are discussed below. Currently, calculations of economic profit are beyond the scope of the report. Economic profit relies on opportunity costs, which may be different from some of the costs reported on the EDC forms, so additional methods and analyses are required. The EDC Program economists will continue to work on developing measures of economic profit so that it may be included in future reports.

Net revenue is calculated two ways: using only variable costs, and using variable costs plus fixed costs (total costs)[5]. The first calculation is called *variable cost net revenue*, while the second is called *total cost net revenue*. Variable cost net revenue is useful to examine changes in fishery operations that are not so great as to affect fixed costs. For example, the cost of fishing an additional day, or catching an additional metric ton of fish, is better represented by only considering variable costs. Total cost net revenue is usually a better summary measure of financial gain or loss for an entire year, season, or fishery.

There are several caveats associated with the net revenue calculations in this report. As noted in the Section 9, there are a variety of costs that are associated with running a vessel that are not requested by the EDC form because it is difficult to determine the share of the cost associated with the vessel. These costs include items that can be used for activities other than fishing, or are too difficult to allocate to a particular vessel in a multi-vessel company. These expenses include office space, vehicles and transport trucks, storage of equipment, professional fees, and marketing. In general, the EDC forms attempt to capture only costs that are directly related to vessel maintenance and fishing operations, and not costs that are related to activities or equipment off the vessel. Therefore, the EDC calculated net revenue is an overestimate of the true net revenue. The difference is likely much greater for total cost net revenue than variable cost net revenue since most of the excluded costs are fixed costs.

Another caveat is that the EDC forms do not collect information about income taxes or financing costs. This has several implications. The first is that these costs are not included in the net revenue calculations. Therefore, net revenue is greater than it would be otherwise. The second is that in lieu

[5] See Section 9 for a more complete discussion of variable and fixed costs used in this report

of financing information (principal and interest payments), EDC total cost net revenue uses the total costs associated with vessel and gear purchases, repair, maintenance and improvements. For example, if a new engine is purchased, the total cost of the engine is used, even though the actual cash outlay, if it were financed, would only be the principal and interest payments made that year. It is likely that many larger capital costs, and perhaps some operating costs, are financed. This would mean that the actual cash outlays in a particular year for those items would be less than what is used in the EDC for the net revenue calculation. This may balance out over time, because previously financed or purchased capital and equipment are also not included, except for the year in which they are purchased[6]. Total cost net revenue is expected to be representative of actual total cost net revenue only when averaged over many years and across vessels because relatively large capital costs occur periodically.

10.1 Net revenue for all West Coast fishing activities

Average net revenue is calculated for all activities on the West Coast for EDC vessels, and it is reported by fishery for EDC vessels.

West Coast revenue includes all revenue from at-sea deliveries and shoreside landings. The variable and fixed costs do not include costs related to acquiring limited entry permits, quota shares, or quota pounds.

$$\text{Variable cost net revenue} = \text{West Coast revenue} - \text{West Coast variable costs}$$

$$\text{Total cost net revenue} = \text{West Coast revenue} - (\text{West Coast variable costs} + \text{West Coast fixed costs})$$

Table 10.1: Revenues and costs on permits and quota. Average revenues and costs (thousands of $) from sale, lease, and purchase of limited entry groundfish permits, quota pounds, and quota shares on the West Coast (N = number of EDC vessels with non-zero, non-NA responses).

Type	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Limited entry permit revenues	***	***	309.3	4	114.2	11	195.0	8
Limited entry permit costs	20.3	23	59.6	24	140.8	17	38.1	18
Quota pounds revenues	***	***	334.0	3	103.7	64	102.2	63
Quota pounds costs	19.1	3	48.1	4	77.7	75	59.7	71
Quota shares revenues	***	***	—	—	64.2	13	77.0	13
Quota shares costs	—	—	***	***	***	***	10.8	5

6 At best it is just a partial balancing out because the interest payments are not accounted in the EDC data

Table 10.2: West Coast average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) on the West Coast. Fixed costs include capitalized expenditures, capital expenses, and other fixed costs (N = number of EDC vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$422.7	130	$473.3	126	$724.3	132	$684.7	127
(Variable costs)	($229.8)	130	($262.2)	126	($355.0)	132	($376.9)	127
Variable cost net revenue	$192.9	130	$211.1	126	$369.3	132	$307.9	127
(Fixed costs)	($135.1)	130	($126.7)	126	($197.4)	132	($224.4)	127
Total cost net revenue	$57.8	130	$84.4	126	$171.9	132	$83.5	127

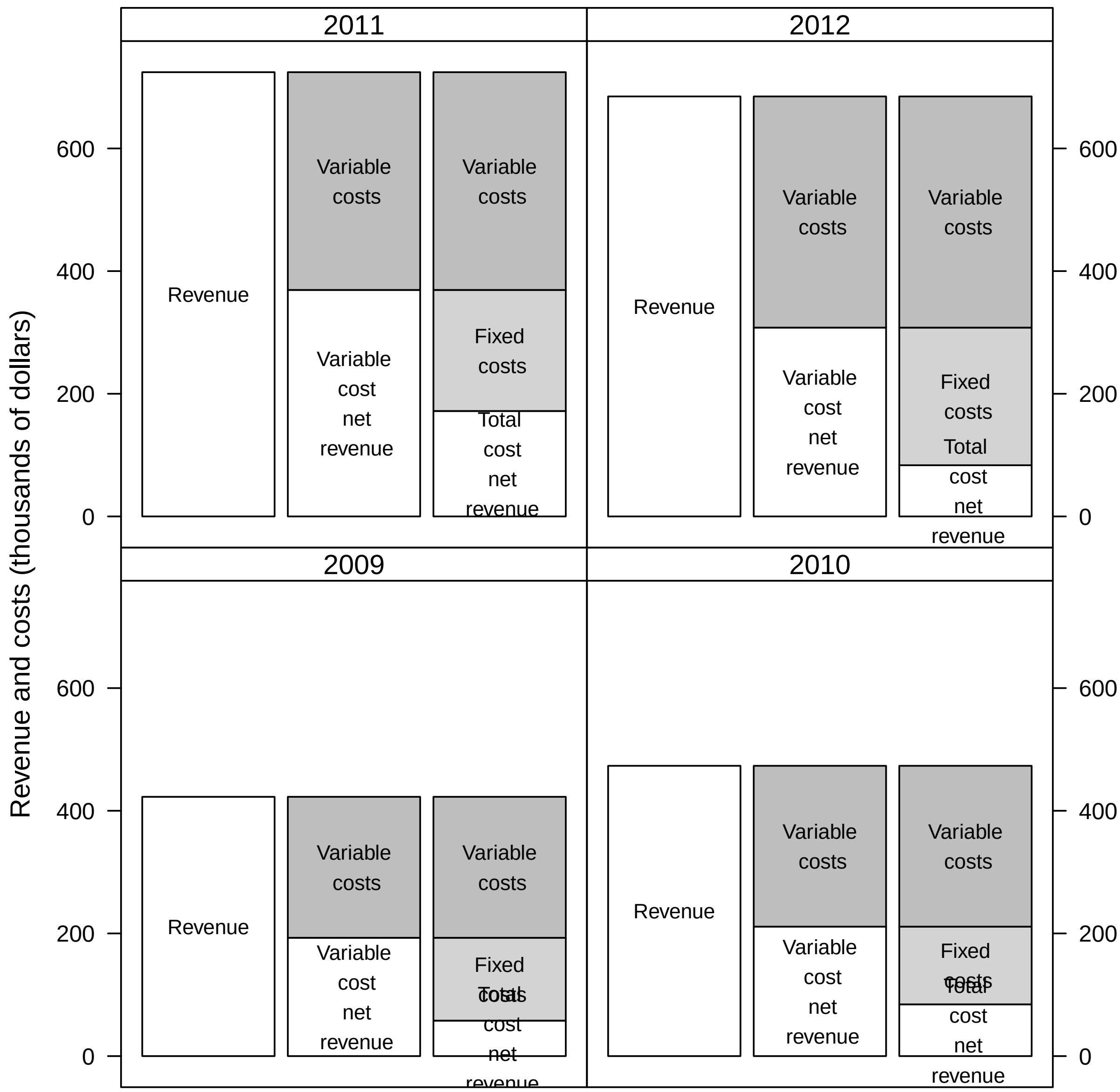

Figure 10.1: West Coast average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue on the West Coast. Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

10.2 Net revenue for West Coast catch share fisheries, crab, shrimp, and other fisheries

Table 10.3: At-sea Pacific whiting fishery average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) in the At-sea Pacific whiting fishery (N = number of EDC vessels with non-zero, non-NA responses). Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$291.7	20	$440.4	20	$705.9	18	$574.5	16
(Variable costs)	($122.8)	20	($186.3)	20	($269.2)	18	($320.4)	16
Variable cost net revenue	$168.9	20	$254.0	20	$436.6	18	$254.1	16
(Fixed costs)	($115.0)	20	($92.4)	20	($184.3)	18	($177.1)	16
Total cost net revenue	$54.0	20	$161.6	20	$252.4	18	$77.0	16

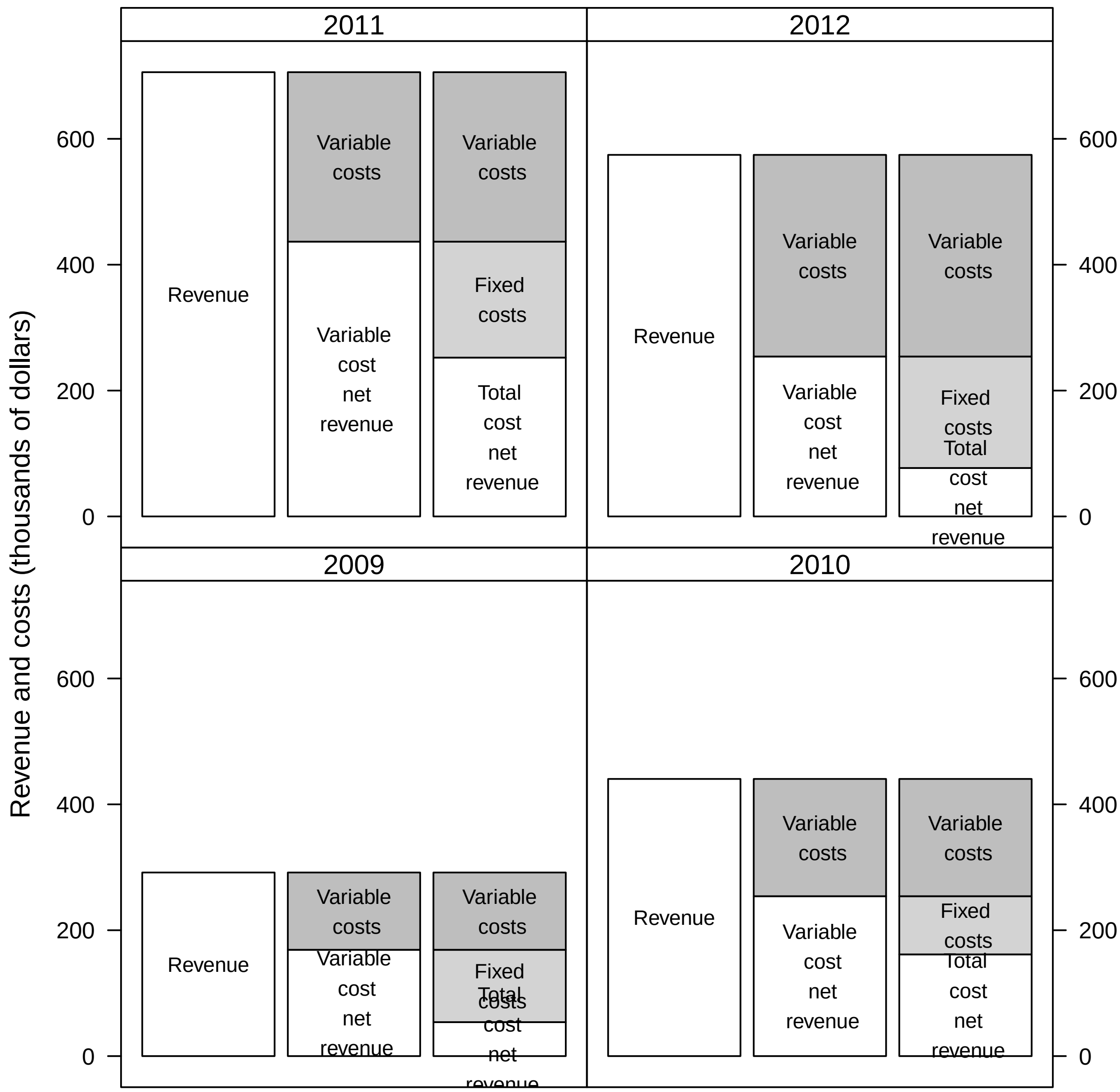

Figure 10.2: At-sea Pacific whiting fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in the at-sea Pacific whiting fishery.

Table 10.4: Shoreside Pacific whiting fishery average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) in the Shoreside Pacific whiting fishery (N = number of EDC vessels with non-zero, non-NA responses). Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$188.1	35	$269.9	35	$823.1	26	$838.1	24
(Variable costs)	($102.6)	35	($144.1)	36	($367.9)	26	($443.6)	24
Variable cost net revenue	$85.4	35	$118.2	36	$455.2	26	$394.5	24
(Fixed costs)	($119.1)	35	($100.7)	36	($307.6)	26	($346.2)	24
Total cost net revenue	-$33.6	35	$17.6	36	$147.6	26	$48.3	24

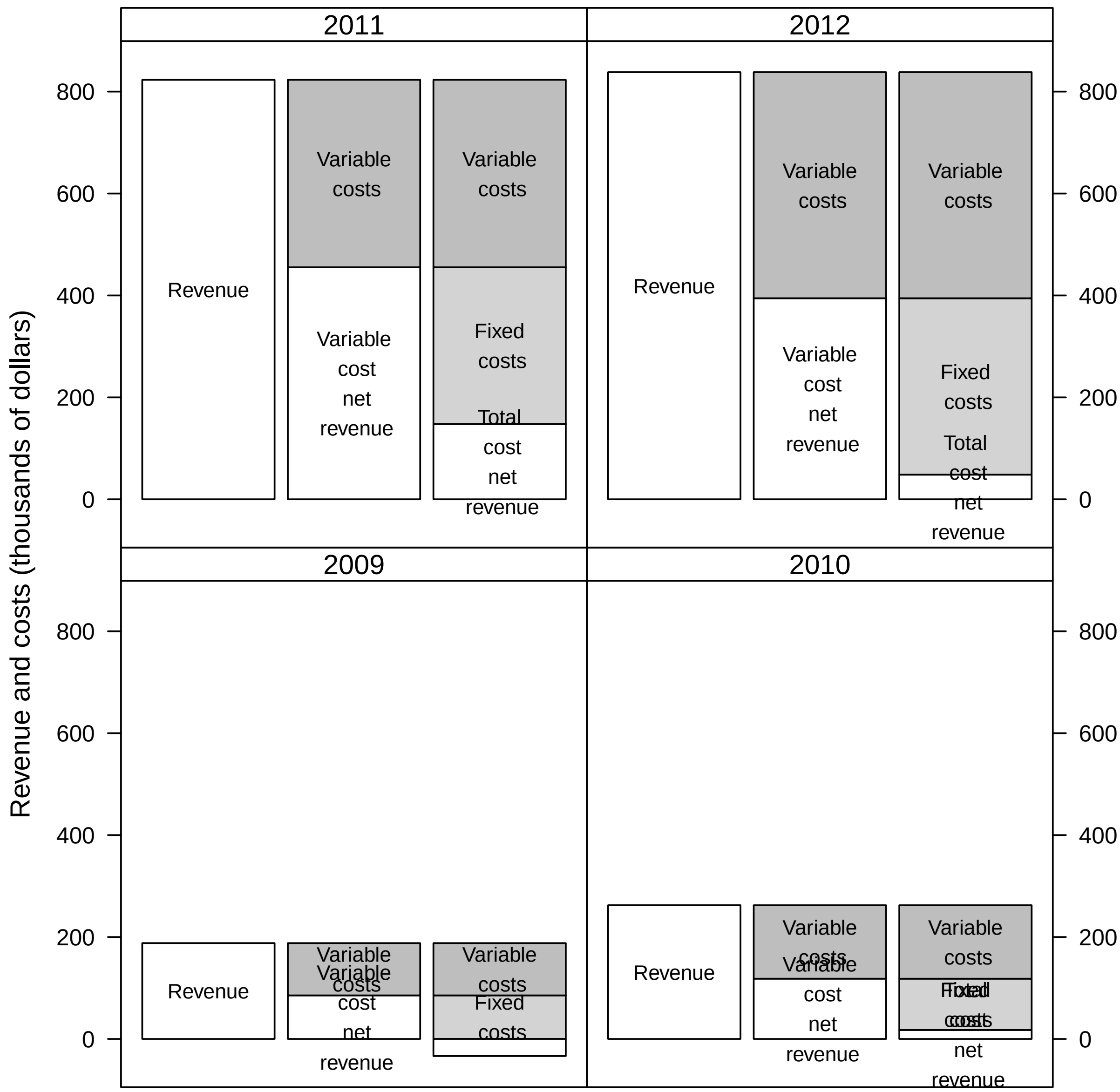

Figure 10.3: Shoreside Pacific whiting fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in the shoreside Pacific whiting fishery.

Table 10.5: DTS trawl with trawl endorsement fishery average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) in the DTS trawl with trawl endorsement fishery (N = number of EDC vessels with non-zero, non-NA responses). Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$248.3	99	$238.4	92	$311.0	63	$271.7	58
(Variable costs)	($135.2)	99	($138.3)	92	($171.1)	63	($152.2)	58
Variable cost net revenue	$113.1	99	$100.1	92	$139.9	63	$119.5	58
(Fixed costs)	($67.1)	99	($63.4)	92	($57.7)	63	($82.7)	58
Total cost net revenue	$46.0	99	$36.7	92	$82.2	63	$36.9	58

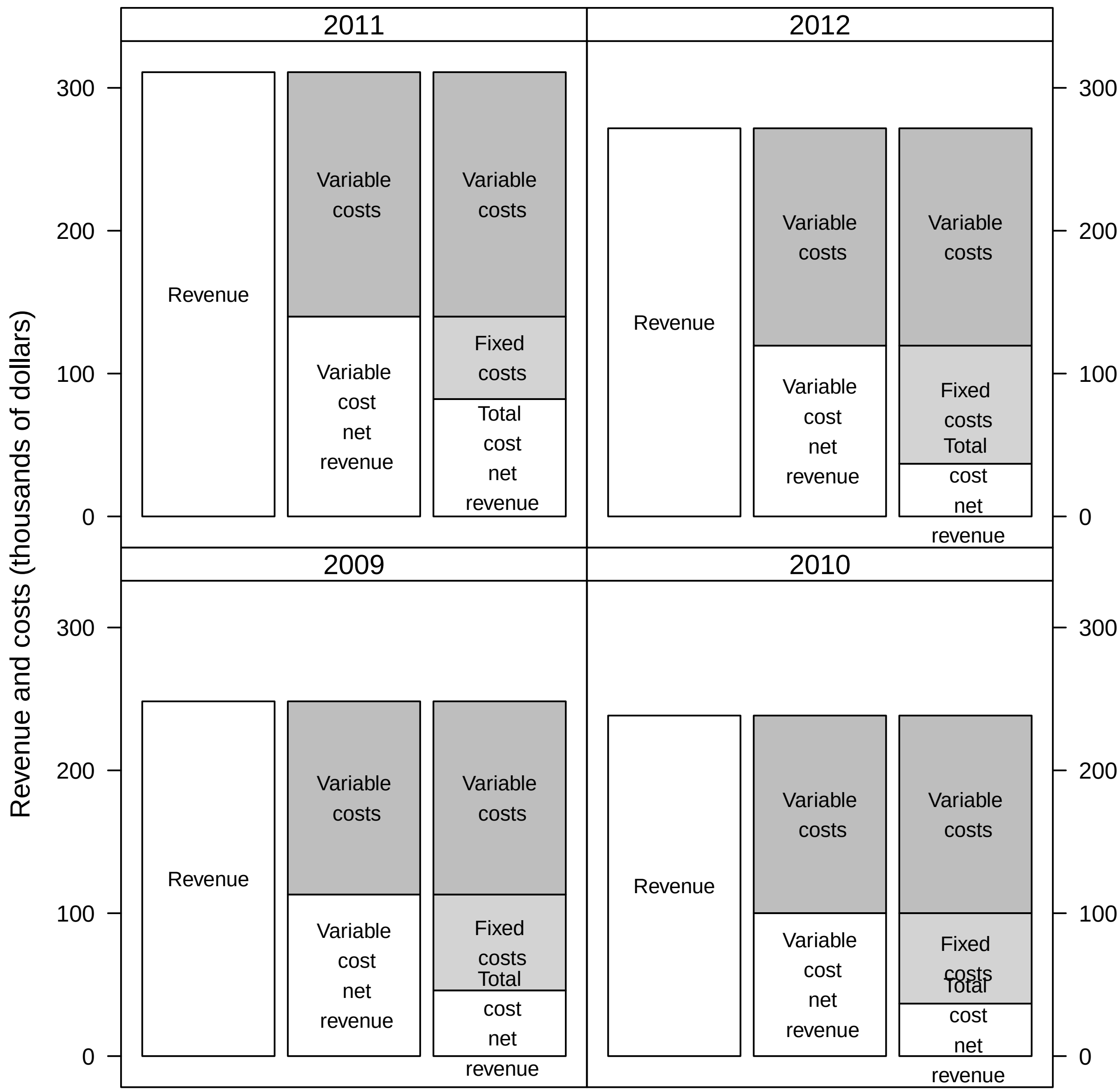

Figure 10.4: DTS trawl with trawl endorsement fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in the DTS trawl with trawl endorsement fishery.

Table 10.6: Non-whiting, non-DTS trawl with trawl endorsement fishery average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) in the Non-whiting, non-DTS trawl with trawl endorsement fishery (N = number of EDC vessels with non-zero, non-NA responses). Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$49.6	78	$40.1	68	$99.9	47	$151.7	50
(Variable costs)	($33.0)	78	($26.3)	68	($56.8)	48	($86.0)	50
Variable cost net revenue	$16.5	78	$13.8	68	$41.0	48	$65.7	50
(Fixed costs)	($14.0)	78	($12.1)	68	($16.5)	48	($31.9)	50
Total cost net revenue	$2.5	78	$1.6	68	$24.5	48	$33.8	50

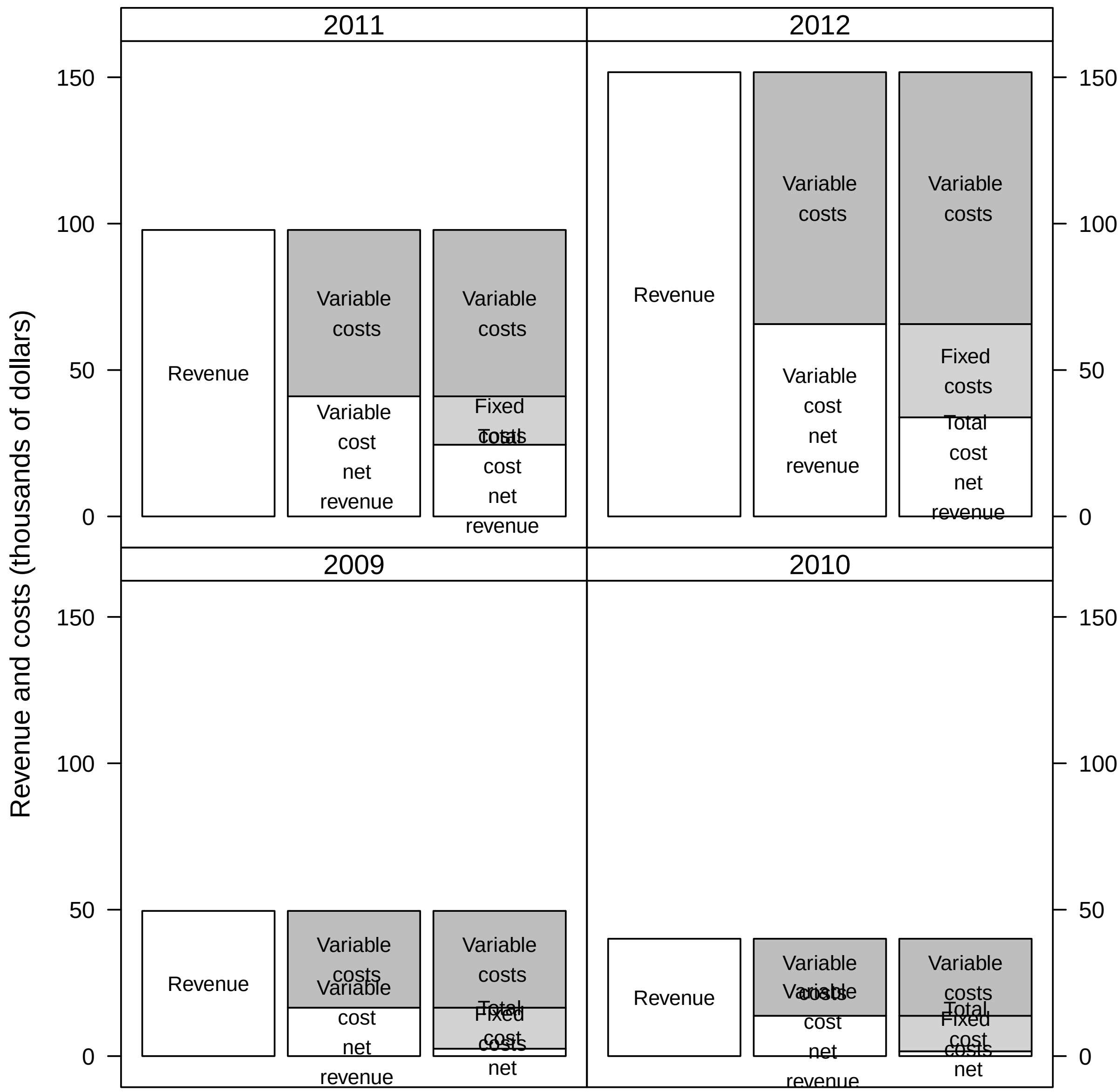

Figure 10.5: Non-whiting, non-DTS trawl with trawl endorsement fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in the non-DTS trawl with trawl endorsement fishery.

Table 10.7: Groundfish fixed gear with trawl endorsement fishery average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) in the Groundfish fixed gear with trawl endorsement fishery (N = number of EDC vessels with non-zero, non-NA responses). Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$61.4	5	$160.8	6	$271.4	26	$194.6	27
(Variable costs)	($29.8)	5	($65.7)	6	($125.0)	26	($100.0)	27
Variable cost net revenue	$31.5	5	$95.1	6	$146.4	26	$94.6	27
(Fixed costs)	($21.0)	5	($22.1)	6	($109.1)	26	($63.2)	27
Total cost net revenue	$10.5	5	$73.0	6	$37.2	26	$31.4	27

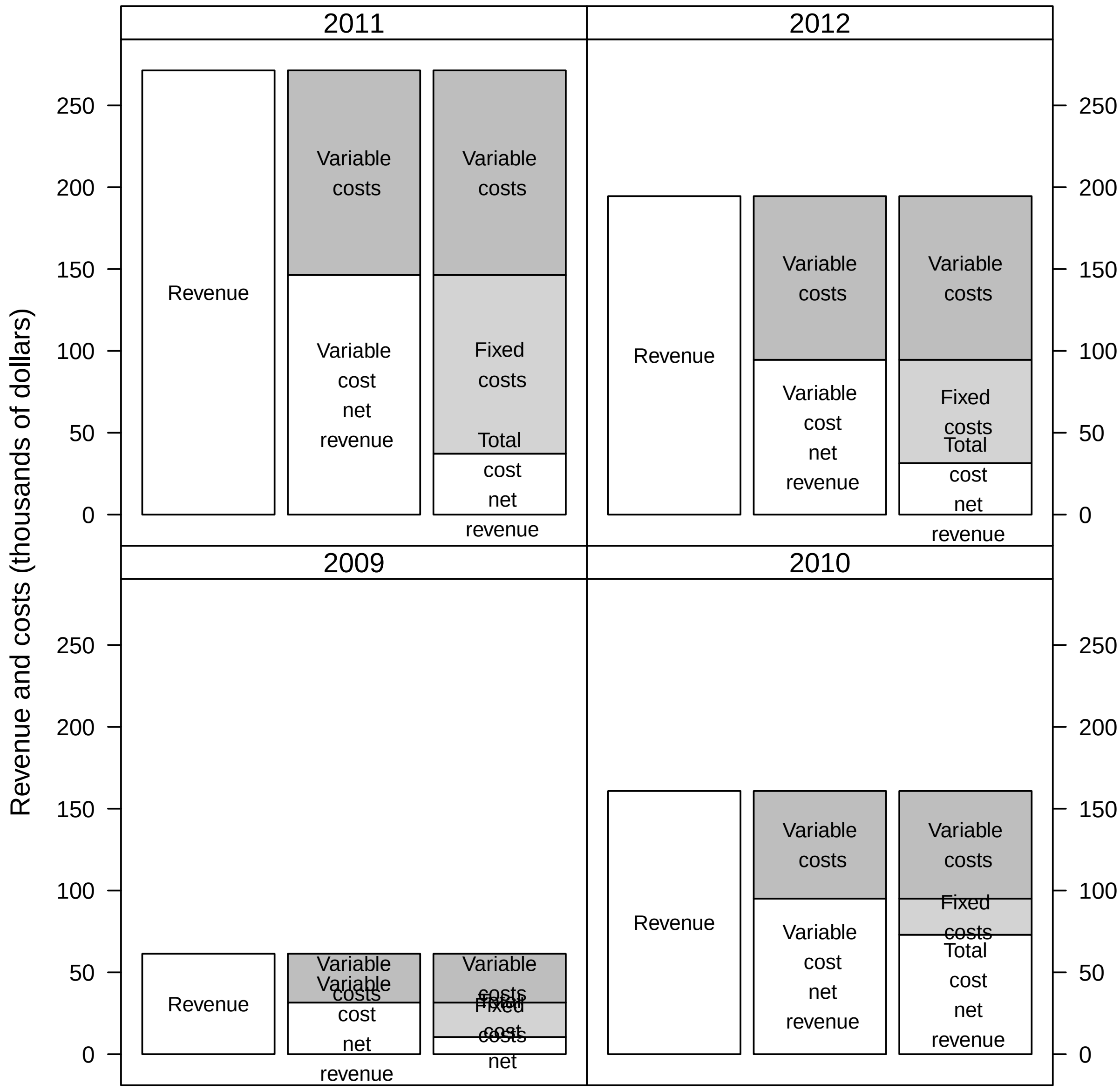

Figure 10.6: Groundfish fixed gear with trawl endorsement fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in the groundfish fixed gear with trawl endorsement fishery.

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Table 10.8: Groundfish fixed gear with fixed gear endorsement fishery average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) in the Groundfish fixed gear with fixed gear endorsement fishery (N = number of EDC vessels with non-zero, non-NA responses). Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$211.3	4	$253.9	3	$215.5	8	$167.0	10
(Variable costs)	($131.9)	4	($179.7)	3	($85.7)	8	($89.2)	10
Variable cost net revenue	$79.5	4	$74.1	3	$129.8	8	$77.7	10
(Fixed costs)	($33.0)	4	($35.6)	3	($33.3)	8	($44.8)	10
Total cost net revenue	$46.5	4	$38.5	3	$96.5	8	$32.9	10

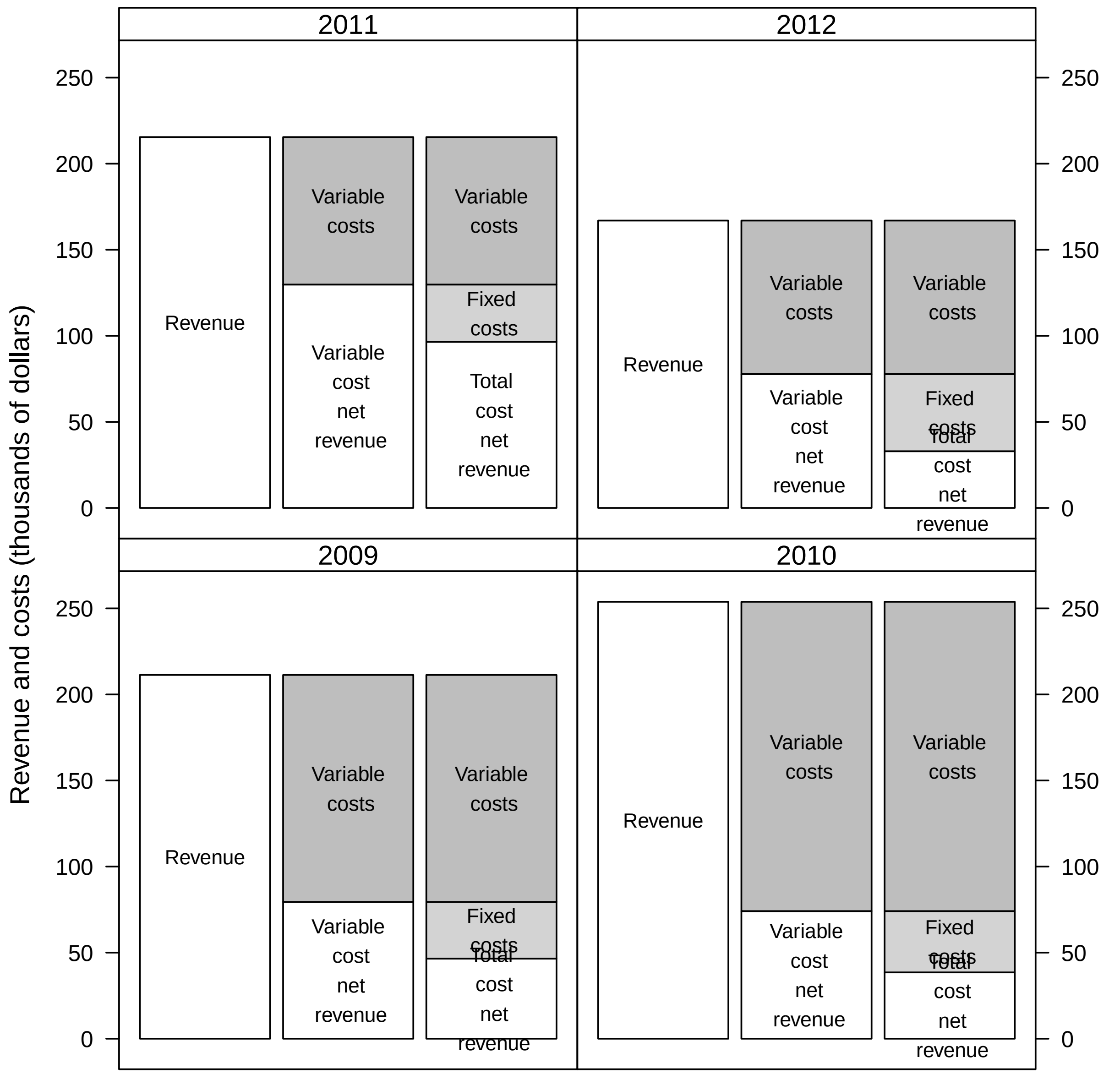

Figure 10.7: Groundfish fixed gear with trawl endorsement fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in the groundfish fixed gear with fixed gear endorsement fishery.

Table 10.9: Crab fishery average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) in the Crab fishery (N = number of EDC vessels with non-zero, non-NA responses). Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$169.2	56	$165.4	57	$218.9	65	$242.9	61
(Variable costs)	($95.6)	56	($96.6)	57	($119.3)	65	($138.8)	61
Variable cost net revenue	$73.5	56	$68.8	57	$99.6	65	$104.1	61
(Fixed costs)	($32.4)	56	($29.7)	57	($56.1)	65	($85.2)	61
Total cost net revenue	$41.1	56	$39.1	57	$43.5	65	$18.9	61

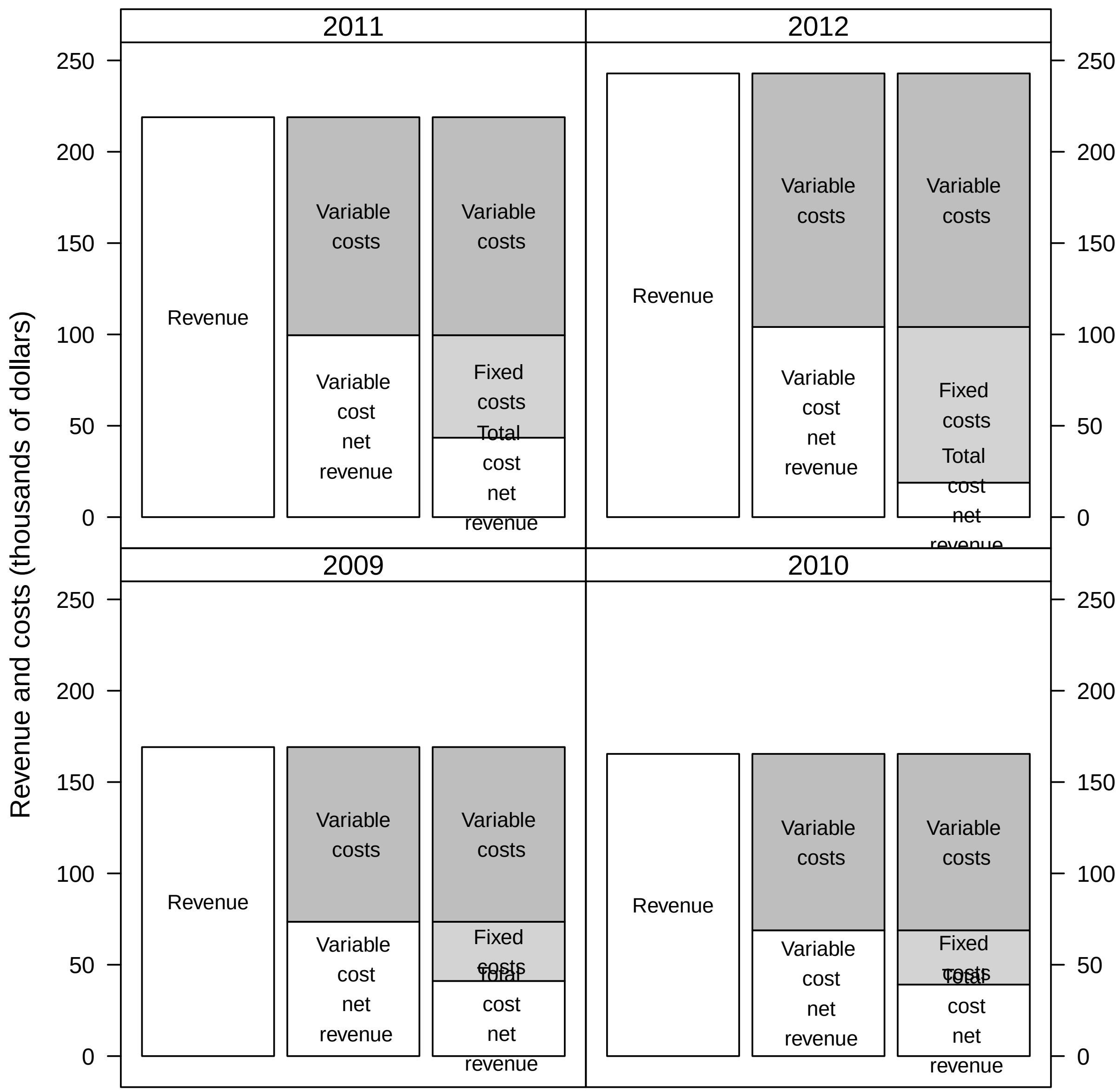

Figure 10.8: Crab fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in the crab fishery.

Table 10.10: Shrimp fishery average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) in the Shrimp fishery (N = number of EDC vessels with non-zero, non-NA responses). Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$111.7	31	$154.7	36	$346.5	41	$322.3	39
(Variable costs)	($58.0)	31	($86.9)	36	($176.3)	41	($176.0)	39
Variable cost net revenue	$53.7	31	$67.8	36	$170.2	41	$146.3	39
(Fixed costs)	($41.3)	31	($52.2)	36	($86.5)	41	($92.0)	39
Total cost net revenue	$12.4	31	$15.6	36	$83.7	41	$54.3	39

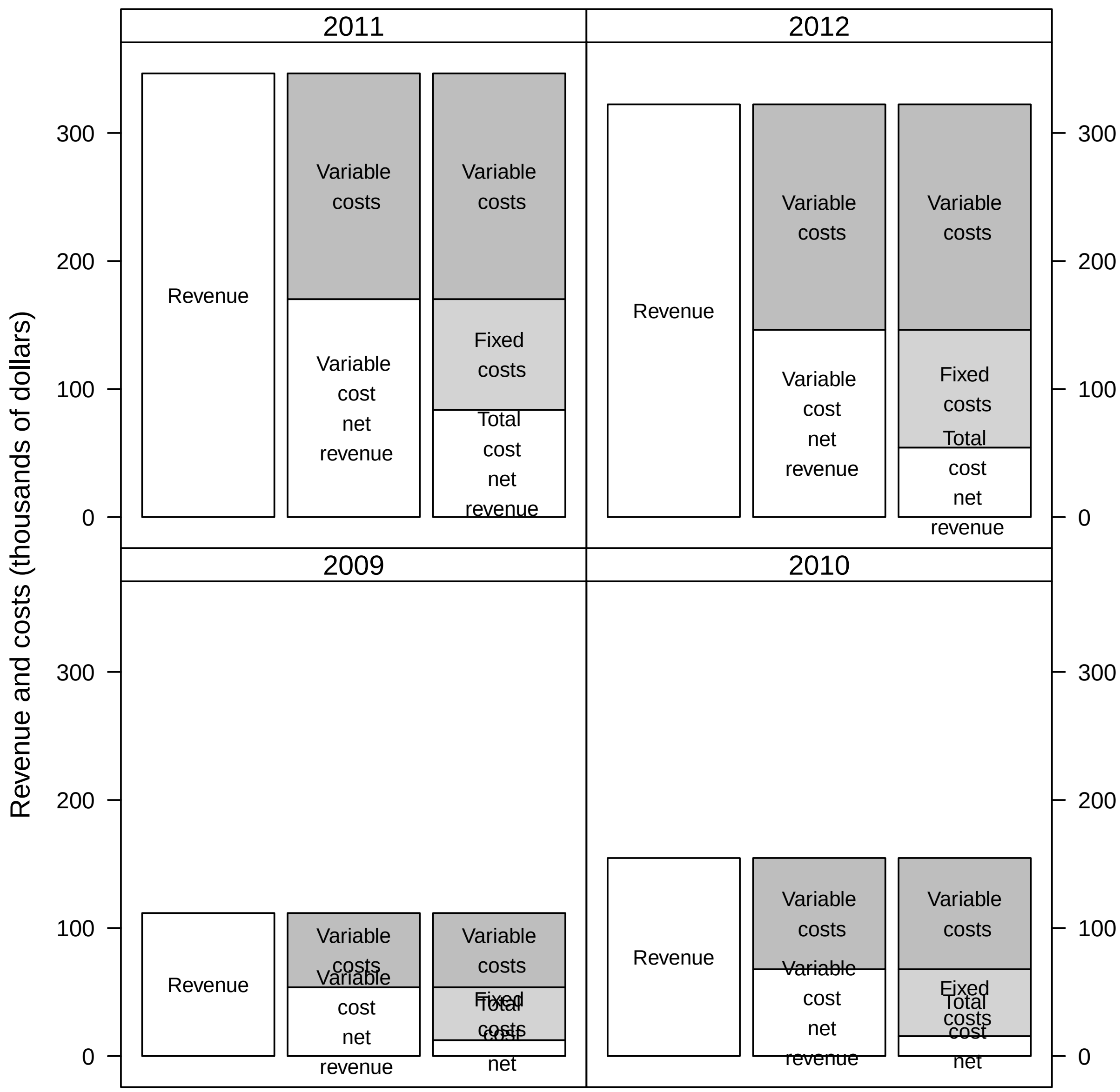

Figure 10.9: Shrimp fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in the shrimp fishery.

Figure 10.10: Other fishery variable cost net revenue and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue in other fisheries.

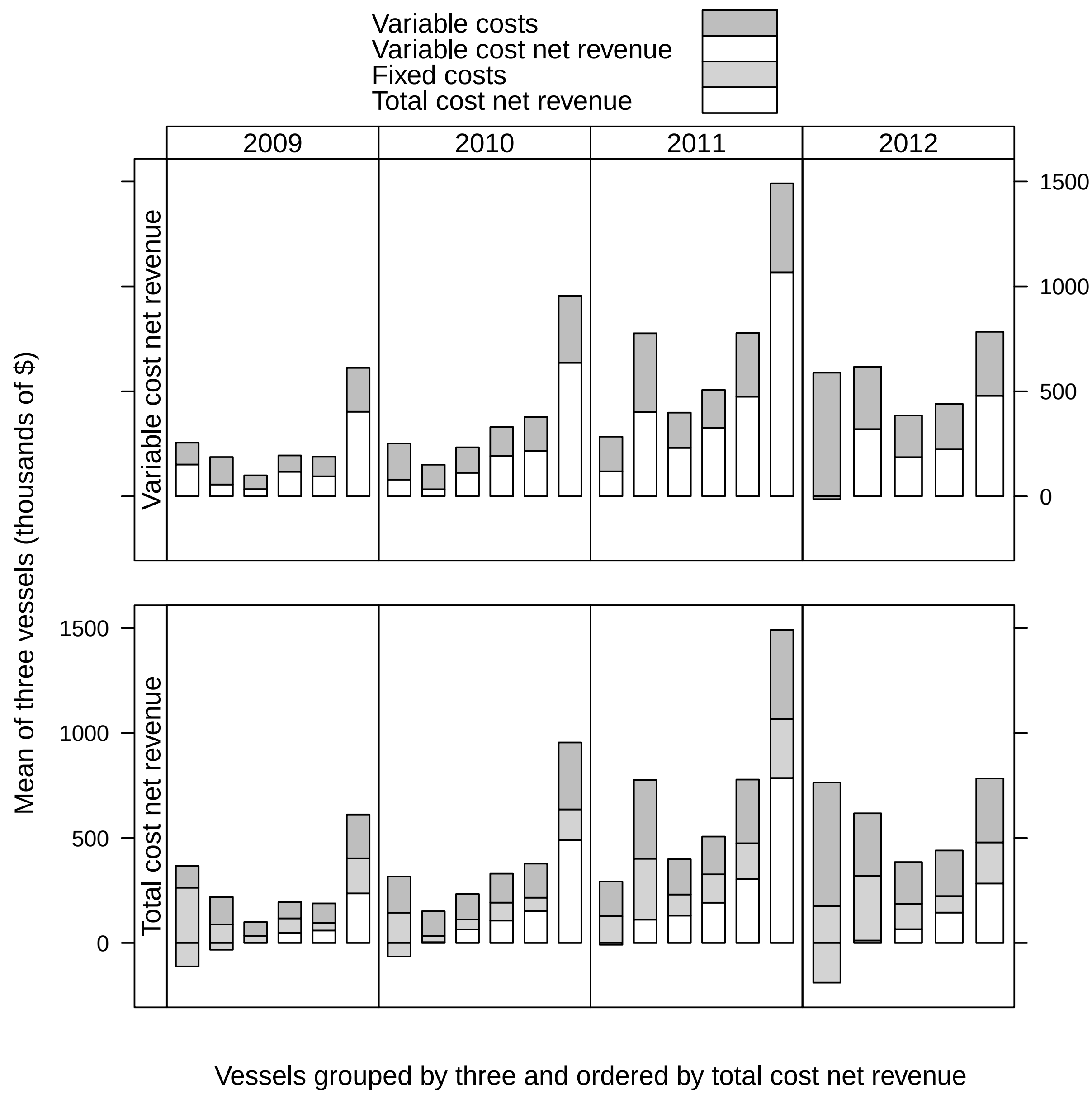

Figure 10.11: Net revenue in the at-sea Pacific whiting fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the at-sea Pacific whiting fishery. To protect confidentiality, vessels were sorted by revenue, put into groups of three vessels, and then means were calculated on the group of vessels.

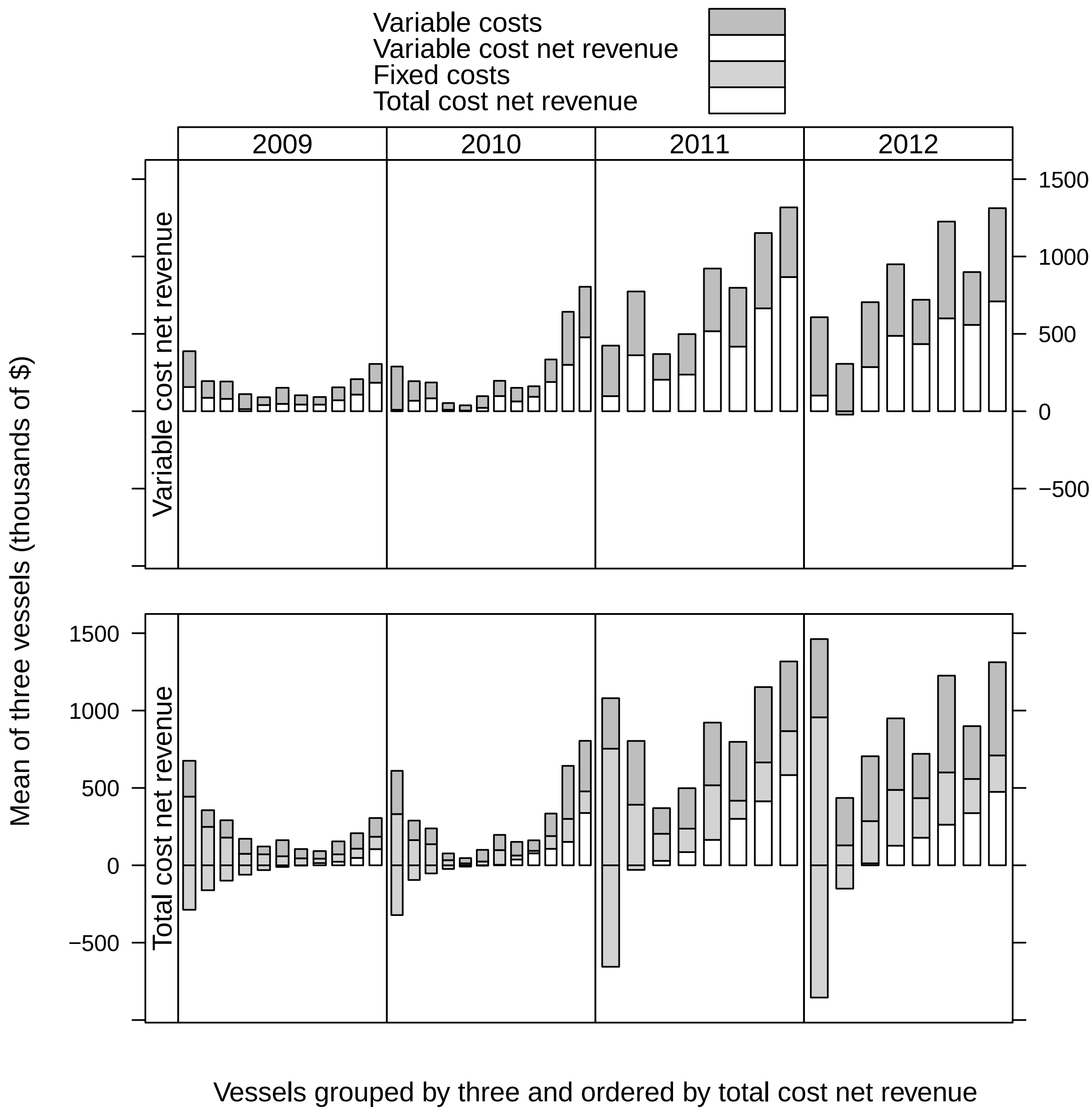

Figure 10.12: Net revenue in the shoreside Pacific whiting fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the shoreside Pacific whiting fishery. To protect confidentiality, vessels were sorted by revenue and means were calculated on groups of three vessels.

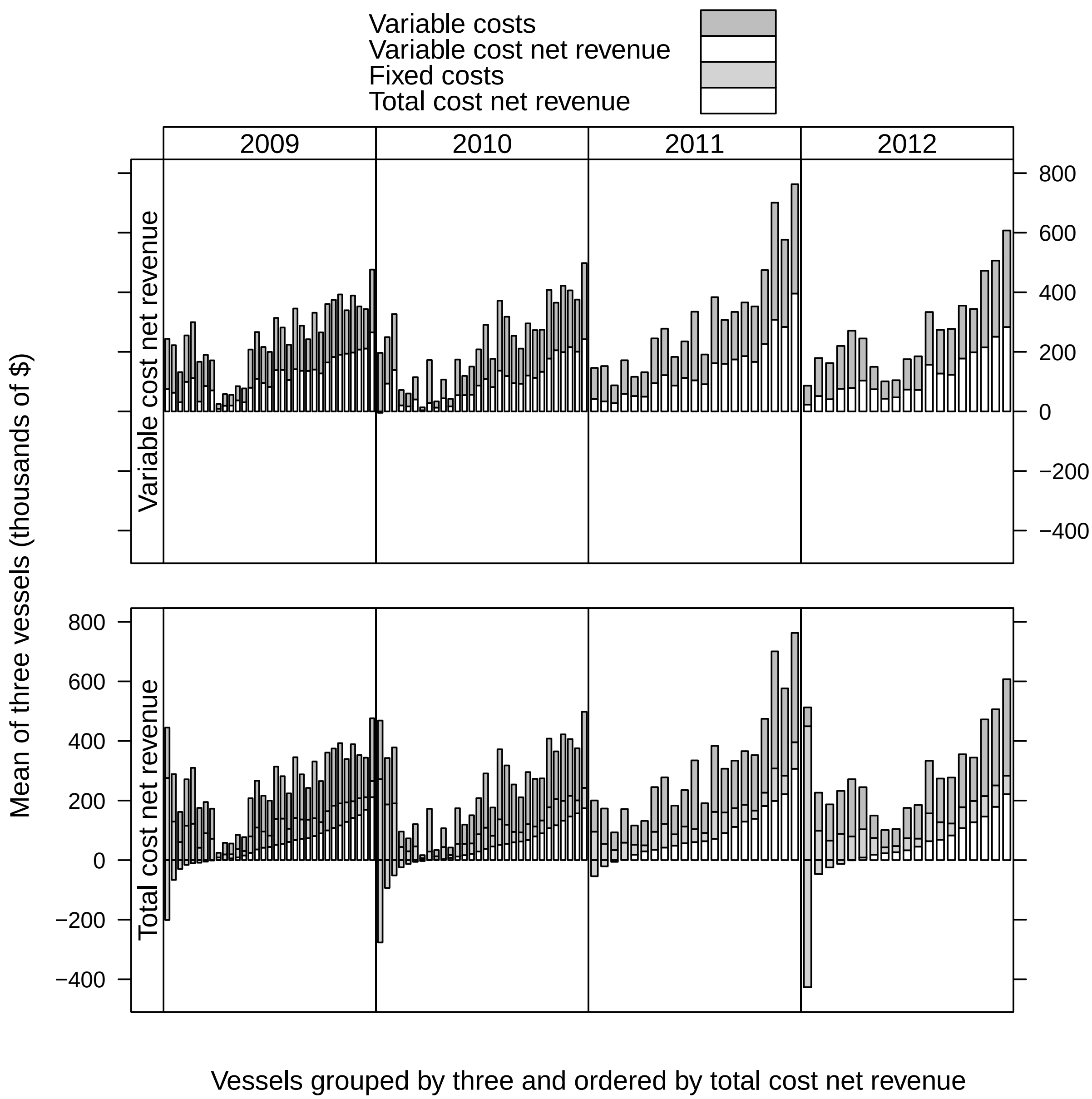

Figure 10.13: Net revenue in the DTS trawl with trawl endorsement fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the DTS trawl with trawl endorsement fishery. To protect confidentiality, vessels were sorted by revenue and means were calculated on groups of three vessels.

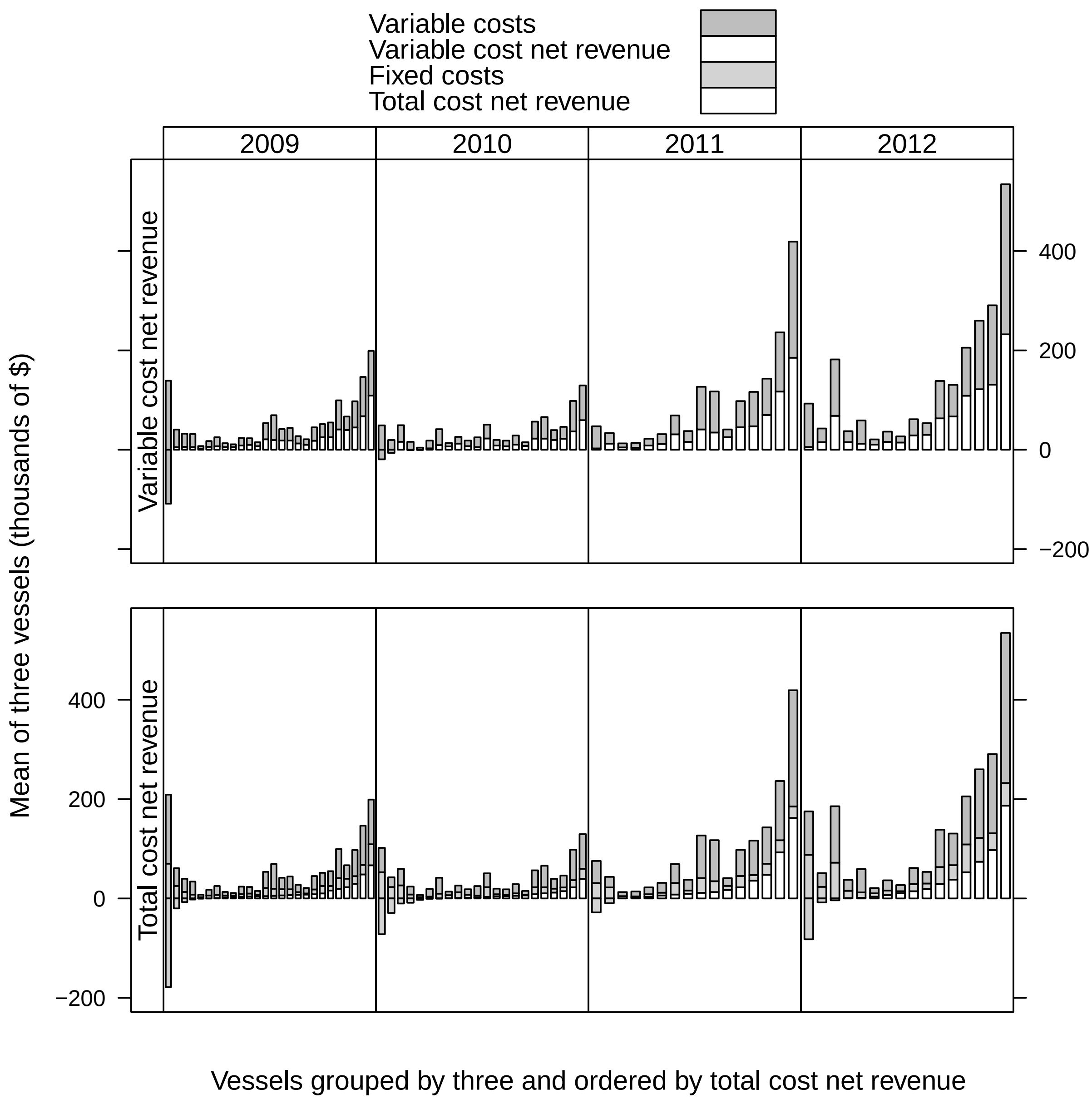

Figure 10.14: Net revenue in the non-whiting, non-DTS trawl with trawl endorsement fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the non-whiting, non-DTS trawl with trawl endorsement fishery. To protect confidentiality, vessels were sorted by revenue and means were calculated on groups of three vessels.

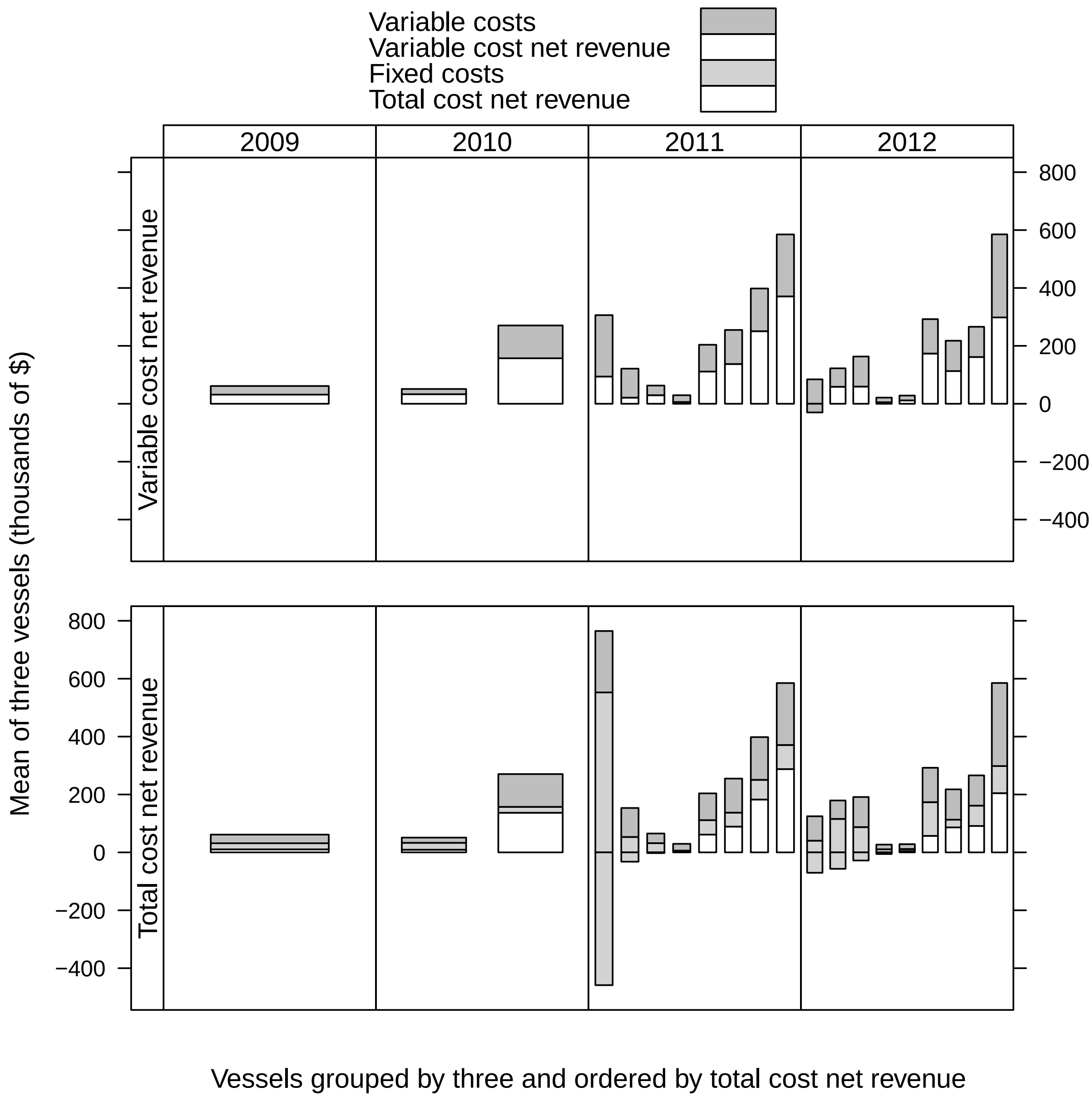

Figure 10.15: Net revenue in the groundfish fixed gear with trawl endorsement fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the groundfish fixed gear with trawl endorsement fishery. To protect confidentiality, vessels were sorted by revenue and means were calculated on groups of three vessels.

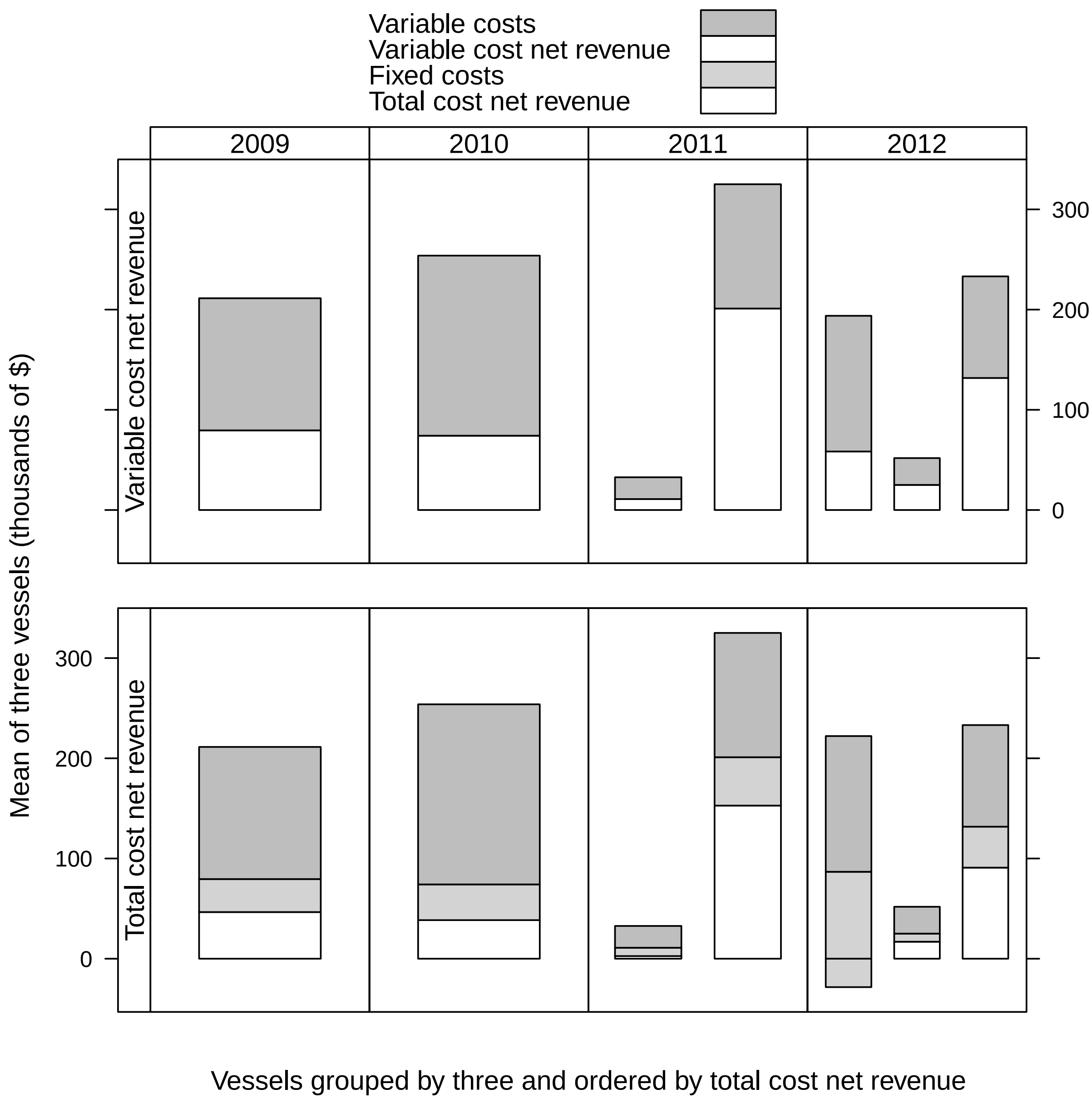

Figure 10.16: Net revenue in the groundfish fixed gear with fixed gear endorsement fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the groundfish fixed gear with fixed gear endorsement fishery. To protect confidentiality, vessels were sorted by revenue and means were calculated on groups of three vessels.

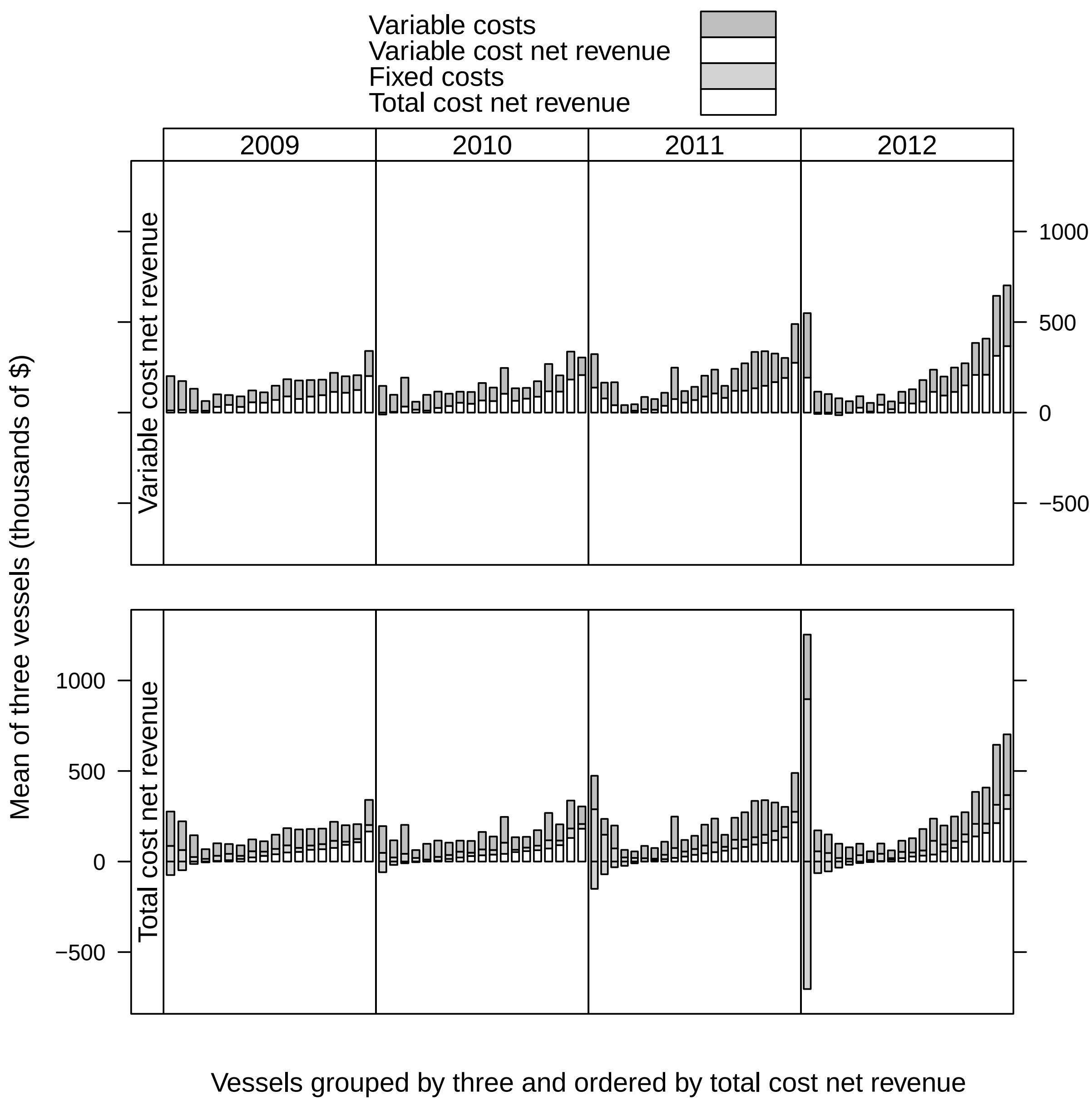

Figure 10.17: Net revenue in the crab fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the crab fishery. To protect confidentiality, vessels were sorted by revenue and means were calculated on groups of three vessels.

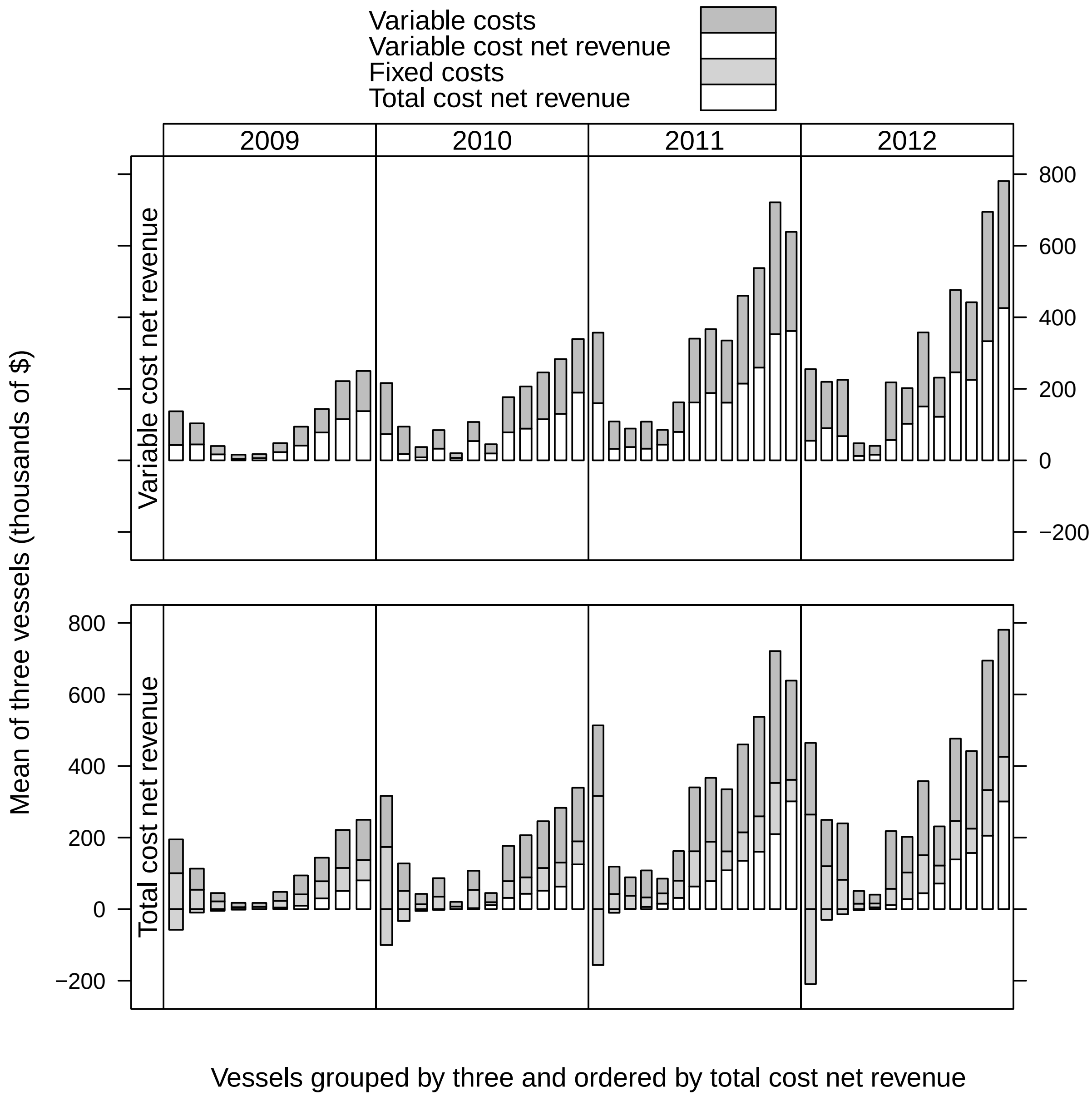

Figure 10.18: Net revenue in the shrimp fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the shrimp fishery. To protect confidentiality, vessels were sorted by revenue and means were calculated on groups of three vessels.

Figure 10.19: Net revenue in the other fishery by vessels groups. Revenue, fixed costs, variable costs, variable cost net revenue, and total cost net revenue in the other fishery. To protect confidentiality, vessels were sorted by revenue and means were calculated on groups of three vessels.

11 Crew Share System

The most common system for remunerating crew is the crew share system where crew are paid a percentage of the total revenue earned by the vessel after certain expenses are deducted. Most vessels in the groundfish trawl fishery use this system (Table 11.1).

Table 11.1: Frequency of crew share distributions. Number of entities who used a crew share system, did not use a crew share system, or did not respond to the question. An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.

Crew share system	2009	2010	2011	2012
YES	127	123	121	114
NO	5	5	14	15
No response	1	2	8	0

Participants were asked to provide the percentage of fishing trips in which the vessel owner served as captain in West Coast groundfish fisheries (Table 11.2). In 2012, 89 participants provided the response "NA". These responses are most commonly a result of ownership of a vessel by an LLC that is not identified with a specific person who could operate the vessel as a captain.

Table 11.2: Percentage of trips with owner operated vessels. Average percentage of trips when the vessel owner served as captain.

Share	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Percentage of trips vessel owner served as captain	$87.3^{\cdot}$	50	$81.9^{\cdot}$	51	$88.9^{\cdot}$	51	$80.7^{\cdot}$	42

Table 11.3: Average crew shares when vessels were owner operated. Average share paid to captain, crew, vessel, and other on trips when the vessel owner served as captain (N = number of EDC vessels with non-zero, non-NA responses).

Share	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Captain share	24.5:	41	20.5:	36	22.5:	41	19.3:	33
Crew share	24.2·	52	22.9·	52	25.0·	52	24.9·	45
Vessel share	58.8·	51	62.3·	51	59.8·	51	60.5·	45
Other share	—	—	—	—	12.7:	3	24.0:	5

Table 11.4: Average crew shares when using a hired captain. Average share paid to captain, crew, vessel, and other on trips when the vessel owner did not serve as captain (N = number of EDC vessels with non-zero, non-NA responses).

Share	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Captain share	17.7·	94	17.8·	93	17.9·	91	18.0·	87
Crew share	21.7·	98	21.2·	96	22.2·	93	22.4·	89
Vessel share	60.3·	96	61.1·	94	59.1·	92	59.3·	89
Other share	—	—	—	—	7.3·	6	8.0·	8

Table 11.5: Fixed costs deducted before calculating crew shares. Percent of entities who deducted fixed costs by cost category (N = number of entities that used a crew share system to pay its crew when operating in West Coast groundfish fisheries during the survey year). An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.

Expenses category	2009		2010		2011		2012	
Depreciation	0%	133	0%	130	—	0	—	0
Insurance	2.3%	133	1.5%	130	1.4%	143	13%	131
Lease of vessel	0%	133	1.5%	130	0.7%	143	23.7%	131
Limited entry permit	0%	133	0.8%	130	2.1%	143	18.3%	131
Onboard equipment repair and maintenance	0%	133	0%	130	—	0	—	0
Other permits	0%	133	0%	130	—	0	—	0
Other West Coast permits	—	0	—	0	0%	143	16%	131
Repair and maintenance fishing gear	0%	133	0%	130	—	0	—	0
Repair and maintenance on processing equipment	0%	133	0%	130	—	0	—	0

Table 11.6: Variable costs deducted before calculating crew shares. Percent of entities who deducted variable costs by cost category (N = number of entities that used a crew share system to pay its crew when operating in West Coast groundfish fisheries during the survey year). An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.

Expenses category	2009		2010		2011		2012	
	%	N	%	N	%	N	%	N
Bait	32.3%	133	31.5%	130	37.8%	143	55%	131
Buy back taxes	—	0	—	0	58%	143	76.3%	131
Communication	3%	133	2.3%	130	2.8%	143	16.8%	131
Fishing association dues	36.8%	133	36.9%	130	32.2%	143	52.7%	131
Food	46.6%	133	42.3%	130	51.7%	143	67.2%	131
Freight to the vessel on supplies	0%	133	0%	130	0.7%	143	21.4%	131
Fuel and lubrication	55.6%	133	57.7%	130	64.3%	143	77.1%	131
Ice	47.4%	133	44.6%	130	45.5%	143	61.1%	131
Licensing fees	—	0	—	0	4.2%	143	16.8%	131
Moorage	0%	133	0%	130	—	0	—	0
Observer coverage	14.3%	133	16.9%	130	46.9%	143	65.6%	131

Table 11.7: Variable costs deducted before calculating crew shares (cont'd). Percent of entities who deducted variable costs by cost category (N = number of entities that used a crew share system to pay its crew when operating in West Coast groundfish fisheries during the survey year). An entity is defined as a unique combination of an owner or lessee and vessel, whereas a vessel refers to all activities related to that vessel, regardless of the number individuals who owned or leased the vessel.

Expenses category	2009		2010		2011		2012	
	%	N	%	N	%	N	%	N
Offload fees	24.1%	133	21.5%	130	27.3%	143	45%	131
Other	15.8%	133	16.2%	130	9.1%	143	89.1%	46
Other costs	15.8%	133	16.2%	130	9.8%	143	—	0
Other supplies	1.5%	133	2.3%	130	2.1%	143	16%	131
Quota held at the start of the year	0%	133	0%	130	2.8%	143	15.3%	131
Quota pounds held	6%	133	4.6%	130	28%	143	51.9%	131
Quota shares purchased	0%	133	0%	130	2.8%	143	22.9%	131
Travel	1.5%	133	1.5%	130	5.6%	143	20.6%	131
Trucking of fish	3%	133	2.3%	130	3.5%	143	23.7%	131

12 Cost, Revenue, and Net Revenue Rates

Table 12.1: Mean and median rates for all vessels that fished on the West Coast. Mean and median revenue, costs, and net revenue per day and per metric ton harvested. ($N_{2009} = 130$, $N_{2010} = 126$, $N_{2011} = 133$, $N_{2012} = 127$).

Description	2009		2010		2011		2012	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Fixed costs per day	1,897.0	998.8	1,570.9	1,011.7	7,339.7	1,545.0	3,989.8	1,737.5
Fixed costs per metric ton landed	423.5	238.4	350.4	233.4	4,916.1	297.5	1,595.5	321.0
Revenue per day	5,596.5	4,702.9	6,005.1	4,640.5	9,555.2	7,819.2	8,366.1	6,885.5
Revenue per metric ton landed	1,297.2	1,103.5	1,357.5	1,066.4	2,430.7	1,493.7	2,472.4	1,385.2
Total cost net revenue per day	659.6	715.2	1,086.9	776.5	-2,409.3	1,821.9	-321.8	1,225.4
Total cost net revenue per metric ton landed	-54.2	145.0	189.0	130.2	-3,978.6	280.4	-558.3	212.5
Variable cost net revenue per day	2,556.7	1,990.5	2,657.8	1,710.1	4,930.4	3,525.1	3,668.1	2,745.4
Variable cost net revenue per metric ton landed	369.3	396.2	539.3	410.0	937.5	636.7	1,037.2	569.0
Variable cost per metric ton landed	927.9	585.9	818.2	615.0	1,504.5	807.1	1,435.2	817.7
Variable costs per day	3,039.8	2,489.4	3,347.3	2,672.2	4,659.8	3,832.5	4,698.0	3,785.6

Table 12.2: Small vessel ($<$ 60 ft) mean and median rates for West Coast operations. Mean and median revenue, costs, and net revenue per day and per metric ton harvested. (N_{2009} = 43, N_{2010} = 40, N_{2011} = 45, N_{2012} = 44).

Description	2009		2010		2011		2012	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Fixed costs per day	$847.3	$724.6	$697.7	$595.6	$14,379.2	$1,023.4	$2,878.3	$957.0
Fixed costs per metric ton landed	$621.0	$390.3	$503.4	$362.1	$13,686.8	$609.1	$3,226.7	$760.4
Revenue per day	$3,682.3	$3,062.4	$3,734.3	$3,308.1	$5,493.1	$4,594.6	$4,914.9	$4,372.6
Revenue per metric ton landed	$2,193.2	$1,667.1	$2,362.6	$1,824.2	$3,845.1	$4,080.1	$3,983.9	$4,444.7
Total cost net revenue per day	$915.0	$570.7	$1,070.4	$888.1	-$11,829.5	$1,108.9	-$581.6	$986.5
Total cost net revenue per metric ton landed	$417.0	$325.3	$596.7	$407.8	-$12,663.5	$580.6	-$1,556.8	$478.1
Variable cost net revenue per day	$1,762.3	$1,427.8	$1,768.2	$1,524.0	$2,549.6	$2,030.1	$2,296.7	$2,023.7
Variable cost net revenue per metric ton landed	$1,038.0	$667.1	$1,100.1	$779.2	$1,023.4	$1,271.6	$1,669.9	$988.4
Variable cost per metric ton landed	$1,155.2	$854.2	$1,262.5	$941.0	$2,821.7	$1,693.4	$2,314.0	$1,759.2
Variable costs per day	$1,920.0	$1,760.2	$1,966.2	$1,648.4	$2,943.4	$2,761.2	$2,618.2	$2,449.0

Table 12.3: Medium vessel ($>$ 60 ft, $<=$ 80 ft) mean and median rates for West Coast operations. Mean and median revenue, costs, and net revenue per day and per metric ton harvested. ($N_{2009} = 50$, $N_{2010} = 50$, $N_{2011} = 53$, $N_{2012} = 51$).

Description	2009		2010		2011		2012	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Fixed costs per day	$1,368.6	$992.4	$1,362.7	$932.0	$2,095.5	$1,384.2	$2,989.1	$1,702.1
Fixed costs per metric ton landed	$382.2	$238.4	$393.4	$259.2	$575.9	$276.0	$951.8	$358.8
Revenue per day	$4,584.7	$4,192.0	$4,638.3	$4,260.5	$8,462.9	$7,859.1	$7,548.0	$6,989.4
Revenue per metric ton landed	$1,176.0	$1,081.3	$1,251.4	$1,046.5	$2,184.8	$1,416.5	$2,273.4	$1,385.2
Total cost net revenue per day	$496.7	$617.5	$307.3	$685.4	$2,142.3	$1,752.8	$180.7	$1,226.7
Total cost net revenue per metric ton landed	$32.6	$161.0	-$25.7	$148.2	$486.3	$303.1	-$8.0	$281.8
Variable cost net revenue per day	$1,865.3	$1,699.0	$1,670.0	$1,459.2	$4,237.8	$3,396.2	$3,169.8	$2,913.6
Variable cost net revenue per metric ton landed	$414.8	$396.2	$367.6	$445.9	$1,062.1	$654.3	$943.8	$611.4
Variable cost per metric ton landed	$761.2	$579.3	$883.7	$616.1	$1,122.7	$775.0	$1,329.6	$802.8
Variable costs per day	$2,719.4	$2,287.7	$2,968.3	$2,572.5	$4,225.1	$3,911.3	$4,378.2	$4,015.3

Table 12.4: Large vessel (> 80 ft) mean and median rates for West Coast operations. Mean and median revenue, costs, and net revenue per day and per metric ton harvested. (N_{2009} = 37, N_{2010} = 36, N_{2011} = 35, N_{2012} = 32).

Description	2009		2010		2011		2012	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Fixed costs per day	$3,831.1	$2,261.5	$2,830.1	$1,931.8	$6,230.1	$3,511.0	$7,113.1	$3,546.2
Fixed costs per metric ton landed	$249.8	$77.7	$120.6	$59.2	$211.6	$74.9	$378.5	$113.0
Revenue per day	$9,188.2	$8,959.5	$10,426.4	$8,577.6	$16,431.8	$17,421.1	$14,415.3	$14,568.1
Revenue per metric ton landed	$419.6	$199.9	$388.2	$197.9	$984.6	$251.2	$711.3	$302.6
Total cost net revenue per day	$583.0	$940.4	$2,188.1	$1,248.0	$2,810.0	$4,546.3	-$765.3	$2,369.8
Total cost net revenue per metric ton landed	-$719.1	$42.4	$34.2	$63.8	$426.8	$92.6	-$62.3	$55.4
Variable cost net revenue per day	$4,414.1	$3,821.2	$5,018.2	$3,619.7	$9,040.1	$9,211.1	$6,347.8	$6,831.0
Variable cost net revenue per metric ton landed	-$469.2	$95.7	$154.8	$111.6	$638.4	$152.2	$316.2	$155.4
Variable cost per metric ton landed	$888.8	$107.0	$233.4	$128.7	$356.4	$111.5	$395.2	$193.5
Variable costs per day	$4,774.1	$4,616.1	$5,408.2	$5,094.1	$7,609.2	$7,352.5	$8,067.5	$7,019.7

Appendix A Cost Disaggregation

In order to conduct economic analyses of specific fisheries it is important to have costs broken out by fishery. However, vessels participating in multiple fisheries incur costs that are aggregated across fisheries. These are called joint costs in the economics and accounting literature. They may include fixed costs (e.g., a new engine), or variable costs (e.g., fuel). The former are joined by the nature of the costs, while the latter are joined due to observational limitations. It is difficult to assign fixed costs to a particular fishery because the level of the cost does not vary with vessel participation (at least over the short run).

Some variable costs can be tracked by fishery, but would be costly to do so. For example, although a vessel could theoretically set up a system to track fuel expenditures by fishery, doing so is rare among the EDC catcher vessels. Moreover, some types of fuel use are inherently (by their nature) difficult to allocate, even if they are tracked. An example is a vessel that fishes both on the West Coast and in Alaska. It is not obvious what proportion of the fuel consumed while steaming between the fisheries should be allocated to the West Coast.

Research is currently being conducted at the Northwest Fisheries Science Center to determine the "best" method of cost allocation relative to certain criteria. For the purposes of this report, four different methods were explored: 1) disaggregation by weight of shoreside landings and at-sea deliveries; 2) disaggregation by value of shoreside landings and at-sea deliveries; 3) disaggregation by days at sea; and, 4) disaggregation by a combination of the other three methods by cost category ("mixed method").

Use of these methods requires data from various sources. The total weight and ex-vessel revenue from shoreside landings are obtained from fish ticket data. The total weight of at-sea deliveries is obtained from A-SHOP data, and the ex-vessel revenue from at-sea deliveries in obtained from EDC data. The days at sea are also obtained from EDC data. Landings and days at sea are allocated to specific fisheries using the methods described in Section 3: .

Alaska landings and revenues obtained from EDC data were appended to the information extracted from the West Coast fish ticket data. This was only done for operators who also operated the vessel on the West Coast. If a vessel only participated in Alaska fisheries, the data were excluded from the analyses. If a vessel fished in Alaska, but the operator of the vessel was different from the operator on the West Coast, the Alaska portion was also excluded.

If the vessel was operated by more than one company during the fiscal year, the range of dates that are used to pull the fish ticket records is adjusted. There are two cases when this would occur: the vessel was leased to a different operator, or the vessel was sold mid-year to another company. In cases where the vessel was sold mid-year, information from the Permit Office must be obtained to determine when the vessel was transferred to a new company. Although both the Coast Guard and the Permit Office track vessel ownership information, we use the Permit Office data as the authoritative source for this information. When the vessel transfers ownership, a new record is made in the Permit Office database and so the dates of operation of the multiple companies can be determined and used as the range of dates for pulling the fish ticket records. Occasionally, the paperwork for vessel sales lags with the change in operation, additional information provided by the participant on the form or other communications is used to adjust the fiscal year used to calculate total revenue to best correspond with the information provided on the form. If the vessel was leased by the owner of the vessel, then the lease dates provided on the EDC form are combined with the fiscal year data to pull the fish ticket records.

Once the total revenues from shoreside landings is calculated, it is then added to the other revenue categories provided on the forms to generate the total revenue. Landings of species associated with zero revenue were excluded entirely from the cost disaggregation analyses.

Listed below are the variables used to disaggregate each cost category for the "mixed" method:

- Costs were disaggregated using ex-vessel revenue for the following cost categories:
  - Capitalized expenditures
  - Crew wages
  - Captain wages
  - Travel
  - Fishery association dues
  - Fees
  - Vessel and on-board equipment.
- Costs were disaggregated using at-sea deliveries and shoreside landings weight for the following cost categories:
  - Bait (only aggregated to non-trawl fisheries)
  - Offload fees
  - Trucking expenses
  - Fishing gear.
- Costs were disaggregated using days at sea for the following cost categories:
  - Food

– Fuel

– Ice

– Insurance

– Other supplies

– Communications

– Lease of the vessel

– Moorage.

To understand the potential implications of the assumptions associated with the four methods of cost disaggregation, the output of the different methods were examined by looking at the effect on average total cost net revenue on the West Coast. Total cost net revenue by cost disaggregation type are presented in Tables A.1 (cost disaggregation using ex-vessel revenue), Table A.2 (cost disaggregation using at-sea deliveries and shoreside landings),Table A.3 (cost disaggregation using days at sea) and A.4 (cost disaggregation using "mixed method").

Using landings and delivery weight resulted in allocating the largest variable and fixed costs to the West Coast than any other method and therefore the lowest total cost net revenue. The days at sea method resulted in the highest total cost net revenue. Although the different methods resulted in different allocations of costs, figures A.1 - A.4 show that there were no major differences between the methods.

Table A.1: Net revenue using ex-vessel revenue for cost disaggregation. Total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) for all participation in the West Coast groundfish trawl catch share program using ex-vessel revenue to disaggregate costs from other fisheries.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$312	132	$340	129	$474	138	$445	130
(Variable costs)	($167)	132	($185)	129	($226)	138	($244)	130
Variable cost net revenue	**$145**	**132**	**$155**	**129**	**$248**	**138**	**$201**	**130**
(Fixed costs)	($102)	132	($90)	129	($129)	138	($142)	130
Total cost net revenue	**$43**	**132**	**$65**	**129**	**$119**	**138**	**$59**	**130**

Table A.2: Net revenue using at-sea deliveries and shoreside landings for cost disaggregation. Total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) for all participation in the West Coast groundfish trawl catch share program using at-sea deliveries and shoreside landings to disaggregate costs from other fisheries.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$312	132	$340	129	$474	138	$445	130
(Variable costs)	($186)	132	($201)	129	($240)	138	($257)	130
Variable cost net revenue	**$126**	**132**	**$139**	**129**	**$234**	**138**	**$188**	**130**
(Fixed costs)	($130)	132	($107)	129	($149)	138	($161)	130
Total cost net revenue	**-$4**	**132**	**$33**	**129**	**$85**	**138**	**$27**	**130**

Table A.3: Net revenue using days at sea for cost disaggregation. Total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) for all participation in the West Coast groundfish trawl catch share program using days at sea to disaggregate costs from other fisheries.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$312	132	$340	129	$474	138	$445	130
(Variable costs)	($168)	132	($182)	129	($223)	138	($242)	130
Variable cost net revenue	**$144**	**132**	**$158**	**129**	**$251**	**138**	**$203**	**130**
(Fixed costs)	($101)	132	($89)	129	($122)	138	($146)	130
Total cost net revenue	**$43**	**132**	**$69**	**129**	**$130**	**138**	**$57**	**130**

Table A.4: Net revenue using the mixed method for cost disaggregation. Total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (thousands of $) for all participation in the West Coast groundfish trawl catch share program using the mixed method to disaggregate costs from other fisheries.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$312	132	$340	129	$474	138	$445	130
(Variable costs)	($168)	132	($185)	129	($226)	138	($243)	130
Variable cost net revenue	**$144**	**132**	**$155**	**129**	**$248**	**138**	**$202**	**130**
(Fixed costs)	($108)	132	($95)	129	($135)	138	($148)	130
Total cost net revenue	**$36**	**132**	**$60**	**129**	**$114**	**138**	**$54**	**130**

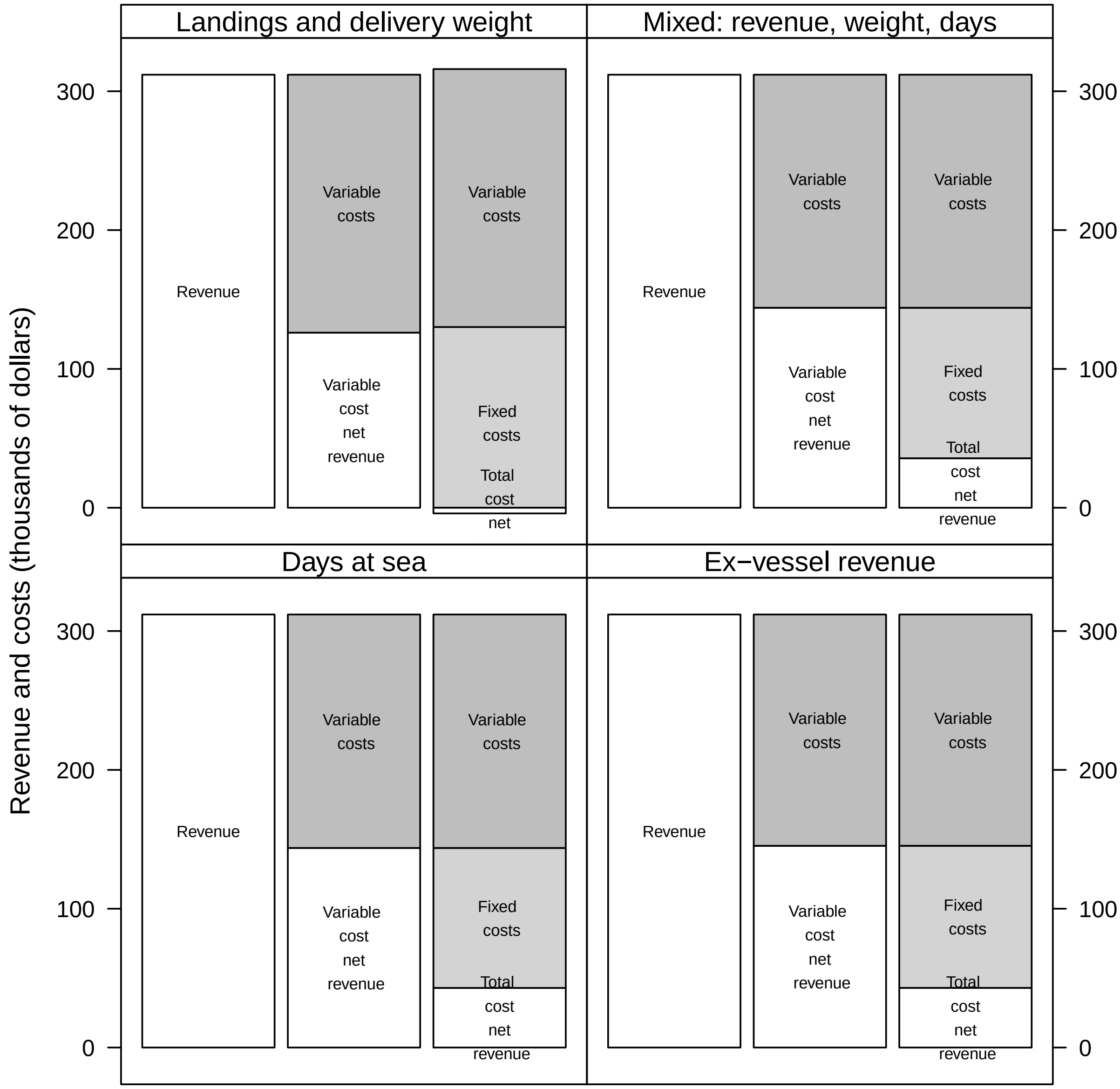

Figure A.1: Sensitivity analysis 2009 cost disaggregation methods. Sensitivity analysis for 2009 cost data of four different cost disaggregation methods in terms of variable costs, fixed costs, variable cost net revenue, and total cost net revenue. The three methods are disaggregation by landings and delivery weight, days at sea, ex-vessel revenue, and "mixed" where costs are disaggregated by one of the three methods depending on the type of cost.

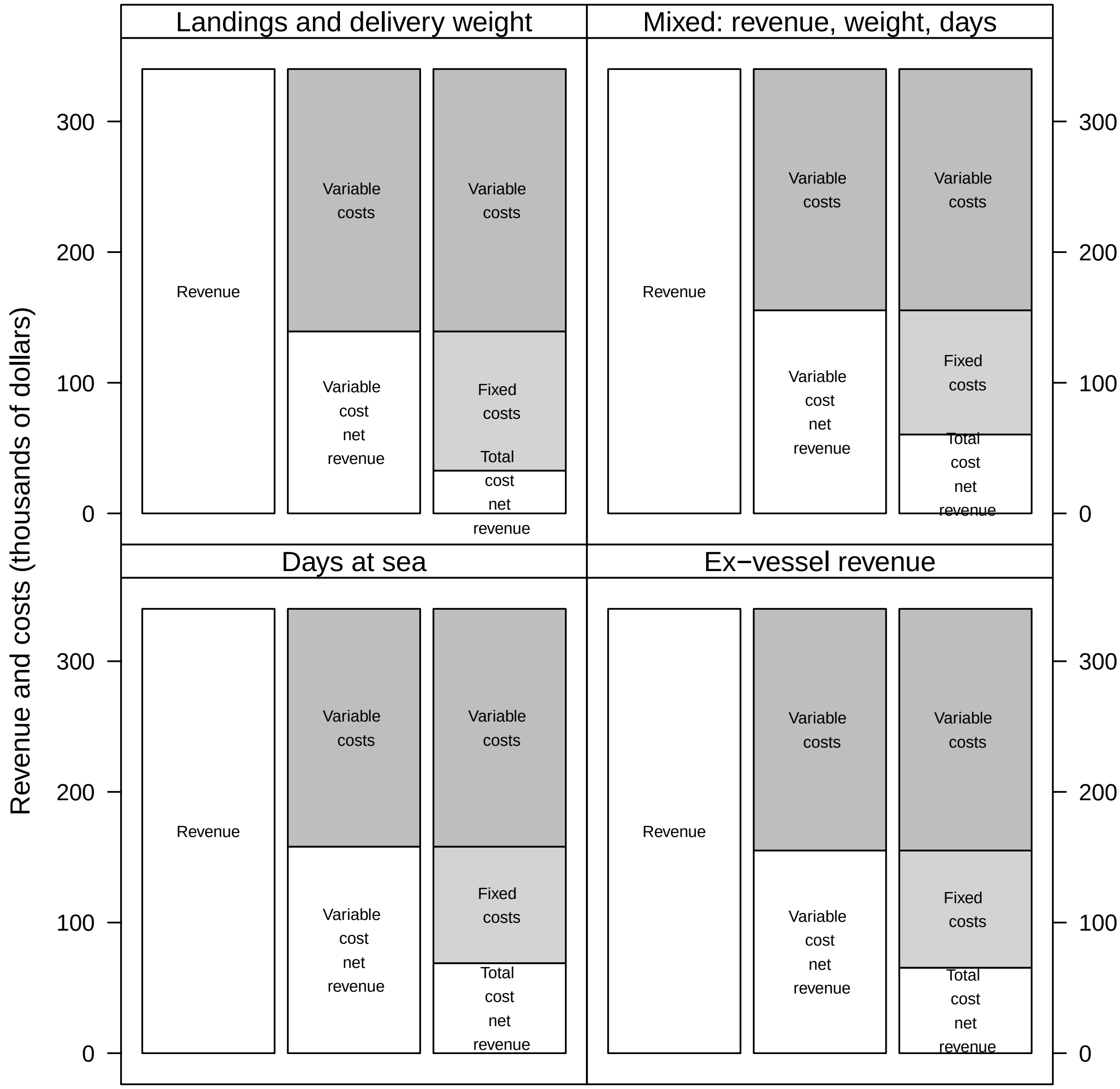

Figure A.2: Sensitivity analysis 2010 cost disaggregation methods. Sensitivity analysis for 2010 cost data of four different cost disaggregation methods in terms of variable costs, fixed costs, variable cost net revenue, and total cost net revenue. The three methods are disaggregation by landings and delivery weight, days at sea, ex-vessel revenue, and "mixed" where costs are disaggregated by one of the three methods depending on the type of cost.

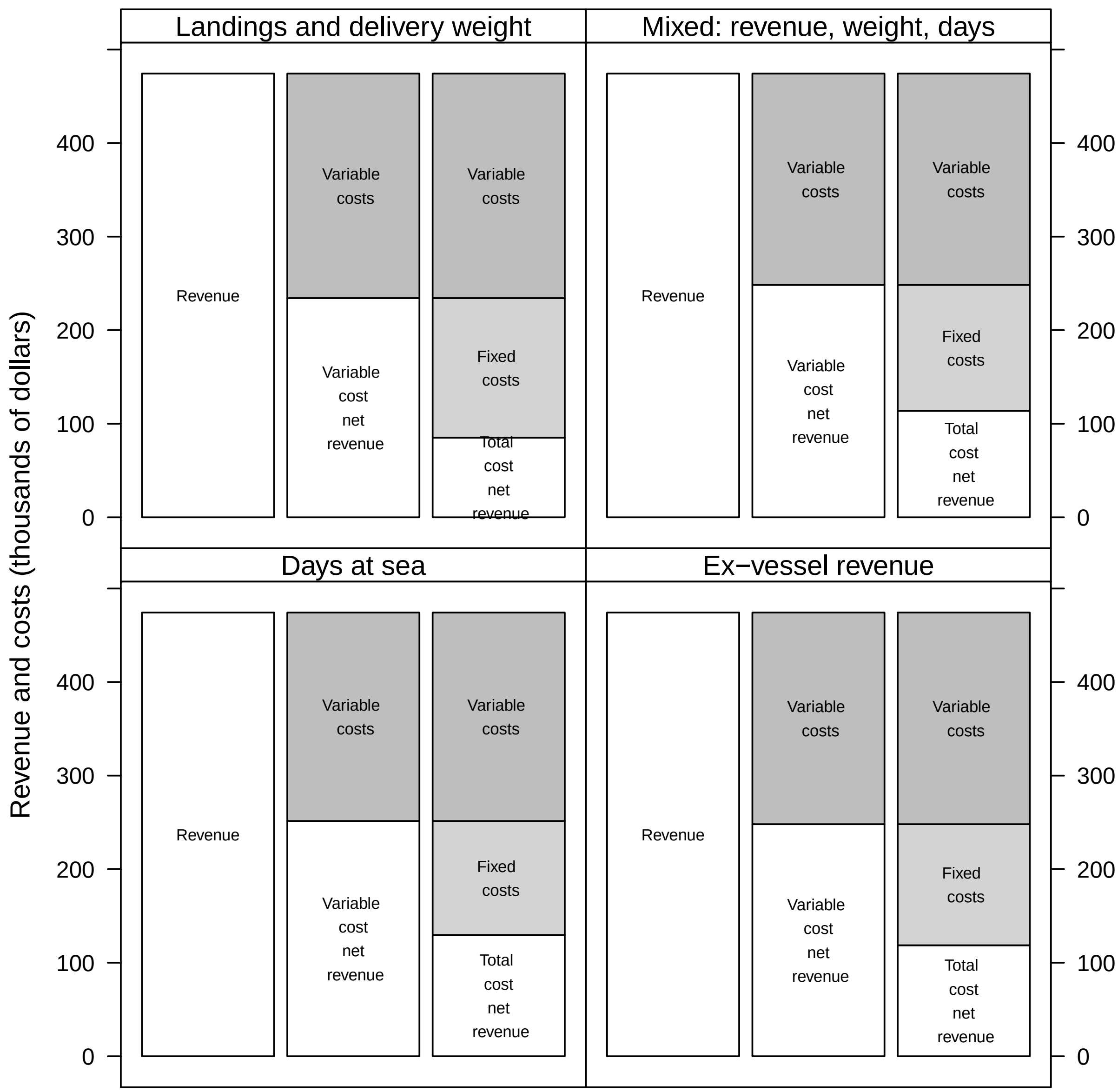

Figure A.3: Sensitivity analysis 2011 cost disaggregation methods. Sensitivity analysis for 2011 cost data of four different cost disaggregation methods in terms of variable costs, fixed costs, variable cost net revenue, and total cost net revenue. The three methods are disaggregation by landings and delivery weight, days at sea, ex-vessel revenue, and "mixed" where costs are disaggregated by one of the three methods depending on the type of cost.

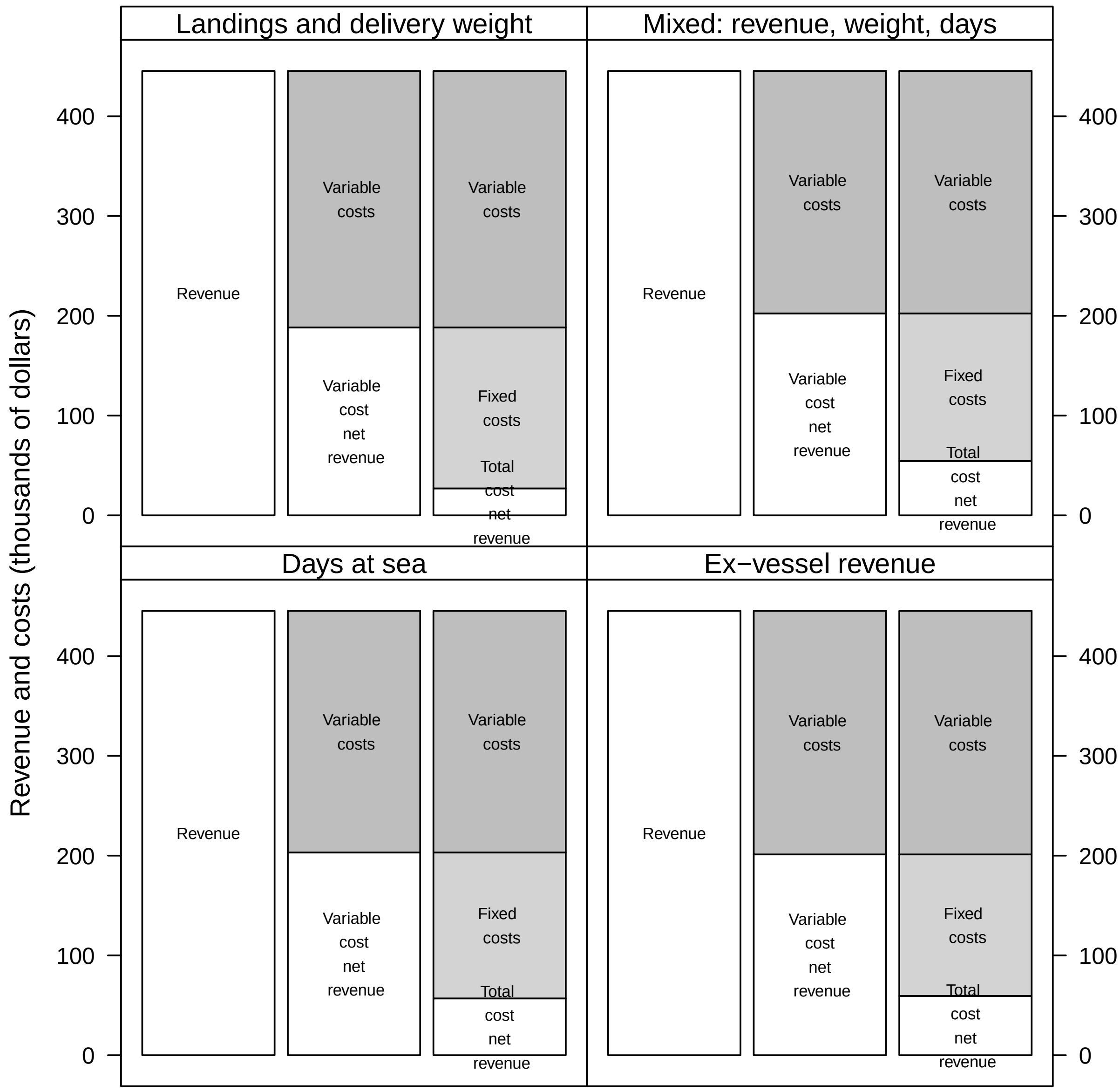

Figure A.4: Sensitivity analysis 2012 cost disaggregation methods. Sensitivity analysis for 2012 cost data of four different cost disaggregation methods in terms of variable costs, fixed costs, variable cost net revenue, and total cost net revenue. The three methods are disaggregation by landings and delivery weight, days at sea, ex-vessel revenue, and "mixed" where costs are disaggregated by one of the three methods depending on the type of cost.

Agenda Item J.5.b
NWFSC Report 3
(Full Version Electronic Only)
November 2014

Economic Data Collection Program

Catcher-Processor Report (2009-2012)

Draft Report for PFMC Review

Do Not Cite

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Northwest Fisheries Science Center[1]

October 22, 2014

[1] For questions or comments, please contact the EDC Program at nwfsc.edc@noaa.gov.

DRAFT

2012 Economic Data Collection (EDC) West Coast Groundfish Catch Share Program

NOAA FISHERIES
Northwest Fisheries Science Center

CATCHER PROCESSOR

PACIFIC WHITING PRODUCTION SUMMARY

- surimi: 47%, 8688 mt; $22.8M, $1.13/lb
- fillets: 35%, 6589 mt; $21.7M, $1.46/lb
- fishmeal: 10%,1897 mt; $3.9M, $0.94/lb
- fish oil: 1%, 254 mt; $0.4M, $0.66/lb
- other*: 7%, 1230 mt; $2.1M, $0.77/lb

*Other includes: H&G, minced, and "other", combined for confidentiality.

33% product recovery rate

ECONOMIC SUMMARY*

Vessel Average

$5.7M revenue
$2.7M variable costs
$3M variable cost net revenue
$1.6M fixed cost
$1.4M total cost net revenue

$91K variable cost net revenue per day

Fleet-wide Totals

$51M revenue
$27M variable cost net revenue
$13M total cost net revenue

ALASKA PARTICIPATION

9 vessels
316,423 mt total fleet weight

WC DELIVERY PORTS

\# of vessels offloading in each port

- Bellingham (4)
- Seattle* (2)
- Tacoma (3)

(*all nine catcher processors report Seattle as their home port)

2,073 mt average total weight of processed product delivered per vessel

FISHERY PARTICIPATION

	Days at Sea
Fishing and processing West Coast whiting fishery	29
Steaming in the West Coast whiting fishery	3
Off-loading in the West Coast whiting fishery	3
Steaming between West Coast and Alaska	18
Fishing in Alaska	150

AVERAGE VESSEL

6,487 HP engine
$55M vessel market value
$86M repacement value

Fuel use
7.6K gal/day
230K gal/season
$808K total fuel cost

$22K observer cost

97 processing crew
$9.3K per person compensation

23 non-processing crew
$17.8K per person compensation

$139K food cost

TOTAL US PACIFIC WHITING TAC

135,480 mt

TOTAL CATCH

55,263 mt

TOTAL CP PACIFIC WHITING ALLOCATION

55,584 mt (34% of U.S. TAC)

CP ALLOCATION BY COMPANY**

American Seafoods	49.4%
Trident Seafoods Corp	29.6%
Glacier Fish	21.0%

vessel length

Vessel	Length	Harvest**
American Dynasty	271 ft	801 mt
Seattle Enterprise	272 ft	2,551 mt
Kodiak Enterprise	276 ft	6,974 mt
Pacific Glacier	277 ft	3,957 mt
American Triumph	286 ft	7,932 mt
Island Enterprise	304 ft	5,266 mt
Northern Eagle	341 ft	3,045 mt
Northern Jaeger	368 ft	9,811 mt
Alaska Ocean	376 ft	6,023 mt

*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.
** PWCC Amendment 20 Catcher/Processor Cooperative Annual Report 2012.

Catcher-Processor Sector: 2012 Highlights

In 2012, the West Coast at-sea catcher-processor fleet consisted of nine catcher-processors, owned by three companies, that harvest Pacific whiting on the West Coast.

- Catcher-processor vessels spent an average of 33 days fishing, processing, and steaming along the West Coast, primarily in June-November.
- The majority of the fleet's time (80%) is spent fishing Alaska pollock in the Bering Sea and Aleutian Islands off Alaska.
- West Coast catcher-processors deliver to three ports: Bellingham, Seattle, and Tacoma. All nine vessels listed Seattle as their homeport.
- The catcher-processor sector caught nearly all of their allocated 55,584 mt of Pacific whiting.
- The average first-wholesale revenue per vessel was close to $5.7 million. Fillet and surimi production made up 87% of the total production value.
- Fillets received an average price of $3,300 per metric ton, followed by surimi and fishmeal at $2,600 and $2,100 per metric ton, respectively.
- Close to an average of 100 processing and 23 non-processing crewmembers worked on each catcher-processor vessel. Average compensation for each processing and non-processing crewmember were $9,400 and $17,800, respectively.
- Average variable cost net revenue (revenue minus variable costs) was $3 million in 2012, which was a decrease from $3.5 million in 2011 and $3.8 million in 2009.[1]
- Average total cost net revenue (revenue minus both variable and fixed costs) per vessel was $1.4 million in 2012 (Figure 9). Average total cost net revenue per metric ton produced was $422 in 2012; a decrease of 18% from 2011 to 2012 (Table 10.3).

Infographic created by Su Kim, Scientific Communications Office, Northwest Fisheries Science Center.

[1] Values reported in inflation adjusted 2012 dollars.

Report Contents

Acknowledgments

The Economic Data Collection Program and Economic Data Collection Reports reflect collaboration and coordination of individuals across the West Coast. There are numerous individuals to thank for their contributions to this effort.

We would like to acknowledge the efforts of all the Northwest Fisheries Science Center (NWFSC) economists who provided a wide range of input into survey design, implementation, and analysis. The group worked together in an effort to provide high quality data that can be distributed in a timely and secure fashion. We thank Su Kim of the NWFSC Scientific Communications Office for producing the Infographic on the second page of this report.

We appreciate the efforts of the Northwest Regional Office for support in the Program development, outreach, and communication efforts. The Permit Office staff was particularly instrumental in ensuring coordination with the mandatory participation requirements.

The Northwest Division of the Office of Law Enforcement (OLE) and the National Oceanic and Atmospheric Administration (NOAA) Office of General Council helped extensively with many aspects of the Program development and enforcement. They continue to cooperate with the EDC Program to ensure compliance. Thanks to the Northwest Fisheries Science Center Scientific Data Management staff for building an extremely useful administrative tracking system and database.

We thank PacFIN and AKFIN staff for providing access to important landings, permit, and vessel data. The staff at ODFW, WDFW, and CDFG also contributed with data used for the fielding of the baseline data collection. Other data and assistance with interpretation of data was provided by the At-sea Hake Observer Program and the West Coast Observer Program.

Finally and very importantly, we thank the members of the West Coast fishing industry who met with us to discuss the survey development and interpretation of the information collected. We appreciate the time and effort of each participant in the program.

Report Introduction

About the Report

The US West Coast groundfish fishery takes place off the coasts of Washington, Oregon and California, and is comprised of over 90 different species of fish. The fish are harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal.[2] In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet.[3] The Economic Data Collection (EDC) Program is a mandatory component of the West Coast Groundfish Trawl Catch Share Program, collecting information annually from all catch share participants: catcher-processors, catcher vessels, motherships, first receivers, and shorebased processors.[4] The EDC information is used to monitor the economic effects of the catch share program, and collects information on operating costs, revenues, and vessel and processing facility characteristics.

This report summarizes information collected from the West Coast catcher-processor vessels. The EDC reports are also produced for the other sectors,[4] and cover the years 2009 to 2012. The 2009 and 2010 data were collected in 2011 to provide a baseline of pre-catch share information. The EDC reports are updated annually to disseminate the data collected and provide background, analysis, and context to support the interpretation of the data. The reports are also expected to provide a useful catalyst for feedback on the data collected and its analysis. It is envisioned that the scope of these reports will expand, and the methods used will be refined with each annual publication.

The report is composed of two major sections. The first section, Catcher-Processor Overview (beginning on page 9), is an in-depth summary that contains descriptive analyses of the catcher-processor fleet focusing on activities during 2012. The second section, Catcher-Processor Data Summaries (beginning on page 19), provides tables of all of the data collected from 2009 to 2012, with a detailed discussion of the methods used to collect and analyze the data. The tables summarize responses for each EDC form question, as well as net revenue and economic performance rates. The data that form the basis for this report are confidential and must be aggregated so that individual responses are protected. In cases where there are not enough observations to protect confidentiality, the data are either not shown, or are combined with broader groups of data. More information about EDC Program administration and fielding of the surveys, the EDC forms, data quality controls and quality checks, data processing,

[2] For more information about West Coast Groundfish, see www.westcoast.fisheries.noaa.gov/fisheries/groundfish/.

[3] More information about the West Coast Groundfish Trawl Catch Share Program is available online at www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/.

[4] Please see the EDC website, www.nwfsc.noaa.gov/edc, for links to the forms used to collect the EDC data and for previous year's reports. The website will be updated with the 2009-2012 reports when they are finalized.

and safeguarding confidential information can be found in the EDC Administration and Operations Report.[4]

Background - Economic Data Collection and West Coast Groundfish Trawl Catch Share Program

The economic benefits of the West Coast groundfish trawl fishery and the distribution of these benefits are expected to change under the West Coast groundfish trawl catch share program. To monitor these changes, the Pacific Fishery Management Council (PFMC) proposed the implementation of the mandatory collection of economic data. Using data collected from industry participants, the EDC Program monitors whether the goals of the catch share program have been met.[5]

Many of the PFMC's goals for the catch share program are economic in nature. These goals include: provide for a viable, profitable, and efficient groundfish fishery; increase operational flexibility; minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical; promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry; provide quality product for the consumer; and, increase safety in the fishery.

The EDC program is also intended to help meet the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 2007 requirement to determine whether a catch share program is meeting its goals, and whether there are any necessary modifications of the program to meet those goals. The MSA requires a formal review 5 years after the implementation of a catch share program to which the EDC program will make a valuable contribution.

Monitoring the economic effects of a catch share program requires a variety of economic data and analyses. The primary effects of a catch share program can be captured in two broad types of economic analysis: 1) economic performance measures, and 2) regional economic impact analysis. Both of these require information on the costs and earnings of harvesters and processors.

Economic performance measures include: costs, earnings, and profitability (net revenue); economic efficiency; capacity measures; economic stability; net benefits to society; distribution of economic net benefits; product quality; functioning of the quota market; incentives to reduce bycatch; market power; and, spillover effects in other fisheries. Some of these measures are presented in this report, while others will require more specific and involved analysis using EDC data.

Regional economic impact analysis measures the effects of the program on regional economies. In general, the catch share program will likely affect different regional economies in different ways. Regional economic modeling involves tracking the expenditures of all businesses, households, and institutions within a given geographic region to arrive at the effects on income and employment. On the Pacific

[5] For more information about the EDC program and the West Coast Groundfish Trawl Catch Share Program, please see the Economic Data Collection Program, Administration and Operations Report available at the EDC website: www.nwfsc.noaa.gov/edc

coast, the Northwest Fishery Science Center's IO-PAC model is used to estimate regional economic impacts.[6]

[6] Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

CATCHER-PROCESSOR OVERVIEW

Management Context

In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of an individual fishing quota (IFQ) program for the shorebased trawl fleet and cooperative programs for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets. Catcher-processors are vessels that both catch fish and process them on-board. The At-sea Pacific whiting fishery also includes motherships, which are factory vessels that only process fish at sea, and catcher vessels that catch fish and then deliver to motherships.[1] In 2012, the catcher-processor sector generated $75 million in income and 1,431 jobs from Pacific whiting caught in the catch share program.[2]

From the 1960s through 1990, foreign vessels processed most of the relatively small amount of Pacific whiting harvested off the West Coast. The U.S. outlawed this practice in 1990, and domestic catcher-processor and mothership vessels entered the fishery between seasons fishing for Alaskan pollock. The Pacific whiting sector grew rapidly in the 1990s with the development of a production process to transform Pacific whiting into surimi, a product popular in Asia, and used domestically as an ingredient in imitation crab. The whiting fishery subsequently transformed into one of the largest fisheries by volume in the United States. In recent years the market for fillets has also grown.[3]

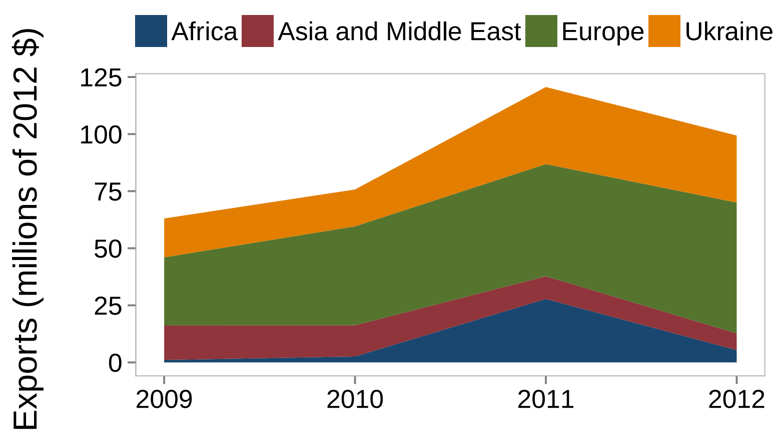

Figure 1: Total exports of fresh and frozen Pacific whiting (including mothership, catcher-processor, and shoreside production) from the state of Washington by recipient region (millions of 2012 $).

1 50 CFR 660.131 - Pacific whiting fishery management measures

2 The values were calculated using the IO-PAC model of the NWFSC. For more information about the IO-PAC model, see Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

3 www.fishwatch.gov/seafood_profiles/species/whiting/species_pages/pacific_whiting.htm

The development of new international markets for smaller, unprocessed fish, and the MSC certification[4] in 2009 that permitted Pacific whiting products into the European Union also likely had an impact on demand for Pacific whiting, as did the development of new production technologies for fillets and surimi. In 2012, most of the U.S. Pacific whiting exports went to the European Union, followed by Ukraine, Russia, and China, among others (Figure 1).[5]

The catcher-processor fleet on the West Coast has operated as a cooperative since 1997, when the Pacific Whiting Conservation Cooperative (PWCC) was formed. The PWCC consists of three companies and all the catcher-processor vessels that currently participate in the Pacific whiting fishery on the West Coast. The primary function of the PWCC is to coordinate harvesting efforts of the catcher-processor vessels. While the 2011 catch share program dramatically changed the structure of the shoreside Pacific whiting and mothership fisheries, the catcher-processor sector experienced fewer changes, and has continued to operate as a single cooperative.

The Pacific Fishery Management Council and National Marine Fisheries Service are responsible for managing the U.S. fishery for the coastal stock of the Pacific whiting. Managers mainly use annual harvest quotas to regulate the coast-wide catch of Pacific whiting. Federal regulations prohibit at-sea processing south of the Oregon-California border. Pacific whiting is managed through a bilateral agreement between the United States and Canada, known as the Pacific Whiting Treaty. The United States and Canada signed an agreement in 2003 (which became law in 2007) that allocates a set percentage of the harvest quota to American and Canadian harvesters. The United States is allocated 73.88% and Canada the remaining 26.12%. Once the total allowable catch of Pacific whiting has been determined and the tribal sector's share has been apportioned, the remaining U.S. proportion is then allocated between the catcher-processor, mothership, and shoreside sectors. The catcher-processor sector is allocated 34%, and the mothership and shoreside sectors are allocated 24% and 42%, respectively. Towards the end of the season, NMFS often redistributes unfished tribal allocation amongst the three commercial sectors according to the same proportions. Commercial allocation may also be redistributed between sectors, for example in 2008, catcher-processors received an additional 36,724 metric tons of whiting allocation over the original catch limit from the shorebased and mothership surplus Pacific whiting (Figure 2).[6]

[4] The MSC seal of approval means that the West Coast Pacific whiting fishery has met the MSC standard for "good management practices to safeguard jobs, secure fish stocks for the future and to help to protect the marine environment".www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/pacific-hake-mid-water-trawl This certification has opened new markets, largely in the European Union, for Pacific whiting.

[5] www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/index

[6] For allocation and season catch summaries going back through 2005, see www.westcoast.fisheries.noaa.gov/fisheries/management/whiting/whiting_reports_and_rulemakings.html

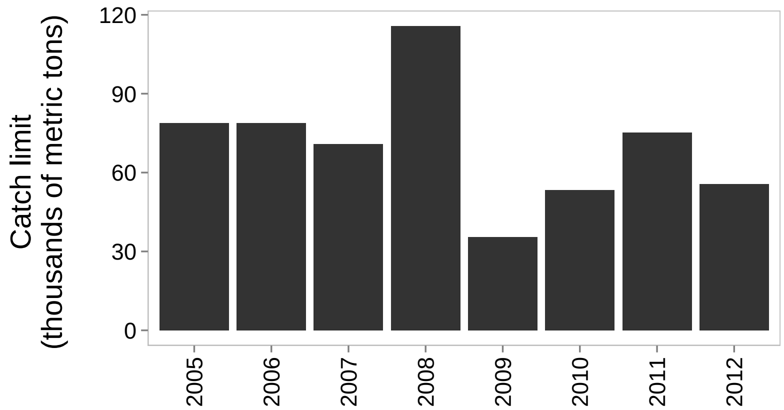

Figure 2: Catcher-processor sector Pacific whiting catch limits, including any reapportionments among sectors that may have occurred during the season (thousands of metric tons).

The catcher processor sector had low catch during the baseline EDC years (2009 and 2010) because of relatively small catch limits. After several seasons of large Pacific whiting harvests from 2006-2008, managers lowered the catch limit substantially in 2009, with a slight increase in 2010 (Figure 2). Low harvest levels and a large recruitment class in 2010 encouraged management to increase the catch limit again in 2011 to 2005-2007 levels. In 2012, updated projections resulted in a lower-than-usual catch limit.[7]. Because of high variability in recruitment and other sources of uncertainty in the stock assessment, catch limits have varied substantially during the EDC collections of 2009-2012. In 2012, the at-sea catcher-processor sector was allocated 55,584 metric tons of Pacific whiting from the Joint Management Committee of the Pacific Whiting Treaty; this was about 20,000 metric tons less than the allocation in 2011, and 2,200 metric tons more than the allocation in 2010 (see Catcher-Processor Data Summaries, Table 6.1). The catcher-processor fleet has typically caught nearly all of its catch limit of Pacific whiting in recent years. The average catch per vessel was 6,140 metric tons in 2012, and the fleet as whole caught 55,263 metric tons of Pacific whiting.

In addition to coordinating harvesting efforts among the catcher-processor vessels, the PWCC engages in voluntary bycatch avoidance initiatives as part of an effort to reduce the incidental catch of species of concern, such as the Endangered Species Act listed Pacific salmon and overfished rockfish. The catcher-processor fleet also caught about four prohibited and protected species per every 100 metric tons of Pacific whiting in 2012, mostly Chinook salmon, but also chum salmon, coho salmon, pink salmon, eulachon, and Pacific Halibut.[8] Since 2005, NOAA Fisheries has established mandatory bycatch limits in the At-sea Pacific whiting fishery for four species of rockfish that have been designated "overfished": Pacific ocean perch, canary rockfish, darkblotched rockfish, and widow rockfish. Levels of rockfish bycatch allowed vary by year and between species. In 2012, the catcher-processor sector was allocated 10.2 metric tons of Pacific ocean perch, 86.7 metric tons of widow rockfish, 8.5 metric tons of dark blotched rockfish, and 5.0 metric tons of canary rockfish. The vessels caught less than 30% of the allocated Pacific ocean perch, 50% of the widow rockfish, less than 30% of the allocated darkblotched rockfish, and 3% of the allocated canary rockfish. The At-sea Pacific whiting fishery on the West Coast has an average bycatch rate of less than 1% of the total Pacific whiting catch.[9]

[7] http://www.pcouncil.org/groundfish/stock-assessments/by-species/pacific-whiting-hake/

[8] Pacific Whiting Conservation Cooperative Amendment 20 Catcher/Processor Cooperative Final Annual Report 2012, http://www.pcouncil.org/wp-content/uploads/D2b_ATT2_CP_RPT_APR2013BB.pdf

[9] www.pcouncil.org/wp-content/uploads/INFO_RPT3_PWCC_Am20_-NOV2012BB.pdf

Catcher-Processor Sector Description

In 2012, the West Coast at-sea catcher-processor fleet consisted of 9 catcher-processors owned by three companies that harvest Pacific whiting (Pacific hake) *Merluccius productus* on the West Coast. Catcher-processors are large vessels with an average length of 304 feet. The average horsepower of the main engines was 6,500 in 2012. Average fuel capacity is about 270,000 gallons. The West Coast catcher-processor fleet caught approximately 11% of all West Coast fish, 31% of all limited entry trawl catch share fish, and 34% of Pacific whiting. Pacific whiting is typically found off the western coast of North America, from Southern Baja California to the Gulf of Alaska, and is a migratory coastal stock that moves northward in the summer and southward in the winter.

The catcher-processors also participate in fisheries in Alaska. In fact, the catcher-processor fleet spends 80% of their total days (days fishing, processing, and steaming on the fishing grounds) fishing Alaska pollock in the Bering Sea and Aleutian Islands (Figure 3). In 2012, the average catcher-processor spent 18 days steaming between the West Coast and Alaska. A summary of catcher-processor fleet activity is available in Catcher-Processor Data Summaries, Table 2.1.

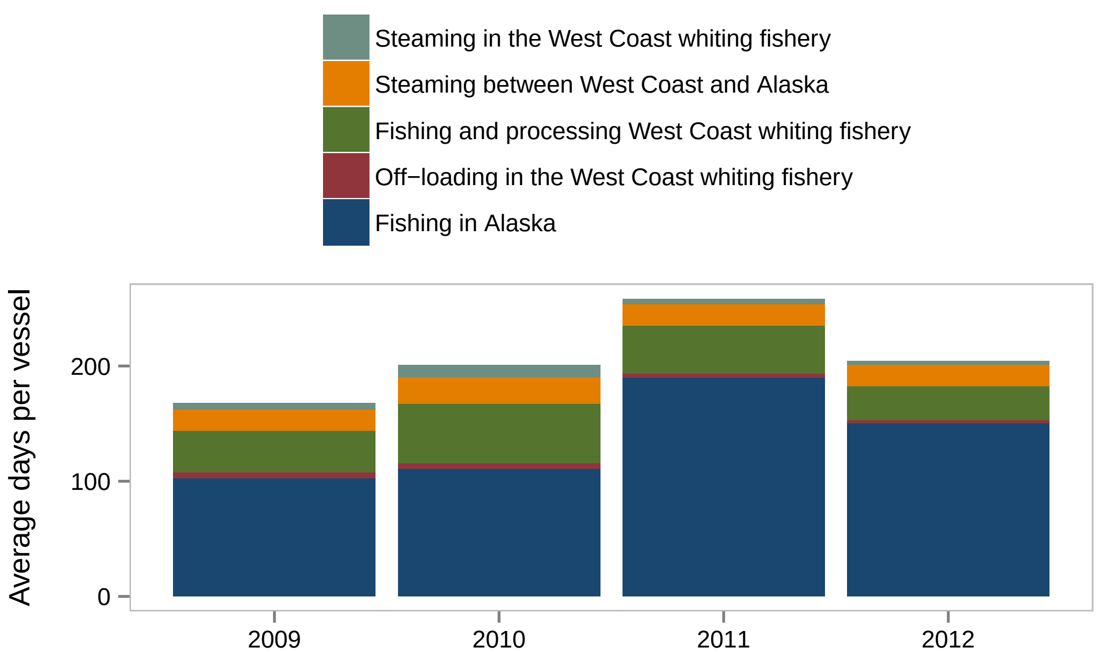

Figure 3: Average number of days spent in each activity per catcher-processor vessel.

The West Coast At-sea Pacific whiting season is open from May 15 through December. Fishing primarily takes place between June and November, with fishing sometimes continuing through December. Catcher-processor vessels spent an average of 33 days engaged in fishing activities on the West Coast in 2012. About 90% of the days at sea were spent catching and processing fish, while the remaining

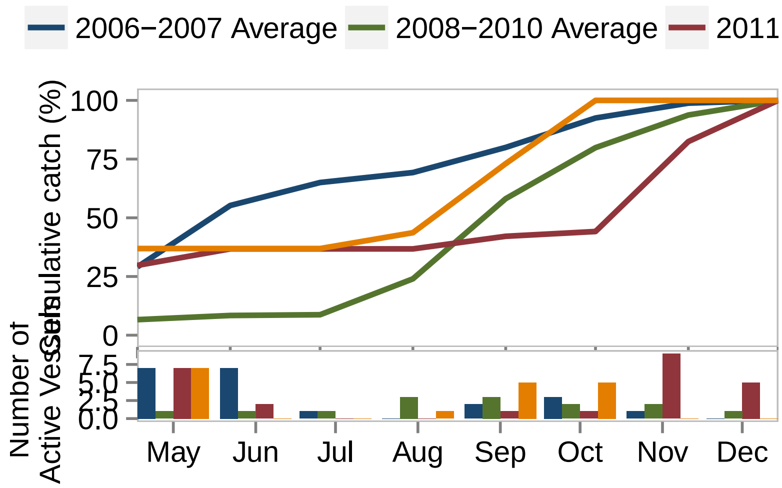

Figure 4: Cumulative catch (top) and number of active catcher-processors by month (bottom).

days were spent steaming. West Coast catcher-processors deliver Pacific whiting to three Washington state ports: Blaine/Bellingham, Seattle, and Tacoma.

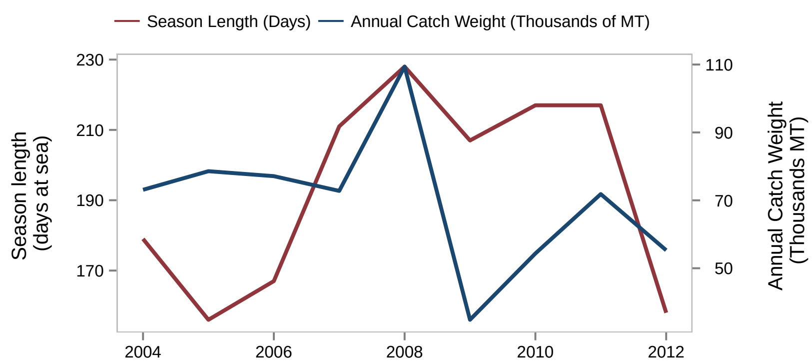

Figure 5: Season length and annual catch weight (thousands of metric tons).

The implementation of the 2011 catch share program does not appear to have had a clear impact on the seasonality or number of vessels participating in the catcher-processor sector (Figure 4). In 2011, nine vessels participated in the fishery during November and five in December, but in 2012 the sector concluded West Coast activities in October. The season length remained relatively constant in the 2009-2011 period, and shortened quite a bit during 2012 (Figure 5)

Economic Indicators

A catcher-processor's variable costs include Pacific whiting purchases, fuel, crew compensation, co-op membership fees, and observer coverage among other costs, and vary with the level of fishery participation (see Catcher-Processor Data Summaries, Table 8.1). Variable costs make up the majority of a vessel's total expenditures. The average variable costs on the West Coast were approximately $2.7 million in 2012. The three largest categories of variable costs are processing crew compensation (33%), fuel and lubrication (30%), and non-processing crew compensation (14%). Like the rest of the West Coast Groundfish Trawl Catch Shares program, catcher-processors have an observer on board 100% of

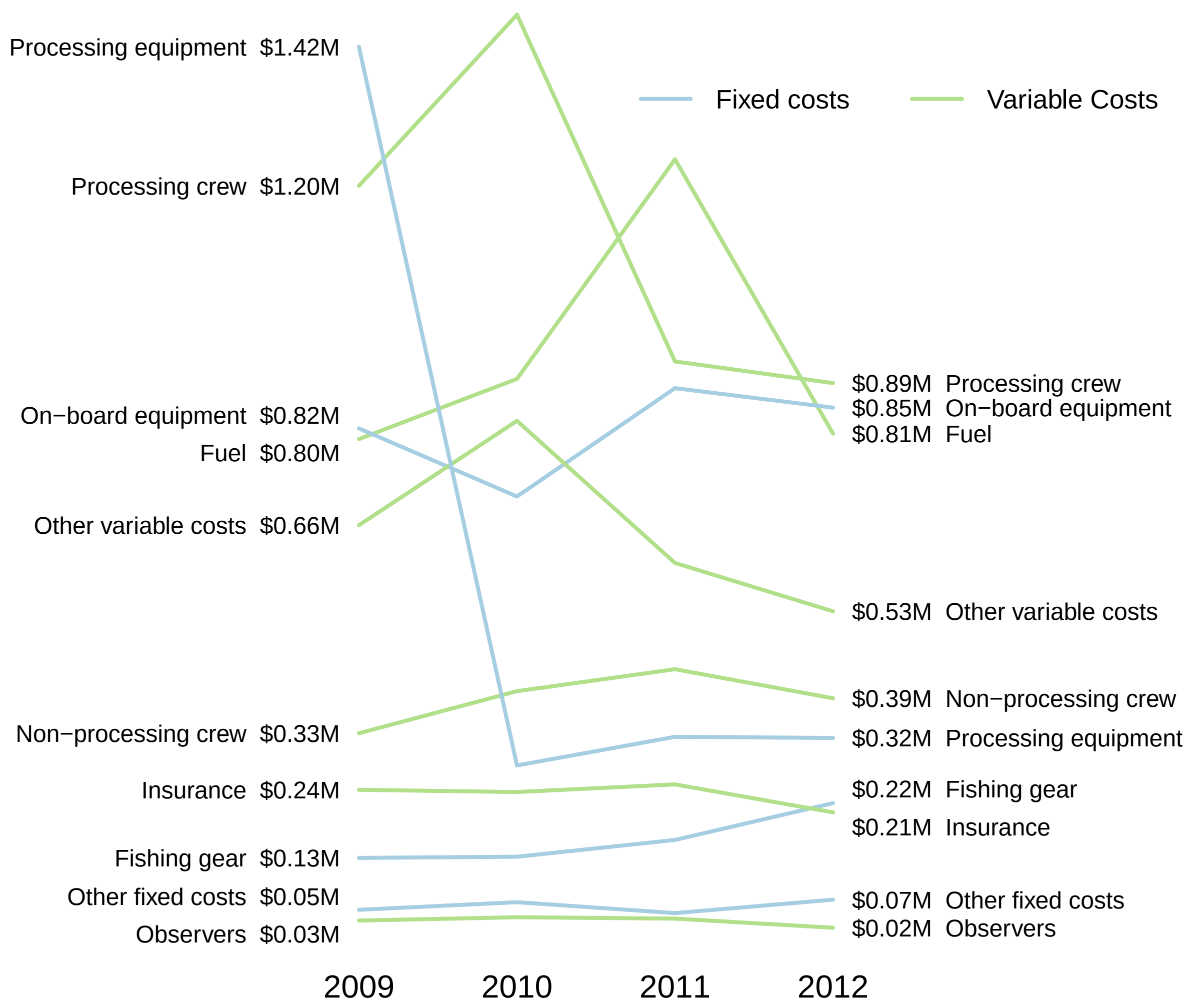

Figure 6: Average fixed and variable costs per vessel (2012 $).

the time while operating in the West Coast Pacific whiting fishery. The catcher-processors spent on average $21,607 on observer coverage in 2012.

In 2012, close to an average of 100 processing crewmembers (which includes line workers, fishmeal crew, quality control, technicians, cleanup, factory managers, combis, and mechanics who work on processing equipment) worked on each catcher-processor vessel in the West Coast whiting fishery. There were also an average of 23 non-processing crewmembers (this includes captain, deckhands, wheelhouse, galley, and engineers). Average compensation per processing and non-processing crewmember were $9,400 and $17,800 per position, respectively. Average processing crew compensation fell about 26%, while non-processing crew compensation increased 17% from 2009 to 2012 (see Figure 6).[10]

[10] Values reported in inflation adjusted 2012 dollars.

The Pacific States Marine Fisheries Commission tracks historical marine fuel prices, which in Washington State increased from $1.92 in March 2009 to a high of $4.10 in April 2012.[11] Catcher-processor's average daily fuel use, and average total fuel used for the season both declined from 2009, so that between 2009 and 2012, average fuel and lubrication expenses only increased 1.1% for the catcher-processor fleet.

Catcher-processor vessel fixed costs include capitalized expenditures and expenses on vessel and on-board equipment, fishing gear, and processing equipment. In general, these do not vary as directly as variable costs with the level of fishery participation.[12] The EDC form requests information for any equipment or gear used on the West Coast and for the vessel's total insurance and moorage costs (Tables 8.2-8.4). Average expenditures on vessel and on-board equipment, fishing gear, and processing equipment were $1.4 million in 2012; this was a decrease of 41% since 2009.

The large decline in processing equipment from 2009-2010 largely drove this overall fixed cost decrease, as fishing gear, on-board-equipment, and other fixed costs increased slightly over the 2009-2012 period (Figure 6). Average insurance and moorage costs were $195,000, which was a decrease of 31% between 2009 and 2012.

The average vessel's first-wholesale value of Pacific whiting production was close to $5.7 million in 2012. The product recovery rate (total weight of production divided by total weight of fish caught) ranged from 0.33 to 0.37.

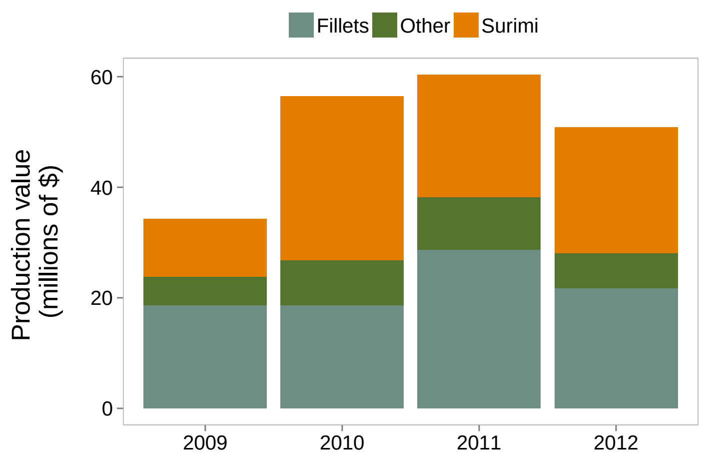

Figure 7: Fleet-wide production value by product type (millions of 2012 $). The Other category includes fish oil, fishmeal, headed and gutted, minced, roe, and other, these categories are combined to protect confidential data.

[11] www.psmfc.org/efin/docs/2012FuelPriceReport.pdf

[12] All of the average fixed costs collected, and the breakout for fixed costs on the West Coast, are reported in Catcher-Processor Data Summaries Section 8.3

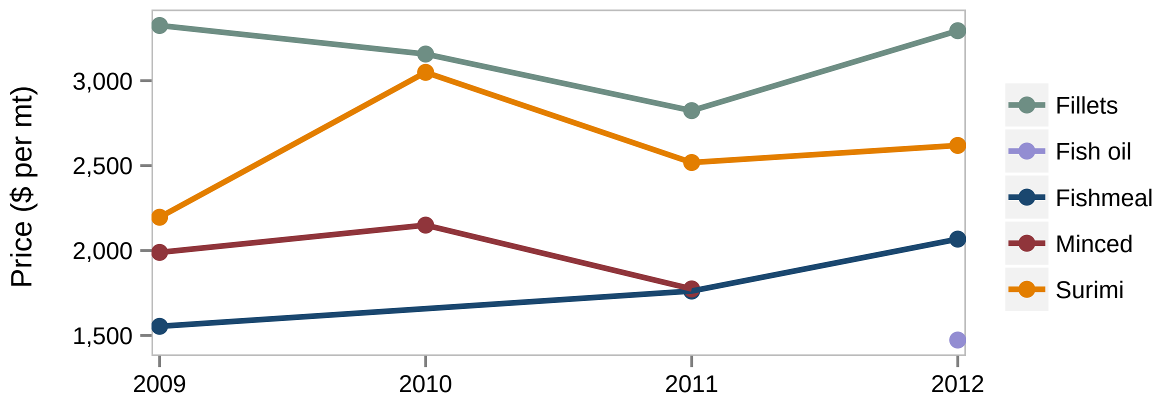

Figure 8: Average first-wholesale price by product type (2012 $). Some values suppressed to protect confidential information.

Fillet and surimi production made up 87% of the total production value in 2012 (Figure 7). Other production types include fishmeal, minced fish product, and fish oil.

In 2012, fillets received an average first-wholesale price of $3,300 per metric ton, followed by surimi and fishmeal at $2,600 and $2,100 per metric ton, respectively (Figure 8). The average first-wholesale price for all products was $2,700 per metric ton.

The EDC program measures the net economic benefits of the catch share program by reporting two types of net revenue. The first is variable cost net revenue, which is revenue minus variable costs. The second is total cost net revenue, which is revenue minus both variable and fixed costs.[13] To provide a complete picture of the changes that have occurred, both net revenue figures are presented at two scales. Figure 9 shows the average net revenue per vessel while Figure 10 shows the fleet-wide net revenue. Average net revenue shows the value generated by a typical vessel, while fleet-wide net revenue represents the total value generated by the fishery. Both figures only include revenues and costs associated with the catch share program. It is important to note that the EDC forms attempt to capture only costs that are directly related to vessel fishing operations, and not costs that are related to activities or equipment off the vessel. Therefore, the net revenue reported here is an overestimate of the true net revenue.[14]

Average variable cost net revenue was $3 million in 2012, a decrease from $3.5 million in 2011 and $3.8 million in 2009 (Figure 9). Average variable cost net revenue per metric ton produced was $1,397 in 2012; nearly the same as in 2009 ($1,411).

Average total cost net revenue per vessel was just over $1.4 million in 2012 (Figure 9). Average total cost net revenue per metric ton produced was $422 in 2012; an 18% decrease from 2011 to 2012 (Catcher-Processor Data Summaries, Table 10.3).

Variable costs for the catcher-processor fleet as a whole increased in 2011-2012 compared to 2009-

[13] See Figure 6 for a description of which costs are considered variable costs and which costs are considered fixed costs.
[14] See Catcher-Processor Data Summaries Section 8: Costs and Section 9: Net Revenue and Economic Profit for a more complete discussion of variable costs, fixed costs, and the calculation of net revenue

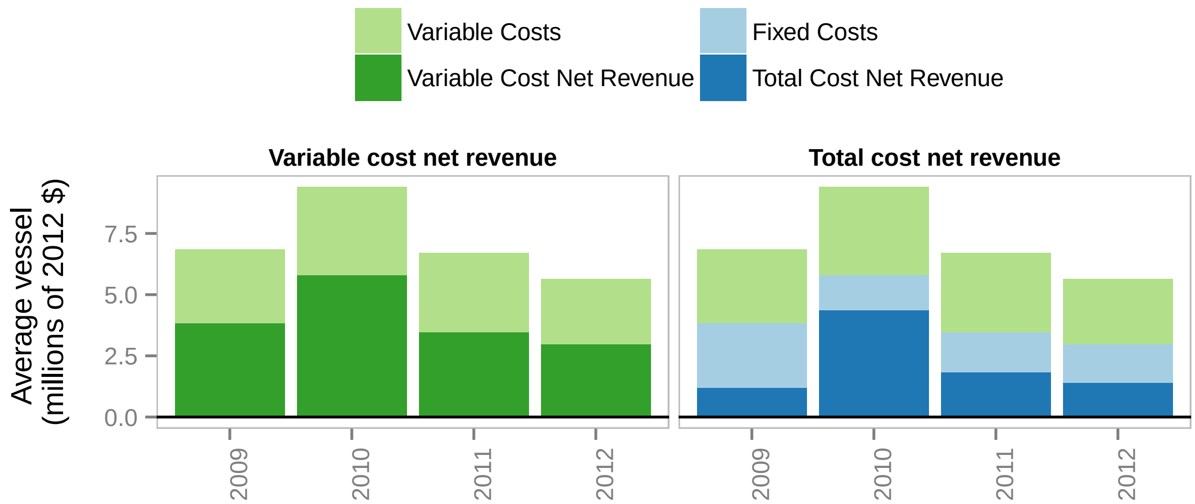

Figure 9: Average variable cost net revenue (revenue minus variable costs) (left), and average total cost net revenue (revenue minus variable costs and fixed costs) (right) (millions of 2012 $).

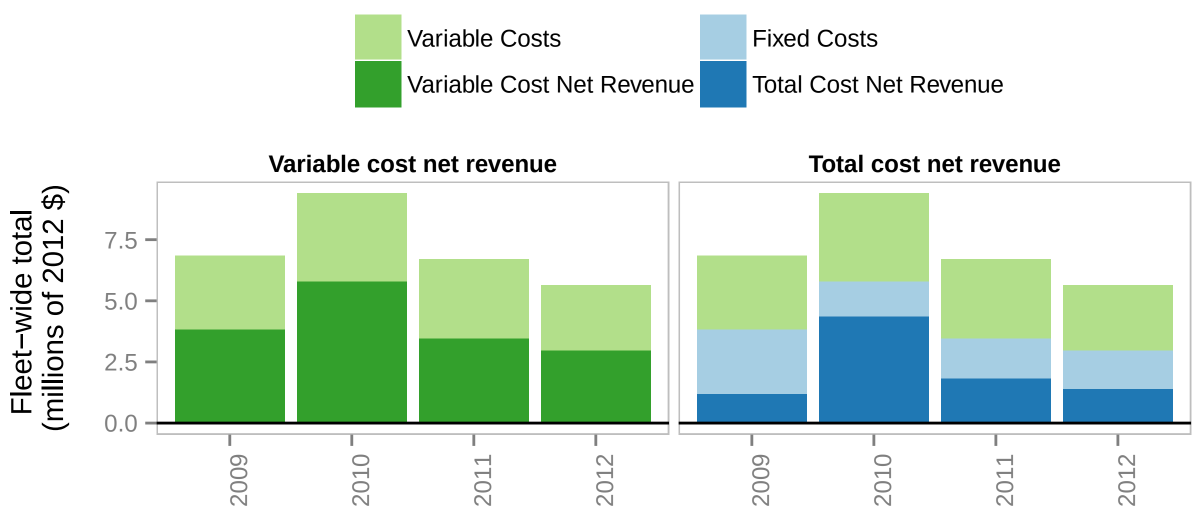

Figure 10: Fleet-wide variable cost net revenue (revenue minus variable costs) (left), and fleet-wide total cost net revenue (revenue minus variable costs and fixed costs) (right) (millions of 2012 $).

2010 (Figure 10). Fixed costs have remained fairly constant from 2009-2012, with a dip in 2010, which contributed to the relatively high total cost net revenue during 2010. Total cost net revenue has declined from 2010-2012, but remains higher than the 2009 season, when it was actually negative. The fleet-wide total cost net revenue has declined by 59% since 2010. The catcher-processors had a fleet-wide total revenue of $51 million in 2012, and the fleet spent about $38 million combined in fixed and variable costs on the West Coast.

CATCHER-PROCESSOR DATA SUMMARIES

CATCHER-PROCESSOR DATA SUMMARIES

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1 Introduction

1.1 Background

The US West Coast groundfish fishery takes place off the coasts of Washington, Oregon and California, and is comprised of over 90 different species of fish. The fish are harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal.[1] In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet.[2]

The Economic Data Collection (EDC) program[3] was implemented as part of these new regulations to monitor the economic effects of the catch share program. Annual economic data submissions are required from all fishery participants: catcher vessels, motherships, catcher-processors, and first receivers and shorebased processors §50 CFR 660.114. Baseline, pre-catch share, data were submitted in 2011 for the 2009 and 2010 operating years. Data for the first year the fishery operated under the catch share program (2011) were submitted in 2012, and the 2012 data submitted for this report were collected in 2013.

EDC Program has enhanced the quantity and quality of economic information available for analysis, and for the management of the West Coast groundfish trawl fishery. While costs and earnings data are available for shorebased catcher vessels starting in 2004[4], this is the first data collection from the catcher-processor fleet. This report summarizes the 2009-12 EDC catcher-processor survey data, and with its companion reports covering the other sector, is the second in what is expected to be an annual

[1] For more information about West Coast Groundfish, see www.westcoast.fisheries.noaa.gov/fisheries/groundfish/.

[2] More information about the West Coast Groundfish Trawl Catch Share Program is available online at www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/.

[3] Additional information on the EDC Program, including the EDC data collection forms can be found at www.nwfsc.noaa.gov/edc

[4] Lian, C.E. 2010. West Coast limited entry groundfish trawl cost earnings survey protocols and results for 2004. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-107, 35 p.

series of reports. EDC economists will expand and refine the scope and methods used with each new annual publication.

The catcher-processor fleet on the West Coast has operated as a cooperative since 1997, when the Pacific Whiting Conservation Cooperative (PWCC) was formed. The PWCC consists of three companies and all the catcher-processor vessels that currently participate in the Pacific whiting fishery on the West Coast. The primary function of the PWCC is to coordinate harvesting efforts of the catcher-processor vessels. While the 2011 catch share program dramatically changed the structure of the Pacific whiting shoreside and mothership fisheries, the catcher-processor fishery experienced fewer changes and has continued to operate as a single cooperative.

1.2 Cost Disaggregation

Some categories of costs on the EDC forms are for West Coast-only operations, while others are combined for the West Coast and Alaska Fisheries. Therefore, cost disaggregation on these shared costs is required to estimate total costs and net revenues on the West Coast.

When disaggregating the West-Coast and Alaska costs, we allocate proportionally to the weight of fish harvested in each fishery. We calculate a ratio of the sum of West Coast Pacific whiting weight for all the years the vessel has supplied data, over the weight in All Fisheries for the same time span:

$$\frac{\sum_y WT_n^{WestCoast}}{\sum_y WT_n^{AllFisheries}}$$

where n is an individual vessel in a season, summed over all of the years, y, that the vessel has supplied EDC data. Thus each vessel's ratio of costs being allocated to the West Coast is the same for all years. This method provides for a constant proportion of fixed costs allocated to the West Coast over time, and this proportion is less sensitive to fluctuations in TAC for the West Coast Pacific whiting and Alaska fisheries.

1.3 Understanding the report

The data provided in the summary tables throughout the report are for all vessels that fished on the West Coast during the survey year, unless otherwise noted.

Unlike the Catcher-Processor Overview, all dollar amounts reported in the Catcher-Processor Data Summaries are in nominal dollars.

All data submitted via the EDC Program are confidential under 402(b) of the Magnuson- Stevens Act (16 U.S.C. 1801, et seq.) and under NOAA Administrative Order 216-100[5]. In order to protect these data, a rule of three and a rule of 90-10 are implemented. The rule of three requires a response from at least three companies in order to show a summary statistic. The 90-10 rule requires that no single company's value should comprise over 90 percent of the value displayed. In the case of the West Coast whiting catcher-processor fishery, there are only three companies and therefore statistics are only shown in the tables if there was at least one vessel from each catcher-processor company reporting a positive value. The tables show a '***' for data points where there were less than three companies reporting the information, and/or if one company's responses accounted for greater than 90 percent of the average value. Zeroes are shown if all entities reported zeroes. More information about how confidential data are protected in the EDC Program can be found in the Administration and Operations Report.

One change implemented this year is the inclusion of a measure of variance of the data. The stacked dots included in the tables provide information about the coefficient of variation (CV) of the mean. We use the following scoring: · represents $CV < 0.5$, : represents $0.5 \leq CV < 1.0$, ⁝ represents $1.0 \leq CV < 2.0$, and ⁞ represents $2.0 \leq CV$. For 2009-2012, none of the CVs exceeded 2.44.

Although participants are identified on a calendar year basis, they complete the form using information based on the fiscal year of the entity. Currently data are presented for survey year, and therefore data assigned to a survey year may not overlap completely with the calendar year. Information obtained from outside of the EDC Program is adjusted to match the fiscal year provided on each form. For the four years of data collected from catcher-processors, all catcher-processors used the calendar year for the fiscal year.

The form had very few changes between the 2009-2010 data collection, and the 2011 and 2012 collections. The 2009 and 2010 EDC catcher-processor forms asked if the participant harvested or processed any fish during that calendar year, and those who answered "No" were not required to respond to any further questions. This option disappeared on the 2011 form and every participant was required to complete the form in its entirety. The only other change to the forms from 2009-2010 to 2011 pertained to offload locations, with "Tacoma" substituted for "Westport, Hoquiam" in response to input on the 2009 and 2010 surveys. In 2012, a space was added for participants to provide the total round weight harvested in the West Coast fisheries in addition to that harvested in Alaska/Other, in order to validate the external data source we will used to calculate revenue from West Coast whiting.

5 For more information about form administration, please see Appendix

1.4 Purpose of the data summaries

This report, like the other four EDC reports[6], has multiple objectives. The first is to provide basic economic data summaries that can be used for a variety of purposes associated with fishery management. Since much of the data collected are confidential under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 2007, the data are summarized as averages or totals for each question on the EDC forms. Thus summarized, the reports make the data available to the public for both research and informational purposes.

The second objective is to provide information about the performance of the catch share program. This includes information that can be used to monitor whether and to what degree the goals of the program are being met. It is expected that additional modeling will provide increased detail about program impacts. These reports will serve as the basis for the 5-year review of the catch share program that is mandated in the MSA, as well as the NOAA Fisheries National Catch Shares Performance Indicators. Currently, with just two years of catch share EDC data, it may be difficult to draw firm conclusions about the performance of the program. In addition, the catch share program may have a transitional period in the first few years as participants learn about the system and develop new business strategies.

Third, the reports serve as the basis for economic models that are used as part of the Pacific Fishery Management Council's (PFMC) biennial specification process for groundfish management. These models include the IO-PAC model[7], as well as estimates of revenue, costs, and net revenue.

Lastly, and perhaps most importantly, the data reports are expected to provide a useful catalyst for feedback on the data collected and its analysis.

The Administration and Operations Report describes the EDC Program administration and fielding of the surveys, the EDC forms, data quality controls and quality checks and data processing, and safeguarding confidential information. The other EDC reports provide basic data summaries of the catcher vessel, mothership, and first receiver and shorebased processor forms.

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6 In addition to the catcher-processor report, there are four companion reports:

- Economic Data Collection Program, Administration and Operations Report Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, Mothership Report, 2009-2012 Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, Catcher Vessel Report, 2009-2012 Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, First Receiver and Shorebased Processor Report, 2009-2012 Draft Report for PFMC Review (November 2014)

7 Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

1.5 Catcher-processor form administration

Completion of EDC forms is mandatory for participants in the catch share program. Survey participants are identified using contact information provided by the Northwest Regional Permit Office. The regulations for defining who is required to complete an EDC form differs between 2009 and 2010 data collection and all annual/ongoing data collections for 2011 onward. For the 2009-2010 period, all owners, lessees, and charterers of a catcher-processor vessel that harvested whiting in 2009 or 2010 as recorded in NOAA Fisheries' NORPAC database §660.114(b)(3)(i) are required to complete an EDC form. For 2011 and beyond, all owners, lessees, and charterers of a catcher-processor vessel registered to a C/P-endorsed limited entry trawl permit at any time are required to complete an EDC form §660.114(b)(3)(ii). For permit owners, a C/P-endorsed limited entry trawl permit application will not be considered complete until the required EDC form for the permit owner associated with that permit is submitted, as specified at §660.25(b)(4)(i). For a vessel owner, participation in the groundfish fishery (including, but not limited to, changes in vessel registration) will not be authorized until the required EDC form for that owner for that vessel is submitted, as specified, at §660.25(b)(4)(v). For a vessel lessee or charterer, participation in the groundfish fishery will not be authorized, until the required EDC form for their operation of that vessel is submitted.

A calendar year is used to determine which vessels meet the criteria. For example, in 2013 data were collected from all owners, lessees, and charters of a catcher-processor registered to a limited entry trawl permit with a C/P endorsement during 2012. The forms are fielded on this schedule in order to allow participants the time necessary to complete their taxes, which may contain some information that is required on the EDC forms.

If a form has missing information, or the information provided on the form is believed to be incorrect, EDC Program staff will attempt to contact the participant to correct the information. On occasion, the participant cannot be reached or the participant cannot provide the missing information. Missing or inaccurate data are treated on a case-by-case basis during analysis as documented in the Administration and Operations Report. Data are validated and verified with external data sources whenever possible. These data sources include the Permit Office and the At-Sea Hake Observer Program database.

2 Vessel Participation on the West Coast and in Alaska

The catcher-processor fleet participates in fisheries on the West Coast and Alaska. Table 2.1 provides the average days at sea by activity. Participants are instructed to count partial days as full days when recording days at sea on the forms.

Table 2.1: Average days at sea. Average days at sea by activity in West Coast and Alaska activities for catcher-processor vessels (N = number of vessels with non-zero, non-NA responses).

Description	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fishing and processing West Coast whiting fishery	36⁚	5	52⁚	6	42˙	9	29⁚	9
Steaming in the West Coast whiting fishery	6⁝	5	11⁚	6	5˙	9	3˙	9
Off-loading in the West Coast whiting fishery	***	***	***	***	3˙	9	3⁚	9
Steaming between West Coast and Alaska	***	***	23˙	6	19⁚	9	18⁚	9
Fishing in Alaska	***	***	111⁚	6	190˙	9	150˙	9

Table 2.2 presents the mean number of one way trips vessels made steaming between Alaska and the West Coast that year. In 2009, not all companies reported steaming trips and thus to preserve confidentiality we cannot report a value for that year.

Table 2.2: Mean number of one-way trips steaming between West Coast and Alaska. Mean number of one-way trips between the West Coast and Alaska (N = number of vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
One-way trips to Alaska	***	***	$3.3^{\cdot}$	6	$4.0^{\cdot}$	9	$3.2^{\cdot}$	9

Table 2.3: Number of vessels that fished on the West Coast and Alaska. The value for 2009 is suppressed because not all companies had vessels that fished in Alaska in 2009.

Description	2009	2010	2011	2012
Fishing and processing West Coast whiting fishery	5	6	9	9
Fishing in Alaska	***	6	9	9

3 Delivery Ports

Table 3.1 lists the number of vessels delivering to each port. Some vessels delivered to more than one port in a survey year. This frequency table summarizes responses to the question on the EDC that asks for the percentage of all West Coast whiting products off-loaded from the catcher-processor vessel at each major West Coast port.

Table 3.1: Off-loading. Total number of vessels that off-loaded in each port. Some vessels delivered to multiple ports in the same year.

Location	2009	2010	2011	2012
Astoria	0	0	0	0
At-sea	0	0	0	0
Blaine/Bellingham	0	2	4	4
Coos Bay	0	0	0	0
Port Angeles	0	0	0	0
Seattle	3	3	2	2
Tacoma	2	3	3	3
Westport	0	0	—	—

4 Vessel Physical Characteristics

Physical vessel characteristics are shown below in Table 4.1. Survey participants were asked to provide basic information about the vessel and its physical characteristics, including market value, replacement value, vessel length, horsepower of main engines, and fuel capacity from the most recent marine survey. Marine surveys are done on a regular basis and are often required for for insurance, financing, and other purposes.

Table 4.1: Average vessel characteristics. Average market value, replacement value, horsepower, fuel capacity and length (N = number of EDC vessels with non-zero, non-NA responses).

Vessel characteristic	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Market value ($)	59,706,000	5	57,583,333	6	55,181,111	9	54,847,778	9
Replacement value ($)	92,000,000	5	86,783,333	6	85,944,444	9	85,944,444	9
Vessel length (feet)	301	5	281	6	304	9	304	9
Vessel fuel capacity (gallons)	265,884	5	212,670	6	277,936	9	270,932	9
Horsepower of main engines	6,600	5	6,433	6	6,800	9	6,487	9

The participants provide information about whether the vessel was hauled out (vessel was removed from the water for maintenance and repairs). Each year about half of all active fishing vessels are hauled out. The information shown below in Table 4.2 provides context that may be used to explain major costs associated with vessel repair and maintenance.

Table 4.2: Haul outs. Number of vessels (N) that hauled the vessel during their fiscal year (% percent of vessels in survey year).

Haul out	2009		2010		2011		2012	
	N	%	N	%	N	%	N	%
YES	2	40.0%	3	50.0%	4	44.4%	2	22.2%
NO	3	60.0%	3	50.0%	5	55.6%	7	77.8%

5 Vessel Fuel Use and Crew Size

5.1 Fuel use

Table 5.1 contains the vessels' average fuel use per day, for propulsion or other uses, when engaged in West Coast activities. The information in the table below represents the average of the average fuel use provided by participants. As stated for Table 2.2, not all companies had vessels that steamed between the West Coast and Alaska in 2009, and thus this value is suppressed to maintain confidentiality.

Table 5.1: Average daily fuel use. Average daily fuel use (gallons per day) ((N = number of vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fishing, processing, and steaming in the West Coast whiting fishery	7,747·	5	7,229·	6	7,750·	9	7,600·	9
Steaming between West Coast and Alaska	***	***	5,503·	6	6,242·	9	6,284·	9

The average total fuel used by the vessel during the survey year for propulsion or other use in the West Coast whiting fishery excludes fuel used for steaming between the West Coast and Alaska.

Table 5.2: Total fuel use. Average total fuel use (gallons) (N = number of vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Total bunker fuel		0		0		0		0
Total diesel	362,185⁝	5	336,837⁚	6	327,614·	9	230,257⁚	9
Total fish oil	***	***	***	***	***	***	***	***

5.2 Crew

Table 5.3 presents the average number of processing and non-processing crew members when the vessel was operating in the West Coast whiting fishery during the survey year. Processing crew includes line workers, fishmeal crew, quality control, technicians, cleanup, factory managers, combis, and mechanics who work on processing equipment. Non-processing crew includes the captain, deckhands, wheelhouse, galley, and engineers.

Table 5.3: Average crew size. Average crew size of non-processing and processing crew (N = number of EDC vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Non-processing	24.0 ·	5	21.0 ·	6	32.0 ·	9	22.6 ·	9
Processing	87.8 ·	5	91.3 ·	6	83.2 ·	9	96.9 ·	9

6 Whiting Harvest

Pacific whiting is managed through a bilateral agreement between the United States and Canada, known as the Pacific Whiting Treaty. The agreement allocates a percentage of the harvest quota to the United States. Once the U.S. allocation has been determined, it is then allocated between catcher-processor, mothership, shoreside, and tribal sectors. The final annual allocations to the catcher-processor sector (Table 6.1) are taken from the annual *Pacific Whiting Fishery Summary* provided by the Northwest Regional Office[1].

The West Coast data for the catcher-processor sector annual whiting fish purchases in Table 6.1 are provided by the A-SHOP through the Pacific Fisheries Information Network (PacFIN) database. The values for average vessel harvest and total fleet harvest in all fisheries (including the West Coast and Alaska) are from a question on the EDC form that asks participants to provide the total round weight of all fish harvested by the vessel in all fisheries during the survey year.

Table 6.1: Annual catcher-processor allocation, West Coast whiting harvest, and West Coast and Alaska harvest. Total final allocation of whiting in the West Coast catcher-processor whiting fishery, total whiting catch, and total catch including catch in Alaska (N = number of vessels with non-zero, non-NA responses).

Description	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Catcher-processor West Coast whiting allocation	35,376		53,379		75,138		55,584	
West Coast whiting catch (A-SHOP)	34,552	5	54,285	6	71,679	9	55,263	9
West Coast and Alaska catch	126,671	5	199,475	6	453,470	9	371,686	9

[1] www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/whiting/

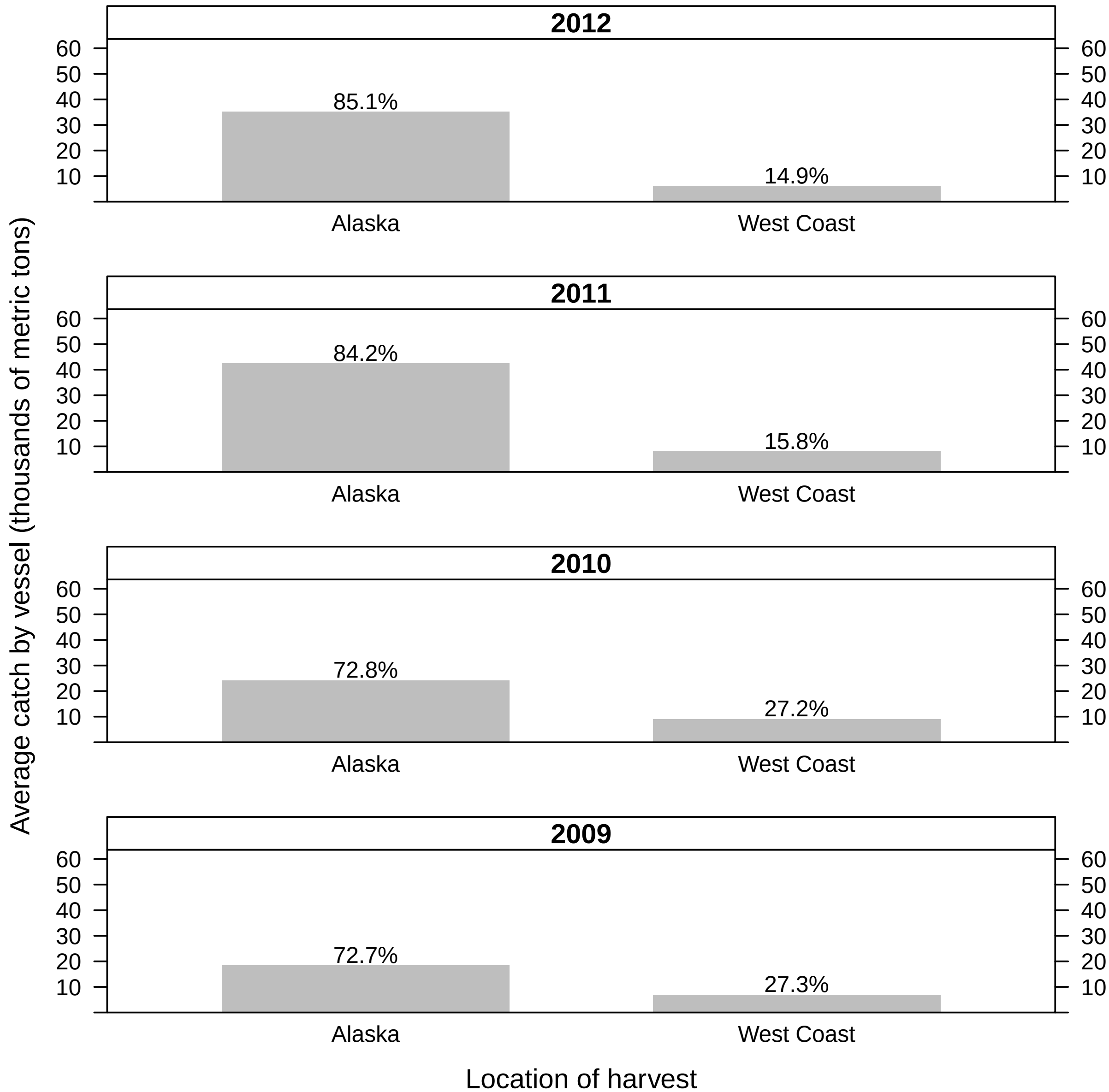

Figure 6.1: Average annual harvest on the West Coast and Alaska. Average annual harvest (thousands of metric tons) from 2009 to 2012 on the West Coast and in Alaska. Percentages above each bar indicate the portion of the total harvest caught by location.

7 Revenue

The EDC forms ask about four forms of revenue: revenue from production of seafood products, revenue from sale or lease of West Coast catcher-processor endorsed permits, revenue from the sale or lease of co-op shares, and revenue from lease or bareboat charter of the vessel. All vessels that fished on the West Coast reported production revenue, but there were no vessels that reported revenue from the other three categories. It is possible that vessels may have made end-of-season informal arrangements regarding leftover quota; however, this type of transfer is not captured by the EDC form.

Tables 7.1 and 7.2 provide summary information on annual production in the West Coast whiting catcher-processor sector. Participants provide total weight of production and value of production by major product categories. These values include any post-season adjustments for products produced during the survey year. Not included in the value of production are any additional payments received to cover shipping, handling, or storage costs associated with the sale beyond the free-on-board (buyer assumes responsibility and liability for the product and pays shipping costs) port of discharge. The revenue only includes fish caught and processed on the West Coast.

Table 7.1: Whiting production weight. Average production weight (metric tons) for whiting (N = number of vessels with non-zero, non-NA responses).

Product Category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fillets	1,122	5	987	6	1,130	9	732	9
Fish oil	***	***	***	***	***	***	36	7
Fishmeal	454	3	***	***	387	6	316	6
Headed and gutted		0	***	***	***	***	***	***
Minced	309	4	511	4	338	7	***	***
Roe		0	***	***		0		0
Round		0		0		0		0
Stomachs		0		0		0		0
Surimi	953	5	1,621	6	975	9	965	9
Other	***	***	***	***	***	***	***	***
Average total weight	2,648	5	3,310	6	2,722	9	2,073	9

Table 7.2: Whiting production value. Average production value ($) for whiting (N = number of vessels with non-zero, non-NA responses).

Product Category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fillets	3,540,092	5	3,001,928	6	3,141,512	9	2,411,717	9
Fish oil	***	***	***	***	***	***	53,450	7
Fishmeal	669,387	3	***	***	670,348	6	653,583	6
Headed and gutted		0	***	***	***	***	***	***
Minced	583,390	4	1,058,464	4	589,839	7	***	***
Roe		0	***	***		0		0
Round (unprocessed)		0		0		0		0
Stomachs		0		0		0		0
Surimi	1,985,758	5	4,761,903	6	2,417,943	9	2,527,992	9
Other	***	***	***	***	***	***	***	***
Other species		0		0		0		0
Average total value	6,502,348	5	9,059,110	6	6,601,671	9	5,652,803	9

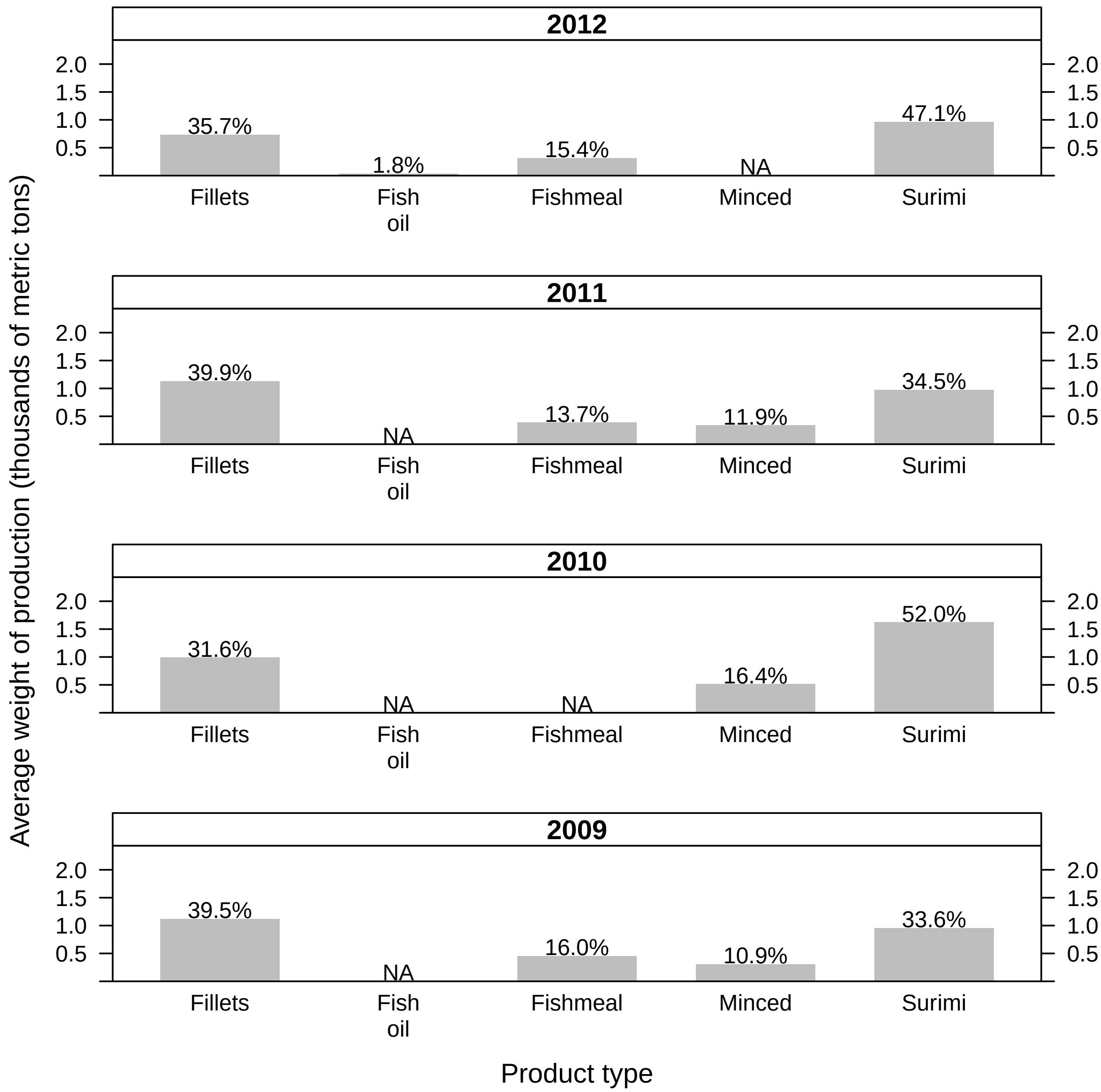

Figure 7.1: Production weight by product type and year. Average whiting production value by product type and year. Confidential data have been suppressed and replaced with "NA", product categories where production value were reported as zero for all vessels for all years are not included. The percentage of each product type of all production is listed on the top of each bar.

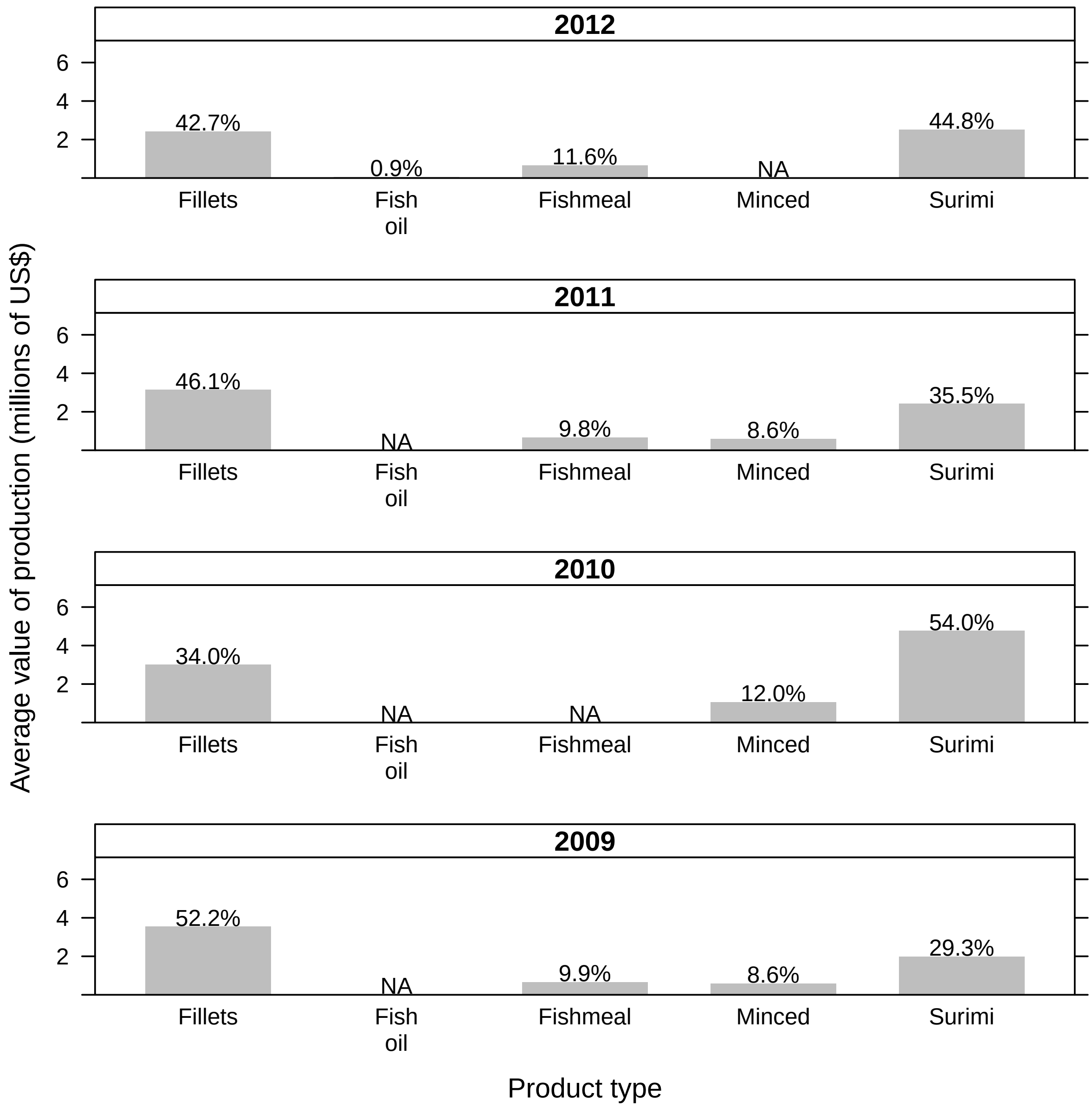

Figure 7.2: Production value by product type and year. Average whiting production value by product type and year. Confidential data have been suppressed and replaced with "NA", product categories where production value were reported as zero for all vessels for all years are not included. The percentage of each product type of all production is listed on the top of each bar.

8 Costs

This section of the report describes the cost data that are collected on the EDC catcher-processor form. It reports variable costs, fixed costs, and total costs, and how those costs are disaggregated to estimate the proportion of costs attributed to West Coast fisheries.

For the purposes of the EDC, costs are divided into two categories: variable costs and fixed costs. Variable costs vary with the level of fishery participation, and generally include items such as fuel and crew compensation. Fixed costs do not vary with the level of fishery participation, and generally include items such as vessel capital improvements. The designation of a cost as variable or fixed depends on many factors, including the relevant time horizon and use of the data. While some costs would clearly be considered fixed (e.g., the purchase of a new engine), others are more difficult to categorize. For the purposes of this report, we consider the costs listed in Tables 8.2, 8.3 and 8.7 to be fixed, and the costs listed in Table 8.1 to be variable. The EDC Program will continue to explore, and possibly improve, the categorization of these costs.

The cost section of the EDC form collects both "capitalized expenditures" and "expenses" for vessel improvements and maintenance, fishing gear, and processing equipment. This is because for tax accounting purposes, certain costs may be treated as either capitalized or expensed. Capitalized expenditures are depreciated over a number of years. Expensed items are fully deducted as a cost for the year in which they occur. In an effort to reduce the reporting burden and errors, these data are collected as they are reported in the businesses' accounting systems.

In order to conduct economic analyses of specific fisheries it is important to have costs broken out by fishery. For some costs, it may be feasible for participants to break out or track costs at the fishery level. However, for most costs this is impossible. During the EDC form development process, a key issue was the determination of which costs could reasonably be broken out by fishery or groups of fisheries. Each cost item is assigned to one or more categories based on how it is commonly tracked by industry members: 1) used on West Coast fisheries only (West Coast Only); 2) used on the West Coast and in other fisheries (Shared); and 3) used in all fisheries (All) regardless of whether they are used on the West Coast.

Some costs that are required for economic analysis are not asked for on the EDC forms because they are available through other sources, or can be calculated through the At-Sea Hake Observer Program or Northwest Regional Permit Office data.

Finally, there are a variety of costs that are associated with running a catcher-processor that are not requested on the form because it is difficult to determine the share of the cost associated with the vessel. These costs include items that can be used for activities other than fishing, or are too difficult to allocate to a particular vessel in a multi-vessel company. These expenses include office space, vehicles, storage of equipment, professional fees, and marketing. In general, the EDC forms attempt to capture costs that are directly related to vessel maintenance and fishing operations, and not costs that are related to activities or equipment off the vessel. For these reasons, the EDC aggregated measures of costs (variable costs, fixed costs, and total costs) underestimate the true costs of operating a business.

8.1 Variable costs

Variable costs were collected for all West Coast activities. Unlike fixed costs, variable costs are directly related to fishing operations, and therefore it is possible for vessels to separate expenses for activities on the West Coast from other activities.

Table 8.1: Variable expenses. Average variable expenses on the West Coast for EDC vessels ($) (N = number of vessels with non-zero, non-NA responses).

Expense Category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Communication	15,896	5	21,514	6	16,765	9	7,165	9
Food	88,372	5	108,934	6	108,896	9	138,566	9
Freight	***	***	***	***	***	***	***	***
Fuel and lubrication	758,126	5	862,106	6	1,225,046	9	808,009	9
Marine Stewardship Council fees	***	***	***	***	***	***		0
Non-fish ingredients (additives)	217,929	5	297,747	6	142,759	9	141,779	9
Non-processing crew	314,131	5	383,442	6	426,262	9	386,814	9
Observers	31,353	5	36,923	6	35,551	9	21,607	9
Offloading	***	***	***	***	***	***	***	***
On-board cargo/product insurance	***	***	***	***	13,087	9	76,432	9
Packing materials	204,837	5	232,183	6	241,636	9	142,494	9
Processing crew	1,140,442	5	1,420,313	6	908,419	9	888,312	9
Sea State data monitoring	3,701	5	3,982	6	***	***	6,308	9
Supplies	***	***	***	***	7,899	9	***	***
Travel	***	***	***	***	***	***	15,042	8
Average total variable costs	2,859,616	5	3,483,184	6	3,184,221	9	2,672,069	9

8.2 Fixed costs

8.2.1 Costs on vessel and on-board equipment, fishing gear, and processing equipment

Table 8.2 presents average annual capitalized expenditures. Survey participants are asked to provide capitalized expenditures for the survey year associated with the following categories:

- New and used vessel and on-board equipment: excludes processing equipment and fishing gear, includes all electronics, safety equipment, and machinery not used to harvest or process fish
- Processing Equipment: excludes all equipment, machines, and buildings based primarily on shore, excludes any processing equipment that is not used at least partially in the West Coast whiting fishery, and includes on-board freezers, storage equipment, packing equipment, conveyors, and on-board cargo handling equipment
- Fishing gear: Includes nets, cables, doors, and fishing machinery used in the West Coast whiting fishery, excludes any fishing gear that is not used at least partially in the West Coast whiting fishery

Participants are asked to split out West Coast capitalized expenditures and expenses on fishing gear, and capitalized expenditures on processing equipment from shared expenses.

Table 8.2: Capitalized expenditures on vessel and on-board equipment, fishing gear, and processing equipment. Average capitalized expenditures ($) on vessel and on-board equipment, fishing gear, and processing equipment (N = number of EDC vessels with non-zero, non-NA responses).

Expenditure category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fishing gear shared between the West Coast and other fisheries	$96,875	5	***	***	***	***	$537,424	9
Fishing gear used only on the West Coast	***	***	***	***		0		0
Processing equipment shared between the West Coast and other fisheries	***	***	***	***	***	***	***	***
Processing equipment used only on the West Coast		0	***	***		0		0
Vessel and on-board equipment in all fisheries	$1,913,124	5	$955,672	6	$2,022,532	9	$1,380,545	9
Average total capitalized expenditures	$7,229,239	5	$1,334,249	6	$2,739,627	9	$2,571,425	9

Table 8.3: Expenses on vessel and on-board equipment, fishing gear, and processing equipment. Average expenses ($) on vessel and on-board equipment, fishing gear, and processing equipment (N = number of vessels with non-zero, non-NA responses). Note that some expenses were requested for all fisheries the vessel participates in (West Coast, Alaska, and other) and others are for West Coast Fisheries only (Washington, Oregon, and California).

Expense category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fishing gear repair and maintenance shared between the West Coast and other fisheries	280,297⁚	5	180,301⁚	6	353,725⁚	9	367,760·	9
Fishing gear repair and maintenance used only on the West Coast	***	***	***	***	***	***		0
Processing equipment shared between the West Coast and Alaska	875,899⁚	5	596,454⁚	6	719,308⁚	9	812,369⁚	9
Vessel and on-board equipment	1,160,418⁚	5	1,034,496·	6	1,610,890⁚	9	1,653,709·	9
Average total costs on vessel and on-board equipment, fishing gear, and processing equipment	2,350,019⁚	5	1,843,085·	6	2,708,413·	9	2,833,839·	9

8.2.2 Other fixed costs

Table 8.4: Other fixed expenses. Average fixed expenses ($) on all other categories (N = number of vessels with non-zero, non-NA responses).

Expense category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Insurance premium payments (hull and machinery, protection and indemnity, and pollution insurance)	890,246	5	742,139	6	896,156	9	523,393	9
Lease of vessel		0		0		0		0
Moorage	184,240	5	192,216	6	153,244	9	260,475	9
Average total fixed costs	1,074,485	5	934,355	6	1,049,401	9	783,869	9

Table 8.5: Depreciation. Average depreciation taken during survey year (N = number of vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Depreciation	2,694,639	5	2,141,627	6	3,029,734	9	3,373,013	9

8.3 Fixed costs on the West Coast

As described above, not all costs reported on the EDC forms are for West Coast only operations. Therefore, cost disaggregation was required both to estimate total costs and total cost net revenue on the West Coast. Estimates of West Coast only costs are calculated using a ratio of pounds caught on the West Coast to pounds caught in all fisheries, including Alaska, Tribal, and any other fisheries, which provides an estimate of the proportion of the vessel costs attributed to the West Coast for costs that are shared. This approximation for the proportion of shared spending on the West Coast is then summed with the West Coast Only spending categories to provide a total estimate for annual West Coast Only spending (Table 8.6). See Section 1.2 above for discussion of this method.

Table 8.6: West Coast fixed costs on vessel and on-board equipment, fishing gear, and processing equipment. Capitalized expenditures and expenses on vessel and on-board equipment, fishing gear, and processing equipment on the West Coast (N = number of vessels with non-zero, non-NA responses).

Cost category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fishing gear	125,924	5	129,689	6	158,827	9	219,975	9
Processing equipment	1,350,256	5	269,611	6	320,343	9	323,657	9
Vessel and on-board equipment	774,219	5	681,873	6	866,514	9	849,281	9
Average total West Coast costs on vessel and on-board equipment, fishing gear, and processing equipment	2,250,399	5	1,081,173	6	1,345,684	9	1,392,914	9

Table 8.7: West Coast costs on insurance, moorage, and leasing. Expenses on insurance, moorage, and leasing on the West Coast (N = number of vessels with non-zero, non-NA responses).

Cost category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
West Coast portion of insurance expenses	221,245˙	5	219,008˙	6	232,765⁚	9	128,809˙	9
West Coast portion of lease expenses		0		0		0		0
West Coast portion of moorage expenses	47,560˙	5	59,990˙	6	44,215⁝	9	66,290˙	9
Average total fixed costs	268,805˙	5	278,997˙	6	276,980⁚	9	195,099˙	9

8.4 Summary of West Coast costs

Table 8.8: Summary of costs on the West Coast. Average capitalized expenditures and expenses on vessel and on-board equipment, fishing gear, and processing equipment, other fixed costs, and all variable costs on the West Coast (N = number of EDC vessels with non-zero, non-NA responses).

Cost category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Total costs on vessel and on-board equipment, fishing gear, and processing equipment	$2,250,399⁝	5	$1,081,173⁚	6	$1,345,684˙	9	$1,392,914⁚	9
Total variable costs	$2,859,616⁚	5	$3,483,184⁚	6	$3,184,221˙	9	$2,672,069˙	9
Total other fixed costs	$268,805˙	5	$278,997˙	6	$276,980⁚	9	$195,099˙	9
Average total costs	$5,378,820˙	5	$4,843,354⁚	6	$4,806,885˙	9	$4,260,082˙	9

8.4.1 Quota and permit costs on the West Coast

The EDC form requests information on quota and permit expenses. No vessels reported lease or purchase of permits; however, vessels may have made end-of season informal arrangements regarding leftover

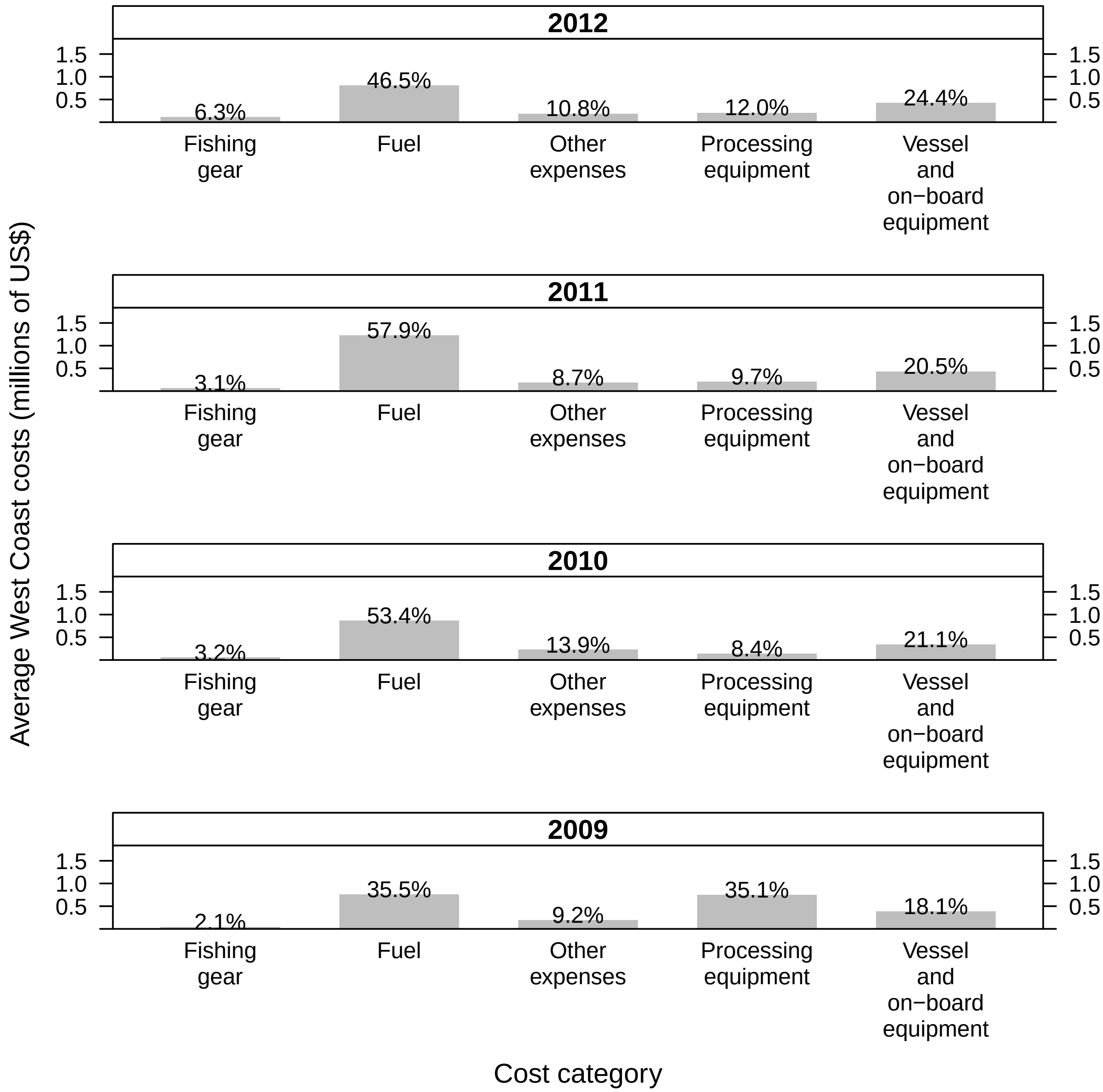

Figure 8.1: Average costs by category on the West Coast. Average costs by category on the West Coast including capitalized expenditures and annual expenses (millions of dollars). Crew includes both processing and non-processing crew expenses shown in Table 8.7. The "Other" category includes expenses on additives, communication, fees, insurance, freight, moorage, observers, offloading, supplies, packing, travel, and Sea-State monitoring. Percentages above each bar indicate the portion the category makes up of total West Coast costs.

quota. This type of transfer is not captured by the EDC form.

9 Net Revenue and Economic Profit

Net returns from operating a vessel are presented in this section. The level of net returns not only indicates whether a vessel is a viable ongoing business, but also the size of net benefit that is created from society's perspective. Two different measures of net returns are examined. They differ in the types of costs that are taken into account, and therefore, in their interpretation and use. The first is a monetary, financial measure that attempts to track a vessel's net cash flow, which we call *net revenue*. It is calculated as revenue minus monetary costs. The only costs that are accounted for are those that are actually paid or associated with a financial transaction. The second measure attempts to track the broader economic performance of a vessel and includes all costs regardless of whether there is a cash or financial transaction. Costs are measured by their true resource costs, which may or may not be equal to monetary outlays. This measure is called *economic profit*[1]. The distinction between the two measures is probably most easily understood through a few examples relevant to fisheries.

Labor costs for the net revenue measure are the total payments to the crew and captain. If work is performed that is not paid for, then it is not included as a cost. This commonly occurs in commercial fishing when the owner of a vessel is also the captain, but does not draw a captain's wage. In this case, the net revenue is higher than it would be if the captain drew a wage or hired a captain. In the end, the vessel owner-captain is not necessarily any worse off since s/he is the residual claimant to the net revenue. However, the net revenue would be higher than a comparable vessel that hired a captain[2]. Economic profit, on the other hand, accounts for the cost associated with an owner's time that is used as a captain. This is called an opportunity cost in the economics literature[3], and is typically approximated by the wage of a comparably productive captain[4].

A second example of the difference between net revenue and economic profit is the treatment of vessel capital costs. Again, net revenue only includes costs that are actually paid, which includes items such as vessel repair, maintenance, and upgrades. Economic profit would also include the opportunity cost of owning the vessel, a capital asset. By owning a vessel, the owner foregoes other investment

1 Whitmarsh D., James C., Pickering H., Neiland A. 2000. The profitability of marine commercial fisheries: a review of economic information needs with particular reference to the UK. Marine Policy, Vol. 24(3), pp. 257-263

2 The same would also be true when a vessel owner does not receive a wage for work performed to repair or maintain a vessel or gear.

3 See Boardman, Anthony, David Greenberg, and Aidan Vining. Cost-Benefit Analysis: Concepts and Practice, Prentice Hall, NJ. 2000. pp. 31-32.

4 A more accurate measure would be the owner-captain's most valued wage off the vessel

opportunities that would provide a rate of return. This is called the opportunity cost of capital, and is typically approximated by the market rate of return associated with businesses of comparable risk, multiplied by the market value of the vessel.

Both net revenue and economic profit are useful measures for fishery management. Net revenue attempts to measure the annual financial well-being of vessel operations. It can be used to determine if there is a monetary gain or loss, or how changes in fishery management may affect the level of monetary gain or loss. Economic profit is a better indicator of the long-term viability of fishery operations since it includes all costs, and values the costs at their opportunity cost. It can be used to estimate whether there are incentives or disincentives to invest in capital, or enter and leave the fishery. It is also a better measure of the net benefit of the fishery to the nation.

Calculations of net revenue are included in this report. The cost categories used in net revenue, based on those reported in the EDC forms, are discussed below. Currently, calculations of economic profit are beyond the scope of the report. Economic profit relies on opportunity costs, which may be different from some of the costs reported on the EDC forms, so additional methods and analyses are required. The EDC Program economists will continue to work on developing measures of economic profit so that it may be included in future reports.

9.1 Net revenue

Net revenue is calculated two ways: using only variable costs, and using variable costs plus fixed costs (total costs)[5]. The first calculation is called *variable cost net revenue*, while the second is called *total cost net revenue*. Variable cost net revenue is useful to examine changes in fishery operations that are not so great as to affect fixed costs. For example, the cost of fishing/processing an additional day, or catching/processing an additional metric ton of fish, is better represented by only considering variable costs. Total cost net revenue is usually a better summary measure of financial gain or loss for an entire year, season, or fishery.

There are several caveats associated with the net revenue calculations in this report. As noted in Section 8, there are a variety of costs that are associated with running a vessel that are not requested by the EDC form because it is difficult to determine the share of the cost associated with the vessel. These costs include items that can be used for activities other than fishing/processing, or are too difficult to allocate to a particular vessel in a multi-vessel company. These expenses include office space, vehicles, and transport trucks, storage of equipment, professional fees, and marketing. In general, the EDC forms attempt to capture costs that are only directly related to vessel maintenance and fishing/processing operations, and not costs that are related to activities or equipment off the vessel. Therefore, the EDC calculated net revenue is an overestimate of the true net revenue. The difference is likely much greater

5 See Section 8 for a more complete discussion of variable and fixed costs used in this report

for total cost net revenue than variable cost net revenue since most of the excluded costs are fixed costs.

Another caveat is that the EDC forms do not collect information about income taxes or financing costs. This has several implications. The first is that these costs are not included in the net revenue calculations. Therefore, net revenue is greater than it would be otherwise. The second is that in lieu of financing information (principal and interest payments), EDC total cost net revenue uses the total costs associated with vessel and gear purchases, repair, maintenance and improvements. For example, if a new engine is purchased, the total cost of the engine is used, even though the actual cash outlay, if it were financed, would only be the principal and interest payments made that year. It is likely that many larger capital costs, and perhaps some operating costs, are financed. This would mean that the actual cash outlays in a particular year for those items would be less than what is used in the EDC for the net revenue calculation. Over time, this may balance out to some degree because previously financed or purchased capital and equipment are also not included, except for the year in which they are purchased[6]. Moreover, total cost net revenue is expected to be representative of actual total cost net revenue only when averaged over many years and across vessels because relatively large capital costs occur periodically.

9.1.1 Net revenue for all West Coast fishing activities

Average net revenue is calculated for all activities on the West Coast. West Coast revenue only includes revenue from production of fish. The variable and fixed costs do not include costs related to acquiring limited entry permits, quota shares, or quota pounds.

$$\text{Variable cost net revenue} = \text{West Coast revenue} - \text{West Coast variable costs}$$

$$\text{Total cost net revenue} = \text{West Coast revenue} - (\text{West Coast variable costs} + \text{West Coast fixed costs})$$

[6] At best it is just a partial balancing out because the interest payments are not accounted in the EDC data.

Table 9.1: West Coast variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue (millions of dollars) on the West Coast (N = number of vessels). Fixed costs include capitalized expenditures and expenses on vessel and on-board equipment, fishing gear, and processing equipment and other fixed costs (N = number of EDC vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$6.50	5	$9.06	6	$6.60	9	$5.65	9
(Variable costs)	$2.86	5	$3.48	6	$3.18	9	$2.67	9
Variable cost net revenue	**$3.64**	**5**	**$5.58**	**6**	**$3.42**	**9**	**$2.98**	**9**
(Fixed costs)	$2.52	5	$1.36	6	$1.62	9	$1.59	9
Total cost net revenue	**$1.12**	**5**	**$4.22**	**6**	**$1.79**	**9**	**$1.39**	**9**

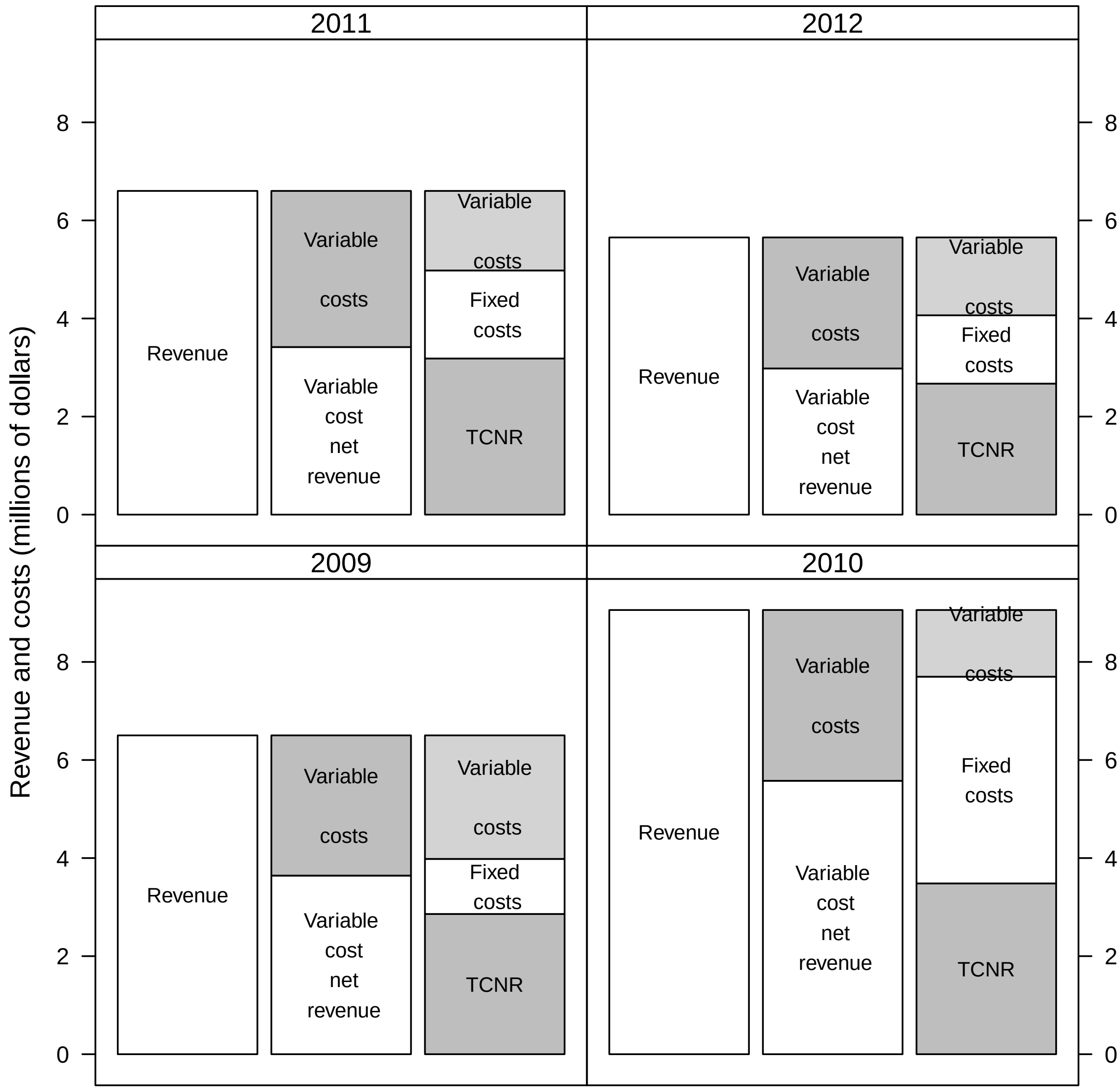

Figure 9.1: Catcher-processor average variable cost and total cost net revenue (TCNR). Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue on the West Coast. Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

10 Economic Performance: Cost, Revenue, Net Revenue, and Product Recovery Rates

As an indication of changes in efficiency and profitabiltiy, rates are calculated for the revenue, variable cost, variable cost net revenue, total cost, and total cost net revenue by days at sea (West Coast processing and steaming), metric ton of fish produced, and metric ton of fish harvested (Tables 10.1, 10.2, and 10.3).

Table 10.1: Revenue, cost, and net revenue per day. Mean revenue per day, variable cost per day, variable cost net revenue per day, fixed costs per day, and total cost net revenue per day.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue per day	$149,099	5	$144,231	6	$139,343	9	$174,589	9
(Variable costs per day)	$68,496	5	$57,028	6	$67,899	9	$83,234	9
Variable cost net revenue per day	**$80,602**	**5**	**$87,204**	**6**	**$71,444**	**9**	**$91,355**	**9**
(Fixed costs per day)	$107,447	5	$25,495	6	$38,474	9	$64,829	9
Total cost net revenue per day	**-$26,845**	**5**	**$61,709**	**6**	**$32,970**	**9**	**$26,526**	**9**

Table 10.2: Net revenue per metric ton harvested. Mean variable cost net revenue per metric ton harvested and total cost net revenue per metric ton harvested.

Net revenue	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Variable cost net revenue per metric ton purchased	$491	5	$591	6	$416	9	$471	9
Total cost net revenue per metric ton purchased	-$453	5	$420	6	$176	9	$144	9

Table 10.3: Revenue, cost, and net revenue per metric ton produced. Mean revenue per metric ton produced, variable cost per metric ton produced, variable cost net revenue per metric ton produced, fixed costs per metric ton produced, and total cost net revenue per metric ton produced.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue per metric ton produced	$2,500	5	$2,743	6	$2,423	9	$2,702	9
(Variable costs per metric ton produced)	$1,162	5	$1,088	6	$1,195	9	$1,305	9
Variable cost net revenue per metric ton produced	**$1,338**	**5**	**$1,656**	**6**	**$1,229**	**9**	**$1,397**	**9**
(Fixed costs per metric ton produced)	$2,771	5	$478	6	$720	9	$975	9
Total cost net revenue per metric ton produced	**-$1,433**	**5**	**$1,178**	**6**	**$508**	**9**	**$422**	**9**

The product recovery rate for the catcher-processor whiting sector (Table 10.4) is

$$\frac{WT_n^{fishoutputs}}{WT_n^{fishinputs}}$$

where N is the number of catcher-processors that harvested fish on the West Coast, $WT_n^{fishoutputs}$ is the weight of fish harvested and $WT_n^{fishinputs}$ is the weight of production for each catcher-processor. The entity average product recovery rate is calculated for each survey year and shown in (Table 10.4).

Table 10.4: Product recovery rate. The product recovery rate (total weight of production divided by total weight of fish purchases) for catcher-processors on the West Coast (N = number of vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Product recovery rate	0.37 $^{\cdot}$	5	0.36 $^{\cdot}$	6	0.34 $^{\cdot}$	9	0.33 $^{\cdot}$	9

Agenda Item J.5.b
NWFSC Report 4
(Full Version Electronic Only)
November 2014

Economic Data Collection Program

Mothership Report (2009-2012)

Draft Report for PFMC Review

Do Not Cite

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Northwest Fisheries Science Center[1]

October 22, 2014

[1] For questions or comments, please contact the EDC Program at nwfsc.edc@noaa.gov.

2012 Economic Data Collection (EDC)
West Coast Groundfish Trawl Catch Share Program

MOTHERSHIP

DRAFT

ECONOMIC SUMMARY*

Vessel Average
$6.1M revenue
$4.6M variable costs
$1.5M variable cost net revenue
$1.7M fixed costs
$-0.2M total cost net revenue

$23.6K variable cost net revenue per day

Fleet-wide Totals
$30.3M revenue
$7.4M variable cost net revenue
$-1.1M total cost net revenue

ALASKA PARTICIPATION

7 vessels
187,613 mt total fleet weight

NOAA FISHERIES
Northwest Fisheries Science Center

WC DELIVERY PORTS

of vessels offloading in each port

- Bellingham (3)
- Seattle* (2)

*(*all five motherships report Seattle as their home port)*

3,740 mt average total weight of processed product delivered per vessel

PACIFIC WHITING PRODUCTION SUMMARY

surimi — 46%, 6588mt
$20.2M, $1.39/lb

other* — 35%, 8,661 mt
$4.1M, $0.21/lb

minced — 10%, 1960mt
$2.8M, $0.64/lb

fishmeal
8%,1490mt
$3.2M, $0.97/lb

**other includes: fillets, fish oil, headed and gutted, and round, combined for confidentiality.*

53%
product recovery rate

FISHERY PARTICIPATION

	Days at Sea
Average days fishing, processing, and steaming on the West Coast	*46*
Average days steaming to and from Alaska	*21*
Average days in Alaska	*141*

TOTAL US PACIFIC WHITING TAC

135,480 mt

TOTAL CATCH

37,505mt, 0.11$/lb

7700 HP engine
$51M vessel market value
$100M replacement value

Fuel use
5.9K gal/day
217.1K gal/season
$750K total fuel cost

$33.1K observer cost

72 processing crew
$10.1K per person compensation

32 non-processing crew
$13.4K per person compensation

$136.4K food cost

AVERAGE VESSEL

347 ft average length

TOTAL US PACIFIC WHITING TAC MS ALLOCATION

39,235 mt (24% of total U.S. TAC)

*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

Mothership Sector: 2012 Highlights

In 2012, five motherships, owned by four companies, processed Pacific whiting on the West Coast.

- Mothership vessels spent an average of 46 days fishing, processing, and steaming along the West Coast, primarily in May-November.
- The fleet spends a majority of its time (70%) processing Alaska pollock in the Bering Sea and Aleutian Islands off Alaska.
- West Coast motherships deliver to two ports: Blaine/Bellingham and Seattle. All five motherships listed Seattle as their homeport.
- A little less than an average of 70 processing and 32 non-processing crewmembers worked on each mothership vessel. Average compensation for each processing and non-processing crewmember was $10,000 and $13,500, respectively.
- The fleet's annual price paid to catcher vessels has increased from $180 per metric ton in 2009 to $248 in 2012.[1]
- The average first-wholesale revenue per vessel was close to $6.1 million. Fillet and surimi production made up 83% of the total production value.
- Surimi generally makes up the largest share of revenue, with an average first-wholesale price of $3,100 per metric ton in 2012. Fishmeal has an average first-wholesale price of $2,100 per metric ton. Average first-wholesale price of all products types was $1,700.
- Average variable cost net revenue (revenue minus variable costs) fell to $1.5 million in 2012 from $2.4 million in 2011, but still represented an increase over the $1.1 million variable cost net revenue in 2009. Motherships earned a variable cost net revenue per metric ton produced of $83 in 2012; a 91% decrease from 2009.
- Average total cost net revenue per vessel (revenue minus both variable and fixed costs) was -$227 thousand dollars in 2012, about -$841 per metric ton produced.

Infographic created by Su Kim, Scientific Communications Office, Northwest Fisheries Science Center.

[1] Values reported in inflation adjusted 2012 dollars.

Report Contents

Acknowledgments

The Economic Data Collection Program and Economic Data Collection Reports reflect collaboration and coordination of individuals across the West Coast. There are numerous individuals to thank for their contributions to this effort.

We would like to acknowledge the efforts of all the Northwest Fisheries Science Center (NWFSC) economists who provided a wide range of input into survey design, implementation, and analysis. The group worked together in an effort to provide high quality data that can be distributed in a timely and secure fashion. We thank Su Kim of the NWFSC Scientific Communications Office for producing the Infographic on the second page of this report.

We appreciate the efforts of the Northwest Regional Office for support in the Program development, outreach, and communication efforts. The Permit Office staff was particularly instrumental in ensuring coordination with the mandatory participation requirements.

The Northwest Division of the Office of Law Enforcement (OLE) and the National Oceanic and Atmospheric Administration (NOAA) Office of General Council helped extensively with many aspects of the Program development and enforcement. They continue to cooperate with the EDC Program to ensure compliance. Thanks to the Northwest Fisheries Science Center Scientific Data Management staff for building an extremely useful administrative tracking system and database.

We thank PacFIN and AKFIN staff for providing access to important landings, permit, and vessel data. The staff at ODFW, WDFW, and CDFG also contributed with data used for the fielding of the baseline data collection. Other data and assistance with interpretation of data was provided by the At-sea Hake Observer Program and the West Coast Observer Program.

Finally and very importantly, we thank the members of the West Coast fishing industry who met with us to discuss the survey development and interpretation of the information collected. We appreciate the time and effort of each participant in the program.

Report Introduction

About the Report

The US West Coast groundfish fishery takes place off the coasts of Washington, Oregon and California, and is comprised of over 90 different species of fish. The fish are harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal.[2] In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet.[3] The Economic Data Collection (EDC) Program is a mandatory component of the West Coast Groundfish Trawl Catch Share Program, collecting information annually from all catch share participants: catcher-processors, catcher vessels, motherships, first receivers, and shorebased processors.[4] The EDC information is used to monitor the economic effects of the catch share program, and collects information on operating costs, revenues, and vessel and processing facility characteristics.

This report summarizes information collected from the West Coast mothership vessels. The EDC reports are also produced for the other sectors,[4] and cover the years 2009 to 2012. The 2009 and 2010 data were collected in 2011 to provide a baseline of pre-catch share information. The EDC reports are updated annually to disseminate the data collected and provide background, analysis, and context to support the interpretation of the data. The reports are also expected to provide a useful catalyst for feedback on the data collected and its analysis. It is envisioned that the scope of these reports will expand, and the methods used will be refined with each annual publication.

The report is composed of two major sections. The first section, Mothership Overview (beginning on page 9), is an in-depth summary that contains descriptive analyses of the mothership fleet focusing on activities during 2012. The second section, Mothership Data Summaries (beginning on page 20), provides tables of all of the data collected from 2009 to 2012, with a detailed discussion of the methods used to collect and analyze the data. The tables summarize responses for each EDC form question, as well as net revenue and economic performance rates. The data that form the basis for this report are confidential and must be aggregated so that individual responses are protected. In cases where there are not enough observations to protect confidentiality, the data are either not shown, or are combined with broader groups of data. More information about EDC Program administration and fielding of the

[2] For more information about West Coast Groundfish, see www.westcoast.fisheries.noaa.gov/fisheries/groundfish/.

[3] More information about the West Coast Groundfish Trawl Catch Share Program is available online at www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/.

[4] Please see the EDC website, www.nwfsc.noaa.gov/edc, for links to the forms used to collect the EDC data and for previous year's reports. The website will be updated with the 2009-2012 reports when they are finalized.

surveys, the EDC forms, data quality controls and quality checks, data processing, and safeguarding confidential information can be found in the EDC Administration and Operations Report.[4]

Background - Economic Data Collection and West Coast Groundfish Trawl Catch Share Program

The economic benefits of the West Coast groundfish trawl fishery and the distribution of these benefits are expected to change under the West Coast groundfish trawl catch share program. To monitor these changes, the Pacific Fishery Management Council (PFMC) proposed the implementation of the mandatory collection of economic data. Using data collected from industry participants, the EDC Program monitors whether the goals of the catch share program have been met.[5]

Many of the PFMC's goals for the catch share program are economic in nature. These goals include: provide for a viable, profitable, and efficient groundfish fishery; increase operational flexibility; minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical; promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry; provide quality product for the consumer; and, increase safety in the fishery.

The EDC program is also intended to help meet the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 2007 requirement to determine whether a catch share program is meeting its goals, and whether there are any necessary modifications of the program to meet those goals. The MSA requires a formal review 5 years after the implementation of a catch share program to which the EDC program will make a valuable contribution.

Monitoring the economic effects of a catch share program requires a variety of economic data and analyses. The primary effects of a catch share program can be captured in two broad types of economic analysis: 1) economic performance measures, and 2) regional economic impact analysis. Both of these require information on the costs and earnings of harvesters and processors.

Economic performance measures include: costs, earnings, and profitability (net revenue); economic efficiency; capacity measures; economic stability; net benefits to society; distribution of economic net benefits; product quality; functioning of the quota market; incentives to reduce bycatch; market power; and, spillover effects in other fisheries. Some of these measures are presented in this report, while others will require more specific and involved analysis using EDC data.

Regional economic impact analysis measures the effects of the program on regional economies. In general, the catch share program will likely affect different regional economies in different ways. Regional economic modeling involves tracking the expenditures of all businesses, households, and institutions within a given geographic region to arrive at the effects on income and employment. On the Pacific

[5] For more information about the EDC program and the West Coast Groundfish Trawl Catch Share Program, please see the Economic Data Collection Program, Administration and Operations Report available at the EDC website: `www.nwfsc.noaa.gov/edc`

coast, the Northwest Fishery Science Center's IO-PAC model is used to estimate regional economic impacts.[6]

6 Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

MOTHERSHIP OVERVIEW

Management Context

In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of an individual fishing quota (IFQ) program for the shorebased trawl fleet and cooperative programs for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets. Mothership factory vessels process fish delivered at sea by catcher vessels. The At-sea Pacific whiting fishery also includes catcher-processors, which are vessels that both catch fish and process them on-board. In 2012, the mothership fleet generated $34 million in income and 755 jobs from purchases of Pacific whiting caught in the catch share program.[7]

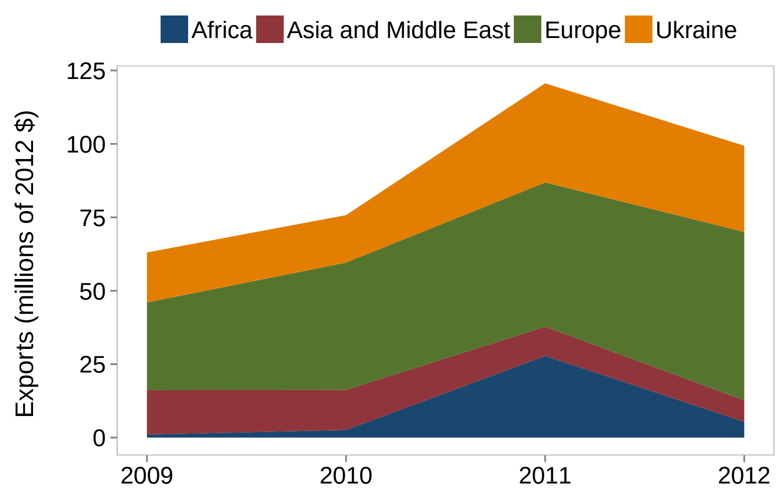

Figure 1: Total exports of fresh and frozen Pacific whiting (including mothership, catcher-processor, and shoreside production) from the state of Washington by recipient region (millions of 2012 $).

From the 1960s through 1990, foreign vessels processed most of the relatively small amount of Pacific whiting harvested off the West Coast. The U.S. outlawed this practice in 1990, and domestic catcher-processor and mothership vessels entered the fishery between seasons fishing for Alaskan pollock. The Pacific whiting sector grew rapidly in the 1990s with the development of a production process to transform Pacific whiting into surimi, a product popular in Asia, and used domestically as an ingredient in imitation crab. The whiting fishery subsequently transformed into one of the largest fisheries by volume in the United States. In recent years the market for fillets has also grown.[8]

7 The values were calculated using the IO-PAC model of the NWFSC. Note that these impacts do not include the income or employment of catcher vessels delivering to motherships. For more information about the IO-PAC model, see Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p..

8 `www.fishwatch.gov/seafood_profiles/species/whiting/species_pages/pacific_whiting.htm`

The development of new international markets for smaller, unprocessed fish, and the MSC certification[9] in 2009 that permitted importation of Pacific whiting products into the European Union also likely had an impact on demand for Pacific whiting, as did the development of new production technologies for fillets and surimi. In 2012, most of the U.S. Pacific whiting exports went to the European Union, followed by Ukraine, Russia, and China, among others (Figure 1).[10]

The Pacific Fishery Management Council and National Marine Fisheries Service (NMFS) are responsible for managing the U.S. fishery for the coastal stock of the Pacific whiting. Managers mainly use annual harvest quotas to regulate the coast-wide catch of Pacific whiting. Federal regulations prohibit at-sea processing south of the Oregon-California border. Pacific whiting is managed through a bilateral agreement between the United States and Canada, known as the Pacific Whiting Treaty. The United States and Canada signed an agreement in 2003 (which became law in 2007) that allocates a set percentage of the harvest quota to American and Canadian harvesters. The United States is allocated 73.88% and Canada the remaining 26.12%.

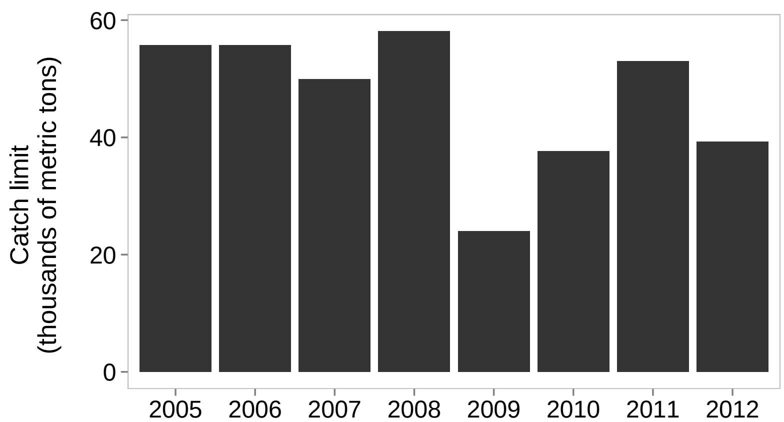

Figure 2: Mothership sector Pacific whiting catch limits, including any reapportionments among sectors that may have occurred during the season (thousands of metric tons).

Once the total allowable catch of Pacific whiting has been determined and the tribal sector's share has been apportioned, the remaining U.S. proportion is then allocated between the catcher-processor, mothership, and shoreside sectors. The mothership sector is allocated 24% while the catcher-processor and shoreside sectors are allocated 34% and 42%, respectively. Near the end of the season, NMFS often redistributes unfished tribal allocation amongst the three commercial sectors according to the same proportions. Commercial allocation may also be redistributed between sectors; in 2008, catcher-processors received 6,000 metric tons of surplus mothership Pacific whiting.[11]

The mothership sector had low catch during the baseline EDC years (2009 and 2010), corresponding to a relatively small catch limit.[12] After several seasons of large Pacific whiting harvests from 2006-2008, managers lowered the catch limit substantially in 2009, with a slight increase in 2010 (Figure 2). Low

[9] The MSC seal of approval means that the West Coast Pacific whiting fishery has met the MSC standard for "good management practices to safeguard jobs, secure fish stocks for the future and to help to protect the marine environment".`www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/pacific-hake-mid-water-trawl` This certification has opened new markets, largely in the European Union, for Pacific whiting.

[10] `www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/index`

[11] For allocation and season catch summaries going back through 2005, see `www.westcoast.fisheries.noaa.gov/fisheries/management/whiting/whiting_reports_and_rulemakings.html`

[12] Values reported in inflation adjusted 2012 dollars. All averages are calculated from non-zero, non-NA responses.

harvest levels and a large recruitment class in 2010 encouraged management to increase the catch limit again in 2011. In 2012, updated projections resulted in a lower-than-usual allocation.[13]. Because of high variability in recruitment and other sources of uncertainty in the stock assessments, catch limits have varied substantially during the EDC collections of 2009-2012. In 2012, the at-sea mothership sector received an allocation of 39,235 metric tons of Pacific whiting from the Joint Management Committee of the Pacific Whiting Treaty; about 14,000 metric tons less than the allocation in 2011, and 1,560 metric tons more than the allocation in 2010 (see Mothership Data Summaries, Table 6.1). The mothership fleet caught 94-97% of its annual catch limit in 2009-2012. The average vessel received 7,510 metric tons of Pacific whiting from catcher vessels in 2012.

The flexibility introduced by the catch share program allows for the usage of new bycatch reduction strategies. Both the catch share provision and the mothership catcher vessels' cooperative charter have stated bycatch reduction as a primary goal under the trawl catch share program. Several measures have been voluntarily agreed upon by the catcher vessel cooperative members, including the prohibition of night fishing above the 42nd parallel north, and the designation of closures in bycatch "hotspots". In 2012, motherships received about six prohibited and protected fish per every 100 metric tons of Pacific whiting from at-sea catcher vessels. This included mostly Chinook salmon, but also chum salmon, coho salmon, Pacific halibut, and eulachon. Major non-prohibited bycatch species include Widow and Minor Slope rockfish, spiny dogfish, and squid. The bycatch rate in the mothership sector decreased by 71% between 2009 and 2012.

Mothership Sector Description

In 2012, four different companies owned the seven vessels with active permits in the West Coast at-sea mothership sector, and of these five motherships participated in the fishery. These motherships process Pacific whiting (Pacific hake) *Merluccius productus* on the West Coast. The average length of mothership vessels participating on the West Coast has declined slightly from 360 feet in 2009 to 347 feet in 2012. Their main engines have 7,700 horsepower, on average, and a fuel capacity of about 358,600 gallons. The West Coast at-sea catcher vessel fleet caught and delivered to motherships approximately 8% of all commercially harvested fish on the West Coast (including crab and shrimp), 22% of all catch shares fish, and 24% of Pacific whiting.

Two types of vessels participate in the Pacific whiting mothership sector: traditional motherships that also act as a mothership in Alaska, and catcher-processor vessels that only act as a mothership on the West Coast. Both types of vessels spend a majority of their time in the Alaska pollock fishery in the Bering Sea and Aleutian Islands (Figure 3). The mothership vessels that participated in the West Coast whiting fishery after the implementation of the catcher vessel cooperative have reported a decrease in Alaska pounds, and an increase in days in Alaska. Changes in Alaska operations likely also reflect changes in regulations and TAC in the Alaska pollock fishery, along with the West Coast shift to catch

[13] http://www.pcouncil.org/groundfish/stock-assessments/by-species/pacific-whiting-hake/

shares. As a whole, the mothership fleet spends only about 30% of their total days (days processing and steaming on the fishing grounds) processing Pacific whiting on the West Coast.

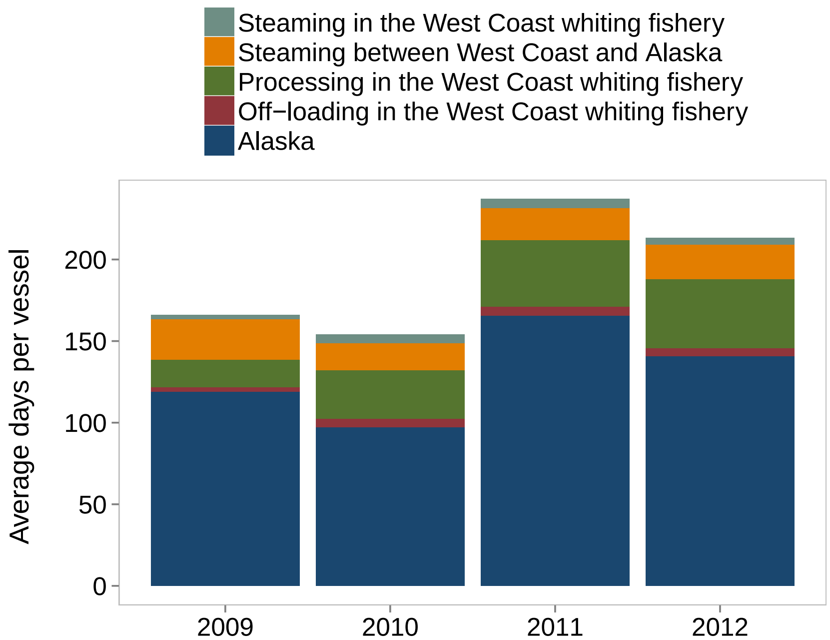

Figure 3: Average number of days spent in each activity per mothership vessel.

The number of participating vessels has declined from six in 2009 and 2010 to five in 2011 and 2012. The number of days the fleet participated in the West Coast fishery increased from 101 in 2009, to 285 in 2011, and decreased slightly to 211 in 2012. In 2012, the average mothership spent 21 days steaming between the West Coast and Alaska. Motherships spend about 90% of the days at sea processing fish and the rest of the time steaming along the coast. See Mothership Data Summaries, Table 2.1 for more information on fleet activity.

The catch share program provides increased operational flexibility to both the motherships and MS/CV vessels, demonstrated through changes in season length.

The length of the season – the number of days from the first to the last haul in the mothership sector – fluctuated during the years before catch shares (Figure 4). The 2006-2007 years make for a good comparison period to 2011-2012; in each period catch limit dropped by about one third from the prior year (Figure 2). In 2007, the season length decreased by about thirteen weeks, corresponding to the decrease in the catch limit. After the implementation of the catch share program, a similar decrease in the catch limit in 2012 resulted in a season length decrease of only five weeks. The two years following the implementation of catch

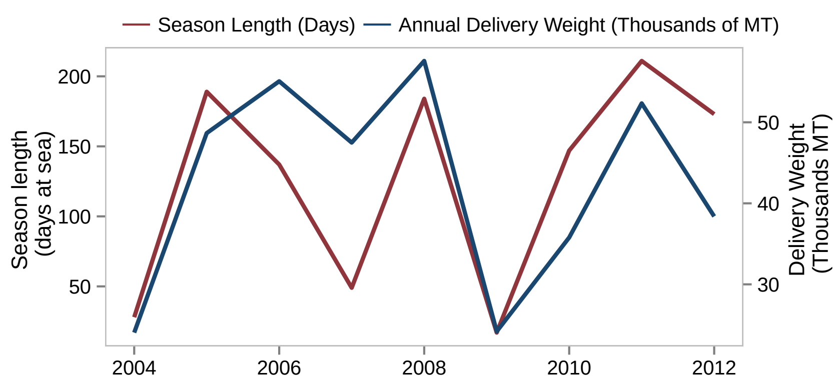

Figure 4: Season length and annual delivery weight (thousands of metric tons).

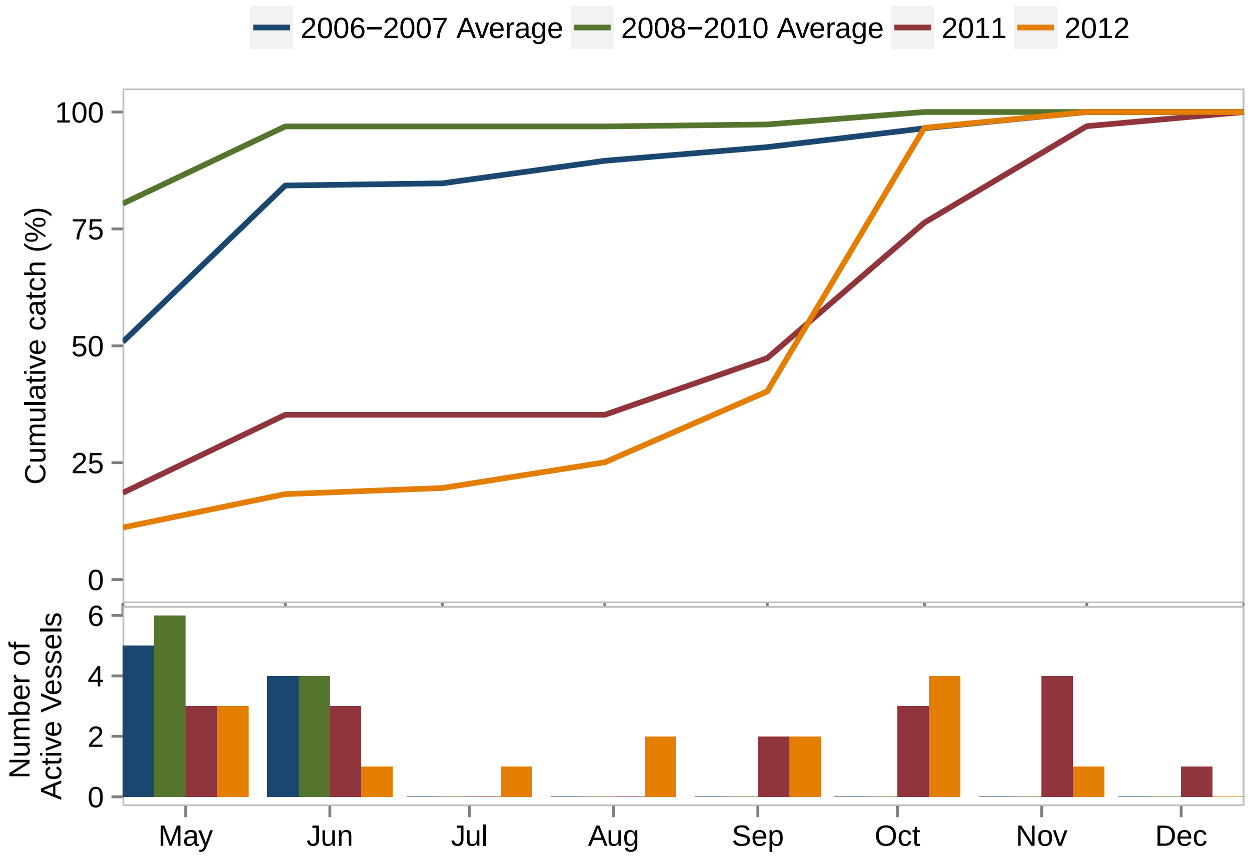

Figure 5: Cumulative catch (top) and number of active mothership vessels by month (bottom).

shares have had relatively long seasons compared to the six preceding years (Figure 4).

The season when motherships may begin at-sea processing, and catcher vessels harvesting at-sea, begins on May 15. In the years prior to catch shares, the mothership fleet had a larger percentage of the annual effort concentrated in May-June (Figure 5). In 2011-2012, the percentage of the fleet's total annual catch harvested in September-December increased dramatically. This may indicate that the catch share cooperative structure gives catcher vessels more flexibility about when to harvest their quota of the migratory Pacific whiting, and motherships more flexibility about when to process on the West Coast and when to go to Alaska. Perhaps reflecting the decline of a race to fish amongst the mothership cooperative catcher vessels, in 2012 at least one mothership vessel from the fleet remained in the West Coast whiting fishery in each month following the season opening. In prior years, the entire fleet went to Alaska for July and August, and generally did not return to the West Coast whiting fishery (Figure 5).

Economic Indicators

A mothership's variable costs include Pacific whiting purchases, fuel, crew compensation, co-op membership fees, and observer coverage among other costs, and vary with the level of fishery participation (see Mothership Data Summaries, Table 8.1). Variable costs make up the majority a vessel's total expenditures. The average mothership had variable costs on the West Coast of approximately $4.6 million in 2012. Pacific whiting purchases constituted the largest portion of variable costs; the next three largest categories of expenses for a mothership included processing crew compensation (16%), fuel and lubrication (16%), and non-processing crew compensation (11%). Like the rest of the West Coast Groundfish Trawl Catch Shares program, both motherships and MS/CVs have an observer onboard 100% of the time while operating in the West Coast Pacific whiting fishery. The motherships spent on average $33,148 on observer coverage in 2012.

The fleet's annual price paid per metric ton increased every year of the survey, from $180 in 2009, to $218 in 2010, and $248 in 2012.[14] Because the catch limit also increased in 2012 relative to 2009 (Figure 2), overall expenditures on Pacific whiting from catcher vessels increased substantially over the period, (Figure 6). Average processing crew compensation – the largest share of variable costs after fish purchases – rose about 83%. Compared to 2009, this amounted to a 141% increase in compensation per average processing crewmember. Non-processing crew compensation also increased 43% from 2009 to 2012. In 2009, the motherships had an average of 90 processing crew, which in 2012 declined to a little less than an average of 70 processing crew. Crewmembers include line workers, fishmeal crew, quality control, technicians, cleanup, factory managers, combis, and mechanics who work on processing equipment. An average of 32 non-processing crewmembers (captain, deckhands, wheelhouse, galley, and engineers) worked on a mothership vessel in 2012, which is only slightly less than the 35 in 2009. In 2012, motherships compensated processing and non-processing crewmembers $10,000 and $13,500 per position, respectively, for the Pacific whiting season.

The fleet as a whole took 26 one-way trips to and from Alaska in 2012. Average fuel use per day steaming both on the West Coast, and to Alaska decreased from the baseline to the post-catch share period by about ten and seven percent, respectively. Fuel and lubrication comprise one of the largest cost categories for the fleet on the West Coast, so the decrease in daily fuel use likely results in significant savings for the vessels. The Pacific States Marine Fisheries Commission tracks historical marine fuel prices, which in Washington State increased from $1.92 in March 2009 to a high of $4.10 per gallon in April 2012.[15] The average cost reported by motherships for fuel expenses on the West Coast has increased with prices, between 2009 and 2012, increasing 172%.

Mothership vessel fixed costs include capitalized expenditures and expenses on vessel and on-board equipment, fishing gear for catcher vessels, and processing equipment. In general, these do not vary as

[14] Values reported in inflation adjusted 2012 dollars.
[15] `www.psmfc.org/efin/docs/2012FuelPriceReport.pdf`

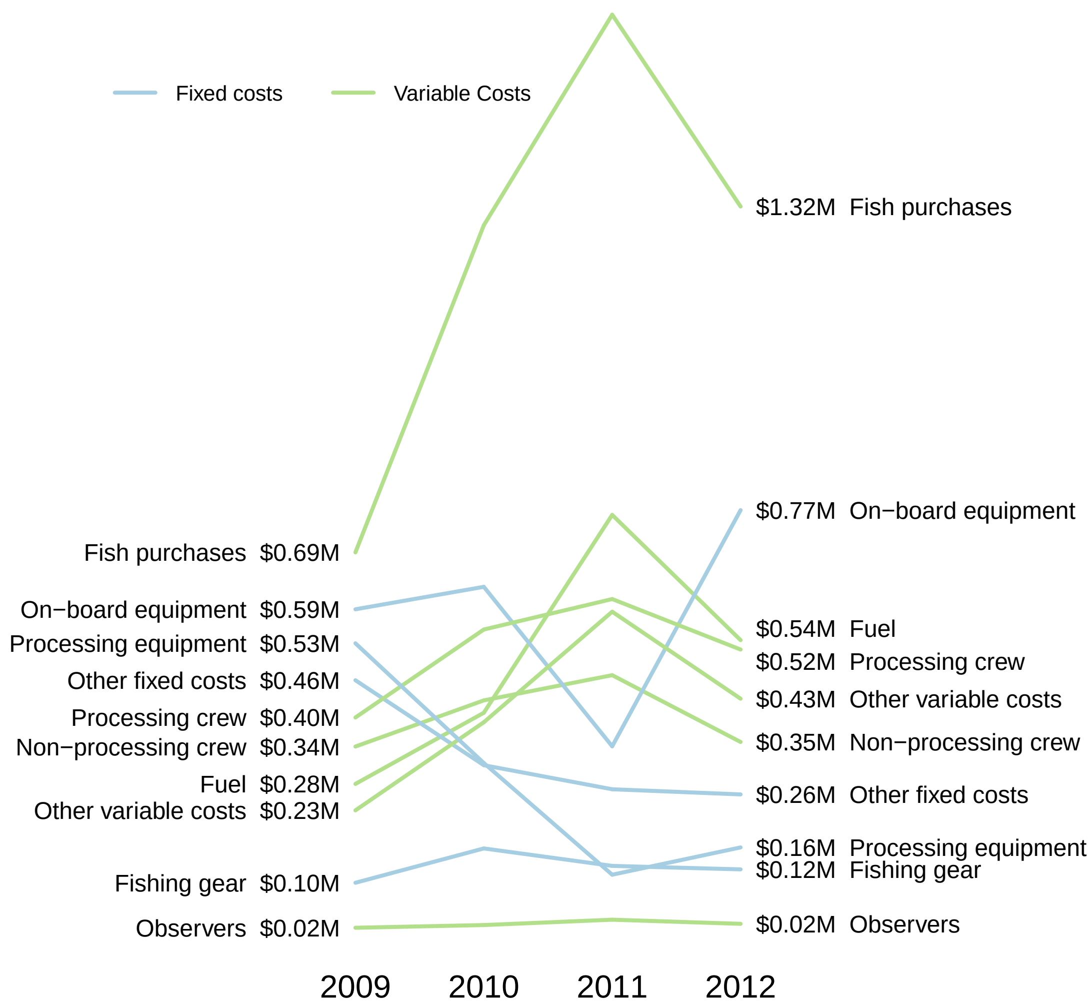

Figure 6: Average fixed and variable costs per vessel (2012 $).

directly as variable costs with the level of fishery participation.[16] The EDC form requests information for any equipment or gear used on the West Coast and for the vessels' total insurance and moorage costs (Tables 8.2-8.4).

Average total outlays on vessel and on-board equipment, fishing gear, and processing equipment shared on the West Coast decreased 17% from 2009, to $4.7 million in 2012. The average West Coast portion of insurance and moorage costs in 2012 ($1 million), decreased 37% from 2009.

[16] All of the average fixed costs collected, and the breakout for fixed costs on the West Coast, are reported in Mothership Data Summaries Section 8.2

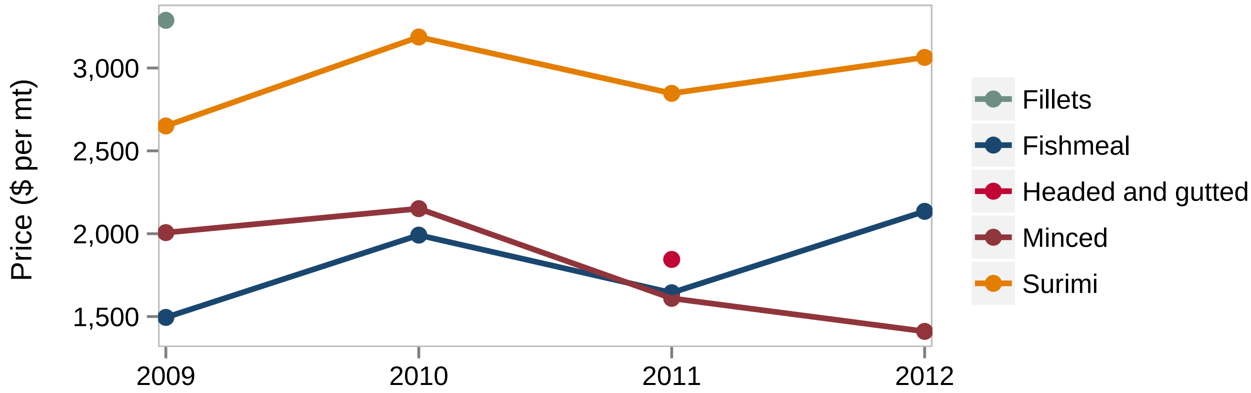

Figure 7: Average first-wholesale price by product type (2012 $). Some values suppressed to protect confidential information.

Fishmeal has an average first-wholesale price of $2,100 per metric ton (Figure 7). Surimi, with an average first-wholesale price of $3,100 per metric ton in 2012, generally makes up the largest share of revenue (Figure 8). Average first-wholesale price of all products types was $1,700. West Coast motherships deliver Pacific whiting primarily to two ports in Washington State: Blaine/Bellingham and Seattle. All of the motherships that participated in the West Coast whiting fishery list Seattle as their homeport.

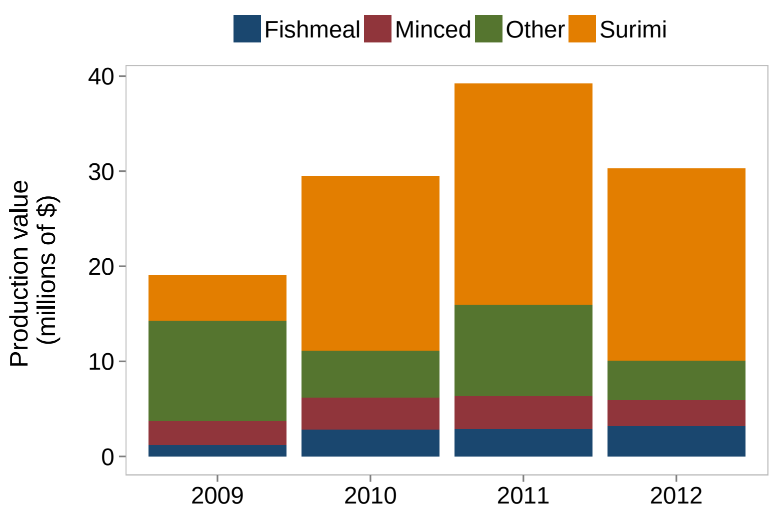

Figure 8: Fleet-wide production value by product type (millions of 2012 $). The Other category includes fillets, fish oil, headed and gutted, and round, and are combined to protect confidential data. See Mothership Data Summaries Table 7.2 for more detailed information.

The average first-wholesale value per vessel of the mothership fleet's primary target, Pacific whiting, came close to $6.1 million in 2012. The product recovery rate (total weight of production divided by total weight of fish purchased) increased from 0.32 to 0.53 during 2009-2012, possibly as a result of the increased season length. In the two years after the implementation of the catch share program, mothership vessels have had a longer period over which to accept deliveries and process fish, and the catcher vessels have more flexibility during the season to time fishing effort for higher quality fish. In 2010-2012, overall production value weight and value of minced product and fishmeal has remained relatively constant. In 2011 and 2012 surimi made up a larger portion of revenue and total weight processed than in preceding years. The "Other" category– including products like fillets,

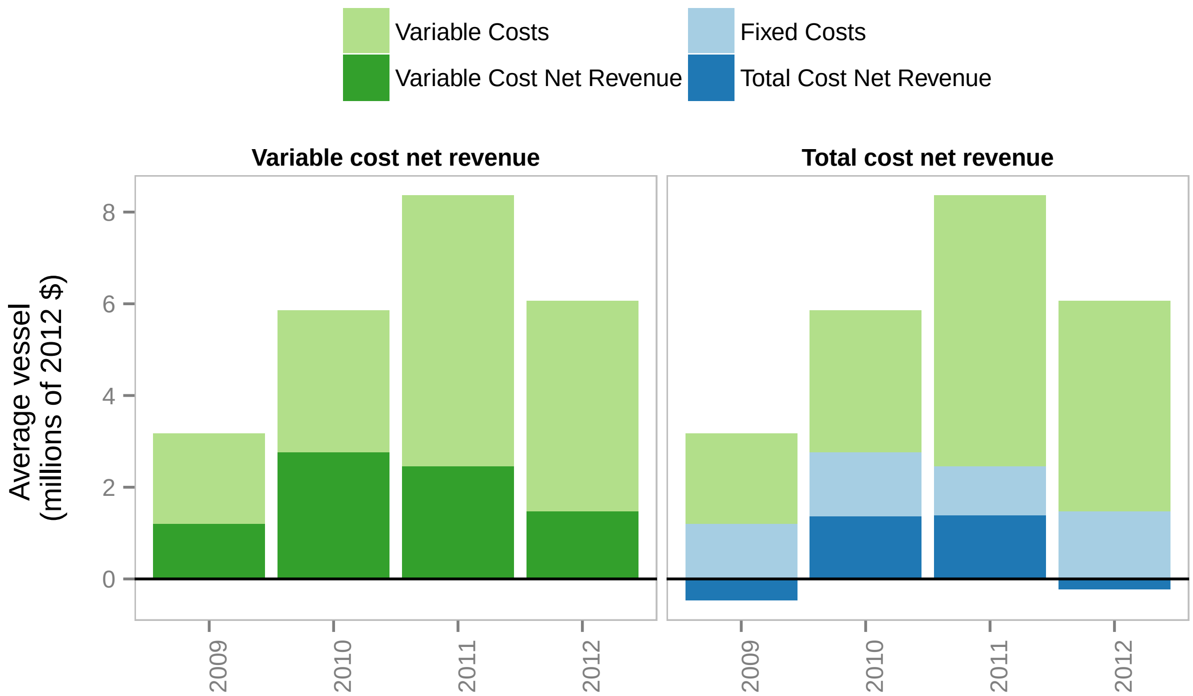

Figure 9: Average variable cost net revenue (revenue minus variable costs) (left), and average total cost net revenue (revenue minus variable costs and fixed costs) (right) per mothership (millions of 2012 $).

minced, fish oil, fish sold in the round, or headed and gutted fish– made up a smaller portion of the fleet's total production in 2012 than in prior years, but as shown in Figure 8, this value fluctuates from year to year.

The EDC program measures the net economic benefits of the catch share program by reporting two types of net revenue. The first is variable cost net revenue, which is revenue minus variable costs. The second is total cost net revenue, which is revenue minus both variable and fixed costs.[17] To provide a complete picture of the changes that have occurred, both net revenue figures are presented at two scales. Figure 9 shows the average net revenue per vessel while Figure 10 shows the fleet-wide net revenue. Average net revenue shows the value generated by a typical vessel, while fleet-wide net revenue represents the total value generated by the fishery. Both figures only include revenues and costs associated with the catch share program. It is important to note that the EDC forms attempt to capture only costs that are directly related to vessel fishing operations, and not costs that are related to activities or equipment off the vessel. Therefore, the net revenue reported here is an overestimate of the true net revenue.[18] Average variable cost net revenue fell to $1.5 million in 2012 from $2.4 million in 2011, but still represented an increase over the $1.1 million variable cost net revenue in 2009. Motherships earned

[17] See Figure 6 for a description of which costs are considered variable costs and which costs are considered fixed costs.
[18] See Mothership Data Summaries Section 8: Costs and Section9: Net Revenue and Economic Profit for a more complete discussion of variable costs, fixed costs, and the calculation of net revenue.

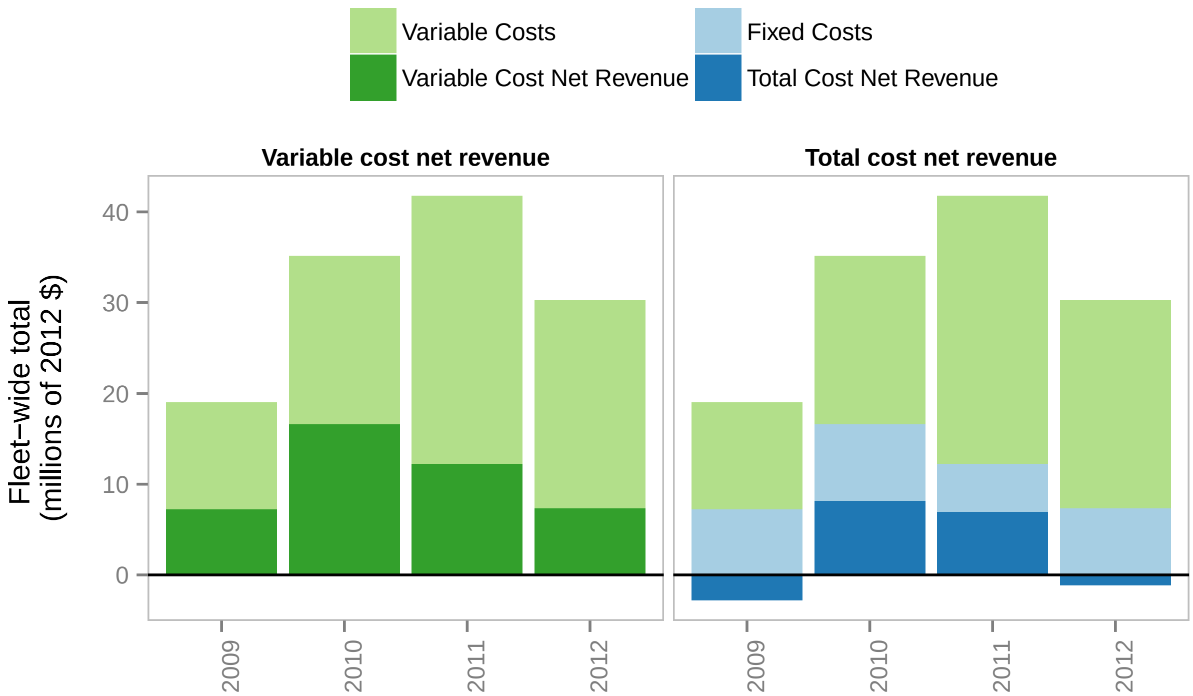

Figure 10: Fleet-wide variable cost net revenue (revenue minus variable costs) (left), and fleet-wide total cost net revenue (revenue minus variable costs and fixed costs) (right) (millions of 2012 $).

a variable cost net revenue per metric ton produced of $83 in 2012; a 91% decrease from 2009 (see Mothership Data Summaries, Table 10.2).

Average total cost net revenue per vessel was -$226,854 in 2012 (Figure 9). Average total cost net revenue per metric ton produced was -$841 in 2012.

The mothership fleet as a whole (Figure 10) experienced increasing variable costs from 2009-2011, with a slight reprieve in 2012. Revenue growth in 2011-2012 did not outstrip increased variable costs, resulting in a steady decline of the fleet's variable net revenue from 2010-2012. Fixed costs on the West Coast decreased slightly in 2011, which kept total cost net revenue from dropping dramatically that year, but fixed costs in 2012 returned to 2009-2010 levels and the fleet-wide total cost net revenue has declined 116% from the previous year. The motherships generated a fleet-wide revenue of $30 million in 2012, and the fleet spent about $31 million in fixed and variable costs.

MOTHERSHIP DATA SUMMARIES

MOTHERSHIP DATA SUMMARIES

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1 Introduction

1.1 Background

The US West Coast groundfish fishery takes place off the coasts of Washington, Oregon and California, and is comprised of over 90 different species of fish. The fish are harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal.[1] In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shorebased trawl fleet.[2]

The Economic Data Collection (EDC) program[3] was implemented as part of these new regulations to monitor the economic effects of the catch share program. Annual economic data submissions are required from all fishery participants: catcher vessels, motherships, catcher-processors, and first receivers and shorebased processors §50 CFR 660.114. Baseline, pre-catch share, data were submitted in 2011 for the 2009 and 2010 operating years. Data for the first year the fishery operated under the catch share program (2011) were submitted in 2012, and the 2012 data submitted for this report were collected in 2013.

EDC Program has enhanced the quantity and quality of economic information available for analysis and the management of the West Coast groundfish trawl fishery. While costs and earnings data are available for shorebased catcher vessels starting in 2004[4], this is the first data collection from the mothership fleet. This report summarizes the 2009-12 EDC mothership survey data, and with its companion reports covering the other sector, is the second in what is expected to be an annual series of reports. EDC economists will expand and refine the scope and methods used with each new annual publication.

[1] For more information about West Coast Groundfish, see www.westcoast.fisheries.noaa.gov/fisheries/groundfish/.

[2] More information about the West Coast Groundfish Trawl Catch Share Program is available online at www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/.

[3] Additional information on the EDC Program, including the EDC data collection forms can be found at www.nwfsc.noaa.gov/edc

[4] Lian, C.E. 2010. West Coast limited entry groundfish trawl cost earnings survey protocols and results for 2004. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-107, 35 p.

1.2 Cost Disaggregation

For vessels that participated in the tribal sector of the West Coast At-sea whiting fishery, West Coast costs, days at sea, fuel use, and production weight and value have been adjusted to reflect only non-tribal mothership sector activities as needed using a ratio of mothership pounds over all the West Coast pounds. In addition, some categories of costs on the EDC forms are for West Coast-only operations, while others are combined for the West Coast and Alaska Fisheries. Therefore, cost disaggregation on these shared costs is required to estimate total costs and net revenues on the West Coast.

When disaggregating the West Coast and Alaska costs, we allocate proportionally to the weight of fish purchased or harvested in each fishery. We calculate a ratio of the sum of West Coast Pacific whiting weight for all the years the vessel has supplied data, over the weight in All Fisheries for the same time span:

$$\frac{\sum_y WT_n^{WestCoastMothership}}{\sum_y WT_n^{AllFisheries}}$$

where n is an individual vessel in a season, summed over all of the years, y, that the vessel has supplied EDC data. Thus, each vessel's ratio of costs being allocated to the West Coast is the same for all years. This method provides for a constant proportion of fixed costs allocated to the West Coast over time, and this proportion is less sensitive to fluctuations in TAC for the West Coast Pacific whiting and Alaska fisheries.

1.3 Understanding the report

The data provided in the summary tables throughout the report are for all vessels that fished on the West Coast during the survey year, unless otherwise noted.

Unlike the Mothership Overview, all dollar amounts reported in the Mothership Data Summaries are in nominal dollars.

All data submitted via the EDC Program are confidential under 402(b) of the Magnuson- Stevens Act (16 U.S.C. 1801, et seq.) and under NOAA Administrative Order 216-100[5]. In order to protect these data, a rule of three and a rule of 90-10 are implemented. The rule of three requires a response from at least three companies in order to show a summary statistic. The 90-10 rule requires that no single company's value should comprise over 90 percent of the value displayed. In the case of the West Coast whiting mothership fishery, there are only four companies. The tables show a '***' for data points where there were less than three companies reporting the information, and/or if one company's responses accounted for greater than 90 percent of the average value. Zeroes are shown if all entities

[5] For more information about form administration, please see Appendix

reported zeroes. More information about how confidential data are protected in the EDC Program can be found in the Administration and Operations Report.

One change implemented this year is the inclusion of a measure of variance of the data. The stacked dots included in the tables provide information about the coefficient of variation (CV) of the mean. We use the following scoring: · represents $CV < 0.5$, : represents $0.5 \leq CV < 1.0$, ⁝ represents $1.0 \leq CV < 2.0$, and ⁞ represents $2.0 \leq CV$. For 2009-2012, none of the CVs exceeded 1.54.

Although participants are identified on a calendar year basis, they complete the form using information based on the fiscal year of the entity. Currently data are presented for survey year, and therefore data assigned to a survey year may not overlap completely with the calendar year. Information obtained from outside of the EDC Program is adjusted to match the fiscal year provided on each form. For the four years of data collected from motherships, 71% of forms reported a fiscal year that is the same as the calendar year.

The form had very few changes between the 2009-2010 data collection, and the 2011 and 2012 collections. The 2009 and 2010 EDC mothership forms asked if the participant harvested or processed any fish during that calendar year, and those who answered "No" were not required to respond to any further questions. This option disappeared on the 2011 form and every participant was required to complete the form in its entirety. The only other change to the forms from 2009-2010 to 2011 pertained to offload locations, with "Tacoma" substituted for "Westport, Hoquiam" in response to input on the 2009 and 2010 surveys. In 2012, a space was added for participants to provide the total round weight harvested in the West Coast fisheries in addition to that harvested in Alaska/Other, in order to validate the external data source we used to calculate revenue from West Coast whiting.

1.4 Purpose of the data summaries

This report, like the other four EDC reports[6], has multiple objectives. The first is to provide basic economic data summaries that can be used for a variety of purposes associated with fishery management. Since much of the data collected are confidential under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 2007, the data are summarized as averages or totals for each question on

[6] In addition to the mothership report, there are four companion reports:

- Economic Data Collection Program, Administration and Operations Report Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, Catcher-Processor Report, 2009-2012 Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, Catcher Vessel Report, 2009-2012 Draft Report for PFMC Review (November 2014)
- Economic Data Collection Program, First Receiver and Shorebased Processor Report, 2009-2012 Draft Report for PFMC Review (November 2014)

the EDC forms. Thus summarized, the reports make the data available to the public for both research and informational purposes.

The second objective is to provide information about the performance of the catch share program. This includes information that can be used to monitor whether and to what degree the goals of the program are being met. It is expected that additional modeling will provide increased detail about program impacts. These reports will serve as the basis for the 5-year review of the catch share program that is mandated in the MSA, as well as the NOAA Fisheries National Catch Shares Performance Indicators. Currently, with just two years of catch share EDC data, it may be difficult to draw firm conclusions about the performance of the program. In addition, the catch share program may have a transitional period in the first few years as participants learn about the system and develop new business strategies.

Third, the reports serve as the basis for economic models that are used as part of the Pacific Fishery Management Council's (PFMC) biennial specification process for groundfish management. These models include the IO-PAC model[7], as well as estimates of revenue, costs, and net revenue.

Lastly, and perhaps most importantly, the data reports are expected to provide a useful catalyst for feedback on the data collected and its analysis.

The Administration and Operations Report describes the EDC Program administration and fielding of the surveys, the EDC forms, data quality controls and quality checks and data processing, and safeguarding confidential information. The other EDC reports provide basic data summaries of the catcher vessel, catcher-processor, and first receiver and shorebased processor forms.

1.5 Mothership form administration

Completion of EDC forms is mandatory for participants in the catch share program. Survey participants are identified using contact information provided by the Northwest Regional Permit Office. The regulations for defining who is required to complete an EDC form differs between the baseline data collection (2009 and 2010) and all annual/ongoing data collections for 2011 onward. For the baseline period, all owners, lessees, and charterers of a mothership vessel that received whiting in 2009 or 2010 as recorded in NMFS' NORPAC database §660.114(b)(3)(i) were required to complete an EDC form. For 2011 and beyond, all owners, lessees, and charterers of a mothership vessel registered to a mothership permit at any time are required to complete an EDC form §660.114(b)(3)(ii). For permit owners, an MS permit application will not be considered complete until the required EDC form for that permit owner associated with that permit is submitted, as specified at §660.25(b)(4)(i). For a vessel owner, participation in the groundfish fishery (including, but not limited to, changes in vessel registration) will not be authorized until the required EDC form for that owner for that vessel is submitted, as specified,

[7] Leonard, J., and P. Watson. 2011. Description of the input-output model for Pacific Coast fisheries. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-111, 64 p.

in part, at §660.25(b)(4)(v). For a vessel lessee or charterer, participation in the groundfish fishery will not be authorized, until the required EDC form for their operation of that vessel is submitted.

A calendar year is used to determine which vessels meet the criteria. For example, in 2012, data were collected from all owners, lessees, and charters of a mothership registered to a limited entry trawl permit during 2011. The forms are fielded on this schedule in order to allow participants the time necessary to complete their taxes, which may contain some information that is required on the EDC forms.

If a form has missing information, or the information provided on the form is believed to be incorrect, EDC Program staff attempt to contact the participant to correct the information. On occasion, the participant cannot be reached or the participant cannot provide the missing information. In these cases, the missing or inaccurate data are treated on a case-by-case basis during analysis as documented in the Administration and Operations Report. Data are validated and verified with external data sources whenever possible. These data sources include the Northwest Regional Permit Office and the At-Sea Hake Observer (A-SHOP) program.

2 Vessel Participation on the West Coast and in Alaska

The mothership fleet participates in fisheries on the West Coast and Alaska. Table 2.1 provides the average days at sea by activity listed. Participants are instructed to count partial days as full days when recording days at sea on the forms.

Table 2.1: Average days at sea. Average days at sea by activity in West Coast and Alaska activities for mothership vessels (N = number of vessels with non-zero, non-NA responses).

Description	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Alaska	119	6	117	5	165	7	141	7
Off-loading in the West Coast whiting fishery	2	6	4	6	7	5	5	5
Processing in the West Coast whiting fishery	17	6	24	6	51	5	42	5
Steaming between West Coast and Alaska	25	6	20	5	20	7	21	7
Steaming in the West Coast whiting fishery	3	6	4	6	7	5	4	5

Table 2.2 presents the median number of one-way trips vessels made steaming between Alaska and the West Coast that year. The median number of steaming trips motherships take to Alaska appears to remain constant through the four survey years.

Table 2.2: Mean number of one-way trips steaming between West Coast and Alaska. Mean number of one-way trips between the West Coast and Alaska (N = number of vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
One-way trips to Alaska	3.7	6	3.6	5	4.0	7	3.7	7

Table 2.3: Number of vessels that processed on the West Coast and Alaska.

Location	2009	2010	2011	2012
Alaska	6	5	7	7
West Coast	6	6	5	5

3 Delivery Ports

Table 3.1 lists the number of vessels delivering to each port. Some vessels delivered to more than one port in a survey year. This frequency table summarizes responses to the question on the EDC form that asks for the percentage of all West Coast whiting products off-loaded from the mothership vessel at each major West Coast port.

Table 3.1: Off-loading. Total number of vessels that off-loaded in each port. Some vessels delivered to multiple ports in the same year.

Location	2009	2010	2011	2012
Astoria	0	0	1	0
At-sea	0	0	0	0
Blaine/Bellingham	1	3	3	3
Coos Bay	0	0	0	0
Port Angeles	0	0	0	0
Seattle	5	5	2	2
Tacoma	—	0	0	0
Westport	0	0	—	—
Other	0	0	0	0

4 Vessel Physical Characteristics

Physical vessel characteristics are shown below in Table 4.1. Survey participants were asked to provide basic information about the vessel and its physical characteristics, including market value, replacement value, vessel length, horsepower of main engines, and fuel capacity from the most recent marine survey. Marine surveys are done on a regular basis and are often required for insurance, financing, and other purposes.

Table 4.1: Average vessel characteristics. Average market value, replacement value, horsepower, fuel capacity and length (N = number of EDC vessels with non-zero, non-NA responses).

Vessel characteristic	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Market value ($)	54,500,000 ·	4	54,500,000 ·	4	48,600,000 ·	5	51,200,000 ·	5
Replacement value ($)	107,500,000 ·	4	107,500,000 ·	4	99,000,000 ·	5	100,000,000 ·	5
Vessel length (feet)	360 ·	6	360 ·	6	347 ·	7	347 ·	7
Vessel fuel capacity (gallons)	397,721 :	6	397,721 :	6	361,171 :	7	358,600 :	7
Horsepower of main engines	8,525 :	6	8,525 :	6	7,807 :	7	7,735 :	7

The participants provide information about whether the vessel was hauled out. The information shown below in Table 4.2 about how many vessels in the fleet are hauled out in that survey year provides context that may be used to explain major costs associated with vessel repair and maintenance.

Table 4.2: Haul outs. Number of vessels (N) that hauled out the vessel during their fiscal year (% percent of vessels in survey year).

Haul out	2009		2010		2011		2012	
	N	%	N	%	N	%	N	%
YES	3	50.0%	1	16.7%	2	28.6%	3	42.9%
NO	3	50.0%	5	83.3%	5	71.4%	4	57.1%

5 Vessel Fuel Use and Crew Size

5.1 Fuel use

(Table 5.1) contains the vessels' average fuel use per day, for propulsion and other uses, when engaged in West Coast activities. The other uses referred to on the form may include non-propulsion fuel uses, such as diesel or fish oil used to run fishmeal plants, vessel generators, or power processing equipment. The information in the table below represents the average of the average fuel use provided by participants.

Table 5.1: Average daily fuel use. Average daily fuel use (gallons per day) (N = number of vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Processing and steaming in the West Coast whiting fishery	6,532·	6	6,463·	6	5,036·	6	5,851·	5
Steaming between West Coast and Alaska	6,733:	6	6,533:	6	5,414:	7	6,292:	7

The average total fuel used by the vessel during the survey year for propulsion or other use in the West Coast whiting fishery excludes fuel used for steaming between the West Coast and Alaska.

Table 5.2: Total fuel use. Average total fuel use (gallons) (N = number of vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Total bunker fuel	***	***	***	***	***	***	***	***
Total diesel	118,105·	6	135,657·	6	278,356:	5	217,073:	5
Total fish oil	***	***	***	***	***	***	***	***

5.2 Crew size

Participants provide the total number processing and non-processing crewmembers when the vessel was operating in the West Coast whiting fishery during the survey year (Table 5.3). Processing crew includes line workers, fishmeal crew, quality control, technicians, cleanup, factory managers, combis, and mechanics who work on processing equipment. Non-processing crew includes the captain, deckhands, wheelhouse, galley, and engineers.

Table 5.3: Average crew size. Average crew size of non-processing and processing crew (N = number of EDC vessels with non-zero, non-NA responses).

Activity	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Non-processing	35.2·	6	33.0·	6	34.0·	5	32.2·	5
Processing	90.3·	6	85.2·	6	66.0·	5	71.8·	5

6 Whiting Purchases

The West Coast data for the mothership sector annual whiting fish purchases in Table 6.1 are provided by the A-SHOP through the Pacific Fisheries Information Network (PacFIN) database. The values for average vessel fish purchases and total fish purchases in all fisheries (including the West Coast and Alaska) are from a question on the EDC form that asks participants to provide the total round weight of all fish processed on the vessel in all fisheries during the survey year.

Table 6.1: Annual mothership sector allocation, West Coast whiting purchases, and total purchases (West Coast, tribal, and Alaska purchases). Final allocation of whiting in the West Coast mothership whiting sector, total whiting purchases (excluding tribal purchases), and total weight of all purchases (West Coast, Alaska, and tribal) (N = number of vessels with non-zero, non-NA responses).

Description	2009		2010		2011		2012	
	Total	N	Total	N	Total	N	Total	N
Mothership West Coast whiting allocation	24,034		37,679		53,039		39,235	
West Coast whiting purchases (A-SHOP)	23,534	6	35,750	6	49,908	5	37,507	5
West Coast and Alaska purchases	203,491	6	212,601	6	219,647	6	187,613	5

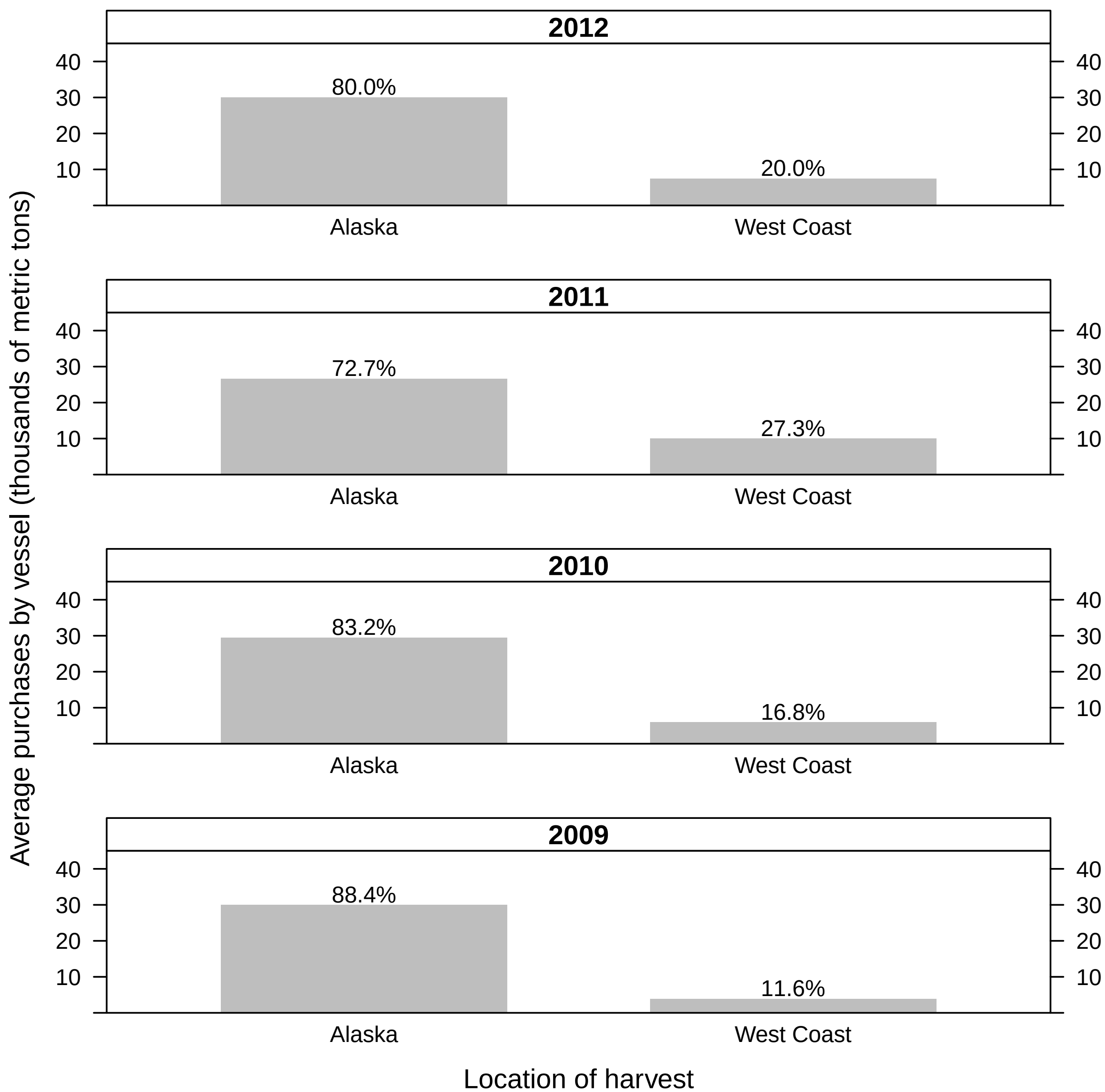

Figure 6.1: Average annual purchases on the West Coast and Alaska. Average annual purchases (thousands of metric tons) from 2009 to 2012 on the West Coast and in Alaska. Percentages above each bar indicate the portion of the total purchases in that fishery.

7 Revenue

The EDC forms ask about three forms of revenue: revenue from production of seafood products, revenue from sale or lease of West Coast whiting mothership permits, and revenue from lease or bareboat charter of the vessel. All vessels that processed fish on the West Coast reported production revenue, but there were no vessels that reported revenue from permits or lease/charter. It is possible that vessels may have made end-of-season informal arrangements regarding leftover quota; however, the EDC form does not capture this type of transfer.

Tables 7.1 and 7.2 provide summary information on annual production in the mothership West Coast whiting sector. Participants provide total weight of production and value of production by major product categories. These values include any post-season adjustments for products produced during the survey year. Not included in the value of production are any additional payments received to cover shipping, handling, or storage costs associated with the sale beyond the free-on-board (buyer assumes responsibility and liability for the product and pays shipping costs) port of discharge. The revenue only includes fish processed on the West Coast.

Table 7.1: Whiting production weight. Average production weight (metric tons) for whiting (N = number of vessels with non-zero, non-NA responses).

Product Category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fillets	398	4	***	***	***	***	***	***
Fish oil		0		0	***	***	***	***
Fishmeal	166	5	278	5	437	4	372	4
Headed and gutted	***	***	***	***	900	3	***	***
Minced	309	4	522	3	547	4	653	3
Roe		0		0		0		0
Round	***	***		0	***	***	***	***
Stomachs		0		0		0		0
Surimi	358	5	940	6	2,040	4	1,647	4
Other	***	***		0		0		0
Average total weight	1,528	6	1,883	6	3,544	5	3,740	5

Table 7.2: Whiting production value. Average production value ($) for whiting (N = number of vessels with non-zero, non-NA responses).

Product Category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fillets	1,240,692	4	***	***	***	***	***	***
Fish oil		0		0	***	***	***	***
Fishmeal	235,762	5	544,999	5	707,839	4	795,070	4
Headed and gutted	***	***	***	***	1,613,303	3	***	***
Minced	587,910	4	1,082,570	3	864,638	4	921,409	3
Roe		0		0		0		0
Round (un-processed)	***	***		0	***	***	***	***
Stomachs		0		0		0		0
Surimi	900,053	5	2,949,102	6	5,716,951	4	5,045,888	4
Other	***	***		0		0		0
Other species		0		0		0		0
Average total value	3,008,372	6	4,737,432	6	7,716,079	5	6,054,338	5

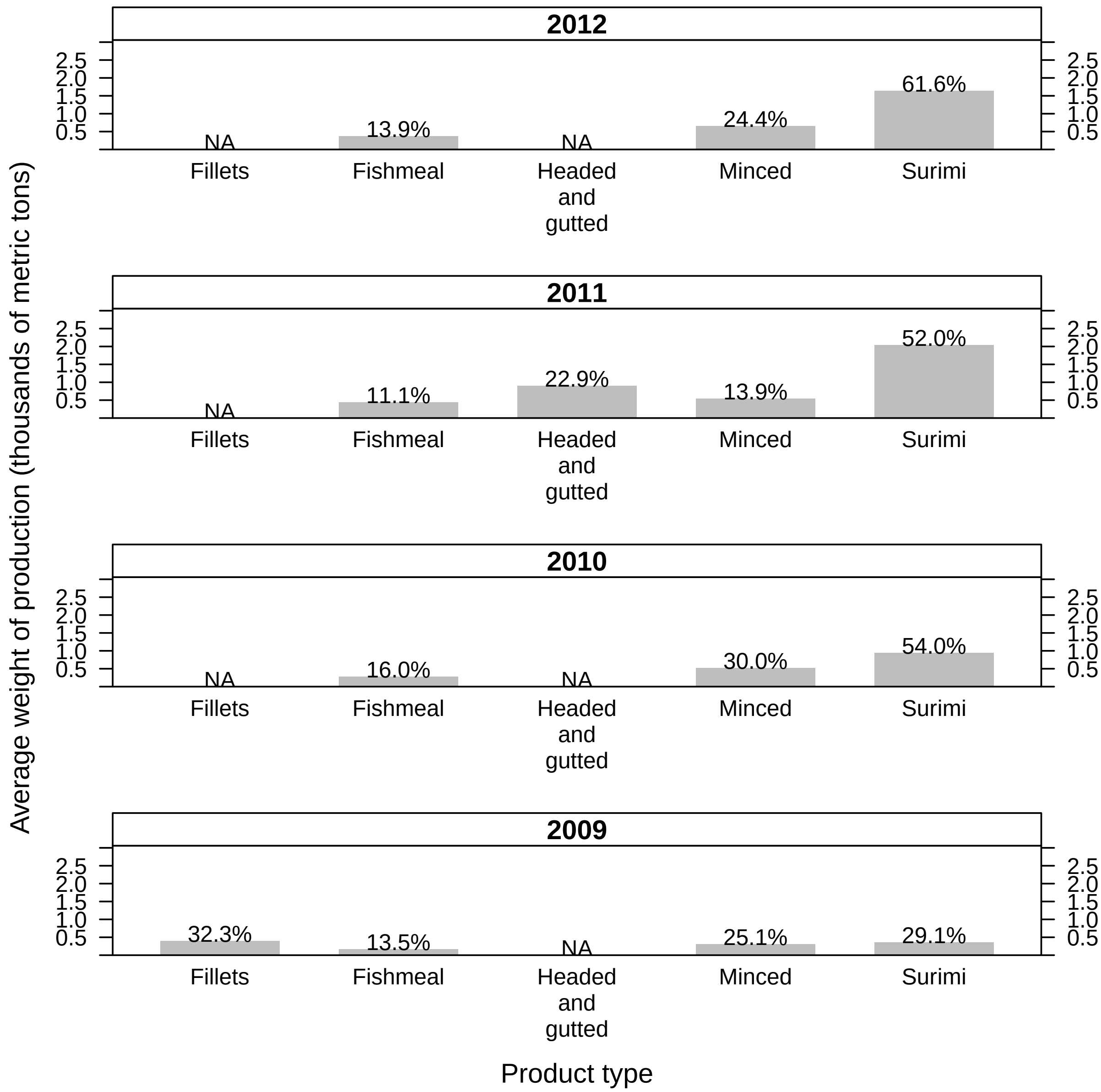

Figure 7.1: Production value by product type and year. Average whiting production value by product type and year. Confidential data have been suppressed and replaced with "NA"; product categories where production value was reported as zero for all vessels for all years are not included. The percentage of each product type of all production is listed on the top of each bar.

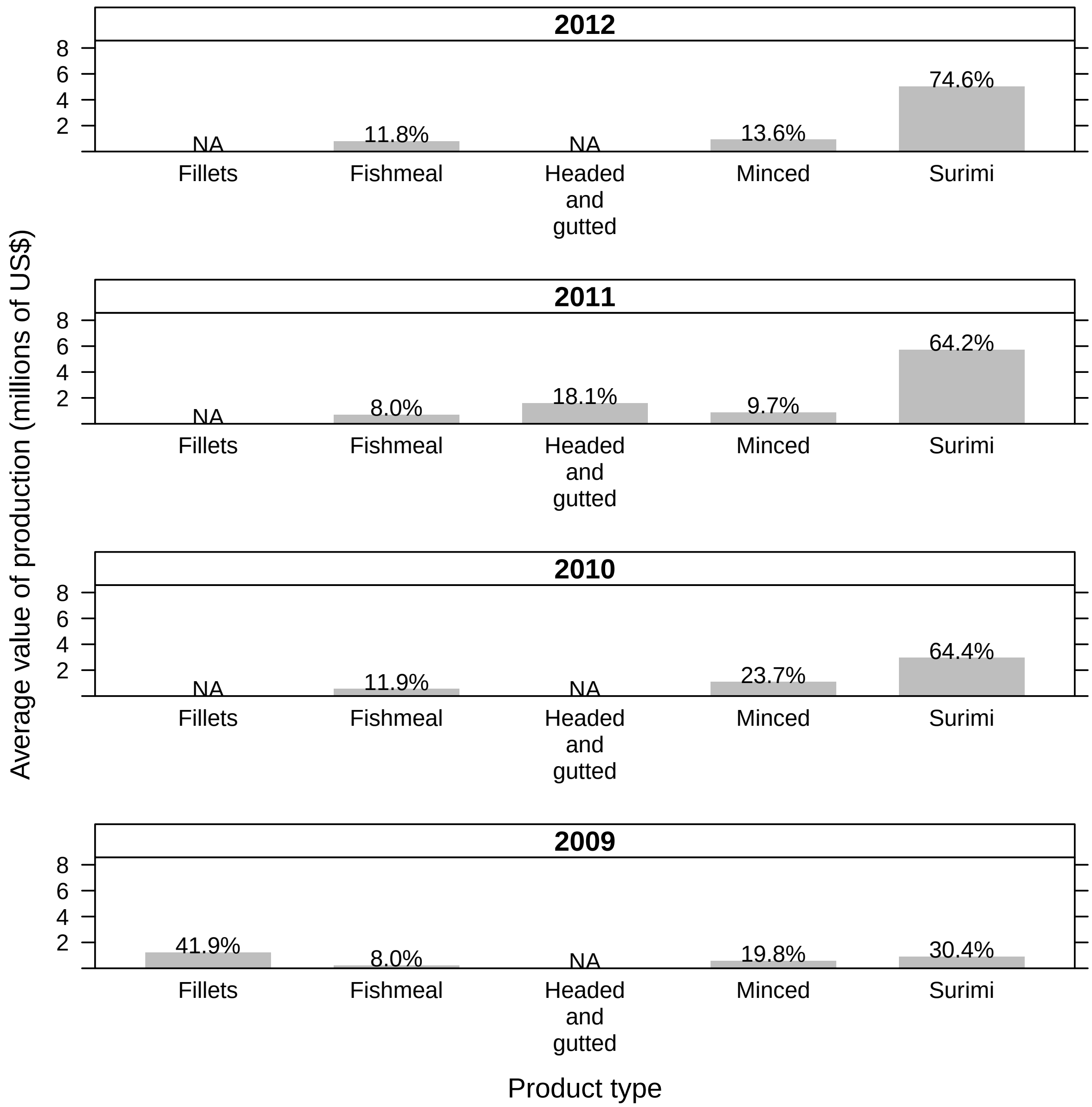

Figure 7.2: Production weight by product type and year. Average whiting production weight by product type and year. Confidential data have been suppressed and replaced with "NA"; product categories where production value was reported as zero for all vessels for all years are not included. The percentage of each product type of all production is listed on the top of each bar.

8 Costs

This section of the report describes the cost data that are collected on the EDC mothership form. It reports variable costs, fixed costs, and total costs, and how those costs are disaggregated to estimate the proportion of costs attributed to West Coast fisheries.

For the purposes of the EDC, costs are divided into two categories, variable costs and fixed costs. Variable costs vary with the level of fishery participation, and generally include items such as fuel and crew compensation. Fixed costs do not vary with the level of fishery participation, and generally include items such as vessel capital improvements. The designation of a cost as variable or fixed depends on many factors, including the relevant time horizon and use of the data. While some costs would clearly be considered fixed (e.g., the purchase of a new engine), others are more difficult to categorize as fixed, versus variable. For the purposes of this report, we consider the costs listed in Tables 8.2, 8.3 and 8.4 to be fixed, and the costs listed in Table 8.1 to be variable. The EDC Program will continue to explore, and possibly improve, the categorization of these costs.

The cost section of the EDC form collects both "capitalized expenditures" and "expenses" for vessel improvements and maintenance, fishing gear, and processing equipment. This is because certain costs may be treated for tax accounting purposes as either capitalized or expensed. Capitalized expenditures are depreciated over a number of years. Expensed items are fully deducted as a cost for the year in which they occur. In an effort to reduce the reporting burden and errors, these data are collected as they are reported in the businesses' accounting systems.

In order to conduct economic analyses of specific fisheries it is important to have costs broken out by fishery, i.e. West Coast whiting or processing in Alaska. For some costs, it may be feasible for participants to break out or track costs at the fishery level. However, for most costs this is impossible, or would require additional burden to do so. During the EDC form development process, a key issue was the determination of which costs could reasonably be broken out by fishery. Each cost item is assigned to one or more categories based on how they are commonly tracked by industry members: 1) used on West Coast fisheries only (West Coast Only); 2) used on the West Coast and in other fisheries (Shared); and 3) used in all fisheries (All) regardless of whether they are used on the West Coast.

Finally, there are a variety of costs that are associated with running a mothership that are not requested on the form because it is difficult to determine the share of the cost associated with the vessel. These costs include items that can be used for activities other than processing, or are too difficult to allocate to a particular vessel in a multi-vessel company. These expenses include office space, pickup trucks, storage of equipment, professional fees, and marketing. In general, the EDC forms attempt to capture costs that are directly related to vessel maintenance and processing operations, and not costs that are related to activities or equipment off the vessel. For these reasons, the EDC aggregated measures of costs (variable costs, fixed costs, and total costs) underestimate the true costs of operating a business.

8.1 Variable Costs

Variable costs were collected for all West Coast activities. Unlike fixed costs, variable costs are directly related to processing operations, and therefore it was possible for vessels to separate expenses for activities on the West Coast from other activities.

Table 8.1: Variable expenses. Average variable expenses on the West Coast for EDC vessels ($) (N = number of vessels with non-zero, non-NA responses).

Expense Category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Co-op membership fees		0		0	***	***	***	***
Communication	5,761	6	4,300	6	15,656	5	8,942	5
Food	47,038	5	48,032	6	127,144	5	136,385	5
Freight	***	***	***	***	***	***	38,139	3
Fuel and lubrication	261,980	6	389,757	6	1,049,821	5	750,015	5
Non-fish ingredients (additives)	29,753	5	148,860	6	392,343	4	245,107	4
Non-processing crew	325,982	6	411,262	6	651,194	5	492,699	5
Observers	15,744	6	20,700	6	42,902	5	33,148	5
Offloading	33,577	6	30,744	6	55,136	5	29,240	5
On-board cargo/product insurance	12,276	5	11,665	5	***	***	135,695	5
Packing materials	86,612	6	97,406	6	228,073	5	132,756	5
Processing crew	375,726	6	534,459	6	840,520	5	726,295	5
Supplies	***	***	40,475	4	47,200	3	70,400	3
Travel	18,178	4	14,481	4	33,335	4	39,273	4
Pacific whiting purchases	658,389	6	1,237,291	6	2,294,085	5	1,845,707	5
Non-whiting fish purchases		0		0		0		0
Average total variable costs	1,864,762	6	2,976,445	6	5,812,775	5	4,585,581	5

8.2 Fixed costs

8.2.1 Costs on vessel and on-board equipment, fishing gear, and processing equipment

Table 8.2 presents average annual capitalized expenditures. Survey participants are asked to provide capitalized expenditures for the survey year associated with the following categories:

- New and used vessel and on-board equipment: excludes processing equipment and fishing gear, includes all electronics, safety equipment, and machinery not used to process fish
- Processing Equipment: excludes all equipment, machines, and buildings based primarily on shore, excludes any processing equipment that is not used at least partially in the West Coast whiting fishery, and includes on-board freezers, storage equipment, packing equipment, conveyors, and on-board cargo handling equipment
- Fishing gear: Includes nets, cables, doors, and fishing machinery used in the West Coast whiting fishery, excludes any fishing gear that is not used at least partially in the West Coast whiting fishery

Participants are asked to split out West Coast capitalized expenditures and expenses on fishing gear, and capitalized expenditures on processing equipment from shared expenses.

Table 8.2: Capitalized expenditures on vessel and on-board equipment, fishing gear, and processing equipment. Average capitalized expenditures ($) on vessel and on-board equipment, fishing gear, and processing equipment (N = number of EDC vessels with non-zero, non-NA responses).

Expenditure category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fishing gear shared between the West Coast and other fisheries	$174,336	5	***	***	$576,144	5	$553,442	4
Fishing gear used only on the West Coast	***	***	***	***		0		0
Processing equipment shared between the West Coast and other fisheries	$2,259,050	5	$882,139	5	***	***	$382,216	5
Processing equipment used only on the West Coast		0		0		0		0
Vessel and on-board equipment in all fisheries	$1,816,714	5	$1,565,967	6	$681,416	7	$2,224,681	7
Average total capitalized expenditures	$3,543,417	6	$2,638,958	6	$1,287,662	7	$2,813,945	7

Table 8.3: Expenses on vessel and on-board equipment, fishing gear, and processing equipment. Average expenses ($) on vessel and on-board equipment, fishing gear, and processing equipment (N = number of vessels with non-zero, non-NA responses). Note that some expenses were requested for all fisheries the vessel participates in (West Coast, Alaska, and other) and others are for West Coast Fisheries only (Washington, Oregon, and California).

Expense category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fishing gear repair and maintenance shared between the West Coast and other fisheries	285,506	4	272,654	4	187,430	7	240,680	7
Fishing gear repair and maintenance used only on the West Coast	***	***	***	***	***	***		0
Processing equipment shared between the West Coast and Alaska	516,536	4	261,935	5	240,975	7	600,880	7
Vessel and on-board equipment	1,609,246	6	1,142,062	6	1,022,819	7	1,260,277	6
Average total costs on vessel and on-board equipment, fishing gear, and processing equipment	2,166,277	6	1,568,536	6	1,473,320	7	1,921,797	7

8.2.2 Other fixed costs

Table 8.4: Other fixed expenses. Average fixed expenses ($) on all other categories (N = number of vessels with non-zero, non-NA responses).

Expense category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Insurance premium payments (hull and machinery, protection and indemnity, and pollution insurance)	1,200,395 ·	6	1,072,765 ·	6	866,488 :	7	692,086 :	7
Lease of vessel	***	***		0	***	***	***	***
Moorage	401,886 ·	6	333,389 :	6	299,151 :	7	317,656 :	7
Average total fixed costs	1,868,948 ·	6	1,406,154 ·	6	1,168,567 ·	7	1,012,599 :	7

Table 8.5: Depreciation. Average depreciation taken during survey year (N = number of vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Depreciation	2,279,615 ·	6	2,280,392 :	6	2,138,087 :	7	2,428,690 ·	7

8.3 Fixed costs on the West Coast

As described above, not all costs reported on the EDC forms are for West Coast only operations. Therefore, cost disaggregation was required both to estimate total costs and total cost net revenue on the West Coast. Estimates of West Coast only costs are calculated using a ratio of pounds caught on the West Coast to pounds caught in all fisheries, including Alaska, Tribal, and any other fisheries, which provides an estimate of the proportion of the vessel costs attributed to the West Coast for costs that are shared. This approximation for the proportion of shared spending on the West Coast is then summed with the West Coast Only spending categories to provide a total estimate for annual West Coast Only spending (Table 8.6). See Section 1.2 above for discussion of this method.

8.3.1 Costs on vessel and on-board equipment, fishing gear, and processing equipment on the West Coast

Table 8.6: West Coast fixed costs on vessel and on-board equipment, fishing gear, and processing equipment. Capitalized expenditures and expenses on vessel and on-board equipment, fishing gear, and processing equipment on the West Coast (N = number of vessels with non-zero, non-NA responses).

Cost category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Fishing gear	111,299	5	230,827	4	176,819	5	170,745	5
Processing equipment	502,773	6	302,354	6	154,841	5	226,219	5
Vessel and on-board equipment	560,978	6	608,697	6	474,210	5	1,078,537	5
Average total West Coast costs on vessel and on-board equipment, fishing gear, and processing equipment	1,156,500	6	1,064,935	6	805,870	5	1,475,501	5

8.3.2 Other fixed costs on the West Coast

Table 8.7: West Coast costs on insurance, moorage, and leasing. Expenses on insurance, moorage, and leasing on the West Coast (N = number of vessels with non-zero, non-NA responses).6.5in

Cost category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
West Coast portion of insurance expenses	230,431	6	220,471	6	168,678	5	144,131	5
West Coast portion of lease expenses	***	***		0	***	***	***	***
West Coast portion of moorage expenses	93,352	6	68,438	6	71,876	5	78,774	5
Average total fixed costs	429,277	6	288,909	6	242,176	5	224,487	5

8.4 Fish purchases

The mothership form includes a question about the purchase of whiting and "Other" fish during the year. This information, along with a calculation of the average annual price is presented in Table 8.8. The average price for the season is calculated using the total reported revenue divided by the total reported purchase weight for each vessel for that survey year.

Table 8.8: Fish purchased and received. Average purchase weight (mt), purchase cost ($), and weight received but not paid for of whiting and other species. (N = number of vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Total weight of whiting purchased	3,922	6	5,958	6	9,982	5	7,501	5
Total cost of whiting purchased	658,389	6	1,237,291	6	2,294,085	5	1,845,707	5
Average annual whiting purchase price per mt	171	6	210	6	237	5	248	5
Total weight of other fish purchased		0		0		0		0
Total cost of other fish purchased		0		0		0		0
Total weight of whiting received but not paid for	141	4	***	***	***	***	***	***
Total weight of other fish received but not paid for	***	***	***	***		0		0

8.5 Summary of West Coast costs

Table 8.9: Summary of costs on the West Coast. Average capitalized expenditures and expenses on vessel and on-board equipment, fishing gear, and processing equipment, other fixed costs, and all variable costs on the West Coast (N = number of EDC vessels with non-zero, non-NA responses).

Cost category	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Total costs on vessel and on-board equipment, fishing gear, and processing equipment	$1,156,500	6	$1,064,935	6	$805,870	5	$1,475,501	5
Total other fixed costs	$429,277	6	$288,909	6	$242,176	5	$224,487	5
Total variable costs	$1,864,762	6	$2,976,445	6	$5,812,775	5	$4,585,581	5
Average total costs	$3,450,539	6	$4,330,288	6	$6,860,821	5	$6,285,569	5

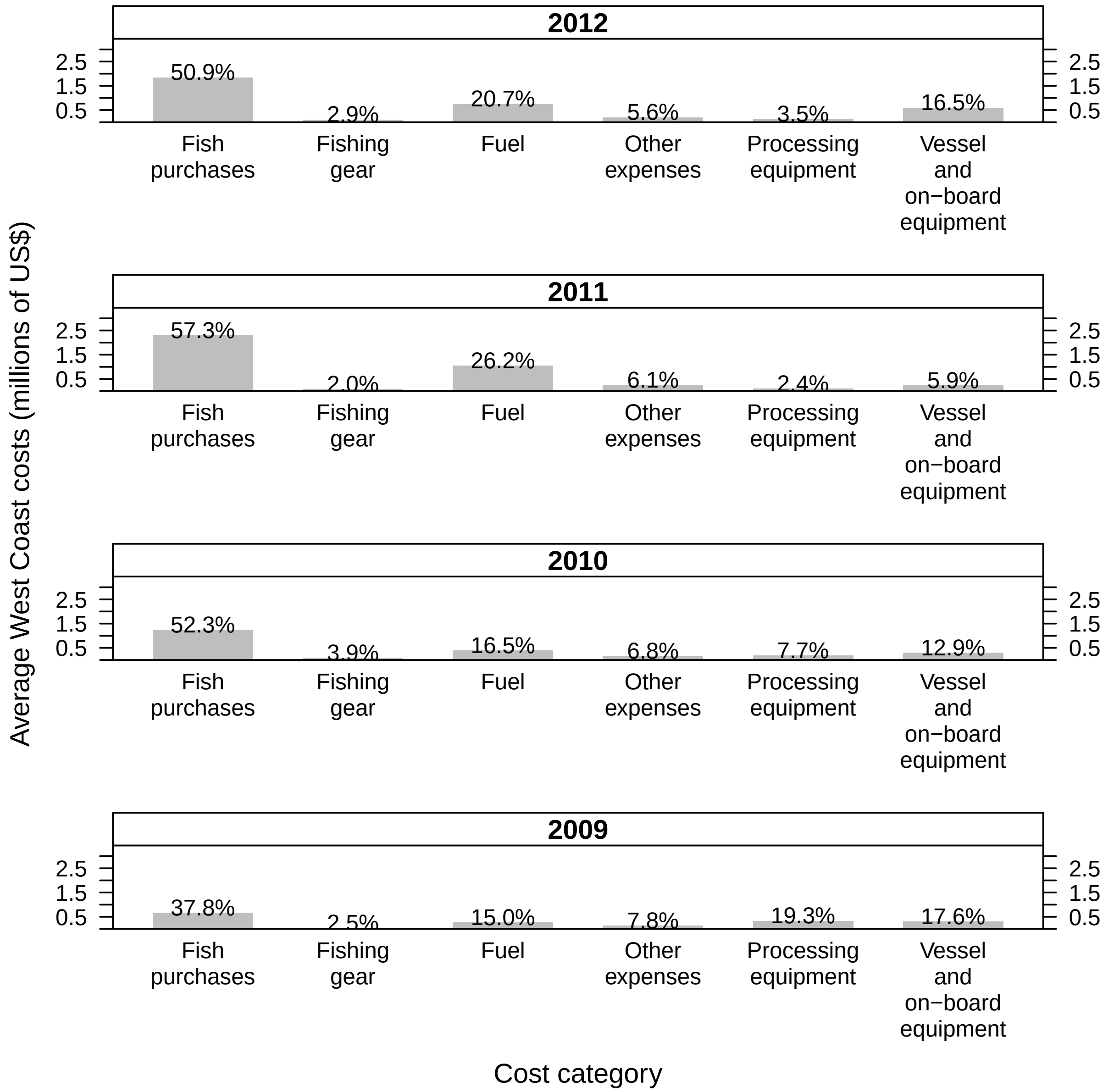

Figure 8.1: Average costs by category on the West Coast. Average costs by category on the West Coast including capitalized expenditures and annual expenses (millions of dollars). Crew includes both processing and non-processing crew expenses shown in Table 8.7. The "Other" category includes expenses on additives, communication, fees, insurance, freight, moorage, observers, offloading, supplies, packing, travel, and Sea-State monitoring. Percentages above each bar indicate the portion the category makes up of total West Coast costs.

8.5.1 Quota and permit costs on the West Coast

The EDC form requests information on quota and permit expenses. No vessels reported lease or purchase of permits; however, vessels may have made end-of season informal arrangements regarding leftover quota. The EDC form does not capture this type of transfer.

9 Net Revenue and Economic Profit

Net returns from operating a vessel are presented in this section. The level of net returns not only indicates whether a vessel is a viable ongoing business, but also the size of net benefit that is created from society's perspective. Two different measures of net returns are examined. They differ in the types of costs that are taken into account, and therefore, their interpretation and use. The first is a monetary, financial measure that attempts to track a vessel's net cash flow, which we call *net revenue*. It is calculated as revenue minus monetary costs. The only costs that are accounted for are those that are actually paid or associated with a financial transaction. The second measure attempts to track the broader economic performance of a vessel and includes all costs regardless of whether there is a cash or financial transaction. Costs are measured by their true resource costs, which may or may not be equal to monetary outlays. This measure is called *economic profit*[1]. The distinction between the two measures is probably most easily understood through a few examples relevant to fisheries.

Labor costs for the net revenue measure are the total payments to the crew and captain. If work is performed that is not paid for, then it is not included as a cost. This commonly occurs in commercial fishing when the owner of a vessel is also the captain, but does not draw a captain's wage. In this case, the net revenue is higher than it would be if the captain drew a wage or hired a captain. In the end, the vessel owner-captain is not necessarily any worse off since s/he is the residual claimant to the net revenue. However, the net revenue would be higher than a comparable vessel that hired a captain[2]. Economic profit, on the other hand, accounts for the cost associated with an owner's time that is used as a captain. This is called an opportunity cost in the economics literature[3], and is typically approximated by the wage of a comparably productive captain[4].

A second example of the difference between net revenue and economic profit is the treatment of vessel capital costs. Again, net revenue only includes costs that are actually paid, which includes items such as vessel repair, maintenance, and upgrades. Economic profit would also include the opportunity cost of owning the vessel, a capital asset. By owning a vessel, the owner foregoes other investment

1 Whitmarsh D., James C., Pickering H., Neiland A. 2000. The profitability of marine commercial fisheries: a review of economic information needs with particular reference to the UK. Marine Policy, Vol. 24(3), pp. 257-263

2 The same would also be true when a vessel owner does not receive a wage for work performed to repair or maintain a vessel or gear.

3 See Boardman, Anthony, David Greenberg, and Aidan Vining. Cost-Benefit Analysis: Concepts and Practice, Prentice Hall, NJ. 2000. pp. 31-32.

4 A more accurate measure would be the owner-captain's most valued wage off the vessel.

opportunities that would provide a rate of return. This is called the opportunity cost of capital, and is typically approximated by the market rate of return associated with businesses of comparable risk, multiplied by the market value of the vessel.

Both net revenue and economic profit are useful measures for fishery management. Net revenue attempts to measure the annual financial well-being of vessel operations. It can be used to determine if there is a monetary gain or loss, or how changes in fishery management may affect the level of monetary gain or loss. Economic profit is a better indicator of the long-term viability of fishery operations since it includes all costs, and values the costs at their opportunity cost. It can be used to estimate whether there are incentives or disincentives to invest in capital, or enter and leave the fishery. It is also a better measure of the net benefit of the fishery to the nation.

Calculations of net revenue are included in this report. The cost categories used in net revenue, based on those reported in the EDC forms, are discussed below. Currently, calculations of economic profit are beyond the scope of the report. Economic profit relies on opportunity costs, which may be different from some of the costs reported on the EDC forms, so additional methods and analyses are required. The EDC Program economists will continue to work on developing measures of economic profit so that it may be included in future reports.

9.1 Net revenue

Net revenue is calculated two ways: using only variable costs, and using variable costs plus fixed costs (total costs)[5]. The first calculation is called *variable cost net revenue*, while the second is called *total cost net revenue*. Variable cost net revenue is useful to examine changes in fishery operations that are not so great as to affect fixed costs. For example, the cost of processing an additional day, or processing an additional metric ton of fish, is better represented by only considering variable costs. Total cost net revenue is usually a better summary measure of financial gain or loss for an entire year, season, or fishery.

There are several caveats associated with the net revenue calculations in this report. As noted in Section 8, there are a variety of costs that are associated with running a vessel that are not requested by the EDC form because it is difficult to determine the share of the cost associated with the vessel. These costs include items that can be used for activities other than processing, or are too difficult to allocate to a particular vessel in a multi-vessel company. These expenses include office space, vehicles and transport trucks, storage of equipment, professional fees, and marketing. In general, the EDC forms attempt to capture only costs that are directly related to vessel maintenance and processing operations, and not costs that are related to activities or equipment off the vessel. Therefore, the EDC calculated net revenue is an overestimate of the true net revenue. The difference is likely much greater for total cost net revenue than variable cost net revenue since most of the excluded costs are fixed costs.

[5] See Section 8 for a more complete discussion of variable and fixed costs used in this report

Another caveat is that the EDC forms do not collect information about income taxes or financing costs. This has several implications. The first is that these costs are not included in the net revenue calculations. Therefore, net revenue is greater than it would be otherwise. The second is that in lieu of financing information (principal and interest payments), EDC total cost net revenue uses the total costs associated with vessel and gear purchases, repair, maintenance and improvements. For example, if a new engine is purchased, the total cost of the engine is used, even though the actual cash outlay, if it were financed, would only be the principal and interest payments made that year. It is likely that many larger capital costs, and perhaps some operating costs, are financed. This would mean that the actual cash outlays in a particular year for those items would be less than what is used in the EDC for the net revenue calculation. Over time, this may balance out to some degree because previously financed or purchased capital and equipment are also not included, except for the year in which they are purchased[6]. Moreover, total cost net revenue is expected to be representative of actual total cost net revenue only when averaged over many years and across vessels because relatively large capital costs occur periodically.

9.1.1 Net revenue for all West Coast fishing activities

Average net revenue is calculated for all activities on the West Coast. West Coast revenue only includes revenue from production of fish. The variable and fixed costs do not include costs related to acquiring limited entry permits, quota shares, or quota pounds.

$$\text{Variable cost net revenue} = \text{West Coast revenue} - \text{West Coast variable costs}$$

$$\text{Total cost net revenue} = \text{West Coast revenue} - (\text{West Coast variable costs} + \text{West Coast fixed costs})$$

[6] At best, it is just a partial balancing out because the interest payments are not accounted in the EDC data.

Table 9.1: West Coast variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue on the West Coast (N = number of vessels). Fixed costs include capitalized expenditures and expenses on vessel and on-board equipment, fishing gear, and processing equipment and other fixed costs (N = number of EDC vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$3,008,372	6	$5,645,012	6	$8,230,477	5	$6,058,715	5
(Variable costs)	$1,864,762	6	$2,976,445	6	$5,812,775	5	$4,585,581	5
Variable cost net revenue	**$1,143,610**	**6**	**$2,668,567**	**6**	**$2,417,702**	**5**	**$1,473,134**	**5**
(Fixed costs)	$1,585,777	6	$1,353,843	6	$1,048,046	5	$1,699,988	5
Total cost net revenue	**-$442,167**	**6**	**$1,314,724**	**6**	**$1,369,656**	**5**	**-$226,854**	**5**

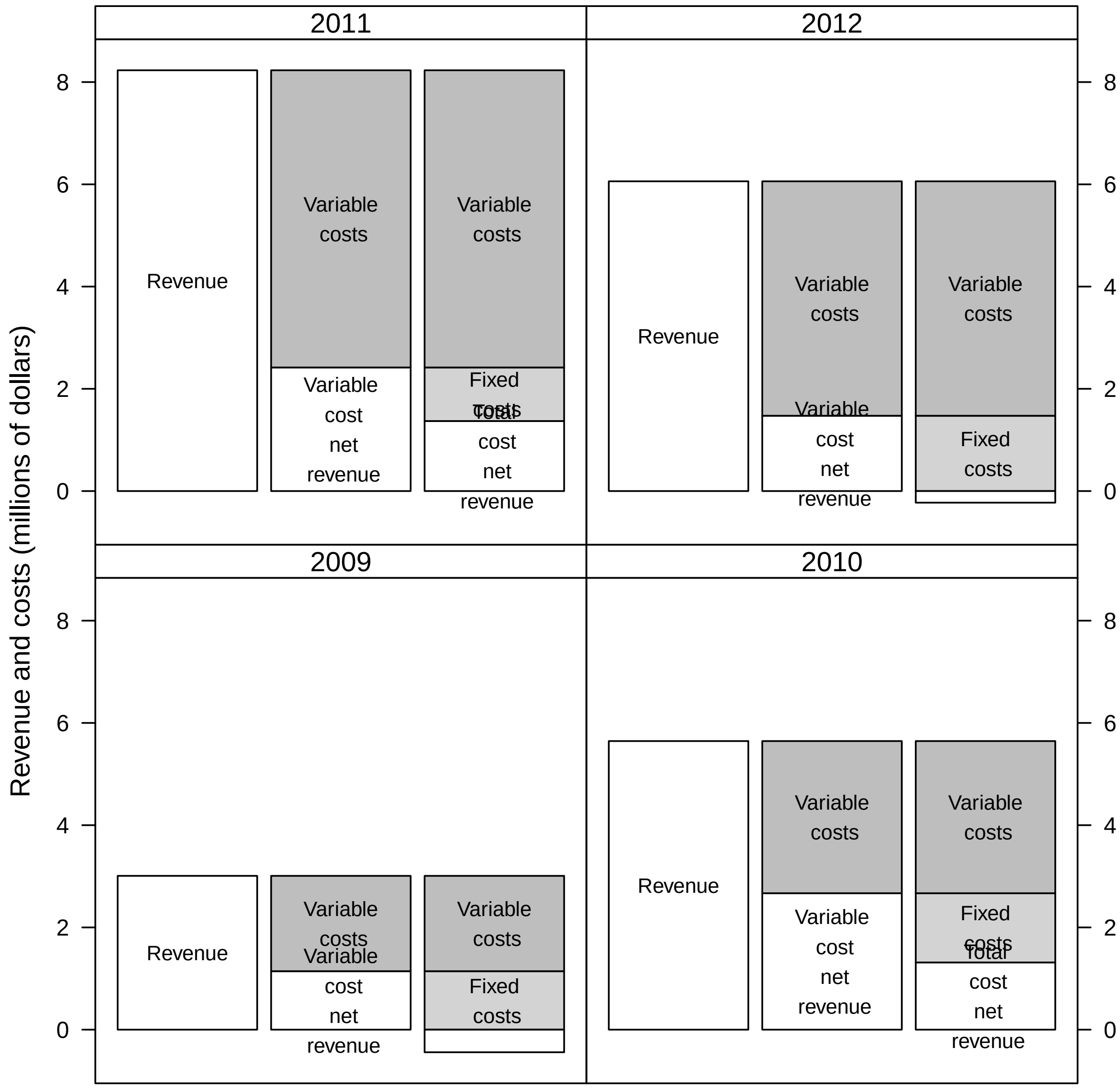

Figure 9.1: Mothership average variable cost and total cost net revenue. Average total revenue, variable costs, variable cost net revenue, fixed costs, and total cost net revenue on the West Coast. Fixed costs include capitalized expenditures, capital expenses, and other fixed costs.

10 Economic Performance: Cost, Revenue, Net Revenue, Markup, and Product Recovery Rates

Table 10.1, Table 10.2, and Table 10.3) provide a breakdown of the revenue, variable cost, variable cost net revenue, total cost, and total cost net revenue by days at sea (West Coast processing and steaming), metric ton of fish produced, and metric ton of fish purchased.

Table 10.1: Revenue, cost, and net revenue per day. Mean revenue per day, variable cost per day, variable cost net revenue per day, fixed costs per day, and total cost net revenue per day.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$152,259	6	$164,112	6	$117,448	5	$116,769	5
(Variable costs)	$93,860	6	$93,468	6	$86,481	5	$93,216	5
Variable cost net revenue	**$58,400**	**6**	**$70,645**	**6**	**$30,967**	**5**	**$23,553**	**5**
(Fixed costs)	$78,844	6	$43,743	6	$16,768	5	$35,883	5
Total cost net revenue	**-$20,444**	**6**	**$26,902**	**6**	**$14,200**	**5**	**-$12,330**	**5**

Table 10.2: Revenue, cost, and net revenue per metric ton produced. Mean revenue per metric ton produced, variable cost per metric ton produced, variable cost net revenue per metric ton produced, fixed costs per metric ton produced, and total cost net revenue per metric ton produced.

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Revenue	$2,160	6	$2,647	6	$2,000	5	$1,715	5
(Variable costs per metric ton produced)	$1,314	6	$1,480	6	$1,478	5	$1,632	5
Variable cost net revenue	**$847**	**6**	**$1,166**	**6**	**$521**	**5**	**$83**	**5**
(Fixed costs per metric ton produced)	$1,163	6	$784	6	$297	5	$924	5
Total cost net revenue	**-$317**	**6**	**$383**	**6**	**$225**	**5**	**-$841**	**5**

Table 10.3: Net revenue per metric ton purchased. Mean variable cost net revenue per metric ton purchased and total cost net revenue per metric ton purchased.

Description	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Variable cost net revenue	**$307**	**6**	**$370**	**6**	**$229**	**5**	**-$39**	**5**
Total cost net revenue	**-$94**	**6**	**$144**	**6**	**$113**	**5**	**-$577**	**5**

The markup for the mothership whiting sector (Table 10.4) is

$$\frac{R_n}{C_n}$$

where N is the number of motherships that processed on the West Coast, R_n is the value of production for each mothership vessel, and C_n is the cost of fish purchases by each mothership vessel. The entity average markup is calculated for each survey year and shown in (Table 10.4).

The product recovery rate for the mothership whiting sector (Table 10.5) is

$$\frac{WT_n^{fishoutputs}}{WT_n^{fishinputs}}$$

where N is the number of motherships that purchased fish on the West Coast, $WT_n^{fishoutputs}$ is the weight of fish produced by each mothership vessel, and $WT_n^{fishinputs}$ is the weight of fish purchases from catcher vessels by each mothership vessel. The entity average product recovery rate is calculated for each survey year and shown in (Table 10.5).

Table 10.4: Markup rate. The markup rate (total value of production divided by total cost of fish purchases) for motherships on the West Coast (N = number of vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Markup	4.87˙	6	3.95˙	6	3.37˙	5	3.12˙	5

Table 10.5: Product recovery rate. The product recovery rate (total weight of production divided by total weight of fish purchases) for motherships on the West Coast (N = number of vessels with non-zero, non-NA responses).

	2009		2010		2011		2012	
	Mean	N	Mean	N	Mean	N	Mean	N
Product recovery rate	0.38˙	6	0.32˙	6	0.44˙	5	0.53˙	5

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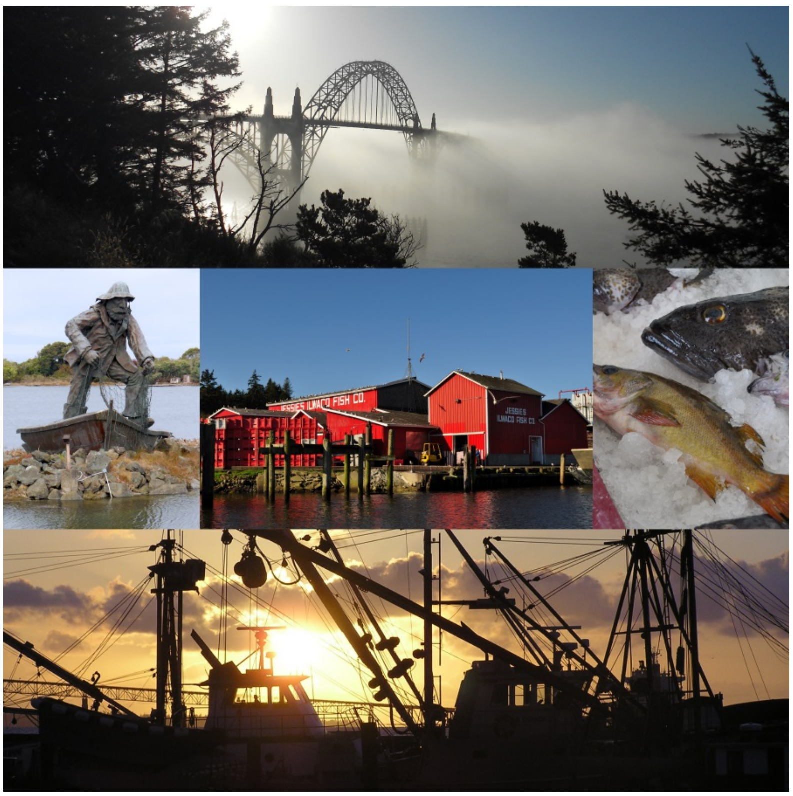
NWFSC Report 5
November 2014

The Pacific Groundfish Fishery Social Study

An Initial Theme Based Report



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October 22, 2014

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Catch
Trawl
income
Shares
boast
Shift
enter
impact
better
Loss
business
difficult
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Longer
Value
bycatch
quality
individual
quota
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schedule
costs
processors
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Groundfish
product
fisheries
processing
Benefits
remain
Fewer
gear
raw
cost
Pacific
Fishery
fishing
boats/small
coverage
jobs
Impacts
accountability
Competition
purchase
delivery
community

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This effort was achieved only through the work of many researchers. Field researchers in 2010 include Tiffany Wilson, Jason Davis, Monica Galligan, Hunter Berns, Stacey Miller, Anna Varney, Kristen Hoelting, and Karma Norman. Field researchers in 2012 include Melissa Stevens, Brian Carter, Ruby Moon, Sarah Wise, Keeley Kent, as well as return researchers Anna Varney and Monica Galligan, and the two co-authors of this report.

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Summary

This report is intended to be an abbreviated representation of the social data collected under the Pacific Coast Groundfish Fishery Social Study. This study aims to capture social changes to fishing communities as a result of the rationalization of the fishery. The results are organized into themes, which aim to provide a greater context to the data collected. The results represent two data sets. Baseline data was collected in 2010 prior to implementation. A second round of data was collected in 2012, post implementation. The results represent comparisons between both sets of data. Data is provided in descriptive statistics only. Continued and more in-depth analysis will be released in future reports.

The themes represented in this report include 1) Graying of the fleet, 2) Changing social relationships, 3) program perceptions, and 4) fisheries participation. Information from multiple sections of the survey and interview data informs each theme. Additional themes are expected to arise with future analysis.

Introduction

The Pacific Fisheries Management Council (PFMC) and the National Marine Fisheries Service (NMFS) implemented a new rationalization program for the Pacific Trawl Groundfish and Whiting Fisheries in January 2011.

The management change was driven by biological, bycatch reduction, and economic goals (NMFS 2011; PFMC and NMFS 2010; Steiner et al. 2014). However, rationalization will not only result in changes in stock abundance, bycatch reduction, species recovery, species conservation, and economic efficiency, but also social impacts and changes on people and communities associated with the fishery. Both positive and negative impacts and changes are possible. Impacts are likely to vary geographically and across participant groups (e.g. harvesters, processors, suppliers, etc.).

Scientific literature extensively discusses the impacts rationalization programs have on fishing communities (Lowe and Carothers 2008; Petursdottir and Palsson 1996). Barriers for new entrants have been discussed to include financial barriers, lack of quota (retired quota owners hold onto quota and lease it), lack of knowledge, and lack of work ethic (Dewees 2008; Ecotrust 2004). Community affects may vary where some communities benefit from consolidation and retain the necessary quota and resources to succeed where others lose labor, processing plants may close down, and individuals and families may leave the communities seeking employment elsewhere (Karlsdottir 2008; NRC 1999). Changing social relationships where shifts in power either between owners and captains/crew or owners and processors may be strained when owners retain control of quota shares, (McCay 1995; NRC 1999). Rising values of quota and lease costs being shifted down to crew, have been shown to result in less pay for crew and longer hours at sea (Copes 1996; McCay and Brandt 2001). These longer hours at sea may create not only stressors aboard vessels but also onshore within families, that may already be strained by participation in multiple fisheries to make ends meet. In addition, the ability of communities to adapt to changing fishing conditions as the ecosystem and ocean conditions change may be limited under rationalization programs (Lowe 2008). Social and cultural changes affecting fishermen, processors, and other industry members, such as net suppliers, are probable. Expected outcomes of rationalization such as consolidation and increased efficiency have benefits to the catch, but may also have negative consequences on some people involved in the fishery (Carothers 2013; Olsen 2011)

The extent of the social and cultural changes is likely to depend on the specific characteristics of the fishery being rationalized (Olsen 2011). Changes are also likely to vary across communities. The Pacific Coast Groundfish Fishery spans a considerable length of the West Coast of the United States with fishermen and processors participating in the fishery from Blaine, WA, to approximately Morro Bay, CA. Communities of varying characteristics from small communities with small docks and minimal infrastructure to larger communities with large vessels and extensive infrastructure all are represented within this fishery. As a result, social and cultural changes may vary from port to port or community to community.

In 2010 prior to implementation of the rationalization program we surveyed and interviewed a broad range of direct and indirect participants in the groundfish fishery in order to collect baseline information. Data was collected on demographics, participation, connections and relationships, well-being and perceptions of rationalization. A second, post rationalization, round of data collection was undertaken data in 2012. We anticipate a third round of data collection in 2015. By collecting data before and after rationalization we hope to identify and quantify social and cultural changes associated with implementation of rationalization across the breadth of the diverse communities involved with this fishery.

This report presents a theme-based subset of results from the two data collection efforts undertaken so far. In future we plan to prepare a more extensive report which will include 2015 data to contribute to the five year review of the rationalization program. The research effort also collected information that pertains to other fisheries, which will be available to assist in better understanding similar characteristics in those fisheries as well as ecosystem management applications.

Legal Background

This research supports several legal requirements, not only for this specific management effort, but possibly for other fisheries. Results will support legal requirements by illustrating the importance of the fishery to fishing communities, by taking the first step to identifying the social characteristics of the fishery, as well as initiating an understanding of the relationships between individuals in the industry. All these results will support various sections of the MSA as well as NEPA and other legal directives[1].

Research Design

This research project was planned to collected data over time in phases. Data collection is linked not only to the inception of the program (i.e., pre and post implementation) but also the design elements of the program. Specifically, the commencement of the quota share transfers which were prohibited in the initial years of the program. Initial data was collected from June – December of 2010, prior to the implementation of the catch shares program. This data serves as a baseline. Any future data collections could then be compared to this data set to assess any social changes.

[1] MSA National Standard 8 Sec 301 (a)(8), Section 303 A.(c)(1)(C), Sec. 404(a), & Sec. 404 (c)(3)

After implementation, a second round of data collection was conducted from June 2012 – February 2013. This was the first round of data collection post-implementation and before any other program elements were triggered. The timing of this data collection was after a full year of the program had been in place. This allows for measurements of any changes as a result of the initial implementation.

A third round of data collection is planned for at minimum one year after the authorization of quota share trading. This round of measurements will serve both to understand any changes related to the trading of quota shares, as well as provide a longer duration since implementation to measure change. It will also provide a comparison to the 2012 data set. Funding has been requested to conduct this round of data collection during the summer of 2015 but has not yet been appropriated.

Data Collection Methods

Data was collected using a mixed methodology. A combination of a survey instrument and semi-structured interviews were used to maximize the amount and type of information gathered from study participants (Bernard 2000; Russell and Schneidler-Ruff 2014; Schensul et al. 1999). The goal of the survey is to attempt to survey all known participants of the industry (Bernard 2000; Schensul et al. 1999). These known individuals were initially found through the Limited Entry Permits held prior to the catch shares program, and double checked with the Quota Share Permits databases for the 2012 data collection effort[2]. Additional participants were sought through snowball sampling, a type of purposive sampling, where referrals were obtained from existing participants to locate new participants (Bernard 2002; Robson 2002). This was necessary to approach participants such as crew members and fishermen's wives where no identifying information is available. Participants from the 2010 baseline collection were approached again for participation in the 2012 data collection effort.

Surveys were primarily conducted in-person, which allowed for in-person interviews. Interviews supplemented survey questions, and allowed for participants to raise discuss other related topics. Researchers were distributed throughout the West Coast to increase accessibility to local communities (Table 1). All surveys and interviews were completely voluntary and confidential. The survey was also available electronically, on the study website, could be emailed upon request, and hard copies were mailed upon request. The option to conduct the survey in person was selected to improve response rates and to reach those communities that are more remote and would be less likely to respond to other forms of data collection (Rea and Parker 1997; Russell and Schneidler-Ruff 2014).

[2] NOAA Fisheries Pacific Coast Fisheries Permit System, West Coast Regional Office. http://www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/quota_share_permits_accounts.html. Accessed October 7, 2014.

Table 1. Geographic distribution of researchers for data collection.

Location of Researcher(s)	Responsible Communities*
Seattle, WA	All WA State, Astoria, OR, Garibaldi, OR, Other Oregon as needed
Newport, OR	Newport, OR Florence, OR Coos Bay, OR Brookings, OR Port Orford, OR
Eureka, CA	Crescent City, CA Eureka, CA Fort Bragg, CA
San Francisco, CA	Bodega Bay, CA Princeton/Half Moon Bay, CA San Francisco, CA
Monterey, CA	Monterey, CA Moss Landing, CA Morro Bay, CA

*NOTE: Researchers would travel to other communities within a 25 mile radius of these identified communities to capture viable participation.

Study participants include several types of people connected to the fishery and affiliated fishing communities. This includes fishermen, vessel owners, vessel operators, groundfish limited entry permit owners, quota allocation recipients\permit owners, crew aboard groundfish/whiting vessels, mothership operations, catcher-processor operations, shoreside processors, first receivers/buyers, and other individuals who are stakeholders in the fishery such as partners or spouses, businesses that are directly tied to the groundfish/whiting communities through the supply of commercial items to include, but are not limited to net suppliers, fuel suppliers, equipment suppliers, dry docks, etc.. We were also approached by fixed gear fishermen who wished to participate in the study. Resources to conduct this effort were limited to the trawl fishery participants, however, researchers obtained fixed gear participation where possible. As a result, the data set does contain a limited representation of the fixed gear fishermen. All results that contain fixed gear responses are clearly identified.

Data included in the survey is extensive. The 2010 survey was reviewed and minor adjustments to provide additional clarity were applied to the 2012 survey. Where any changes affected the results, it is noted in the results. In addition, the 2012 survey contains an additional section as noted below in Table 2.

Table 2. Description of survey sections.

Survey Data Section	Description
Demographic	Comparable to U.S. Census data where it is not otherwise obtainable for fishermen
Individual Participation	Expansion to include individual role information, family participation, and job characteristics information
Connections	Collects information to inform social networks within the fishery and communities
Quota Perspectives	Collects information to gauge perceptions of the catch shares program and identify key areas of support and concern.
Fishermen	Collects information to understand how fisherman fish, what they fish for, how so they work with processors, and how they move between fisheries.
Processors	Collects information to understand what species are important to processors and why, how do they work with fishermen, and how do they market and distribute product.
2012: Quota Allocation Recipients	Collects information to understand leasing and retaining of pounds, and how do different people manage their allocation.

In conjunction with the survey, or in the event a participant was not interested in taking the survey but would participate through an interview, semi-structured interviews were conducted. These interviews provided the opportunity to capture additional information about survey questions as well as pursue lines of questions independent of the survey. The majority of interviews were conducted in-person and a few interviews were conducted over the phone when in-person interviewing was not feasible. Interviews were audio recorded with permission and general were completed within 60 minutes, although they ranged in length from 10 minutes to 4 hours.

Response Rates

Response rates have been calculated for both the 2010 and 2012 survey results based on the total response as well as for the trawl only response rate (Table 3). Trawl only responses remove any fixed gear participation and only reflect participants with any connection to the grounfish trawl industry. While both the overall and trawl response rates were lower in 2012, the study had a much higher target in 2012. Study participants had the option of taking the survey, participating in an interview or participating in both formats. Response rates by state show declines in participation in Oregon and California and an increase in participation in Washington (Table 4).

Table 3. Response rates.

	Survey and Interview	Survey Only	Interview Only	Total Survey	Total Interview	Targeted	Response Rate
2010 Overall	201	41	32	242	200	379	63.9%
2012 Overall	235	24	31	259	236	500	51.8%
2010 Trawl	172	38	31	210	171	340	61.8%
2012 Trawl	195	22	25	217	195	386	56.2%

Table 4. Survey response rates by state.

	WA	OR	CA
2010 Overall	60.0%	60.4%	71.0%
2012 Overall	51.7%	49.0%	54.6%
2010 Trawl	47.6%	58.7%	68.9%
2012 Trawl	63.6%	51.3%	60.0%

In 2010 there were 200 interviews conducted in total, 24 of which were with two more respondents. 171 of these interviews were categorized as trawl, 21 of which were conducted with two or more people. In 2012 there were 236 interviews conducted in total, 26 of which were with two or more respondents. 195 of these interviews were categorized as trawl, 19 of which were conducted with two or more people. The breakdown of participant’s roles as reported by the participants is described in Figure 1.

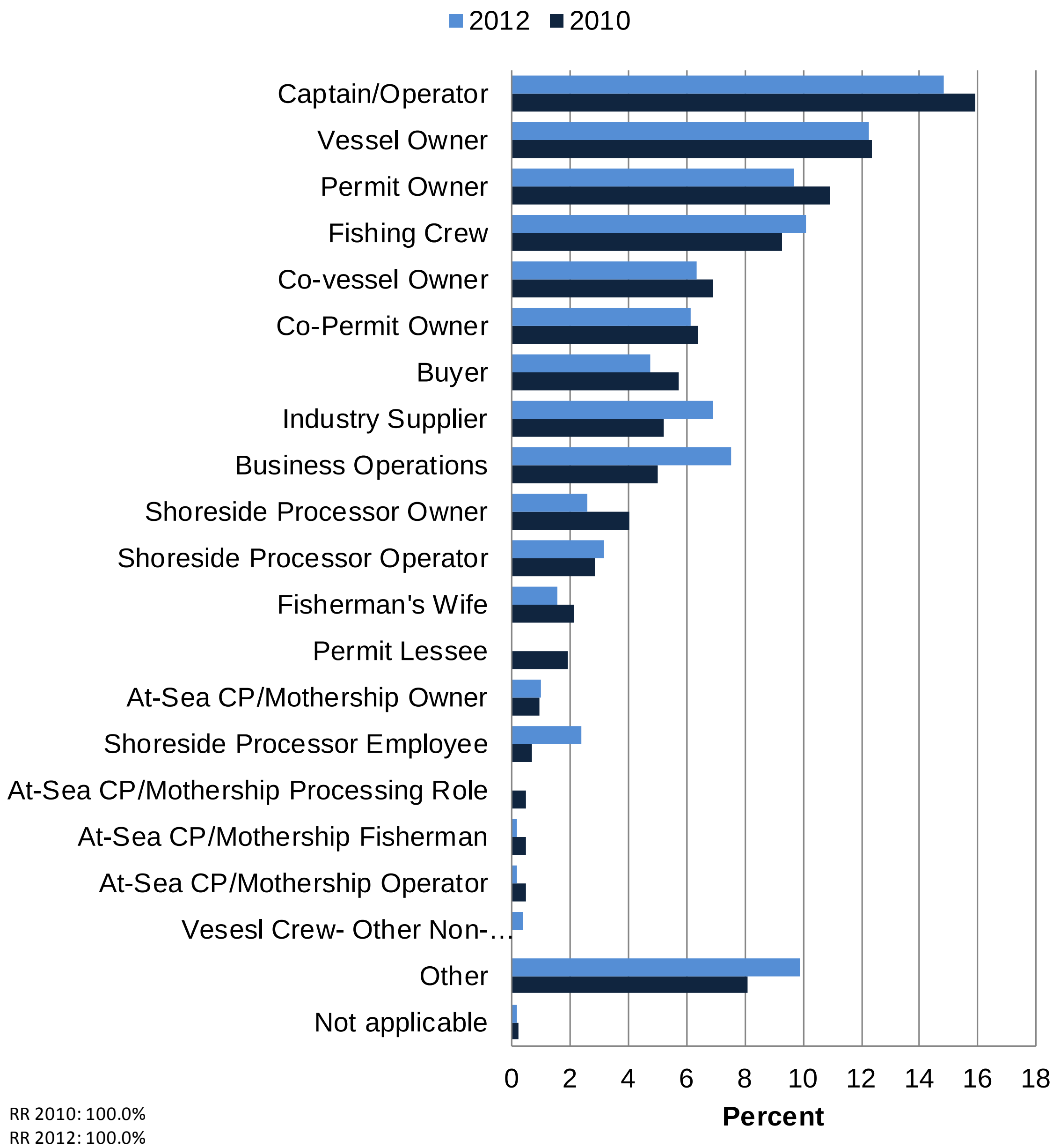

Figure 1. Roles in the industry. NOTE: This is a multiple response set, so participants were able to select more than one role that represented their participation.

Repeat Response Rate and Non-Response

This study attempts to understand the impacts of Catch Shares over time, and thus targeted many of the 2010 participants in the 2012 data collection process. The repeat response rate for the 2010/2012 survey efforts has been calculated as the number of repeat respondents who participated in either the survey or the interview, or both. This more accurately describes the amount of respondents who participated as some respondents switched the format in which they participated. For example, in 2010 a participant might have only taken the survey, but in 2012 decided to only participate in the interview or vice versa. This combined response rate is 54.2%, reflecting any type of participation by 2010 respondents also participated in 2012. Response rates may also be calculated for repeat survey participation only as well. Calculations of those participants that repeated the survey portion of the study only are represented in Table 5.

Table 5. Repeat response rate for surveys only.

	Total surveys		Total surveys	N new	% New Respondents	N repeat surveys in 2012	% Repeat Response
2010 Overall	242	**2012 Overall**	259	137	53.0%	122	50.4%
2010 Trawl	210	**2012 Trawl**	217	109	50.2%	108	51.4%

Table 6. Non response description.

Reason	Non-response Rate 2010	Non-response Rate 2012
Left messages, No return response	34.2%	36.1%
Unable to contact due to bad information	3.4%	16.6%
Agreed to participate but unable to arrange	8.5%	13.7%
Not applicable to study	-	9.8%
Surveys not returned	31.6%	7.3%
Immediate decline – Multiple reasons	3.4%	5.4%
Immediate decline – No reason	7.7%	2.4%
Health Condition Prohibitive/Deceased	0.9%	2.9%
Other	10.3%	5.9%

Non-response was recorded by researchers in the participant tracking process. If we were able speak with participants and they declined to participate, they were asked questions to ascertain their reasons why they did not wish to participate. If reasons were indiscernible, standard codes were applied based on levels of contact (Table 6). The highest levels of non-response were in the inability to obtain a return response from primarily phone messages. Researchers would attempt to make contact up to three times. If no response was achieved, further contact was not pursued. One caveat to this contact, is if the participant was a permit owner and address information was available. Under these circumstances a letter and flyer where mailed to the individuals as well. This category of non-response, includes small percentages of lack of response to these letters and any email communications, where addresses were available.

Contact information, either provided by referrals, from the 2010 information, or through the permit documentations often yielded disconnected phone numbers or 'return to sender' addresses. The category of 'unable to contact due to bad information' is reflective of these circumstances. In the case we were able to make contact and participants agreed to participate but schedules were very busy, we followed up with participants throughout the entire study period. Often four to five attempts were made to accommodate schedules. However, 8.5% (2010) and 13.7% (2012) of the time, researchers were unable to make a final connection to secure participation. We attempted to reach additional members within targeted communities, usually through referrals and 10.3% (2012) of those we approached felt they did not meet the criteria to participate in the study either because they did not participate in the groundfish fishery, or felt they were too far removed from the fishery to contribute to the study. Surveys were available to be mailed, dropped off, and they were accessible on the study web page. 31.6% in 2010 and 7.4% in 2012 of the surveys that were not conducted in person were not returned. These included surveys that had been dropped off by researchers, mailed, and accessed on-line. Several individuals declined to participate. 7.7% in 2010 and 2.9% in 2012 did not provide any specific reasons. However, for those who did, 3.4% in 2010 and 4.4% in 2012 showed a consistent trend of anger towards NOAA and the catch shares system. Post implementation reasons included the loss of jobs, low allocations affecting the ability to fish, or general negativity towards the catch shares program. Other reasons some did not participate included people having moved out of state, selling of boats, retiring, some participants yielded to other family members who participated, and some felt uncomfortable participating and referred us to senior personnel in their businesses. In some of these cases, we had still hoped to gain participation, however participants did not want to have any input into the study.

Data Analysis

Survey Analysis

Surveys were analyzed across all data, by all trawl respondents, all trawl harvesters, all trawl processors, fishermen's wives/other industry operations, by state, by community (where confidentiality allows), and by fixed gear. Each of these types of analysis allows for a more detailed perspective of the data. This detail provides a greater understanding of differences between variables, for example, states or communities. For the purpose of this report, the majority of the results presented will be representative of the 'all trawl respondent' analysis. Additional reports will expand on the full range of analysis. A primary focus of this report is a comparison of response in 2010 and 2012, pre and post rationalization.

Interview Analysis

Interview data was transcribed and analyzed using Altas.ti version 6.2 and MaxQDA version 11 software. Transcripts were analyzed with a grounded theory framework using in vivo coding and descriptive coding (Corbin and Strauss). Grounded theory and the use of in vivo coding allow concepts and themes to emerge directly from the data in the language of the participants rather than in terms of preexisting theory (Saldana 2009). The end result of grounded theory analysis is often verbatim quotes from participants that help demonstrate key ideas and theories (Ryan and Bernard 2003). Data was reviewed in an iterative process to identify information relevant to the research questions, which included paying special detail to frequency, omission and declaration of data (LeCompte 2000). 121 codes such as "availability of observers" or "business planning" were created to reflect interview content. Definitions and memos were created for each of the codes which helped to elucidate code meanings and conceptualize similarities and differences; codes were then clustered together to form categories (Kendall 1999). The categories were then examined for their relationship to one another, which paved the way for categories to be woven together to form a broader narrative (Holloway and Todres 2003).

Theme Development

The broad range of data available from this research is very informative and comprehensive, but also too extensive to present in this short report. The analysis for each survey question will be available to be viewed in future technical memoranda that will be released after the 2015 data collection effort. However, to better show the utility of this data, we have organized information both from specific sections of the survey and between sections of the survey to illustrate key themes. These themes are further supported with qualitative data results. This report is based in the identification of four initial themes generated from both the 2010 and 2012 data sets. Additional themes will likely be identified as analysis continues. This report serves as an initial communication of these results. The themes discussed in this report are as follows:

1) Graying of the Fleet
2) Changing Social Relationships
3) Program Perceptions
4) Fisheries Participation

Each theme will be discussed and supported in the remainder of this report.

Themes

Graying of the Fleet

The realization that members of the fishing industry inclusive of fishermen, vessel owners (where differentiated), crew, as well as in other industry support business members are aging is one that is gaining attention in recent years. This is coupled by the concern of the lack of new entrants to the industry. The Pacific Coast Ecosystem Plan discusses age parameters for various fisheries on the West Coast and suggests the need for new recruitment approaches to draw future generations of fishermen into the business (PFMC 2013). Understanding where past generations of fishermen came from may not assist in recruiting new generations of fishermen, but understanding perspectives on the issue may go a long way to plan for the future. We present several indicators that relate to this issue we refer to as "graying of the fleet." We also present qualitative information in the form of excerpts from interviews that provide context to the quantitative results.

Results

The majority of harvesters[3] in the Pacific Coast Groundfish Fishery are approaching ages where they may consider retiring and exiting the fishery in the next 10-15 years. Currently, there does not appear to be an equivalent population of younger fishermen who will replace those retiring in the fishery. Qualitative data reveal that younger fishermen may not want to enter the Groundfish fishery because it is not considered lucrative or they cannot enter because of financial barriers. The majority of the current fishermen have been fishing for more than 26 years and entered the fishery at a very young age (6-20). These fishermen have participated in the Groundfish Fishery for a while and have gained working knowledge of the fishery and the grounds. Therefore, there could potentially be a loss of knowledge as seasoned fishermen retire without passing on their skills to crew working their way up the back deck.

[3] Harvesters are defined as all members related to 'fishing' inclusive of captains, crew, Limited Entry permit owners (2010), quota share permit owners, vessel owners, and any other vessel roles.

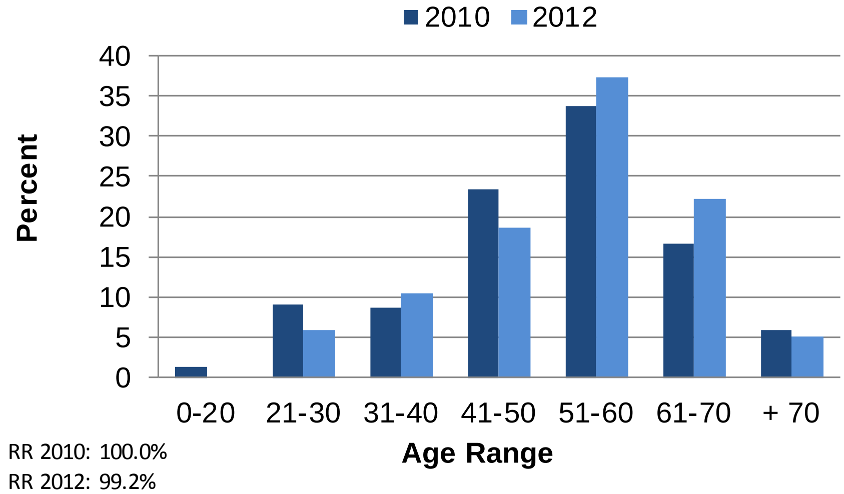

Figure 2. Age range of trawl harvesters.

Harvesters in the Pacific Coast Groundfish Fishery are aging. The mean age of trawl harvesters in 2010 was 50.8 years, in 2012 it was 51.1 years. A slight majority of trawl harvesters fall in the 51-60 year old range for both survey years, 33.8% and 37.8% respectively (Figure 2). Over half the harvesters in both years are over 50 years old (51-70+ years), 56.3% in 2010 and 64.6% in 2012. The increasing percentage of fishermen who are 61 years old or older is also noteworthy. In 2010, 22.5% of groundfish trawl fishermen surveyed were 61 years old or older, whereas this percentage increased to 27.2% in 2012. Fishermen at this age are close to retirement, and are typically replaced by younger captains and deckhands who may be physically more capable and who want to establish their own fishing careers. On the contrary, the data available show a lack of younger fishermen. Only 10.4% of harvesters were 30 years old or younger in 2010, and this percentage decreased to just 5.8% in 2012.

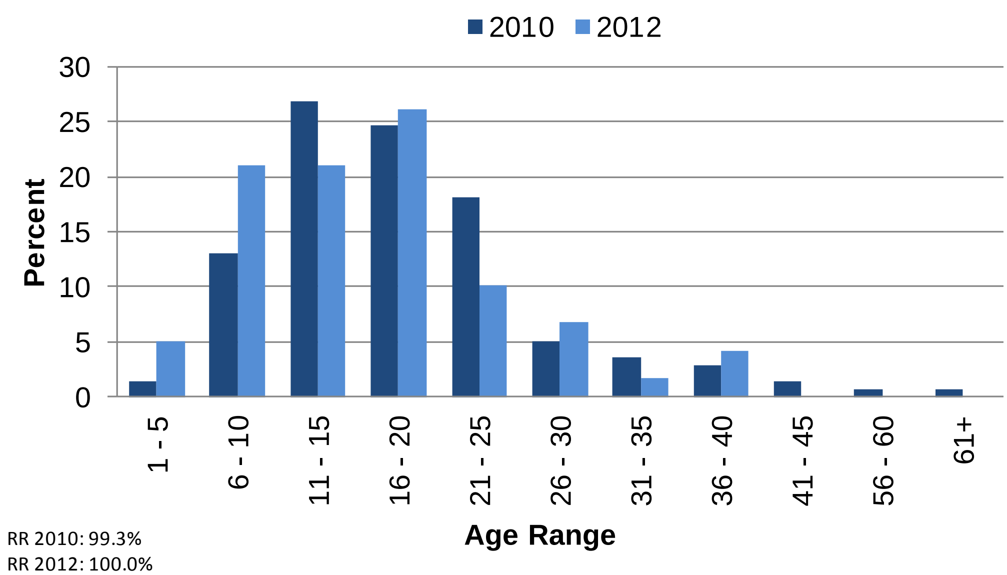

Figure 3. Age Started Fishing

The vast majority of survey respondents (82.6% in 2010 and 78.2% in 2012) stated that they typically began fishing between the ages of 6-25 (Figure 3). It is interesting to note in the previous graph that in 2012 there were no fishermen under the age of 20, and relatively few (5.8%) were between the ages of 21-30. If the majority of Groundfish fishermen typically enter the fishery before they are 25 years old, this suggests that either the younger fishermen are not entering the Groundfish fishery or the participants may be currently entering at a later age.

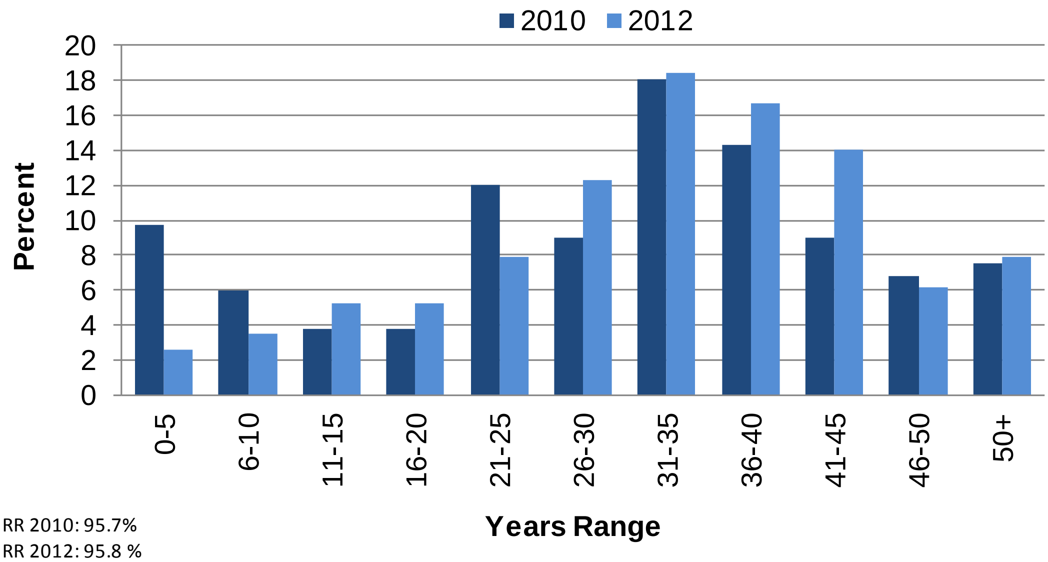

Figure 4. Number of Years Fishing

The majority of participants have been in the commercial fishing industry for 31- 35 years, 18.0% in 2010 and 18.4% in 2012 (Figure 4). Over half of the fishermen indicate they have been fishing for more than 31 years, 55.6% in 2010, 63.2% in 2012. While there were some newer entrants in 2010, represented by low years of fishing, that number dropped from 9.8% in 2010 to 2.6% in 2012.

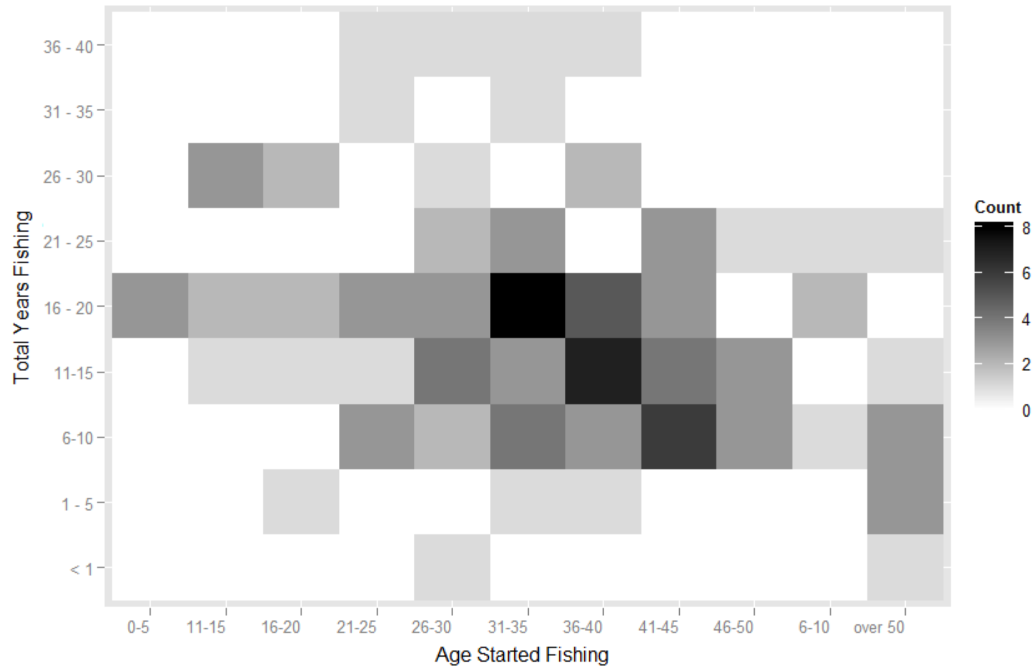

Figure 5. Frequency cross-tabulation of Age Started Fishing with Total Years Fishing (2012)

A cross-tabulation of age started fishing and the number of years fished reveals that the majority of current fishermen are older, experienced fishermen who have been fishing for a substantial amount of years (Figure 5). While there are some outliers of younger fishermen currently entering the fishery within the last 5 years, the majority of current fishermen (75%) have been fishing for more than 26 years and entered the fishery at a younger age (6-20).

Groundfish fishermen themselves confirm the finding that the population of participating harvesters is aging and that these participants are not being replaced by younger fishermen. A survey respondent from Seattle states that:

> *"We've got a major problem with the aging of the crews. In our fleet, for example, most of our guys are close to 50 years old or older. And we don't see young people getting involved in fishery, it's just not happening (2012)."*

Another participant in Bodega Bay states that

> *"All our fishermen are cotton tops, white hairs. There's no new blood (2010.)"*

This trend is concerning given the fact that coast wide, older fishermen are continuing to participate in a demanding fishery, which may have implications for health and safety. It also raises questions such as why aren't new entrants coming into the fishery? And what barriers to entry do they face?

Qualitative data help to shed light on why the Groundfish fishery is not attracting new entrants. Fishermen identify that potential entrants either do not want enter the groundfish fishery or can't because of financial barriers.

Groundfishing is not lucrative

Data reveal that younger entrants might not want to enter the Groundfish fishery because it appears that the industry is shrinking, perhaps even dying. Participants report that at the moment the Groundfish fishery looks like a dying industry that no one wants to invest in; infrastructure is falling apart and it is apparent that the fleet is aging out:

> *"If there's success, yeah there's a lot of people that wanna be fishermen. If you have a healthy industry that induces, especially young people, to take part in it. When they see somebody's making a living at it. When they can see, you know, that it's being conducive to makin' a living and all that, then people are gonna want to get into it. If you're looking at it in disarray and there are boats that are failing and anything else like that… it doesn't take too much to figure out that, "Well, I don't want to do that." You know 'cause fishing is not an easy way to make a living by any stretch of the imagination…So if you're not making a living you're certainly not gonna do it. So we need to have an industry, one of the things we've always talked about is we call "providing for entry level", where we're providing for new participants… well short of giving somebody some money you're not gonna get new participants unless the business itself looks like it's something that new participants want to get into." (Industry provider, Fort Bragg, 2012)*

> *"The way it was before the catch share program was easier to find crew. I mean...I can't... I had a guy quit me in probably April. I can, I can't hardly replace him. Because nobody's coming into fishery anymore. This fishery is dying, I mean literally going away. There nobody comin'... why would you? I mean, we're...there's no stability whatsoever, I mean.. every time you turn around the share or the quotas are getting cut or bam! you go out and make an unlucky tow. You're outta fish." (Eureka Fisherman, 2012)*

Fishermen also state that the Groundfish fishery is highly regulated. They don't make that much money compared to other West Coast and Alaskan Fisheries, with the exception of Pacific Whiting. The Groundfish fishery is not perceived as lucrative or financially able to support livelihoods. Participants state that Groundfish fishing needs to be lucrative; new entrants are not going to enter a profession that they can't make a living at:

> *"Like I say, you can't, you can't spend money without some kind of return. You know, we're not in the charity business, so it makes it a little frustrating in that regard. In fact I mentioned to someone just a while ago that there's not a lot of young people entering the fisheries. There's a lot of old, grey haired guys like me in the business. And the statement that I said got a chuckle out of a couple of em. I said, "Look. If a young guy has got the money to get in the fishery, to buy quota, to buy a boat, and to get into the fishery…you probably shouldn't." I mean, seriously, if you've got…if you've got that kind of money, invest it somewhere else. Uh, I mean you're talking, to just get started, it's going to cost you half a million dollars!" (Astoria Fisherman, 2012)*

Given the choice, younger fishermen would rather participate in other fisheries. Many children of fishermen are dissuaded from entering the fisheries altogether. It is unclear whether the transition to Catch Shares management will eventually change the perception of the Groundfish Fishery being a dying industry.

> *"What we've done now is we have no expertise to carry on the industry. I mean, my kid's 45 years old. And I don't see any one of his 3 children going into the fishing business. I have another grandchild in another family that is going in the fishing business, but…the one that runs my boat, I'd be surprised if…I don't, I don't expect any of them, they show no inclination to go into it. They don't even go on the boat. And so where are we going to get the people to run these boats down the road?" (Fort Bragg Fisherman,2012)*

> *'I think that at one time it was looking very…kind of an unstable thing and you know 2 years ago, or 5 years ago when we were cut back so far on limits, guys were out there 2 manning just to keep things going so, maybe...maybe they'll be able to see more future in it with this program, if it continues to be successful. Maybe that will change, but I don't see that happening right now.' (Astoria Fisherman, 2012)*

Financial Barriers

> *"There is no avenue for new entrants, unless you're exceptionally wealthy or exceptionally lucky." (Monterey Fisherman, 2012)*

While there are a few respondents who believe that the Groundfish fishery is still accessible to new entrants, most fishermen state that it's very difficult for new entrants to come up with the financial capital needed to enter the Groundfish fishery. Most newer entrants do not have the startup capital needed to buy a boat, a trawl permit, and quota share. There are very few places that will finance this type of loan, and even then loan payments might be too high.

> *"You know, I've been lucky. I've been fishin' my whole life. I've had some good seasons and would like to believe I've managed my money fairly well. My boat's paid for. All my permits are paid for, you know, and I'm okay…So I could afford to fish fairly cheaply. I don't have a mortgage, I don't have payments on, you know, permits or IFQ or, you know, that I bought or anything like that. So I can afford to fish fairly cheaply. And when guys like me are startin' to suffer a little bit…There's no chance for somebody new to come in. You know and make a go of it. I mean, yeah, if somebody has just an atrocious amount of money, sure they could get in. But for the average person to come in, you know, borrow some money, maybe have a little bit of money saved up and make a go of it…it's impossible." (Fort Bragg Fisherman,2012)*

> *"You know the saddest thing about all of this coming down now…I'm sure it's going to work out good for me, I don't know what I can get for it, but I'll get something. But a young man that's coming into the business and wants to work hard…there's no way in hell he's going to get a million or whatever it takes to get into it. Let alone buy a boat. So unless NMFS comes up with some kind of a…loan program to help crew members or whatever that…I mean there's guys who want to fish, but it's financially impossible to do." (Astoria Fisherman, 2012)*

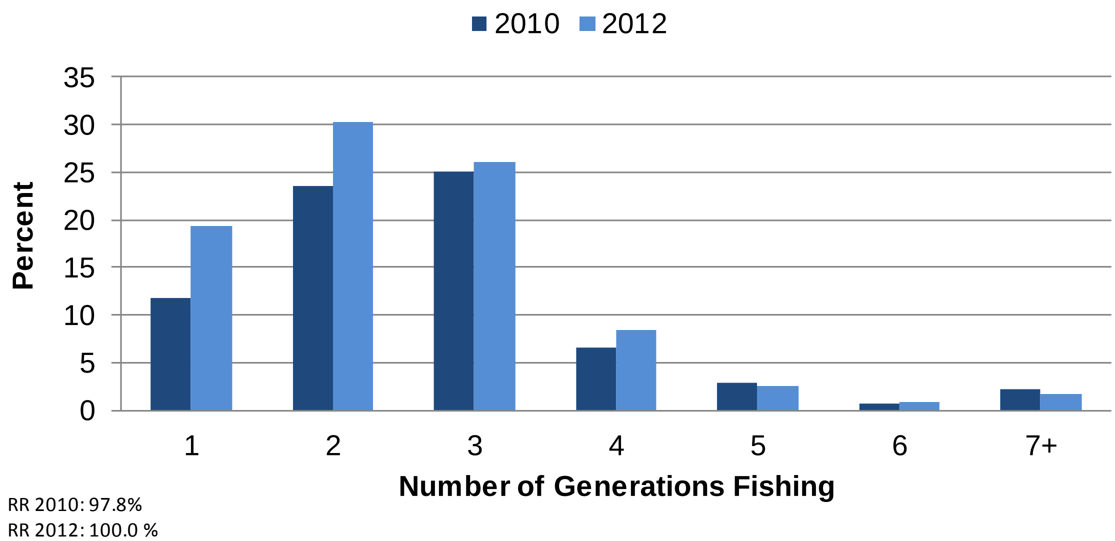

Figure 6. Generational Fishing History

Data indicate that fishermen are more likely to come from a multi-generational family fishing background. The majority of responses indicate fishermen are second or third generation fishermen, while some, 12.5 % in 2010, and 13.4% in 2012 indicate they come for over three generations of fishermen (Figure 6). Most of these responses are families with strong Norwegian and Scandinavian fishing heritage.

Although this background may make it more likely for younger fishermen to become established, it does not necessarily guarantee newer entrants a better financial position. Current groundfish fishermen usually rely on the price of their boat, permit and quota as their retirement. Some state that although they would like to gift their operation to their sons and other family members, they financially can't afford to do that, and will end up selling to the highest bidder.

The natural progression from crew to operator to owner is not as functional in the Groundfish fishery. The crew often does not make enough money to work their way up the back deck (Copes 1996). This is exasperated due to additional costs of the Catch Shares program in the future (cost of buying quota) as well as current decreased pay due to the additional cost of lease rates:

> *"But I'd even recommend talking to some of the other draggers that have just even leased out their quota. Again, that's taking away from the crew that's on their boat, that's income that now they're losing out, and so not only is the crew on that boat losing out on those fish, the quotas being leased out and everyone on the other boat is not getting paid what they normally would have." (Astoria Fishermen 2012)*

> *"The lease rate comes off the fish price, so under that scenario you have to catch more product to make the same amount of money. So, yeah, there have been some guys that*

say, I can't do this. There's been guys that have completely switched out of the fishery, and do something else." (Astoria Fishermen, 2012)

<u>Loss of knowledge</u>

The finding that the Groundfish fleet is aging raises questions about the sustainability of the fishery in terms of preserving skills and knowledge necessary to prosecute the Groundfish fishery. There could potentially be a loss of knowledge as seasoned fishermen retire without passing on their skills to crew working their way up the back deck. Who is learning how to fish for groundfish if younger fishermen are not entering the fishery and learning from more experienced operators? Fishermen state that optimally the fishery operates much like an apprentice program would:

> *"We need to support the older guy with the knowledge, as they are needed to mentor the young guys coming in to the fishery. We have to support that natural transition from older to younger practitioners, like an apprentice program would." (Morro Bay Fisherman, 2012)*

Experienced fishermen express concern that unexperienced captains will not be able to prosecute the fishery. Groundfish fishing is a learned skill:

> *"Yeah, anybody can go run a shrimp boat. All you gotta know how to do is run the gear up and down. With trawl it is, it's experience. That's the only way you can get it is by doing it." (Eureka Fisherman, 2012)*

There is not a lot of room for error in the Groundfish fishery under the Catch Share system. Operators need to know the grounds well, their gear well, and be very aware where they might catch constraining bycatch species. The consequences of having an overage range from having to purchase more quota, to potentially getting shut down and losing a job. Most older fishermen have had years to perfect their skills, and are currently participating in the Catch Shares program. What will happen when older fishermen retire and 'green captains' attempt to participate in the Groundfish fishery?

> *"I don't see a lot of younger people getting into this, as a way to make a living, so that kind of concerns me a little bit. I've got deck hands that are 50 years old, I mean, how long can these guys continue to do this…with such low bycatch rates or poundage issued on yelloweye or canaries? I mean, how can you trust a green captain to go out and actually participate in the fishery? So sooner, you know, some of these captains are getting older too, you know. Some of these guys are going to start wanting to not…they're not going to do it after a while, and I don't see a lot of young people coming in to learn the bottom and I'm a little bit concerned about that. I mean, probably not in my lifetime, it's going to be fine for me, but 30 years from now? You know, it might be a little different." (Astoria Fisherman, 2012)*

Industry Suppliers

Harvesters in the Pacific Coast Groundfish Fishery are not the only ones aging. There is a clear trend for fishery industry suppliers as well. The mean age for industry suppliers in 2010 is 52 years old, and in 2012 is 56 years old. Results indicate that the majority of industry suppliers 41.7% in 2010 and 43.8% in 2012 were 51-60 years old (Figure 7). 81.3% of industry suppliers in 2012 were 51 years old or older, as compared to 66.7% of industry suppliers who were 51 years old or older in 2010. The percentage of industry suppliers in the 61-70 year old bracket more than doubled from 2010 to 2012.

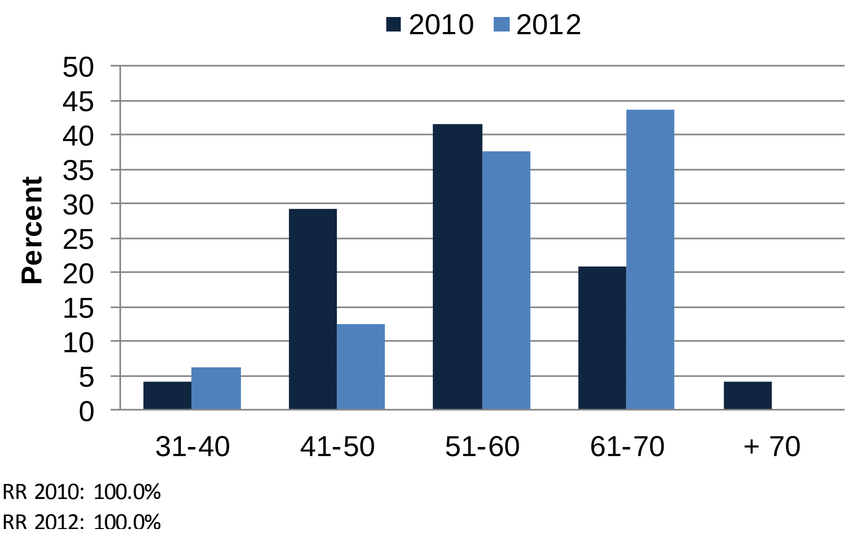

Figure 7. Age of Trawl Industry Suppliers

Loss of industry knowledge is also a concern for industry suppliers. Many suppliers report that they are the only ones that supply a specific service over a wide portion of the coast. They state that they are getting older, and that their family has no desire to continue the business. Some suppliers go so far as to say that they have tried to find an apprentice to train, but that they haven't found anyone interested. When the current generation retires, it is unclear who will have the knowledge to provide industry services, considering that:

> *"Working on boats is different than working on anything else and there are no schools for it. You either get in or get down or get dirty and have somebody with experience teach you. Boats are systems they are not just boats. They are fuel systems, hydraulic systems, propulsion systems, electronic systems, there is a myriad of things that they are. They are floating, living spaces that work and so all these systems interact and you need to have a basis of knowledge of how the interactions take place….As I have gotten older, I start looking at, I am only going to do this a little bit longer, you are not going to have me, and unfortunately for you in this area there is no more 'mes' out there." (Industry Supplier, 2012)*

Changing Social Relationships

To establish a successful fishing, processing, or other fishing industry associated business, social relationships are needed. Whether you need suppliers for fuel for your vessel, or boxes to ship your fish, or line to build a net, you need connections and relationships to function. In the previous section we've discussed the age of the fishermen and when they started fishing. This suggests many of them have been fishing for a very long time. It stands to reason, that they have established quite a few relationships to run their business effectively over those years, The changes in the fishery associated with rationalization have the potential to change relationships in both negative and positive ways.

Information in this section provides indicators of whether any of these changes appear to be occurring in this fishery. Potential changes in relationships between fishermen and processors, are explored.

Results

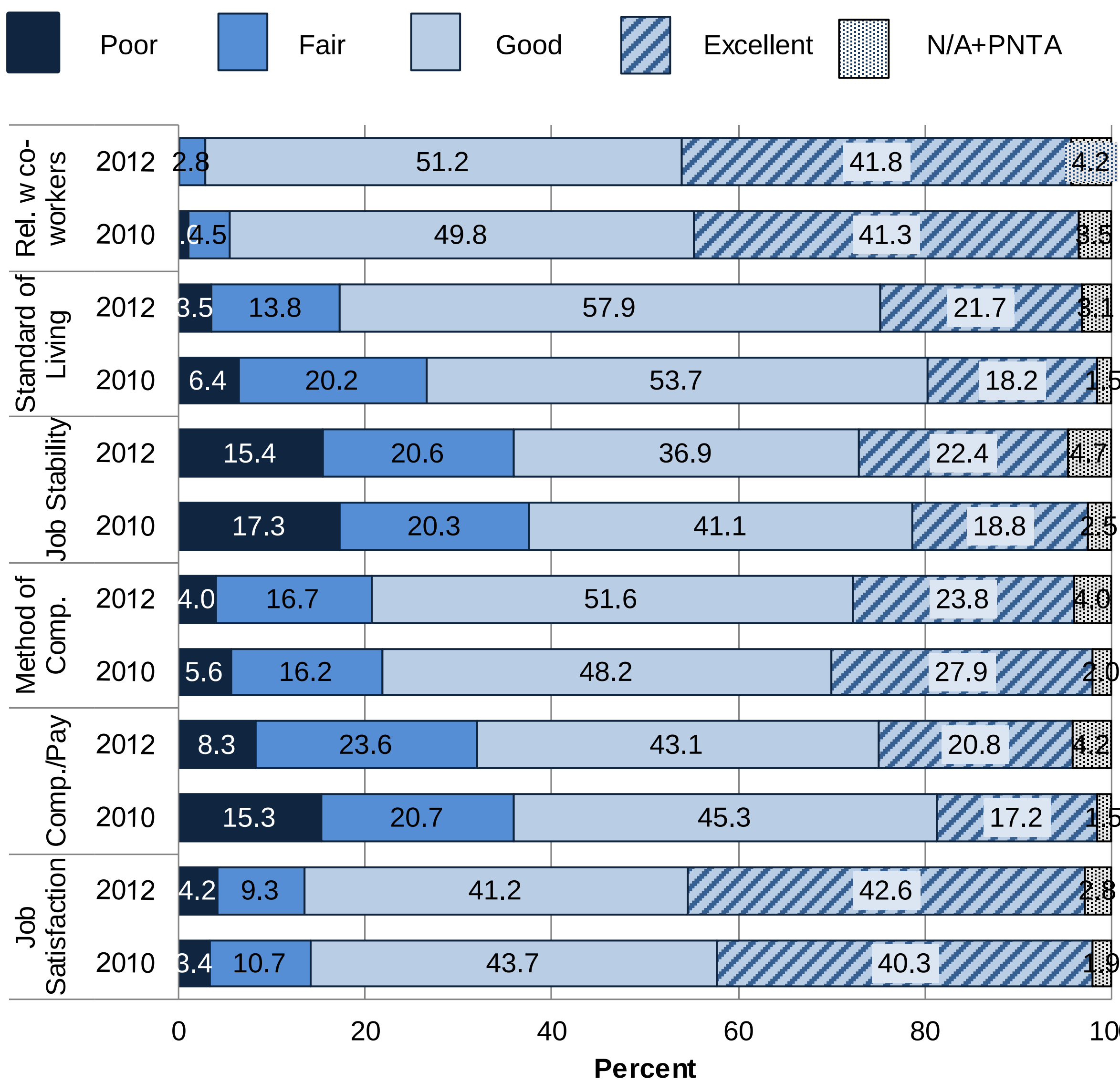

Figure 8. Quality of Life. Likert scale responses. NOTE: PNTA = Prefer Not To Answer

Respondents were asked to rate their relationship with co-workers, standard of living, job stability, method of compensation, compensation/pay and job satisfaction based on a Likert scale of poor, fair, good or excellent as they related to their role within the commercial fishing industry. Ratings have remained relatively stable between 2010 and 2012 with the exception of standard of living, and compensation and pay, which appear to have improved (Figure 8). Overall, respondents indicated that they were most satisfied with their relationship with their coworkers, while they were the most unsatisfied with job stability.

Relationships with coworkers, standard of living, and compensation and pay appear to have universally improved in 2012. Fewer respondents indicate that job stability is poor, however fewer also report that it is excellent. Job satisfaction in 2012 appears to be more polarized in contrast to 2010; more respondents indicate that job satisfaction is poor and excellent. It is important to note that this particular question asked about fishing in general, and not specifically about groundfish.

Fishermen

Fishermen were asked to rate the quality of their relationships with the people they work with on a positive, neutral, or negative scale. They were then asked whether the quality of these relationships had changed since the implementation of Catch Shares. Overall, relationships seem to have gotten slightly worse, especially with observers, and to some extent permit owners, crew and boat owners (Figure 9).

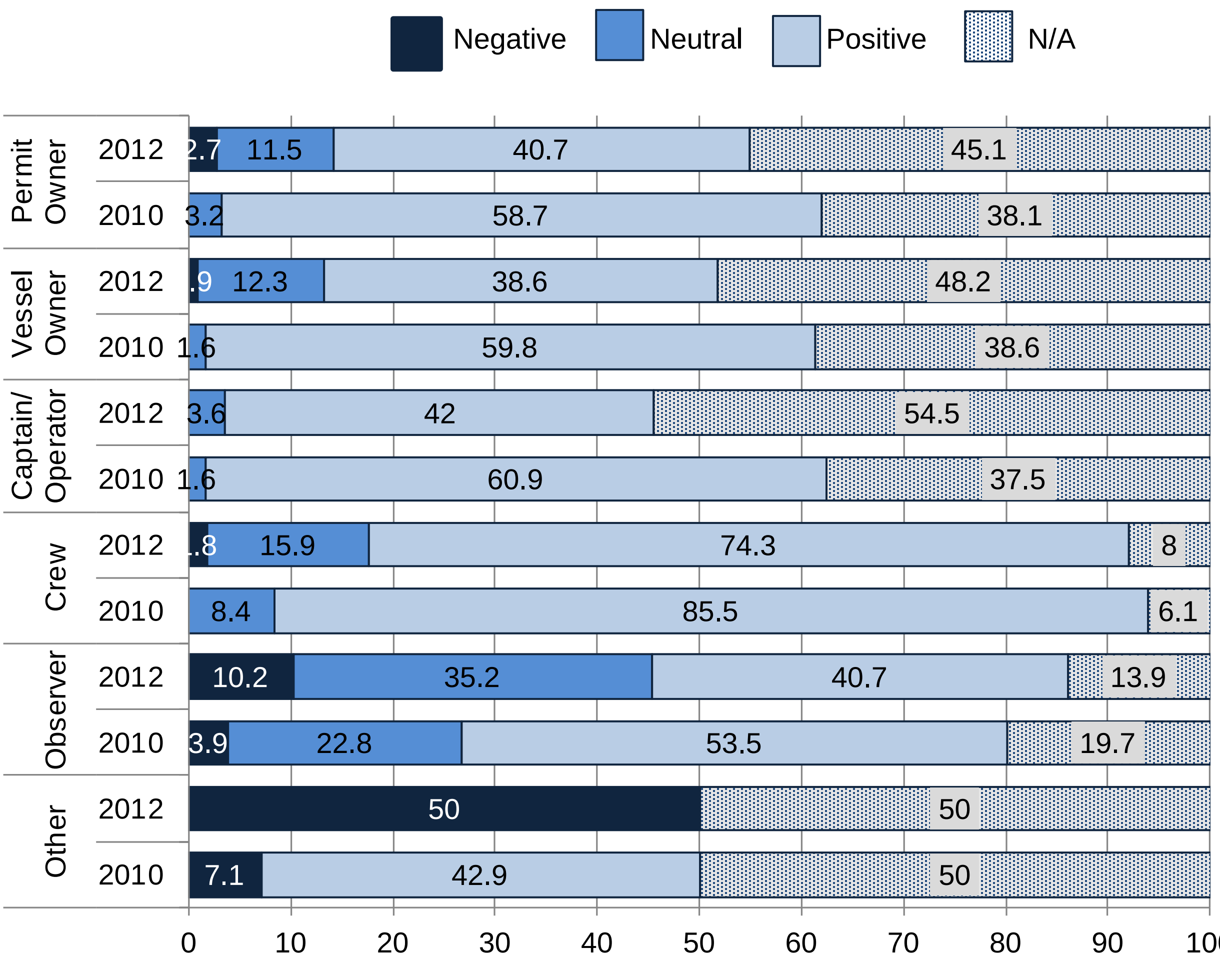

Figure 9. Fishermen's quality of relationships.

In 2012, there was a 6.3% increase of respondents who indicated that they had a negative relationship with their observer; likewise there was a 12.8% decrease of respondents who indicated that they had a positive relationship with their observer. This same trend is applicable to permit owners. In 2012, there was a 2.7% increase of respondents who indicated that they had a negative relationship with the permit owner; likewise there was a 19% decrease of respondents who indicated that they had a positive relationship with the permit owner. Relationships to vessel owners showed a minor increase in a negative response in 2012 to .9%, but more noticeably, there was a 21.3% decrease of respondents who indicated a positive response. This trend with a few negative relationships noted, but decreased positive relationships continues with crew showing a 19% decrease and captain/owner showing a 11% decrease in positive relationships.

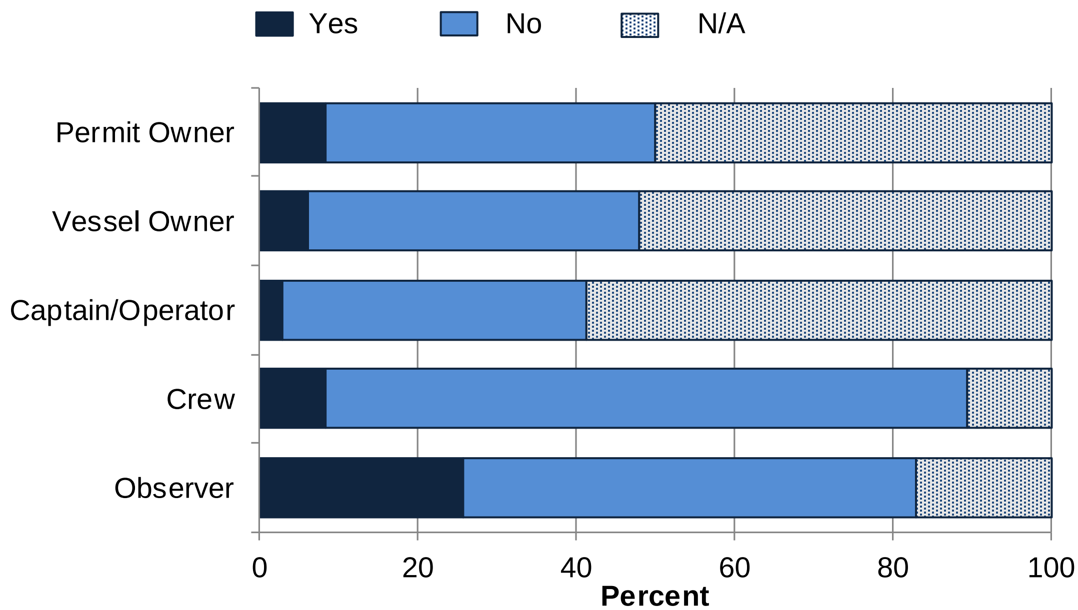

Figure 10. Have fishermen's relationships with other harvester roles changed?

25.6% of respondent's indicate that their relationship with observers has changed since the implementation of catch shares (Figure 10). 8.3% indicate that their relationship with the permit owner has changed; 8.2% indicate that their relationship with the crew has changed since the implementation of catch shares. 6% indicate that their relationship with the vessel owner has changed, and only 2.9% indicate that their relationship with the captain/operator has changed since the implementation of catch shares.

Respondents were asked to explain why they thought relationships had changed. Table 7 shows open ended responses to why respondents believed that their relationships had changed; all open ended answers indicate that relationships have changed due to Catch Shares. Most relationship changes involved the observers.

Table 7. Open ended response to why relationships have changed between fishermen and other harvester roles., mainly observers.

	Themes	N
Positive	Observer relationships are new	4
	More cooperation between captains and permit/vessel owners	3
	Have better relationship with crew because crew like fishing under the ITQ	2
	Observers - data has direct impact on fishing activities	1
Neutral	Observer is on the vessel 100% of the time	3
	Observer relationships are new	2
	Observer changes; different people each time	1
Negative	Observers make mistakes/are unexperienced	5
	Crew are getting paid less for the same amount of work	2
	Quota/Vessel owner unwilling to invest in boat/sold fish	2
	Observer is on the vessel 100% of the time	1
	Quota holders own paper that guarantees fish	1
	I have to pay for the observer to be here	1

Fishermen were also asked to rate their relationships with the people related to the selling of their trawl caught Pacific Coast groundfish on a positive, neutral, or negative scale. They were asked whether the quality of these relationships had changed since the implementation of Catch Shares. The most notable change is that fishermen were less willing to indicate that they had a positive relationship with their buyer/first receiver as well as their processor in 2012. 66.9% of fishermen indicated that they had a good relationship with their buyer/first receiver in 2010, as compared to 44% in 2012 (Figure 11). Likewise, 63.2% of fishermen indicated that they had a good relationship with their processor in 2010, as compared to 44.4% in 2012.

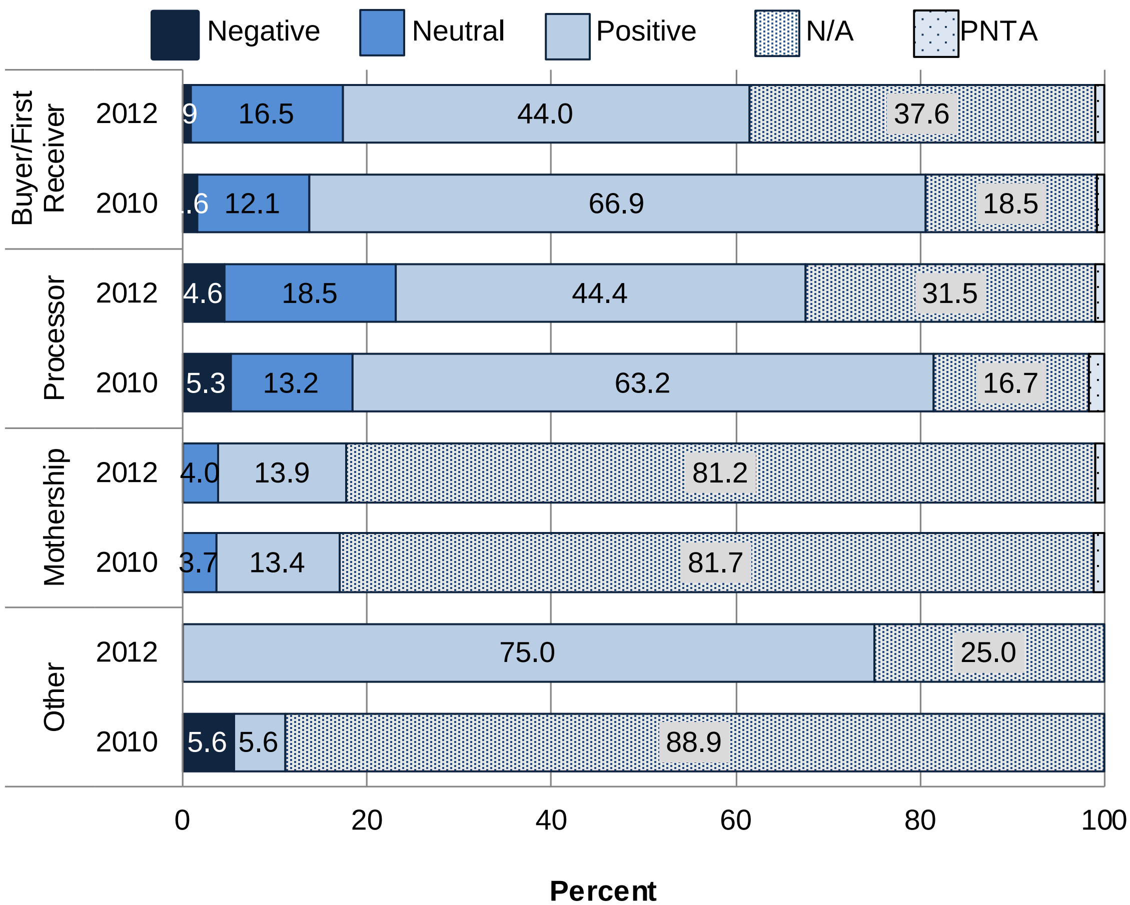

Figure 11. Quality of Relationships with sellers (processors).

12.6% of respondent's indicate that their relationship with their buyer/first receiver had changed since the implementation of catch shares (Figure 12). 12.4% of respondent's indicate that their relationship with their processor had changed since the implementation of catch shares. Only 3.1% indicate that their relationship with their mothership had changed. Table 8 shows open ended responses to why respondents believed that relationships had changed.

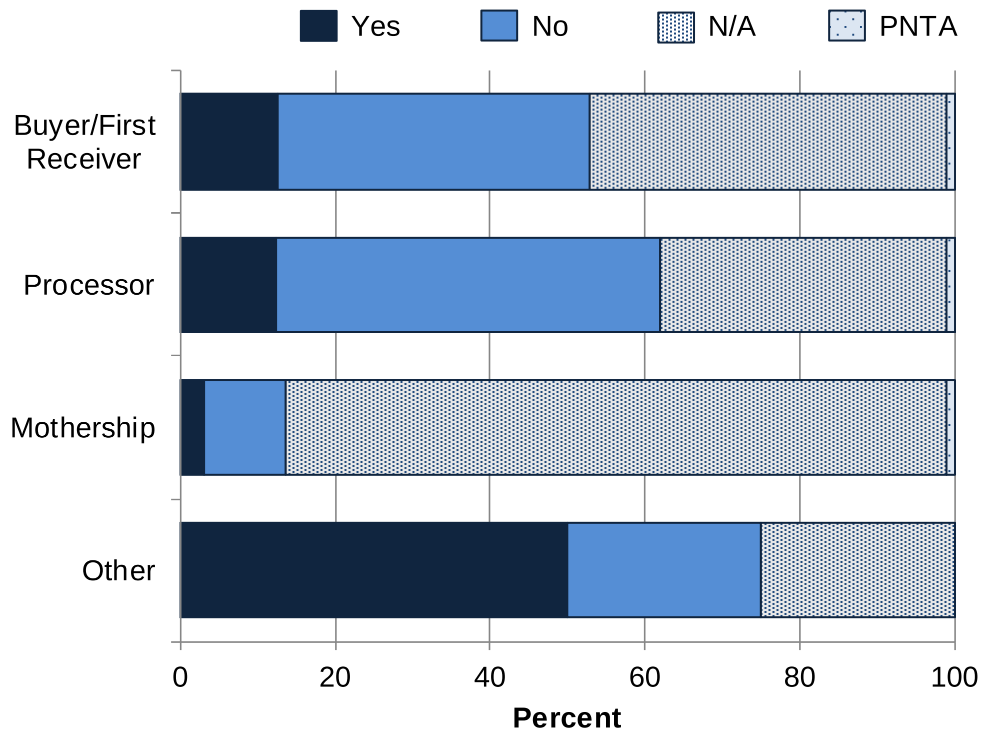

Figure 12. Have Fishermen's relationships with seller's changed?

Table 8. Open ended response to why relationships have changed between fishermen and sellers. These are qualitative answers to a survey question asking participants to describe why the relationships have changed. *NOTE: This data is repeated in both positive and negative areas because the shift in processors was positive with the new processor and negative with the old processor.

		Themes	N
Buyer	Positive	Improved relationship: fishermen have leverage with quota and buyer acknowledges	1
		Relationship grew closer trying to work with program requirements	2
	Neutral	Observers noticed shorting us on pounds	1
		Price problems	1
		No relationship now, they control everything. When to get ice, what to catch. Just go along with processor controls	1
		Other vessel's input	1
	Negative	Price manipulation and delivery dates , monopoly, favoritism	1
Processor	Positive	Gotten better with Bornstein. Work more together; networking that Andrew does, he can swap quota to keep boats going.	1
		Gotten better: they want us more then we want them	1
		I shifted to pink shrimp, so had to shift processors from Caito to Pac Choice because they take both*	1
		Improved	1
		More superficial	1
		Only so many boats now, processor has to be nice. Choice of other catch	1
		Relationship with inshore processor has gotten better, everybody is getting used to program. New relationships with processors, give them consistency, they reward that. No problems with actual people or motherships.	1
		The processor realizes I can go to the competition and they want me to stay.	1
		We trade fish now	1
	Neutral	Processor has more control - plant still controls flexibility.	1
		They tried to work with us - gave plant more power	1
	Negative	Shifted to pink shrimp, so had to shift processors from Caito to Pac Choice because they take both	1
Mothership	Positive	Gotten better they want us more then we want them	1
		Improved	1
		More opportunity to get more fish before, less opportunity now	1

Processors

Processors were asked to rate the quality of their relationships with the people they interact with in the fishing industry on a positive, neutral, or negative scale. They were then asked whether the quality of these relationships had changed since the implementation of Catch Shares. Relationships with vessel owners and the processor's own labor force appear to have become more negative, whereas relationships with quota holders have actually improved.

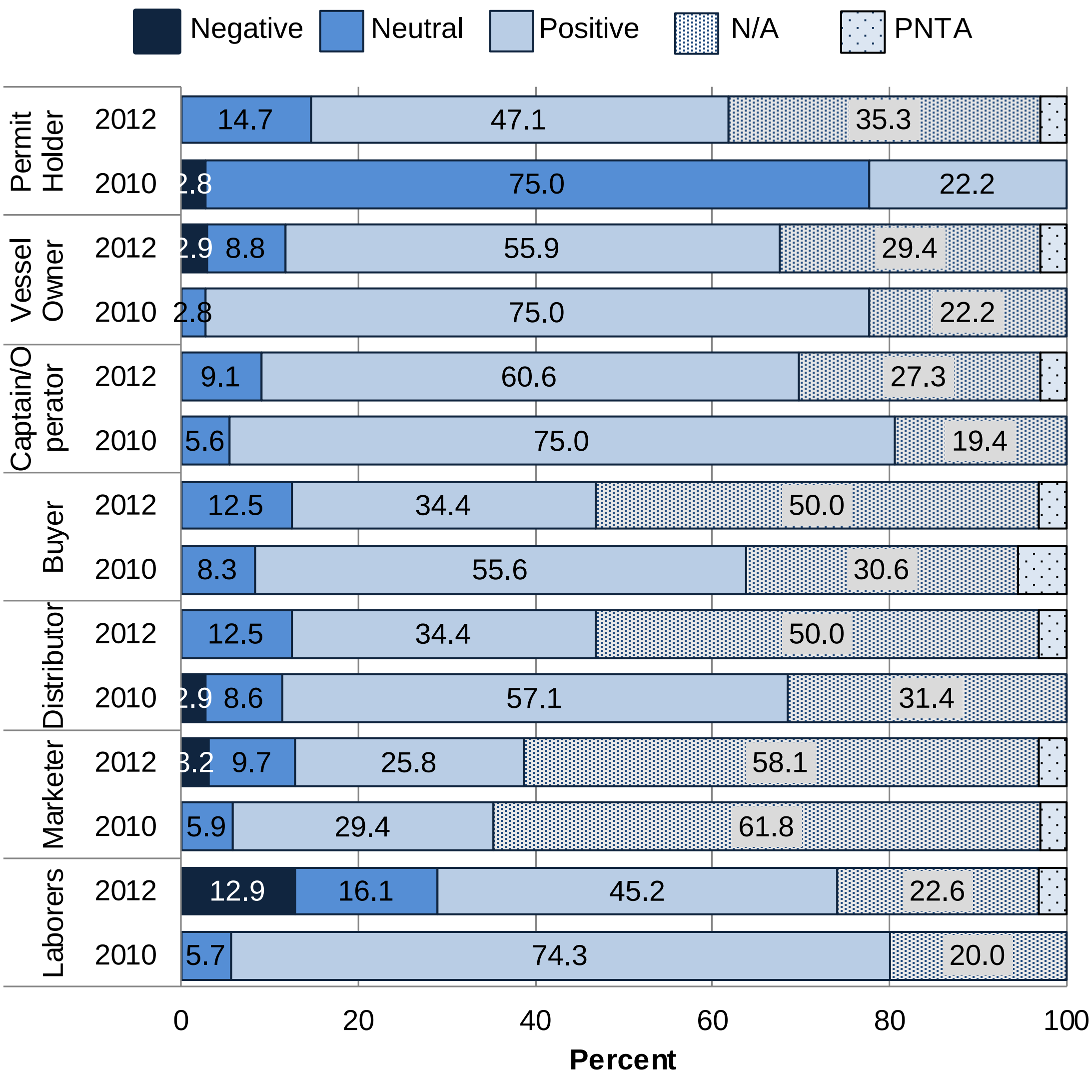

Figure 13. Processor's quality of relationships.

The most dramatic decline in processor relationships was actually with their own workforce (Figure 13). In 2010, 74.3% of processors indicated that they had a positive relationship with their laborers; this decreased to 45.2% in 2012. 12.9% of processors indicated that they had a negative relationship with their workforce in 2012, as compared to 0% in 2010. 27.6% of processors indicate that their relationship with their laborers has changed since the implementation of Catch Shares. Processors indicate that they believe relationships have worsened *because "laborers are upset due to the lack of work"* and that there is a lack of supply to their plants due to Catch Shares.

Processors also indicate that their relationships with vessel owners have deteriorated. In 2010, 75% of processors indicated that they had a positive relationship with vessel owners; this decreased to 55.9% in 2012. Processors indicated that they had negative relationships with vessel owners in 2012. One processor states that relationships have deteriorated because:

> *"There used to be a mutual understanding between vessel owners and processors. They work together, not anymore. Now the fish goes to the highest bidder. Processors helped out harvesters, but harvesters don't honor old relationships anymore."*

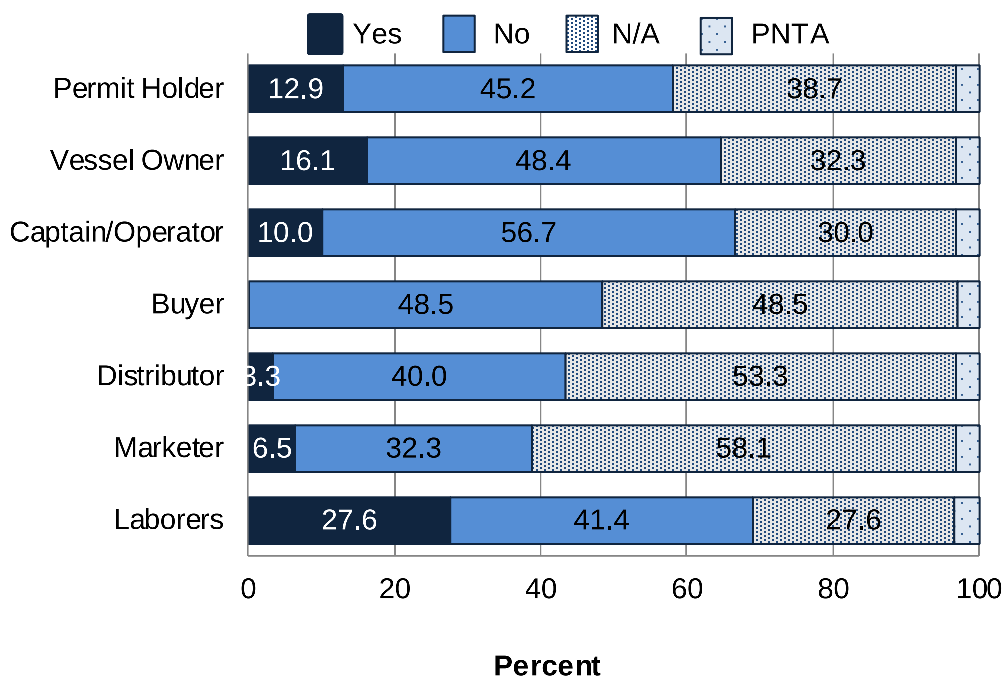

Figure 14. Have processor's relationships changed with other roles both in the harvesting and processing sectors?

Processors were less likely to indicate that they had positive relationships with captain/operators, buyers, and distributors in 2012. They also were more likely to indicate that they felt that these relationships were not applicable in 2012. 10% of processors felt that their relationships with captains had changed, 3.3% believed that their relationships with distributors had changed, and 0% indicated that their relationships with buyers had changed since the implementation of Catch Shares (Figure 14).

Permit holders appear to have a better relationship with processors in 2012. In 2010, 22.2% of processors indicated that they had a positive relationship with the permit holder; this increased to 47.1% in 2012. In 2012, no processors indicated that they had a negative relationship with quota holders. 12.9% of processors indicated that their relationships with quota holders had changed since the implementation of Catch Shares. Processors indicated that their relationships with quota holders have improved because they are *"forced to talk to each other and understand process and how to make it work,"* and that there is *"more trust"* between processors and quota holders.

Crew and Quota Leasing

Results from qualitative data point to the fact that crew relationships with owners are potentially becoming more negative if the owner decides to lease quota. Crew/captains are typically negatively affected by leasing trawl fish. On the one hand leasing quota provides the opportunity to continue employment if the vessel did not receive a large enough initial allocation; however additional lease fees tend to be added to the general overhead expenses of the boat. Crew that work for vessels that are leasing fish generally have decreased pay rates because of the additional lease fees that are taken off the top. This theme tends to be localized in Northern and Central Oregon.

> *"We actually had to talk to guys before we hired em, said, "Look, this is different than it used to be." One guy been out of the fishery a couple of years, and when he came back in, we'd been doing the rationalization program for over a year. And I said, "Hey, Jeff you know, this…this is not like it used to be," you know the crew share is generally like 10%. Said well your 10% is no longer 10%. I said by the time you see all the deductions…and the cost of observer fee, the lease rates…I said you're looking at about 5.5%. "5.5%?!? I can't do that!!" he says. I said "Well, it's either that or nothing, you know, what do you want to do?" (Astoria Fisherman, 2012)*

> *"I would have to say [my relationship with crew is] negative to be truthful because the amount of fish we catch doesn't add up on the guys' checks like it used to. And, so yeah…I hear about it. Well, they're getting paid less for the same amount of work. And that's kind of across the board industry, it's not just a personal thing, just the way it is. A boat owner has to go out and buy or lease fish, well you couldn't buy, you had to lease it. And so when you have more investment in the fish, you can't pay the crew the same so." (Astoria Fisherman, 2012)*

Some fishermen point out that crew that work on vessels where the quota/vessel owner has decided to lease out trawl fish also potentially lose out on the income that they might have made fishing groundfish:

> *"But I'd even recommend talking to some of the other draggers that have just even leased out their quota. Again, that's taking away from the crew that's on their boat, that's income that now they're losing out, and so not only is the crew on that boat losing out on those fish, the quotas being leased out and everyone on the other boat is not getting paid what they normally would have." (Astoria Captain, 2012)*

Program Perceptions

This section illustrates study participants perceptions of the catch shares program during each data collection effort. Results in this section can help reveal the concerns within the fishery, and what part of the program works well. Information on why participants support or do not support the program directly speak to what is happening within the communities as a result of the catch share program.

Results

Support for Catch Shares in 2012 is more evenly split between participants who support the program and those who don't compared to the 2010 results. There was no clear change in individuals who do not support the program, but individuals who felt like they didn't know or were unsure about their opinion of the program in 2010, generally were in favor of the program in 2012. This increase can likely be explained by a combination of many factors: reduced uncertainty and increased knowledge of the program, refusal of survey participation, and how individuals were personally affected by the program. Washington State continues to be the most supportive of Catch Shares followed by Oregon, while respondents from California are the least supportive of Catch Shares. Catch Shares is not a black and white issue; data support the idea that some respondents support and reject aspects of Catch Shares.

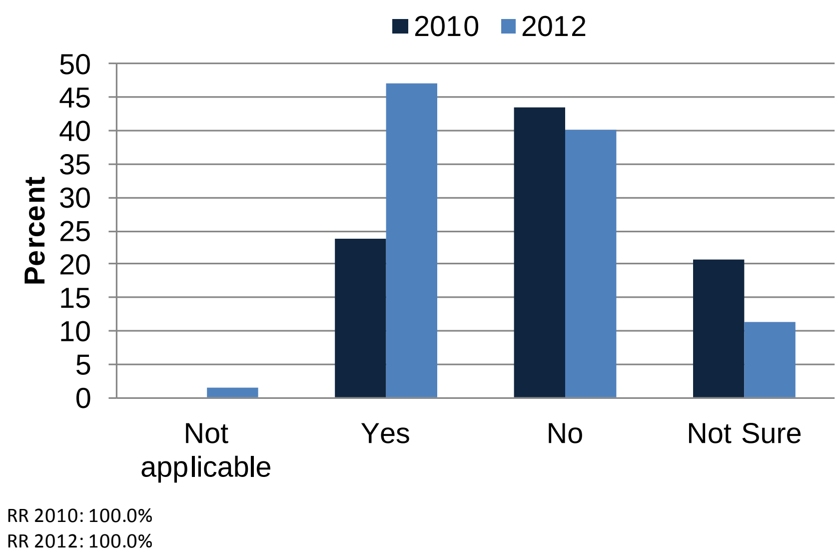

Figure 15. Support for catch shares.

Support for Catch Shares in 2012 is more evenly split between participants who support the program and those who don't, as compared to the 2010 results (Figure 15). 47% of respondents support Catch Shares in 2012, whereas 40.1% respondents do not support Catch Shares. This is a more even split than in 2010 where 23.8% of respondents supported the program and 43.5% did not support it. There was a 23.2% increase for those who support Catch Shares between 2010 and 2012, as well as a 3.4% decrease of participants who do not support the program.

There is also a 9.3% decrease of respondents who were unsure of whether they supported Catch Shares. Results show a minimal change for individuals who did not support the program, but individuals who felt like they didn't know or were unsure about their opinion of the program in 2010, generally were later in favor of the program in 2012.

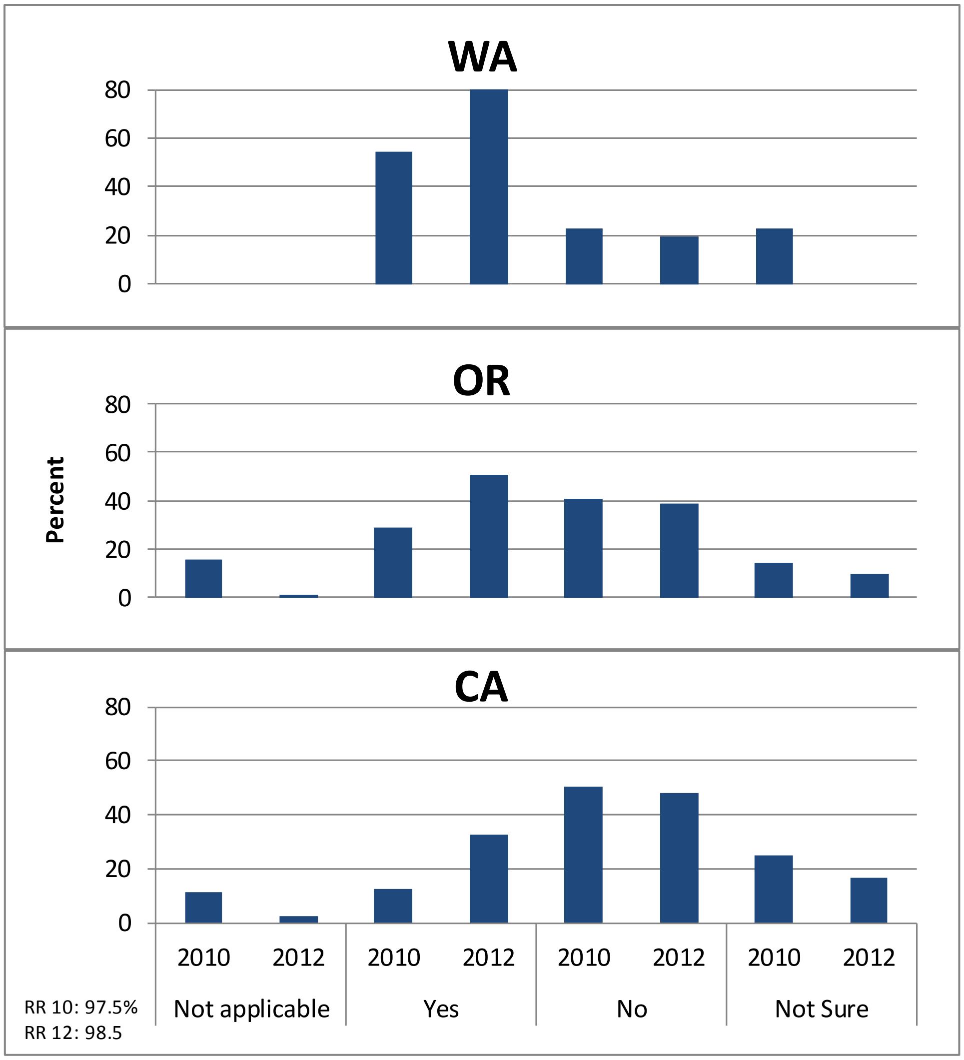

Figure 16. Support for catch shares by state.

A more in-depth analysis showing the support of the catch shares program by state illustrates where the program is more widely supported. Washington State showed the highest levels of support for the program in both 2010 and 2012 at 54.5% jumping to 80.8% respectively (Figure 16). Oregon also showed an increase in support of the program from 28.9% in 2010 to 50.5% in 2012. This is interesting as the level of individuals whom did not support the program in 2010, 40.8%, only slightly decreased in 2012 to 38.7%. The additional support for the program in Oregon is interpreted to come from a combination those individuals who changed their minds, those, who were not sure in 2010, or new participants in the 2012 data collection effort. The highest levels of lack of support for the program are fairly consistent in California at 50.5% in 2010 and 48.2% in 2012. It is interesting to note as well that while California has the lowest levels of support for the program, they had an increase of support of the program from 12.6% in 2010 to 32.5% in 2012.

Effects of Uncertainty on the Perception of Catch Shares

The most interesting part of the above graph is the dramatic increase of respondents who support catch shares from 2010 to 2012. This increase can likely be explained by a combination of many factors: reduced uncertainty and increased knowledge of the program, refusal of survey participation by people who were unhappy with the program, and how individuals were personally affected by the program.

Uncertainty factor reduced

> *"Anytime there's a change, I mean, it's hard to change a fisherman. That's the hardest thing in the world." (Coos Bay Fishermen, 2012)*

People are typically adverse to unknown change, and fishermen are no exception to the rule. While some respondents may have had some previous experience with Catch Share programs in Alaska, all Catch Share programs are different. In 2010, respondents were not able to fully anticipate changes that this particular Catch Share program would bring. Figure 17 below demonstrates a high level of uncertainty about how respondents would be personally impacted by Catch Shares in 2010.

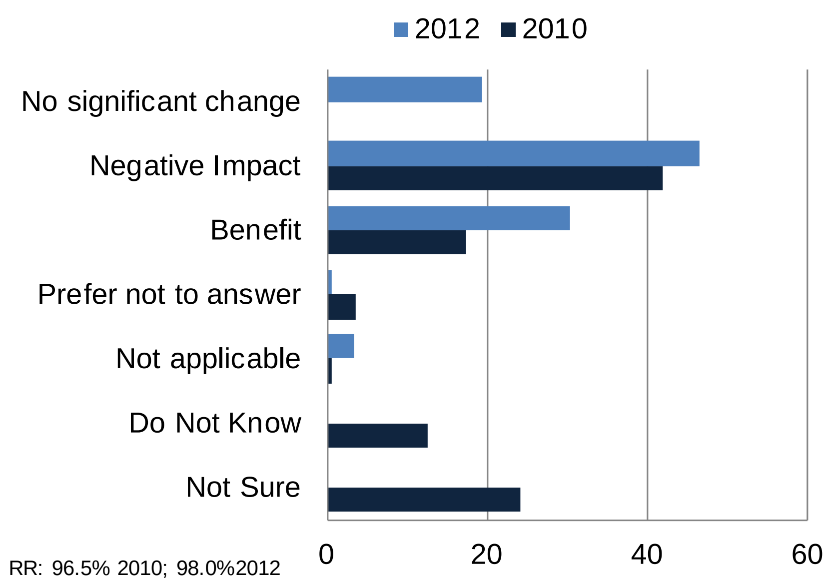

Figure 17. Personally impacted by catch shares.

In 2010, 36.6% of respondents either did not know or were not sure how they expected to be personally impacted by the transition to Catch Shares. In 2010, 41.9% of individuals indicated that they felt that they were going to be negatively impacted by the program, and 17.3% felt that they would benefit. The perceived risk of change would have been high for many respondents, considering that this management program had a direct impact on their livelihoods. Thus, many respondents were unsure of their support of the program or felt that they would be negatively impacted.

Change that has high stakes and is uncertain is likely to illicit a negative/unsure response initially even if the change may actually be beneficial. Qualitative data from respondents who indicated that they were unsure whether they supported catch shares in the survey data indicate that these respondents were concerned about the transition to catch shares:

> *"The quota program scares me because it gives me an uncertain future. It seems like it's designed to get rid of boats like the one I work on, so I have a great level of uncertainty in the future. The program increases pressure on existing fisheries. Instead of putting in more controls, before we do anything else, we should confirm or correct the accuracy of the stock assessment - what if we're working on wrong information? How could anybody make a good management decision then?" (Monterey Fisherman, 2010)*

> *"I am real apprehensive about the whole thing, it is a little scary. It is taking a good part of people's lives, livelihoods for my crew the people that run the boat which are very important to me, if it puts them out business that is an impact to my community. I won't be the only one it will be boat after boat." (Crescent City Fisherman, 2010)*

> *"The IFQ? I don't know. I think it can work, but I think there's a lot of bugs to be worked out. That's a hard question." (Astoria Fisherman, 2010)*

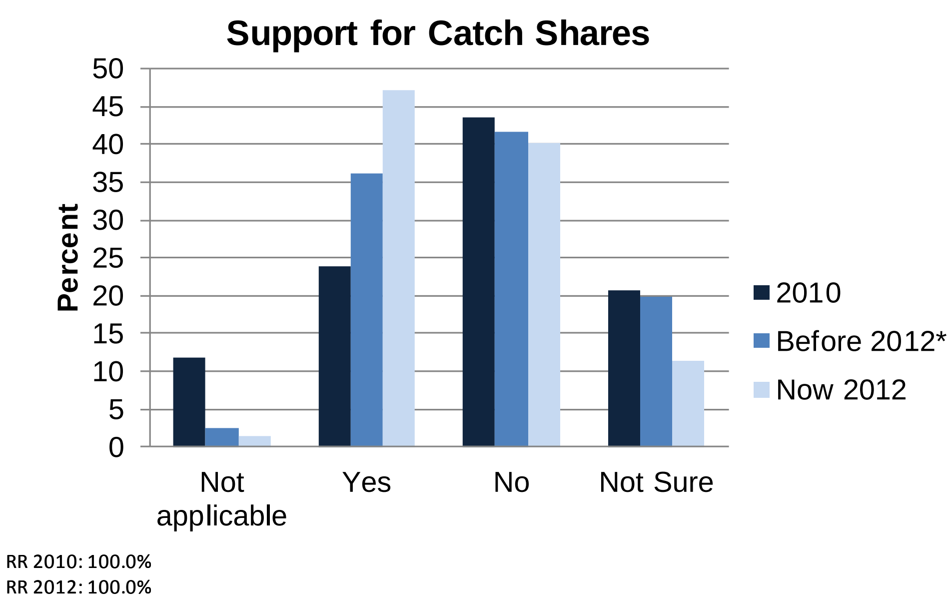

Figure 18. Support for catch shares.

Hind sight is 20/20. It is interesting to note that respondents' recollections of how they felt about Catch Shares in 2012 were less extreme than their actual responses in the 2010 survey. Respondents were asked in the 2012 survey whether they supported catch shares before the management change in 2011. For individuals who support Catch Shares in 2012, there is a difference of 12.3% between how respondents actually answered in 2010 and what they remember indicating (Figure 18). Again, this speaks to the fact that some aspects of uncertainty were removed; respondents had a better idea in 2012 how they had been impacted under catch shares.

Knowledge of the catch shares program

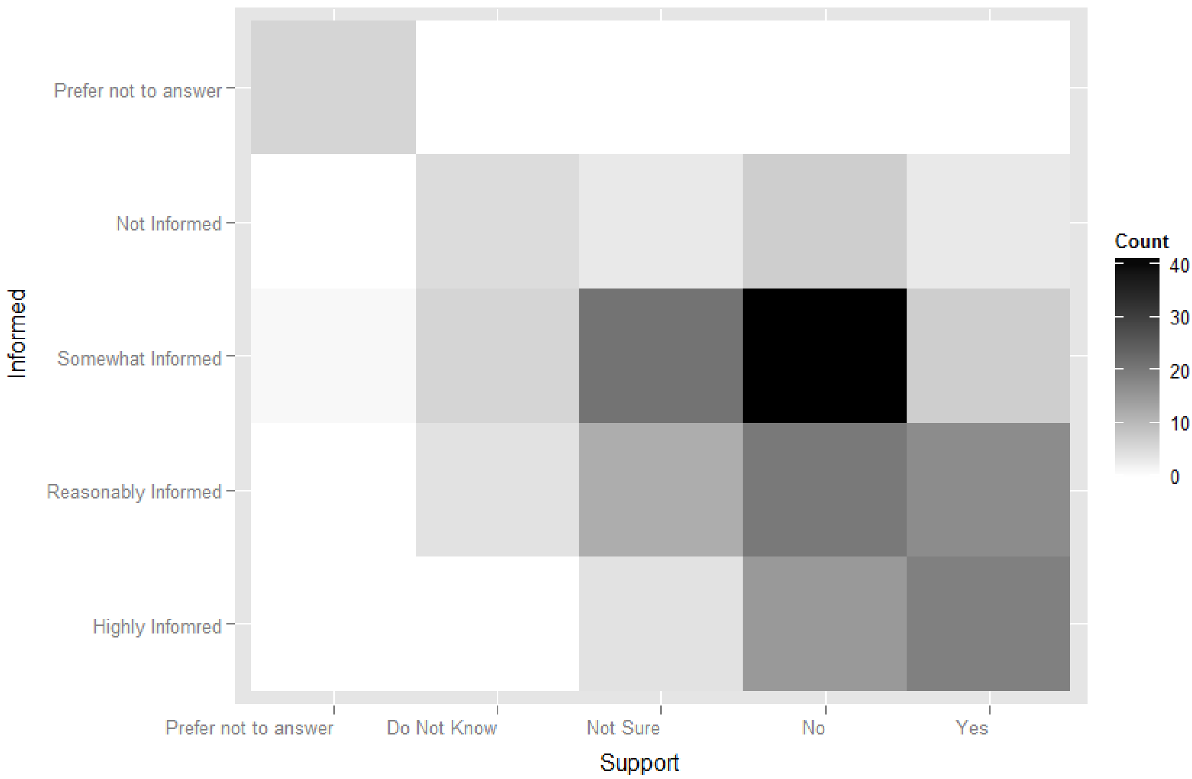

Figure 19. Frequency cross-tabulation of support for catch shares based on knowledge of the program (2010).

In 2010, half of individuals who considered themselves highly educated about Catch Shares indicated that they supported the program. This percentage decreased to 32% for those individuals who considered themselves reasonably informed about Catch Shares. Only 9% of individuals who considered themselves somewhat informed about Catch Shares indicated that they supported the Catch Shares program in 2010. There is a correlation between support of Catch Shares and knowledge about Catch Shares: The less informed respondents were, the more likely they were to indicate that they did not support the Catch Shares program in 2010 (Figure 19). This supports the idea that unknown change is generally perceived as a negative impact, and that increased education and outreach in future Catch Share programs could result in smoother transitions.

Non-response rate

Non response rate also helps explain the surge of support for Catch Shares. While every effort was made to talk to every respondent who participated in the 2010 baseline survey, there were respondents who flatly refused to talk to researchers because they were upset with the program [4]. Thus, inevitably survey results will naturally, disproportionately remove extreme negative perceptions of Catch Shares, and this needs to be considered.

Respondents are genuinely supportive of the program for varying reasons

The top five survey responses why respondents support Catch Shares include the fact that there is reduced bycatch, an increase in individual accountability, an increase in business flexibility, an increase in safety, and an increase in market value. More detailed analysis of why respondents support catch shares is addressed in the following section.

Reasons for Respondent's Support or Rejection of Catch Shares

Survey Data

Respondents were asked to indicate specific reasons why they might support or not support Catch Shares in 2010 as well as in 2012. These reasons to support and concerns have changed slightly over time (Table 9). Initially in 2010, respondents supported Catch Shares because they expected to have reduced bycatch in the fishery, increased market value for their product, increased business flexibility, improved product quality, and more stable income. In 2012 top reasons included of an increase individual accountability and increase in safety while improvement of product quality or more stable income dropped out of the top five.

The top reasons that respondents do not support Catch Shares has also altered (Table 10). In 2010, respondents cited that they did not support catch shares because boats would leave the fishery and negatively impact the community, there would be a loss of business and community infrastructure, there would be fewer jobs, a decrease in income, and an increased cost to remain in the fishery. Top reasons in 2012 include the fact that observer coverage is problematic, there is an increased cost to enter the fishery and that Catch Shares impacts small boats and small businesses negatively.

[4] See Non-response bias in Response Rate section.

Table 9. Top 5 reasons respondent's supported Catch Shares.

2010	2012
Reduced bycatch	Reduced bycatch
Increase in market value	Increase in individual accountability
Increase in business flexibility	Increase in business flexibility
Improvement of product quality	Increase in safety
More stable income	Increase in market value

Table 10. Top 5 reasons respondents did not Support Catch Shares.

2010	2012
Boats leave the fishery and negatively impact the community	Observer coverage is problematic
Loss of business and community infrastructure	Increased cost to enter the fishery
Fewer jobs	Fewer jobs
Decrease in income	Impacts small boats/small businesses negatively
Increased cost to remain in the fishery	Increased cost to remain in the fishery

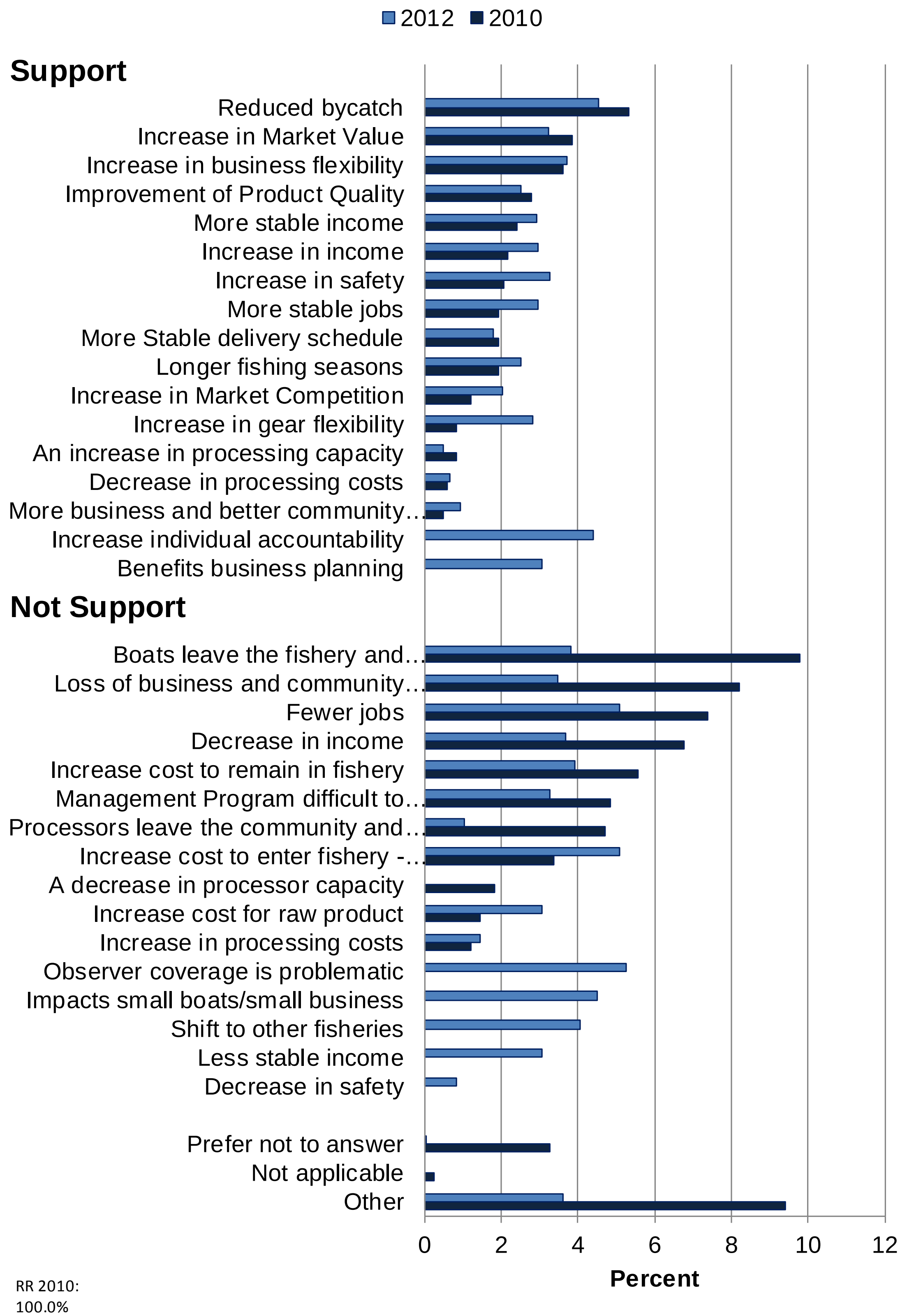

Figure 20. Reasons to support or not support catch shares. * NOTE: The options of Observer coverage is problematic, Impacts small boats/small businesses negatively, Increase in individual accountability,

Shift to other fisheries, Less stable income, Benefits business planning, Increase in product quality, and Decrease in safety were options added in the 2012 survey and a result of high qualitative open ended responses in 2010.

Qualitative Data Program Perceptions

2012 qualitative data mirrors survey results. While there were still considerable concerns raised in the 2012 data, there were more respondents who felt that they had seen positive attributes of the program as compared to the 2010 qualitative data where the majority of respondents expressed fear, uncertainty and concern about Catch Shares (Figure 20).

Benefits

> *"But again, for the first 2 years it's exceeded everybody's expectations and, you can prove things like bycatch have gone down. The price of the fish has gone up. There's some variables that you can, that are proven that are better. Now there are some guys that maybe didn't think they got enough or want to go back to the old system or you know, but…that's not the new world, you know, this is kinda a new world we're living in." (Newport Fisherman, 2012)*

Advocates of Catch Shares feel that the program has brought some stability and business flexibility to the groundfish fishery. Even respondents who don't fully support the program acknowledge positive things, like reduced bycatch, have occurred. While there are still fewer respondents who support the program than those who do not support the program in the 2012 qualitative data, there is a dramatic increase in support compared to the 2010 qualitative data, where very few respondents expressed that they were in support of Catch Shares.

Stability and Business Flexibility

One of the main benefits that respondents cite is the ability to plan their operations rather than have their fishing dictated by trip limits. This ultimately creates more stability for fishermen, and to some extent processors, as fishermen have a known quantity of fish to catch. While fishermen may still be limited by markets and weather, respondents state that Catch Shares gives them a lot more options in terms of maximizing their participation in multiple fisheries, maintaining vessels, and planning their fishing schedules to maximize market value.

Respondents state that they like the flexibility of being able to prosecute other fisheries, while still having guaranteed access to their groundfish. Before catch shares, respondents state that they were constantly switching back and forth from different fisheries in order to fully utilize their 2 month groundfish allocation. If fishermen did not switch over in time, or chose not to, they lost their allocation of groundfish for that 2 month period. Respondents state that they now have the ability to plan when they want to groundfish and prosecute other fisheries without losing access to groundfish.

> *"Basically we've got all year to catch the entire quota instead of the 2 months system, because we also crab and salmon. So when we used to crab and salmon we'd lose at*

least half of that, half of our fish…and then once you didn't get it in 2 months, you'd lose that fish. So now we wait til September, and then we can get our entire quota. So that definitely works better for us, being a multi-fishery boat." (Fort Bragg Fisherman, 2012)

While numerous respondents state that fishing is an inherently unstable profession, advocates of Catch Shares state that the program brings a fair amount of stability. Fishermen know better what they are allocated for the year, and can plan to prosecute the fishery in a way that makes the most sense for them:

"The reason it is positive for us is because we can manage our fisheries like a business. We schedule when we fish, we schedule when we can do maintenance, which is absolutely a positive for us even though we might be catching less fish we still generate more cash because we can program it. [Even though there is] potentially less fish, it's still a better cash flow for the boat, a better income for the boat because you can now plan your season and your maintenance." (Newport Fisherman, 2012)

"I had to give up a bunch of quota but still my business is much more stable. I had to give up a bunch of my history I should say, but I was willing to do that because I want stability." (Newport Fisherman, 2012)

Having guaranteed quota has allowed respondents to take time off fishing to devote time to vessel maintenance. Respondents state that they are able to take time off in the middle of the season without worrying about lost income, and that they never would have considered this in a derby fishery. Respondents can plan out maintenance in better weather, when the shipyard is less busy and when it is more convenient for them:

"This year we stopped fishing for a week or 10 days right in the middle of the season. Took our boat down to Reedsport, hauled it out. Painted it. Put it back in the water and went fishing again. Would have never done that before. Ever. Rather let the bottom of the boat fall off." (Newport Fisherman, 2012)

To some extent, respondents state that Catch Shares has provided the opportunity to plan with their processor for the best price and market conditions:

"I think flexibility and your fishing schedule is positive. I think being able to go out and targeting different species in different market conditions, I think is good. I think if the market says "Hey, the market is really good on rockfish, could you guys go target chilipeppers, you know, for this trip?" you can do that because you got so much of this quota for the year. You can go do that in a certain month instead of before, getting 5,000lbs…spread out, you know, every 2 months for the whole year, that limits you on what you can do." (Fort Bragg, 2012)

<u>Reduced Bycatch</u>

Proponents of the Catch Share system support the program because they believe that bycatch has been reduced. Many respondents believed that the previous management system of 2 month trip limits had the unfortunate effect of encouraging or allowing large amounts of discard. Respondents state that they are now accountable for their bycatch, and that many fishermen have changed their fishing practices to avoid areas with overfished species. Some fishermen state that they have changed their gear to incorporate excluder devices and cameras. While some respondents believe that there is potentially less bycatch because there are fewer vessels fishing, even those who do not fully support Catch Shares acknowledge that they support the fact that there has been reduced bycatch:

> *"I'm a very big advocate of this and it's just worked beautifully. I mean the race for fish is over. The reckless, I know fishermen that would, had to fish in places where they just had to, because if they didn't catch the fish, the next guy was gonna. And catch the bycatch and it just…you know, there was some bad actors out there." (Newport Fisherman, 2012)*

> *"I think it's worked out well. I hear fewer bitches from people that said it would never work, and they'd starve to death tomorrow. And I think people have been creative and given the economic and resource protection that's happened, reduction of bycatch, I mean you gotta call it a success. I would think." (Washington State Fisherman, 2012)*
> *"One benefit of the catch share program is reduced bycatch – I definitely support that." (Morro Bay Fisherman, 2012)*

<u>*Concerns*</u>

Respondents in the 2012 data set express many of the major concerns they did in the 2010 qualitative data. However, some of these concerns have shifted slightly in response to actual experience with the program. This is in comparison to 2010 data, where respondents had concerns about Catch Shares, yet were ultimately unsure as to how the program would actually affect them.

<u>Bycatch</u>

> *"The Catch share program will succeed or fail based on limits of choke species." (Oregon Processor, 2012)*

Issues around bycatch and bycatch allocation continue to permeate the qualitative data set. The most common concern is about the fact that the west coast Catch Shares is managing multiple species, and that many species intermingle so that it is unlikely to catch one species without catching the other. Respondents often state that they allocated species that they will not be able to prosecute because they did not receive enough of the other species that co-exist. Fishermen refer to these species as 'choke species', and state that unless they are able to trade or lease, these species often prevent them from harvesting target species. There are communities that state that they received zero bycatch allocation, and that this severely limits their fishing opportunity under Catch Shares.

> *"But that's the kind of disparity that we see. When fisherman cannot get the full bulk of the benefits of the catch shares program because they're strung up or hamstrung so much by some minor species. Now am, so I'm, that kind of really just bothers the hell out of me*

> *and it's the biggest, probably the biggest comment and pain you're gonna get from the fishermen, from the industry, they're gonna say the same thing, how can you have a system where 6lbs of fish shuts down 100,000lbs of fish over here when this 6lbs was never, and never will be, a target fishery. It's an incidental catch." (Fort Bragg Fisherman, 2012)*

Some fishermen also state that they were surprised at which species became choke species for them. Some anticipated that overfished species such as Canary rockfish, Yelloweye or Bocaccio would potentially be a major problem in 2010. The small allocations of these overfished species continue to pose problems for many fishermen; however fishermen also state that small allocations of petrale or black cod prevent them from targeting some of their main fisheries. Many respondents stated that they effectively save their allocation of black cod as a bycatch quota for other targeted fisheries, whereas in the past they would have specifically targeted black cod as well.

> *"This trawl rationalization program was very overreaching in a lot of respects. And I think we're only now coming to the realization of how many problems we have associated with it, from a constraining species standpoint. The things that weren't really thought of as constraining species before, are now. And I think that sablefish is a perfect example of that. You know, as sablefish quotas get ratcheted down, you need so much sablefish bycatch to execute a lot of fisheries. Particularly petrale, particularly dover, particularly those and…it isn't going to be readily available, just like halibut is a huge problem, and it will become even more of a problem and ah….you know when we were thinking of constraining species, we were focused more on things like canary bycatch, widow bycatch and…yelloweye rockfish bycatch and while they're bad, and they are constraining, they're proving to be…almost less of a problem than some of these other things." (Westport, 2012)*

Many respondents anticipated the possibility of having a 'lightning tow,' in the 2010 data, which refers to unexpectedly catching a large amount of overfished species in a single tow. Respondents were concerned that under the catch share program a lightening tow could occur, and that they would be unlikely to find the fish to cover their overage. This in effect, would shut down their fishing operation for the remainder of the year or until the overage could be covered. There are almost no mentions of lightning tows in the 2012 data set. This could be because this has not actually occurred that often, or because fishermen are able to procure quota to avoid or cover an overage.

<u>Observers</u>

The observer program continues to be a major concern for the majority of respondents. In 2010, respondents had experience with observers who monitored the West Coast Groundfish fishery approximately 20% of the time. Some had experience with observers through other catch share programs in AK. While the majority of the fishery had some observer experience, there was a substantial portion of respondents who objected to the physical presence of observers on their vessel. Many of these respondents stated that there wasn't enough room for the observer on their vessel, they were concerned about safety, or that they just didn't want a government representative watching them. A large proportion of 2010 respondents were concerned about the cost of the observer as well, and whether they could make the program work for them with such high observer costs.

While there are still respondents who object to the physical presence of observers in 2012, there is a slight shift about respondent's concerns about the observer program. Some respondents now state that they actually have had positive experiences with observers. There are still a lot of stories told about 'that one observer' or 'that one guy' that didn't work out well, but many captains and owners state that observers do their jobs and that they generally get along.

Major concerns now focus on the cost and availability of observers. Availability of observers is just as problematic as the cost of observers; these were both major themes in the 2012 data. Many fishermen have stated that they are unable to obtain an observer when they wish to go out because of the lack of observers in their port. This results in lost trips and income. Some state that they have to schedule an observer days in advance of when they actually want to go out; in some cases the weather is good and in other cases it is not. Respondents report that if they have obtained an observer and the weather changes for the worse, they are still going out. Respondents suggest that availability of the observers potentially negates benefits in business flexibility and actually decreases safety.

> *"You gotta wait on the observer and then when the observer came you had to go in whatever weather was available. And once you could get one…there was a waiting time. So when you get one, and the weather's rough, you gotta go." (San Francisco Fisherman, 2012)*

The cost of observers is a prominent concern for many respondents. Fishermen often bring up the fact that many vessels are barely making ends meet with existing overhead costs such as the rising cost of fuel, the Federal Buyback loan payments, as well as other NMFS administrative fees of the Catch Shares program. Many fishermen feel that the cost of the observers is disproportionately harmful to smaller vessels, as these vessels have to pay the same costs as larger trawlers who have a much larger profit margin and can more easily absorb the cost of observers. There have been some fishermen that state that they will exit the fishery once they have to absorb the full cost of the observers because at that point the ground fishery will no longer be an economically viable fishery. Many respondents are hopeful about the possibility of going to a camera monitoring system as a way to alleviate costs.

> *"The cost of the observer program is going to be one of the deciding factors whether in the long-term this is a successful program or not. Um… we're looking at costs approaching $400 a day for observers. And NMFS right now is subsidizing that but when the subsidy removed in a few years that's going to be one tremendous financial blow to anybody's ability to make any money." (Eureka Fisherman, 2012)*

Variation of Support for Catch Shares by Fishery

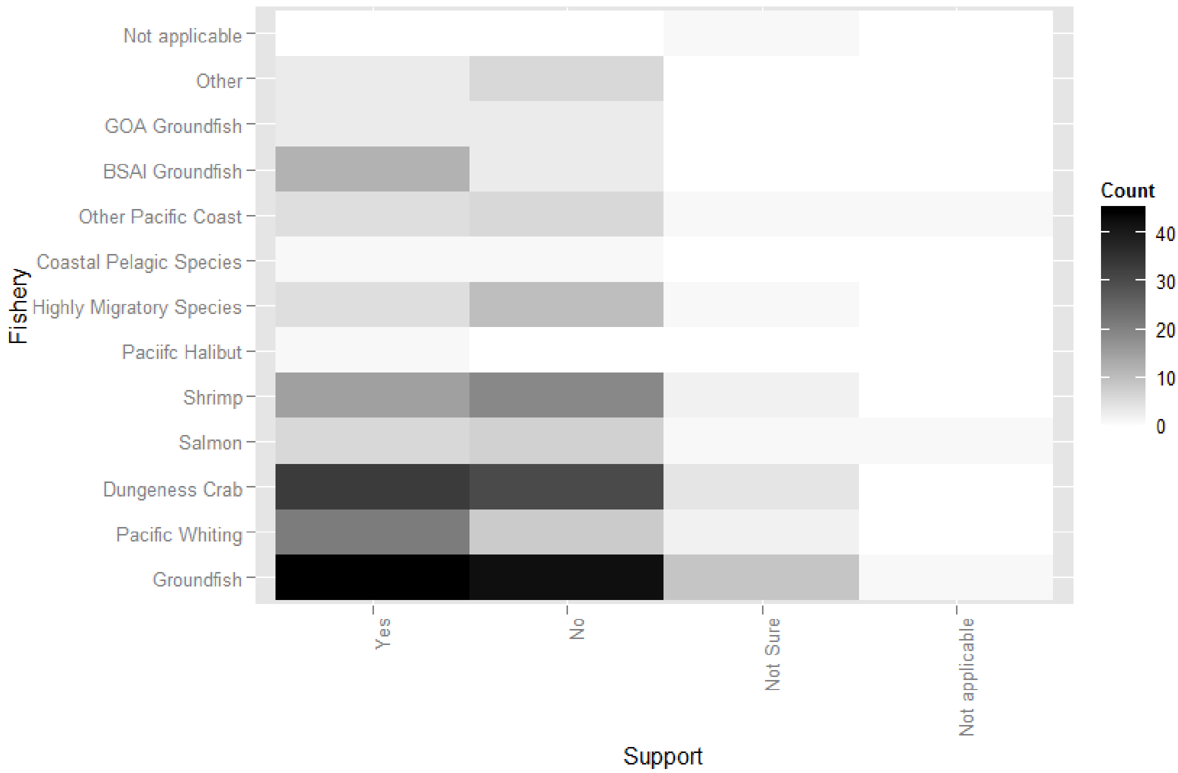

Figure 21. Frequency cross-tabulation showing support of Catch Shares by the most important fisheries (2012) .

Figure 21 shows a cross-tabulation between respondents' most important fishery and whether or not they support Catch Shares in 2012. Respondents who indicate that groundfish is their most important fishery are evenly split between those who support catch shares and those who do not. Over two thirds of respondents who indicated that their most important fishery was Pacific Whiting support Catch Shares. Respondents who indicated that their most important fishery was Dungeness Crab were slightly more likely to support catch shares, whereas respondents who indicated that their most important fishery was Shrimp were slightly more likely to not support the program. 75% of respondents who indicated that their most important fishery was Bering Sea and Aleutian Islands Groundfish support Catch Shares.

Contradictions, Program Misperceptions, Unexpected Results

Catch Shares is not a black and white issue; data support the idea that some respondents are inconsistent in their perceptions. Respondents often indicated that they support and reject elements within catch shares. Some respondents indicated that they made more money, but still did not support the program or vice versa. Qualitative data reveal that there were program misperceptions about specific elements of Catch Shares as well as unexpected results of the transition to Catch Shares.

Contradictions

Catch Shares 2012 program perceptions are more evenly spread across the board than in 2010. Overall program perceptions are more positive (47%) than negative (40%); however it is important to note that Catch Shares is not a black and white issue. Many respondents indicated that they love/hate specific elements of Catch Shares; this does not necessarily reflect how they feel about the program as a whole. Many respondents indicated that they supported Catch Shares, but then would state that there were a lot of negative aspects of Catch Shares. Other respondents stated that they did not support Catch Shares, but then would note that positive things, such as reduced bycatch, had occurred. Likewise, how respondents were personally impacted by Catch Shares did not always determine their opinion of the program (Figure 22). 15 respondents indicated that they had been negatively impacted by Catch Shares, yet still indicated that they supported the program.

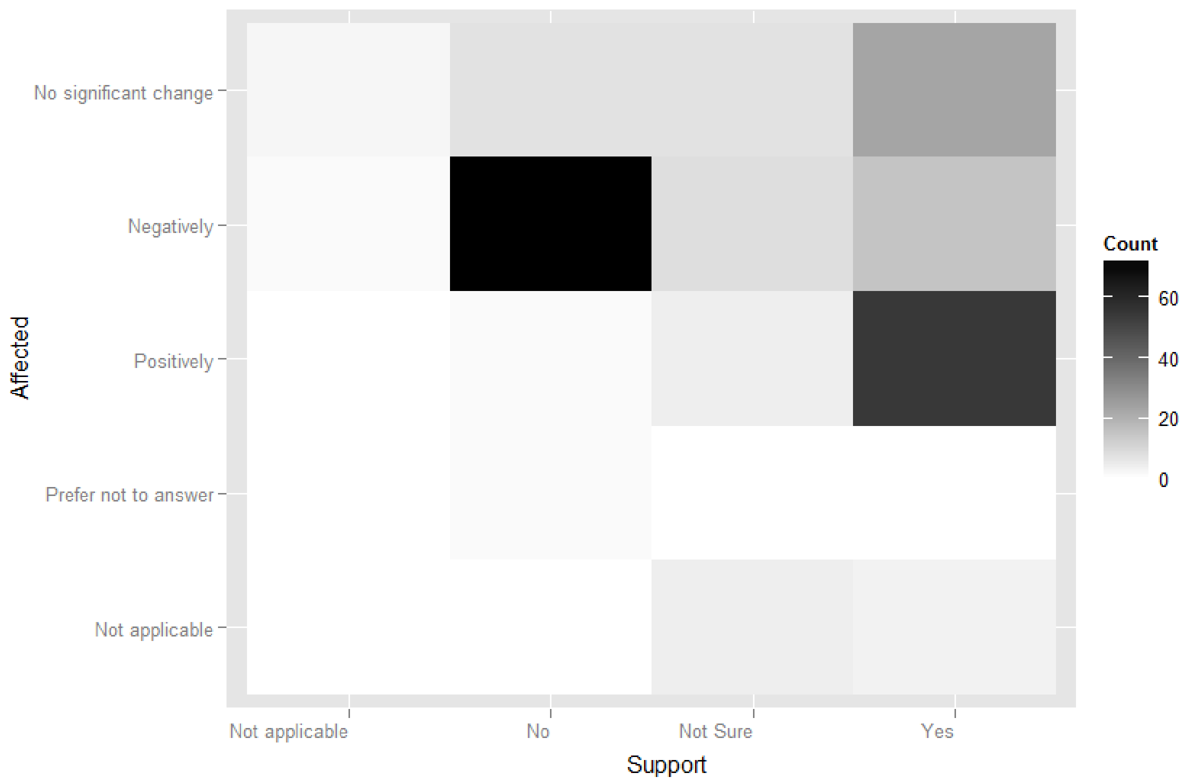

Figure 22. Frequency cross-tabulation of support of Catch Shares and how participants were personally affected by the program (2012).

Program Misperceptions

A minor, but consistent theme in the qualitative data was that respondents felt that gear restrictions need to be removed with the implementation of Catch Shares. Some respondents felt that this had been promised to them as a ‘selling point’ of catch shares before it was implemented, whereas others simply felt that having gear and area restrictions was redundant with the program. Respondents specifically stated that the idea of 100% accountability that came with the observer program negated the need for the Rockfish Conservation Areas (RCA). These respondents are especially frustrated that they cannot access species they were allocated because they live almost exclusively in the RCA.

> *“All this other stuff that theoretically should come along with catch shares and individual accountability is some relaxing of a lot of the old regs. Gear restrictions, RCAs…none of that’s happened. It’s happened, well…gear not at all. And RCAs very little, very very little. Well, with the regs the way they are, it’s hard to go try to target these underutilized species because of all the different old regs that really have no point anymore.” (Astoria Fisherman, 2012)*

> *“I think having gear restrictions like…small footrope or big footrope, I think is kinda redundant now. You’re already accountable for yourself, for what you’re going to catch…if you’re stupid enough to go somewhere with a big footrope…and catch a bunch of canaries, you’re the only one who’s going to be hurtin from it, I think you should be able to make that decision on your own. I think some of the gear restrictions are kinda funny and I think some of the areas that you can’t fish should be lifted because you have account for all your fish that you’re gonna catch. I mean, if you’re that dumb…to go somewhere to catch 5,000lbs of Widows where you know there’s a possibility you’re going to catch 30,00lbs, why would you even be in there? But I think if you have the quota to go catch a few…I think you should be able to go in there and catch what…cause there’s going to be a lot of fish left on the table if they don’t do something about it.” (Fort Bragg Fisherman, 2012)*

> *“All of our net restrictions, mesh sizes…that was all supposed to go away. It hasn’t. RCAs, they were supposed to go away. They haven’t. So all the things that we were promised in this program haven’t happened.” (Astoria Fisherman, 2012)*

Unexpected Results

The survey asked respondents to describe any results of the transition to Catch Shares that occurred, but were unexpected. A little under half of the respondents that replied to this question indicated that this was not applicable or that there were no surprises (Table 11). The most common unexpected results involved quota allocation, bycatch allocation and issues with the observer program.

Table 11. Description of the unexpected results from the transition to Catch Shares.

Theme	N
None; no unexpected results	17
Allocation of Target Species wasn't what expected	17
1. Quota Share Less Than Expected/cut in limits (13)	
2. Allocated more fish/more work (1)	
Bycatch; bycatch limits are too low	13
Observers problematic	12
1. Availability/coverage problematic (6)	
2. Cost problematic (4)	
No Surprises; Anticipated Everything	9
Catch shares working Well/Pleasantly Surprised	4
Rollover of Species did not occur	4
Old gear restrictions still in place	4
Increased communication/networking amongst fishermen	3
Lawsuits	3
Fishing Less/fewer trips	3
Additional costs of program	3
Didn't expect new position/job	2
Working Poorly/management failure	2
Less Fish to Catch	2
Accumulation caps on quota	2
More reporting and monitoring	2
Program better at reducing bycatch	2
Retention of juvenile fish (black cod)	2
Other	36
Not Applicable	51
Prefer Not To Answer	2
Didn't know what to expect/ don't know	2

Fisheries Participation

The goal of fisheries participation section of the data collection is to monitor how individuals are working within the industry and how that has changed over time. The Catch Shares program will likely require changes in participation. These changes may be related to which fisheries are targeted, which gears are used, who people work with, or how people work with each other. Some of the changes, such as increased participation in other fisheries, may result in additional management concerns. These changes may be slow to be seen, however, this data aims to better understand what they may be, when they happen, and what factors may influence them.

Results

Fisheries Participation

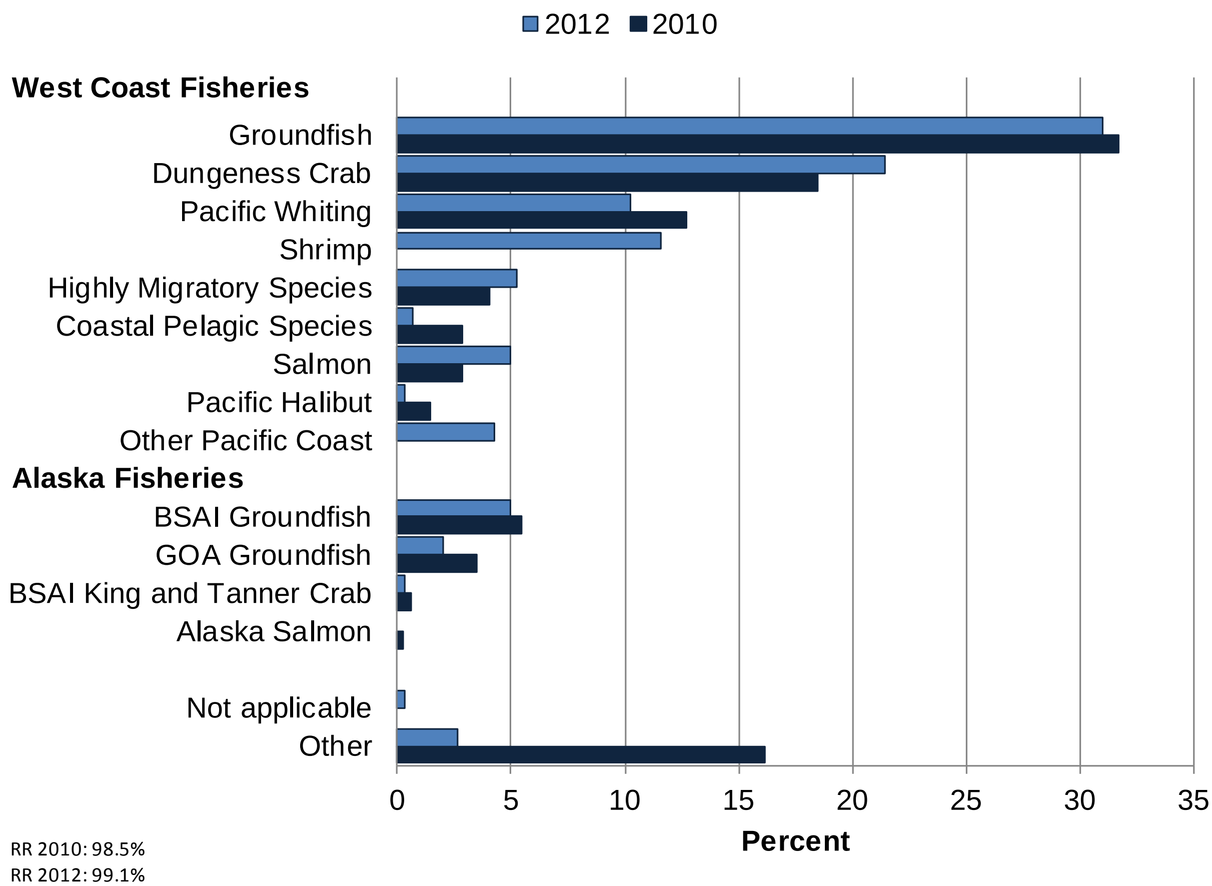

Figure 23. Fisheries participation in most West Coast and Alaska fisheries.

Figure 23 identifies the fisheries that survey participants have participated in on a regular basis before Catch Shares was implemented in 2010, as well as fisheries they participated in since the implementation of Catch Shares. The high percentage of the 2010 "Other" category is comprised mainly of shrimp, which was added as a separate category in 2012. There appears to be a slight increase in respondents who participate in the Dungeness crab fishery, Highly Migratory species, Salmon as well as other Pacific Coast fisheries. On the other hand, there appears to be a slight decrease in respondents who participate in Groundfish, Pacific Whiting, Coastal Pelagic species, Pacific Halibut and Alaska fisheries.

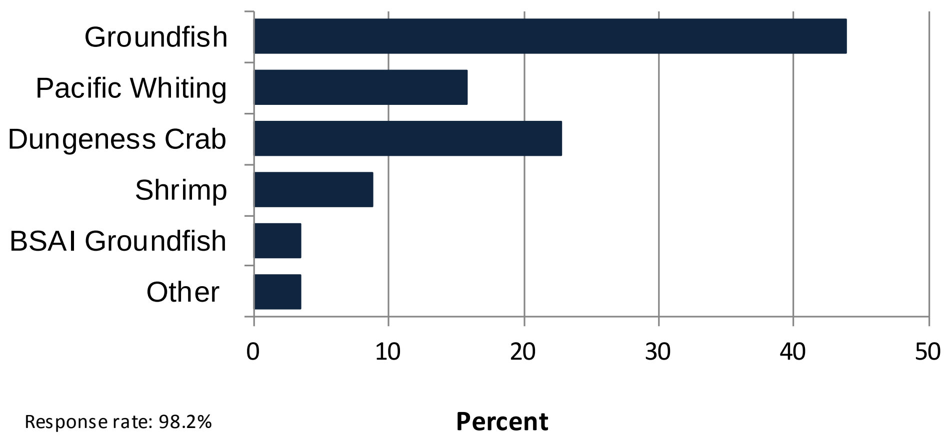

Figure 24. Most important fisheries for trawl harvesters in 2012. NOTE: The question that provided this data was identical in both the 2010 and 2012 survey tools. Instructions requested responses to be ranked in order of importance. The responses in 2010 were inconsistent and most simply selected fisheries and did not rank them. This was emphasized in 2012 and accurately resulted in a ranking order.

Trawl caught Pacific Coast Groundfish was considered the most important fishery for 43.9% of respondents in 2012 (Figure 24). Pacific Whiting, Dungeness crab and Shrimp together made up another 47.4%. More over 18.4% of respondents indicated that Pacific Coast Groundfish was their sole fishery in 2012, as compared to 9.5% of respondents in 2010 who indicated that Pacific Coast Groundfish was their sole fishery.

Gear Use

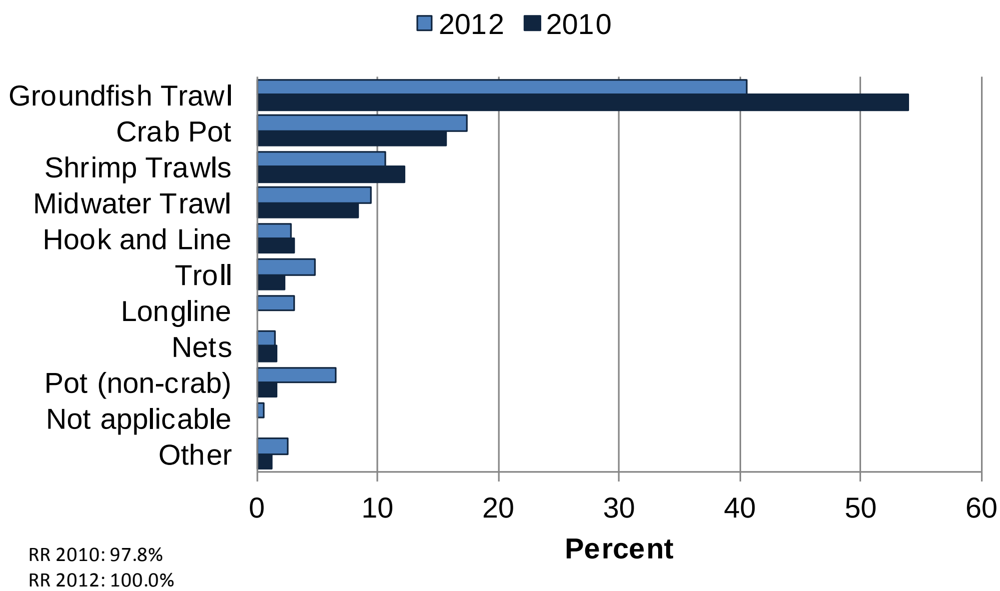

Figure 25. Most commonly used gear types.

From 2010 to 2012 there has been a 13.4% decrease in the amount of respondents who use a groundfish trawl (Figure 25). There has also been a 5% increase in the use of fish pots, suggesting that fishermen may be utilizing their ability to switch to fixed gear under Catch Shares. In addition, there has been a 2.6% increase in the use of troll gear. The use of crab pots and midwater trawl have increased marginally, while there appears to be a slight decrease in the use of shrimp trawls.

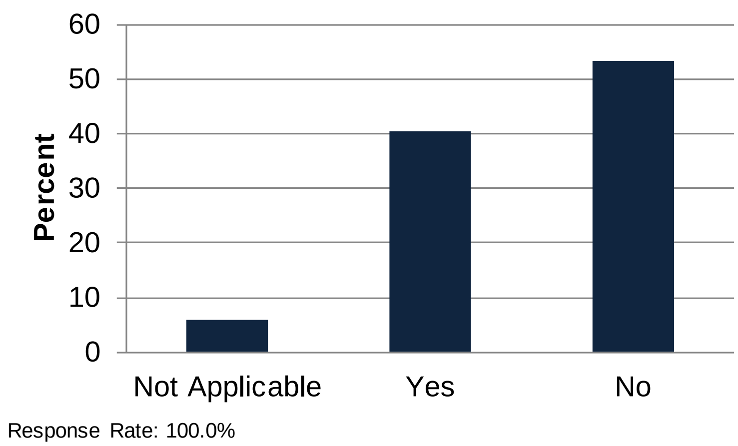

Figure 26. Have targeted species changed?

40.5% of respondents indicated that they have changed the species they target since the implementation of Catch Shares (Figure 26). Qualitative data reveal that fishermen are changing the species they target within the groundfish fishery, as well as shifting some of their effort to other fisheries such as Dungeness crab and Pink Shrimp.

Respondents state that they have changed the groundfish species they target in response to low quota allocations on certain species. This often has a spatial element, as many fishermen explained that they had changed the areas they fish in order to avoid species of concern that would potentially cause an overage. This included both areas that were known to have a high potential of catching an overfished species, or areas where species were known to co-exist:

> *"It [species targeted] has changed because of the potential to catch species that you don't have a catch share for…in other words I don't go for Petrale because I catch Boccaccio, and I don't go for the Chili's (I got a fairly big chili quota) because I might catch a Cowcod." (San Francisco Fisherman, 2012)*

Many respondents have stated that they have been unable to fish "the beach," or the nearshore fishing grounds shoreward of the RCA because they either do not have enough bycatch quota or target species of fish that intermingle:

> *"The other problem with the IFQ program is incidental catch on the beach. We used to beach fish. Now everybody's afraid to beach fish. I go two pounds of yellow eye. That's a fillet. How am I going to deliver a fillet? I can't even deliver a whole fish. So nobody, well not, there might be one boat in this area that beach fishes now. He'll gather up all the bycatch he can and beach fish. One boat out of Eureka, the rest of us are afraid to do that. So it's changed the dynamics of fishing" (Crescent City Fisherman, 2012)*

There may have been increased effort shift in other fisheries. Most of the time fishermen explained that a shift in fisheries effort meant that they were more fully utilizing permits that they already had, rather than purchasing new permits. Qualitative data speak to the fact that this switch may have happened simply because other fisheries such as Dungeness crab and Pink shrimp, had good years, and it was simply more profitable to fish in those fisheries. Fishermen state that this was a shift in effort they would have made regardless of Catch Shares; they will participate in the fishery that is the most profitable in any given season.

> *"I crab longer than normally would. And I'm pink shrimp fishing now. We do one week pink shrimp and the next week groundfish, where normally we groundfish every week. That's because the market's good, but that can change." (San Francisco Fisherman, 2012)*

Other respondents state that they used increased activity in those fisheries to supplement their groundfish catch. Some respondents expressed concern that they were currently financially stable only because other fisheries were having good years and that these fisheries were cyclical. They are concerned that once these fisheries taper off, they will not have enough groundfish to make ends meet.

"I mean, we're able to fish as much as we want for the most part, but this is good shrimp years though. When we get down to poor shrimp years, this whole thing's going to change." (Brookings Fisherman, 2012)

"Last year, this is also somewhat distorted because it was an exceptional pink shrimp year and so some of those people that chose not to [ground] fish went pink shrimp fishing instead. When pink shrimp fishing isn't good, if the El Nino that is predicted for next year arrives, it won't be good. And those people will be relying on groundfish trawling again. In which case we may find ourselves back again where we had been, in terms of the flexibility being removed and people being restricted in how much fish they can actually land. So that remains to be seen." (Eureka Fisherman, 2012)

Fishermen and Processing Information

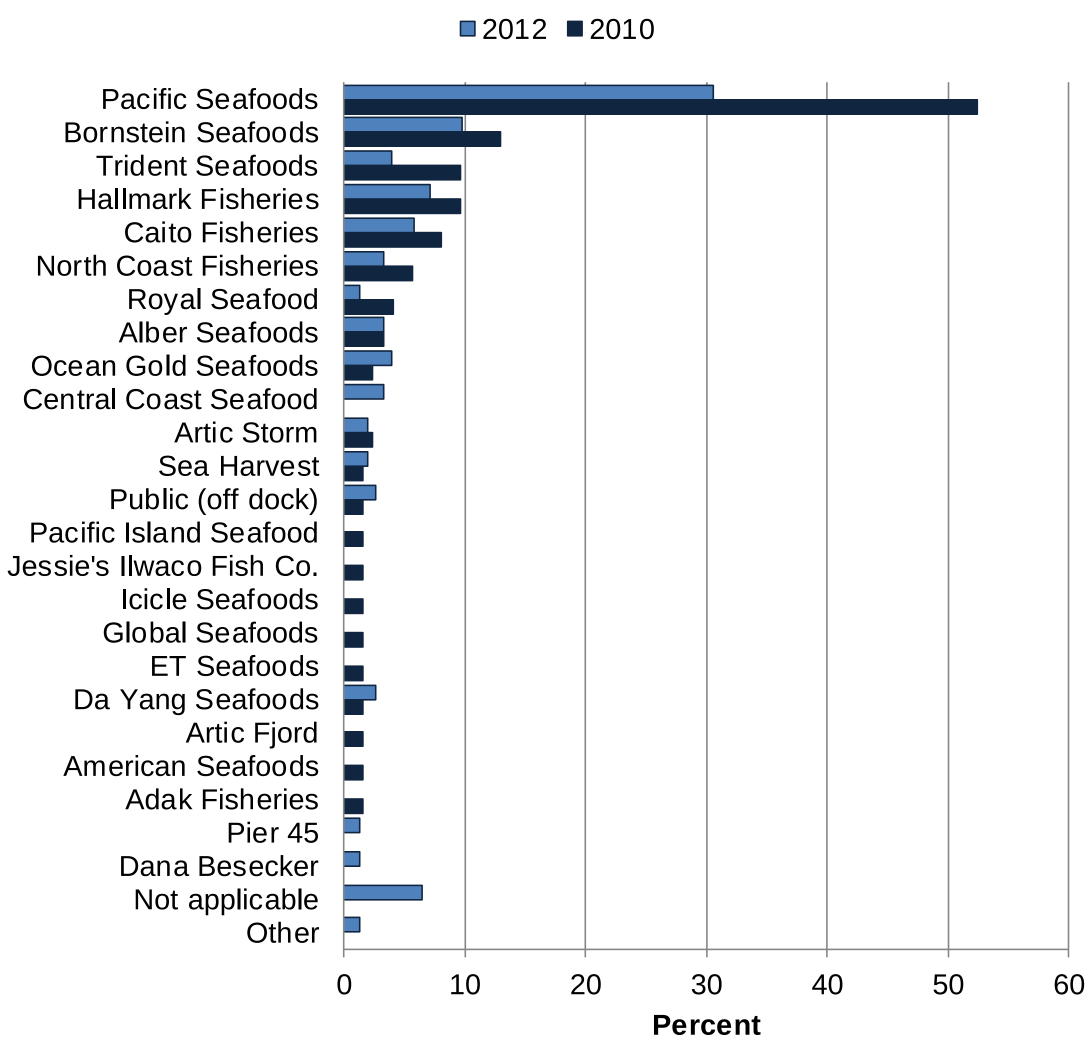

Figure 27. Processors fishermen sell to.

Figure 27 identifies the processors that fishermen sell their trawl caught groundfish to. Most of the prominent processors that purchase West Coast Trawl caught Groundfish appear to have less fishermen selling to them in 2012 relative to 2010. This could be because there are fewer trawl participants in 2012 due to vessel consolidation. Pacific Seafoods appears to have been impacted the most, with a 21.9% decrease in the amount of respondents who say they deliver to Pacific.

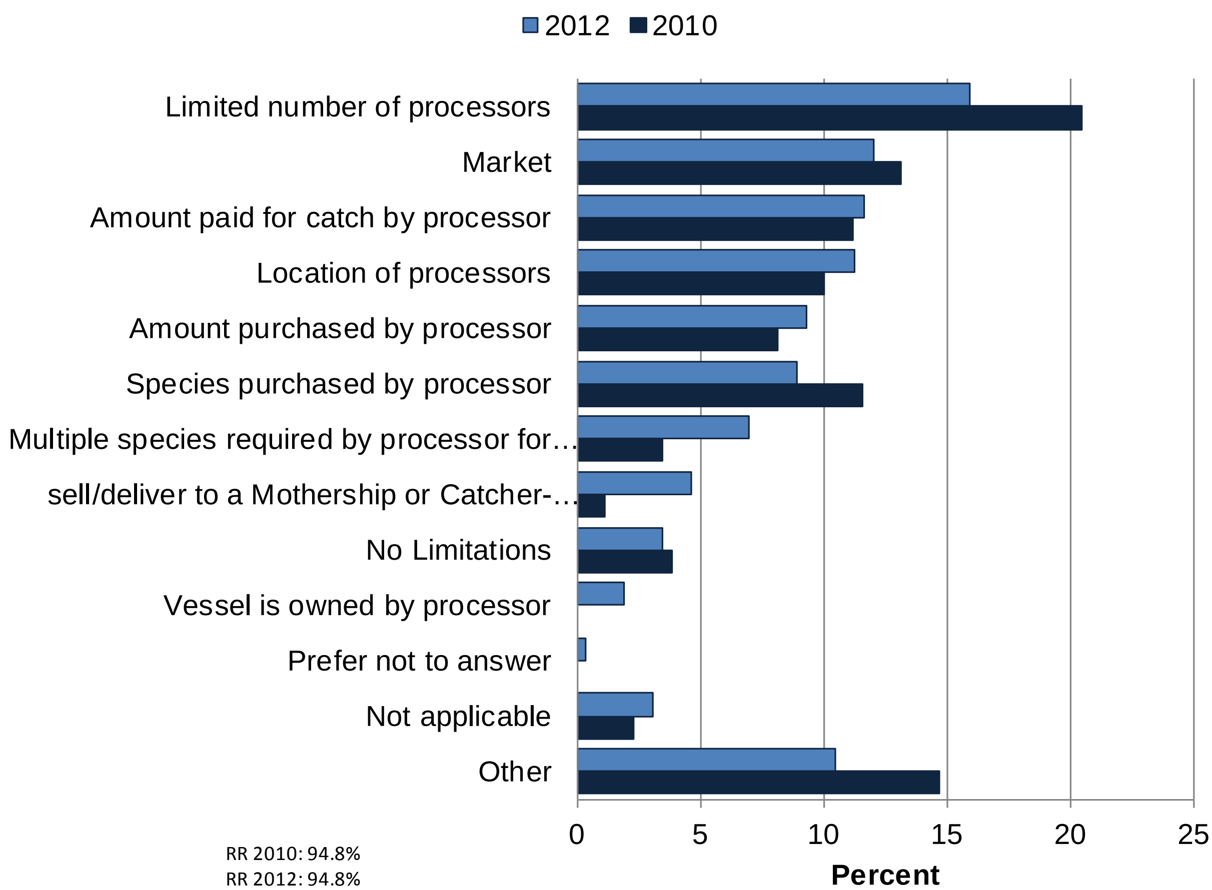

Figure 28. Fishermen's limitations on selling fish.

Fishermen were asked to specify what limits their choice of where they sell their fish, and were given the option to select multiple answers. Fishermen feel most limited by the number of processors both in 2010 and 2012 (Figure 28). Other included responses such as do not know, and the owner limits where the fish is sold.

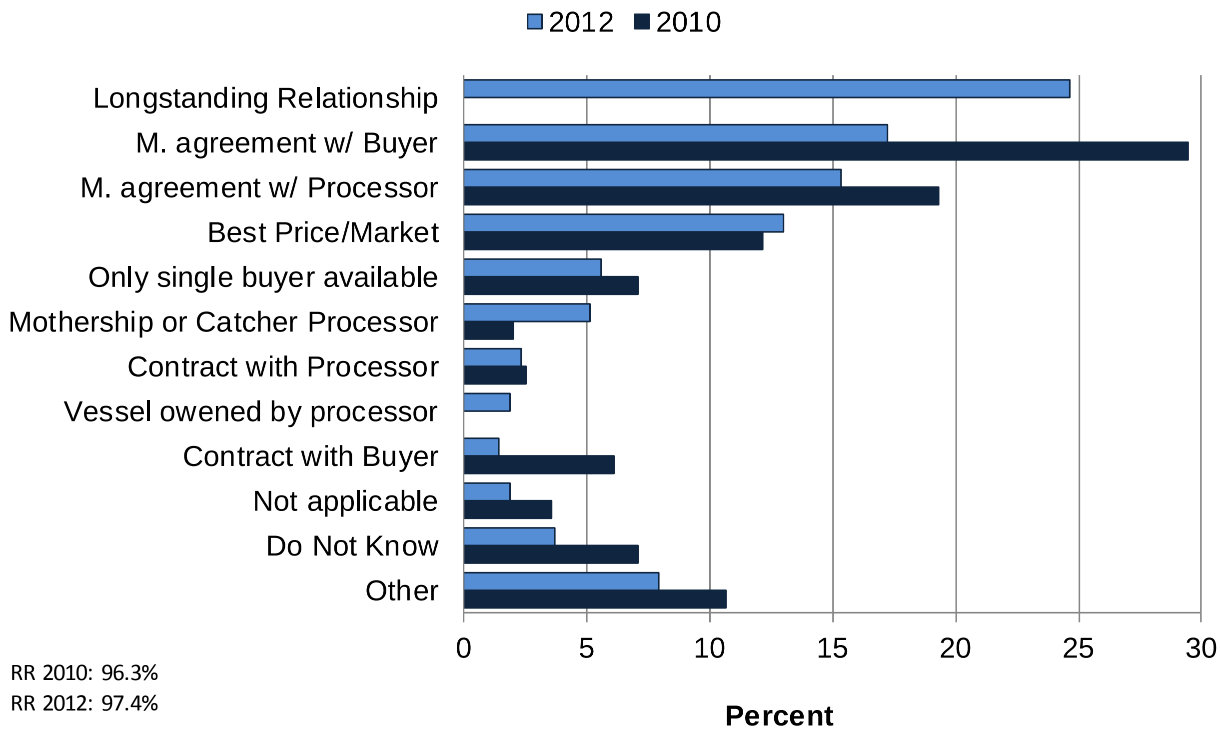

Figure 29. Fishermen's considerations where to sell groundfish. Note: M. agreement refers to mutual agreement.

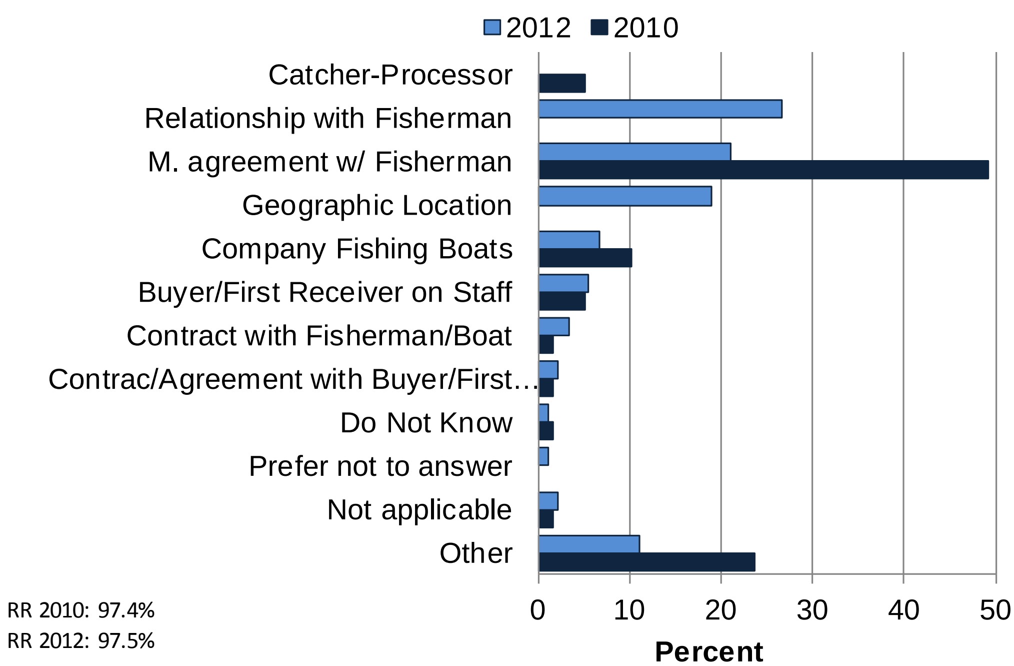

Figure 30. Processor's considerations where to buy groundfish.

Both fishermen and processors were asked what they take into consideration when selling/buying Pacific Coast Trawl Groundfish. Overall fishermen and processors appear to rely on longstanding relationships, as well as mutual agreements to buy/sell fish (Figures 29 and 30). Contracts are not frequently used. This does not appear to be affected by catch shares. The option of "Longstanding Relationship" was added in the 2012 survey. This may just be a more commonly used term by the study participants that was captured in the 2010 data set, and was therefore added. Both the relationships between fishermen and processors and the mutual agreements between the parties represent a 'good faith' informal arrangement that has withstood the first years of the program. Considering processing perspectives, it is interesting to note that they report contracts with fishermen/boats did almost double from 1.7% in 2010 to 3.3% in 2012, hardly a noticeable value, but notable and worth watching in the future.

Change in personnel

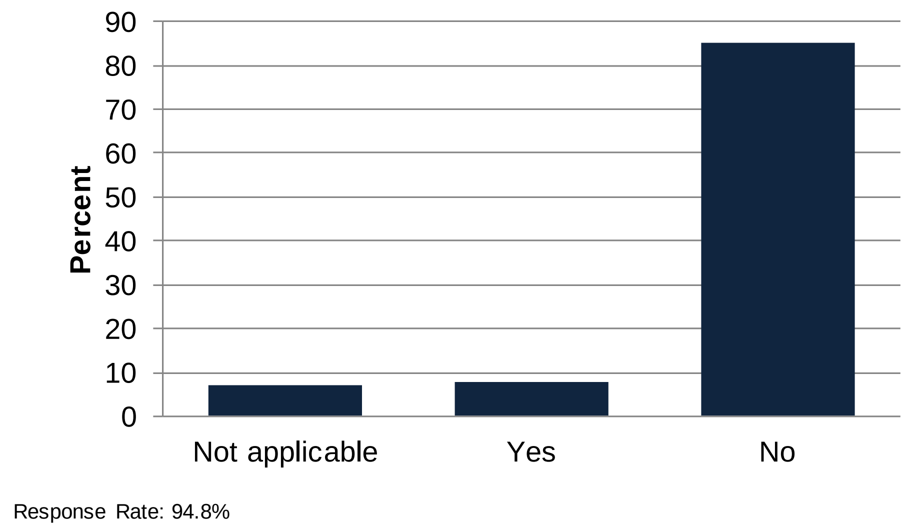

Figure 31. Change in crew 2012 (personnel aboard vessels).

85.3% of respondents state that the people they work with on their vessel have not changed as a result of the catch shares program (Figure 31). 7.8% reported that the people they work with had changed directly because of the program. This is important to note because often the effect of catch shares programs is consolidation, which has the potential to negatively harm crew if quota is consolidated on fewer boats and there are fewer jobs available. This is not to say that crew may have been impacted in other ways, but it appears that the majority of the respondents still work with the same people, regardless of Catch Shares.

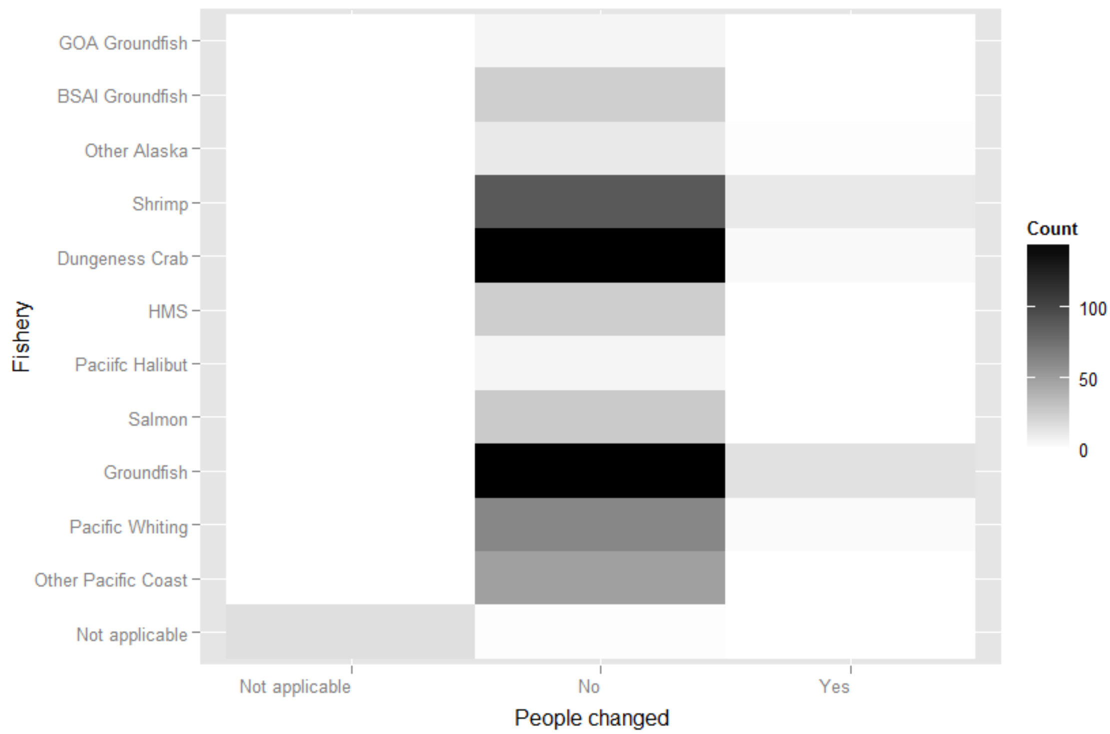

Figure 32. Frequency cross-tabulation of whether people have changed by the individual fisheries (2012).

As previous data indicate a majority of groundfish fishermen target the crab fishery as well, it is not surprising to see little movement of staff in both the groundish and crab fisheries. Highest levels in the change of people in the fishery are indeed found in the groundfish fishery and the Dungeness crab fishery followed by the shrimp fishery (Figure 32). As consolidation continues this may become a more prevalent and noticeable issue.

<u>Permit owner activities post implementation</u>

The following section describes actions that quota holders have taken in response to the rationalization of the West Coast Groundfish fishery. The majority of trawl participants did not feel like their initial allocation of quota pounds met their expectations. Over two thirds of quota permit owners surveyed have received quota pounds from another vessel account.

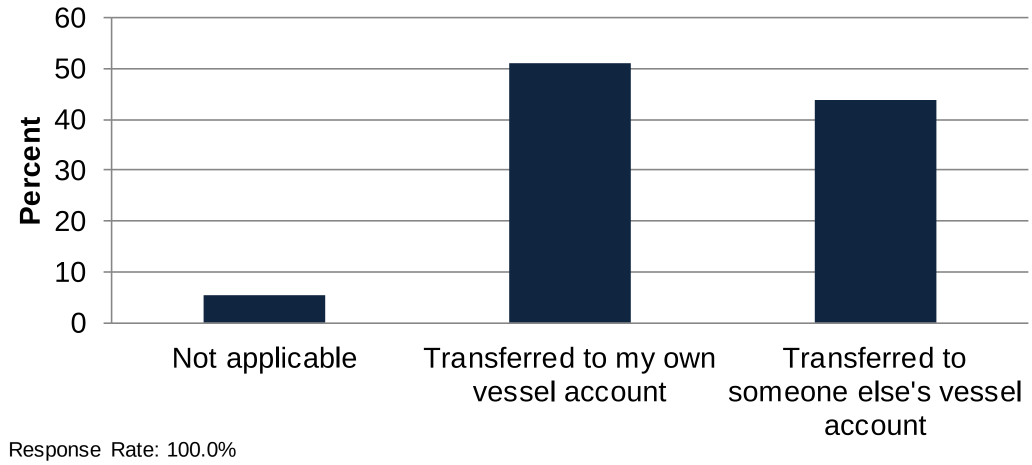

Figure 33. Transfer of quota pounds.

50.9% of respondents stated that they transferred their quota pounds to their own vessel accounts, whereas 43.8% transferred their quota pounds to someone else's vessel account (Figure 33). When asked why they transferred their quota pounds, most respondents indicated that they transferred because they were leasing their quota pounds or that they were trading quota pounds. Table 12 gives examples of the most common reasons why respondents transferred quota pounds to another vessel account.

Table 12. Why respondents transferred quota pounds to another vessel account.

Reason	Examples of Responses	N
Leased/Sold Quota Pounds	Have to lease initial allocation to other boats besides company boats (to get fish we need for processing; have to lease pounds). No money gained. Have to give quota pounds to outside vessels to ensure those vessels will deliver product to us.	18
	Not actively fishing, transferred it out to leases.	
	Mix of species worked better to lease than to fish ourselves.	
	Small amount of groundfish was leased out.	
	Wasn't able to catch North/South blackcod. Leased below 36 - Jefferson St.com.	
	Because some of it was allocated below the 36 (further south); they wanted it and I didn't want the additional expense of catching it.	
Traded Pounds	Used for trade because that's what you can do in a rationalized fishery.	11
	Traded some whiting quota pounds for black cod and petrale.	
	Some trading occurred, petrale trades for black cod.	
	Trading quota because of different species. We trade because one guy is using whiting and we're using the groundfish. We traded black cod, there’s the north south aspect of it.	
	Traded pounds to get what I wanted.	
Transferred because wasn't going to catch species	We weren't gonna use it, we were shrimping and gambled. We stayed shrimping.	4
	Transferred fish I wasn't going to catch - due to gear type (petrale/whiting).	
Don't fish own vessel at this time	Not able to fish my own boat at the time.	4
	Because I don't own boat anymore to fish quota; just hired as skipper on boat (partners in permit). Would prefer to catch my own quota, but make more money on leasing.	
Increased Income	To get money to cover vessel dry dock and repair. Hake transferred since not used.	3
Transferred because no longer fishing	Transferred to a couple different vessels; no longer feasible to fish.	3
Extra fish	Had to spread out shortspine for south to keep it. Had too much (over the max allowed).	2
Processors transferred to fishermen	Transferred to vessels outside the company for processor to have access to 20% whiting. Try to make fishermen whole.	2
Transferred to risk pool	We contribute them to the risk pool.	2
Other	Misc.	7

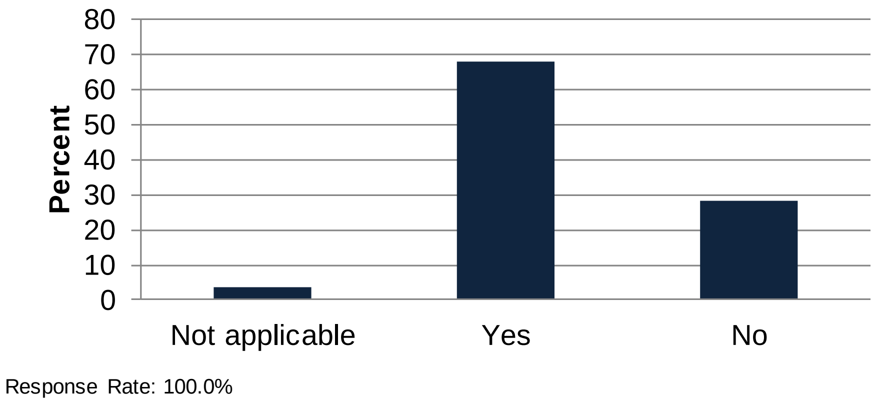

Figure 34. Receive quota pounds from another vessel account?

67.9% of quota holders received quota pounds from another vessel account (Figure 33). Respondents indicate that the top reason additional pounds were received was to increase fishing opportunities (30.1%), followed by the ability to gain sufficient pounds for a specific species (16.8%) (Figure 35). This makes sense in light of the fact that only 36.9% of quota share permit owners received an allocation that met their expectations. Qualitative data reveal that permit owners generally did not believe that they received enough fish in the initial allocation. Many stated that they *"had to lease bycatch in order to target harvested species,"* or that they *"felt like I should have gotten more; [it was a] strange mix of species I never used to catch."*

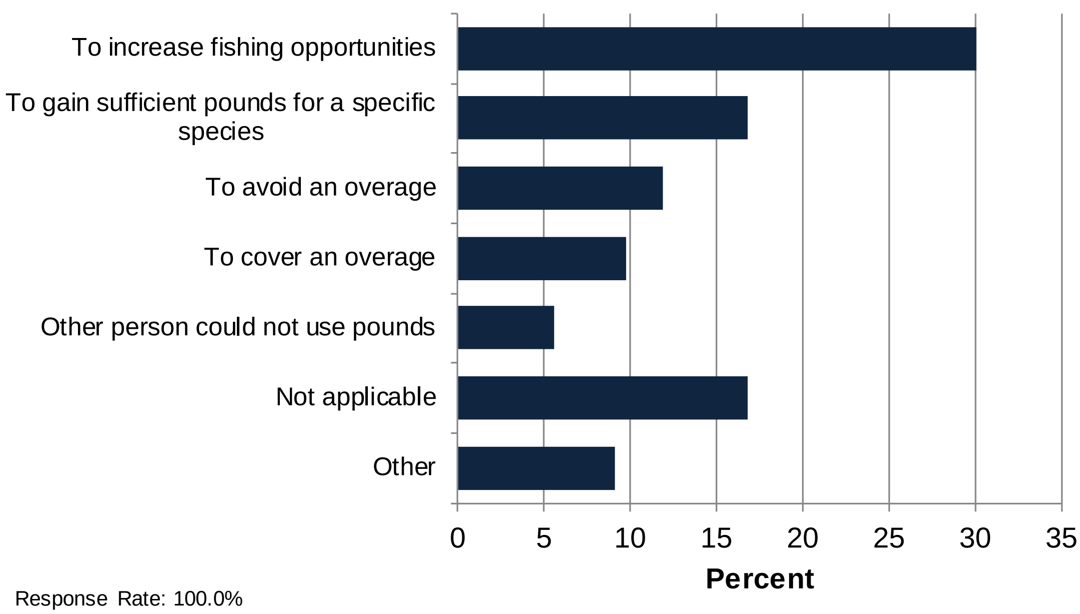

Figure 35. Why additional pounds were received.

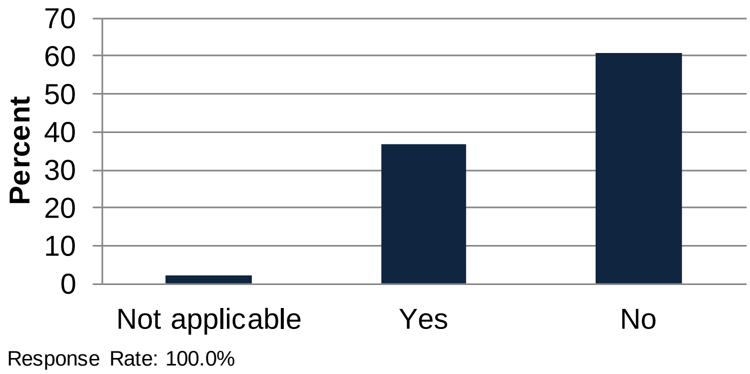

Figure 36. Initial allocation meets expectations?

The initial allocation of quota pounds did not meet 60.7% of quota share permit owners' expectations (Figure 36). The allocation met the expectations of 36.9% of permit owners.

Future Plans

It appears that the majority of respondents plan to continue their participation in the West Coast Groundfish Trawl fishery (Figure 37). More respondents plan on acquiring more quota pounds and quota shares in order to prosecute the fishery. The majority of participants also plan on participating in other commercial fisheries, with the top three being Dungeness crab, shrimp, and albacore.

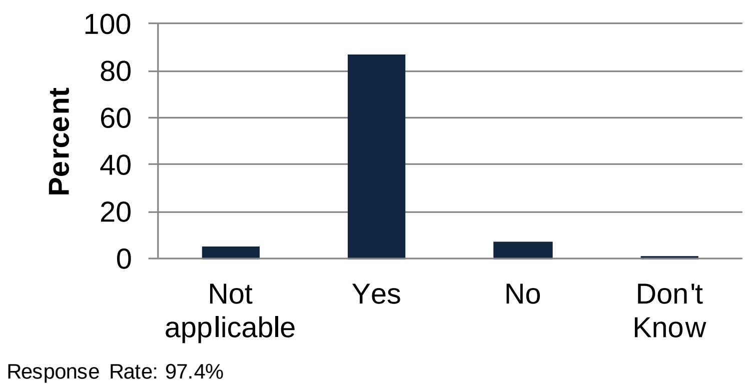

Figure 37. Continued participation in the Groundfish fishery.

When asked if they planned on continuing their participation in the Pacific Coast Groundfish Fishery, 86.7% of respondents indicated that they planned to continue.

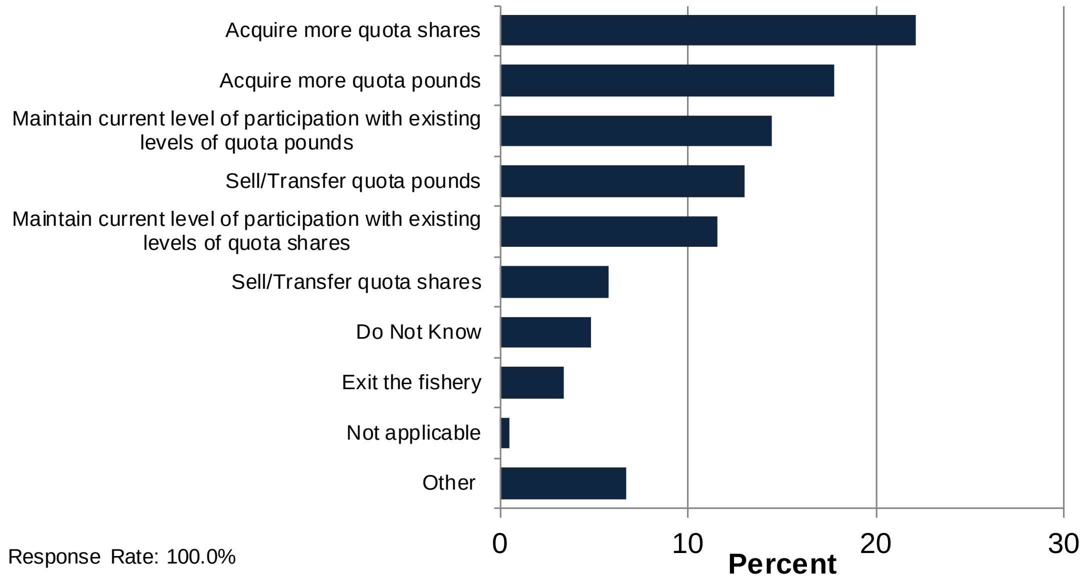

Figure 38. Quota shareholders future plans for the Groundfish fishery.

Quota Share Permit owners were asked what their future plans were regarding their quota pounds as well as their quota shares. Respondents were able to select all the options that applied. 22.1% of respondents indicated that they wanted to acquire more quota shares when possible; 17.8% planned on acquiring more quota pounds (Figure 38). More respondents indicated that they planned on selling/transferring quota pounds before they would consider selling transferring their quota shares. 3.4% of respondents plan on exiting the groundfish fishery altogether. Overall, there appears to be a desire to remain in the groundfish fishery.

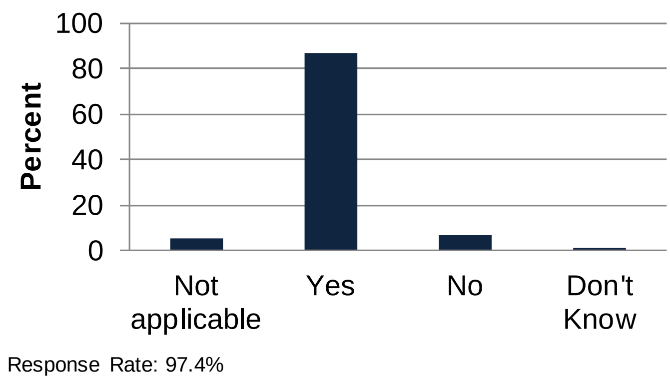

Figure 39. Continued participation in other fisheries.

86.7% of respondents indicated that they planned to continue participation in other commercial fisheries (Figure 39). The top three other fisheries that fishermen plan on participating in include Dungeness crab (25.1%), Shrimp (18.65), and Tuna/Albacore (9.5%) (Figure 40).

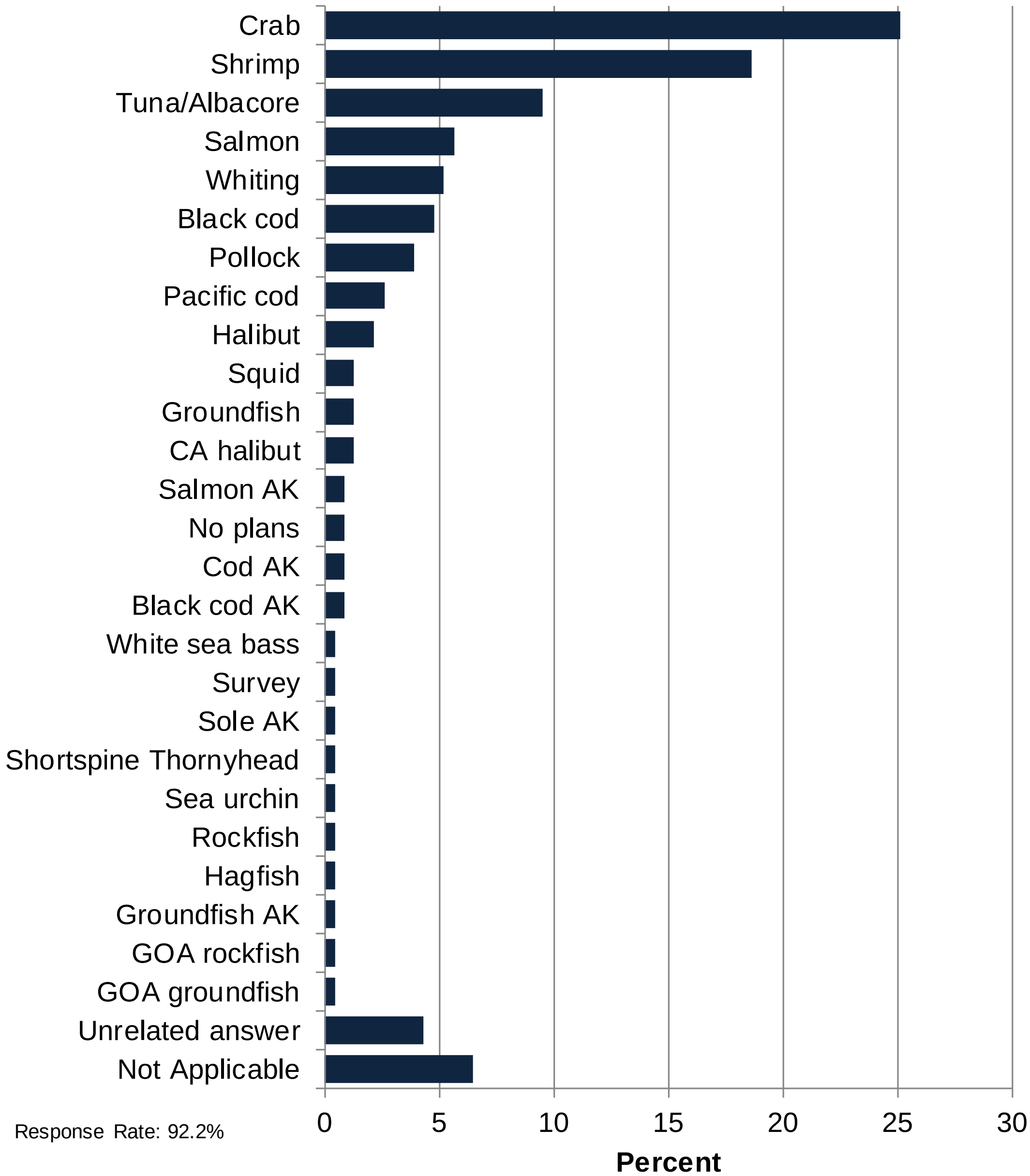

Figure 40. Planned participation on other commercial fisheries.

Discussion

The organization of results from our survey and interviews by theme is intended to more clearly communicate our findings in a means that has utility to managers and stakeholders. The augmentation of the survey data with the interview data, provides a clearer context to the information. Each of the themes, graying of the fleet, changing social relationships, program perceptions, and fisheries participation, provide unique information on what is happening in the fisheries.

Graying of the Fleet

The perception of graying of the fleet is pervasive and is supported by the survey results and interviews. Data indicates it is indeed present in the Groundfish fishery, over half of the fishermen are 50 years old or older. This is also acknowledged by study participants in their interviews. Most of these older fishermen started fishing when they were young, by the age of 25 and then stayed in the industry. Over half of the fishermen in both data collection years indicated they had been fishing for more than 31 years, some as many as 50 years. Younger entrants were indicated by the number of years fishing (0-5 years) in 2010, 9.8%, which dramatically dropped to 2.6% in 2012. Many of these fishermen also indicate a they come from multi-generational fishing families. They worked on their family member's boats and became fishermen themselves. This graying is not limited to fishermen, other industry suppliers such as net suppliers and service providers also show over half of the respondents are over 51 years old for both survey years.

Qualitative data provides insight into the lack of new entrants into the fishery. Perceptions that the Groundfish fishery is consolidating is as is a dying fishery doesn't draw the interest of new fishermen are perceived as discouraging new entrants. Respondents indicate the fishery needs to be more lucrative to draw new entrants, and that regulatory restrictions and financial barriers are contributing factors that discourage entry.

Why is this important? Many wonder who the future fishermen will be. Respondents worry about a loss of knowledge in the fishery. Some respondents have described the old process of becoming a fishermen like an apprentice program, where you worked on the back deck learning from more skilled fishermen. While this issue may be prevalent in different types of fisheries, respondents indicate groundfish fishing is more complex and with prohibited species, higher levels of skill are required to successfully execute the fishery. Industry suppliers also provide insight into the difficulty to recruit and train new staff. Respondents comment on the need for programs to draw new entrants. These programs shouldn't be limited to teaching skills but should also assist with financial limitations that otherwise would limit fishery participation. While the perception of 'greying of the fleet/ is not necessarily a result of the Catch Shares system, respondents communication of several limitations due to the catch shares program may be a contributing factor.

Changing Social Relationships

As pressures of a changing fishery management system affect the business practices of those operating in the system. Relationships between individuals and businesses are likely to change as well and these changes in turn affect the well-being of the people involved in the fishery. Relationships may change for better or worse in some cases. Measurements of quality of life exhibited little movement between 2010 and 2012 before and after implementation of the catch share program. Concepts such as 'standard of living' have shown a small overall improvement between survey years, and 'compensation and pay' shows improvement as well. Job stability appears to be changing slowly where there is a slight in increase in excellent responses in 2012 as well as a decrease in poor responses, but a slight decrease in those reporting a good response in 2012. Our study suggests a prevalent perception that stability is improved overall.

Fishermen were specifically asked about their relationships in the industry. Results for people in 'harvesting' roles from the 2012 survey indicated the greatest changes in relationships between fishermen and observers, permit owners, and vessel owners, and captains/operators. Relationships with all these entities overall trended toward the negative, whereas positive ratings declined. Observers were the highest level of concern, where inexperience of the observers was a major contributor to the concern. With regards to the permit holders and crew, the first poor ratings appear in the 2012 and there is a dramatic decrease in good ratings. Qualitative data also indicated greater issues for crew/captains on boats who lease pounds where pay is less due to more fees to cover observer costs and lease fees are taken out of their cut. This bears concern as more people are less willing to indicate positive relationships and over time may contribute to lower job satisfaction or people shifting within the industry to try and find better socially acceptable arrangement for work.

When fishermen were asked to rate their relationships to the processing sector, results also trended towards the negative. In this case the negative ratings did not increase, but, the positive ratings decreased, especially between fishermen and buyers/first receivers and fishermen and processors. A small number of qualitative responses as to why relationships change speak to pricing issues, delivery date issues, other processor controls. However, others speak of improved and new relationships as everyone was learning how to work in the new system. The data with regards to how fishermen relate to processors is still changing, and this information is an indication of how its changing.

Processors also showed similar negative trends in relationships as fishermen with an additional complication. Processors showed their greatest challenges in relationships with laborers or plant workers. Results show an appearance of a negative rating in 2012 that was not present in 2010. Indications from qualitative data suggest the lack of work is a contributing factor. Other relationships appear to be suffering as well with the exception of the relationships with permit owners. Again we infer from the qualitative data that some reasons for this success were the necessity to work together to work under the new system which ultimately generated some trust.
Data show both on boats and onshore relationships are changing. We are starting to see issues due to the pressures of the system. Will these issues contribute to the difficulty in finding crew in the future? Will plant workers have to find other jobs? Will relationships need to bend and

become more flexible to be successful in this fishery. These are all questions we should continue to explore as the new management system matures.

Program Perceptions

Our study provides information on how people viewed the rationalization program, both prior to and after implementation. This provides insights into concerns, benefits, difficulties, and challenges of the catch shares program. Rather than pre-supposing areas of concern, we asked questions outright to better gauge the atmosphere in the communities as it relates to the Catch Shares program.

The measurements of support of the program changed between survey years, where more support was indicated in 2012. The percentage of respondents not supportive of the program only decreased slightly as well, so the responses are more evenly distributed post implementation that prior to it. The relative increase in support could be coming from some of the undecided responses in 2010, but may be due in part to refusals to participate by disaffected individuals. However, we can't overlook the lack of support of the program only decreased slightly as well, State analysis also show the majority of lack of support of the program comes from California, while the majority of support for the program comes from Washington, followed by Oregon. This is interesting to note, as the fleets in different states and the alternate fisheries they participate in are different up and down the coast. As a result, the impacts of the program on different geographies appear to be different, as we expected.

Support of the program appears to have been influenced in 2010 by uncertainty and lack of knowledge of the program, which resulted in more negative responses. This underscores the importance of good outreach and communication as new management programs are developed and implemented. In addition, in 2012, it is believed that positive responses were affected by the non-response rate, where those whom were removed from the fishery within the first year after implementation, and refused to participate in our data collection effort, may have contributed alternate perceptions here. With that said, the results are so similar, rates may only have leveled out more.

When asked why they support the catch shares program the top reason in both years, is a reduction in bycatch. An increase in market value and an increase in business flexibility were also in the top five in both years, though their ranking changed. Changes in 2012 included the addition of an increase in individual accountability and an increase in safety. Improvement of product quality and more stable income, which had been top reasons for support in 2010, dropped out of the top reasons in 2012.

In considering why respondents did not support the catch shares program, the reasons changed between survey years. In 2012, the top reason became problematic observer coverage, followed by an increased cost to enter the fishery, fewer jobs, impacts small boats/small businesses negatively, and increased cost to remain in the fishery. This removed the responses of a decrease in income, loss of business and community infrastructure, and boats leaving the fishery and negatively impacting the community from the top 5 reasons in 2010. This may represent a difference from what was expected when surveyed in 2010 and what was experienced in the 2012 survey effort.

These survey data were supported by interview data where some common themes reflected benefits and concerns of the program. Benefits include stability and business flexibility which allows for better planning and participation in multiple fisheries. Some speak to a using the flexibility for vessel repairs at earlier times as their catch is guaranteed. The issue of bycatch is an enigma. Participants communicate the benefits of reduced bycatch , where gear changes to include excluder devices and changed fishing practices have contributed to the success of bycatch reduction. On the flip side, others communicate concerns of being shut down for catching minimal 'choke species' and having to lease 'choke species' because they didn't receive any in their allocations. Observers are continue to be a vocal issue. While some indicated positive relationships in 2012, most still communicate issues with space on the vessel and cost being prohibitive. One of the new issues that arose during 2012 is the availability of observers, where fishermen would have to wait to get one, and sometimes this would work against them, as they would then fish in bad weather or when they didn't want to because an observer was available. Interview data here continues to provide a little more detail that further explains what we have learned in the survey data.

Through the measurement of program perceptions from pre to post catch shares we can see the difference between what people expected in a new program and what happened upon implementation. Support levels changed, the reasons for support or not supporting the program changed based on what happened in the first year and a half of the program.

Fisheries Participation

Fisheries participation helps inform what fisheries are being targeted, whether there have been changes in effort in other fisheries, is gear use changing, are there changes in business transactions, and are there changes on the boats. All this information informs how members of the industry are adjusting to sustain, maintain, succeed, or merely survive under this system.

Trawl fishermen appear to be shifting some of the species they catch, the gear they use, and the fisheries that they participate in slightly. Pacific Coast Trawl harvesters may be focusing more effort on Dungeness crab, and to a limited extent Shrimp. Qualitative data also indicates they are changing the Groundfish species they target due to both allocated species as well as to reduce the potential of catching overfished species. Shift in effort also refers to fishermen who are more fully utilizing permits that they already owned, but have not fished in recent years, rather than fishermen entering entirely new fisheries. Whether this shift is due to Catch Shares or other factors such as good Dungeness and Shrimp years, market forces, or reductions in the overall TAC for certain groundfish species, remains unclear. Fishermen also report when working with processors, consistently across both data collection years they are limited in the number of processors available to them to sell their fish. Other considerations when selling fish include market, the amount paid by processors, and the location of the processors. Both fishermen and processors consistently indicate they maintain 'longstanding relationships' or 'mutual agreements' as to the sale/purchase of fish.

On the 2012 survey instrument additional questions asked about quota allocation and pound transfer activities. Slightly less than half, 43.8%, of the respondents to this question indicated they transferred their pounds to another vessel. Primary reasons to do so include mixes of species they didn't typically fish, because the allocations didn't make it feasible to fish, so leasing was the only option available, or to transfer for other species for processors to obtain sufficient deliverables of specific species. A majority of respondents also indicated they leased quota pounds primarily to increase fishing opportunities.

Despite these limitations or changes, the vast majority of respondents report that they intend to continue participating in the Pacific Coast Groundfish Fishery. Quota shareholders indicated they intend to acquire more shares and pounds in the future. Fishermen indicate they intend to stay in the Groundfish fishery and also continue participation in the crab and shrimp fisheries as well.

Conclusion

The information presented here is a theme based subset of the larger data set collected. It is important to emphasize the design of this research. Each year of data collection represents perspectives and provides insight into what is happening in the fishery at the time of data collection. A snapshot in time, if you will. Many factors can influence those perspectives between data collection periods. Hence the need for supplemental data collection efforts to understand influences and factors that may elicit change.

Some changes within systems may be rapid, while other may take time to emerge. The information presented here is early in the process and represents some of the immediate changes seen in the system. Some of the information may also raise new questions that bear further exploration.

We believe this information is indeed showing change as a result of signs of consolidation, observer coverage, bycatch species, and other pressures continue to influence business considerations. While some fishermen have learned to succeed, others have exited the Groundfish fishery and either retired from fishing overall, or moved to other fisheries.

It is our aim to continue this research through more in-depth analysis, and funding dependent, more data collection, to learn what else has changed since the 2012 data collection period.

Some caveats to our results, particularly to comparisons between 2010 and 2012 are in order. While our results indicate many changes between 2010 and 2012 our ability to determine whether these changes reflect statistically significant change in our population of interest is limited by the lack of a known sampling frame for participant groups other than permit holders. This makes it difficult to distinguish in some cases whether changes are due to changes for a given set of individuals vs. changes in the sample itself. The latter could reflect both changes in who is participating in the fishery, but could also be impacted by who participated in the survey (or refused to).

Additional analysis will be continued to determine more specific trends and clarify perceptions within the data. This will include analysis at the community level where confidentiality can be protected, and analysis on the repeat participants only to determine if there are differences in their perceptions over time. Each question asked and piece of data run, provided an additional layer of insight. We aim to continue to provide such insight in future reports.

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Agenda Item J.5.b
Supplemental NWFSC PowerPoint 1
(Electronic Only)
November 2014

NOAA FISHERIES
Northwest Fisheries Science Center

Economic Data Collection (EDC) Program Report

2009-2012 Report

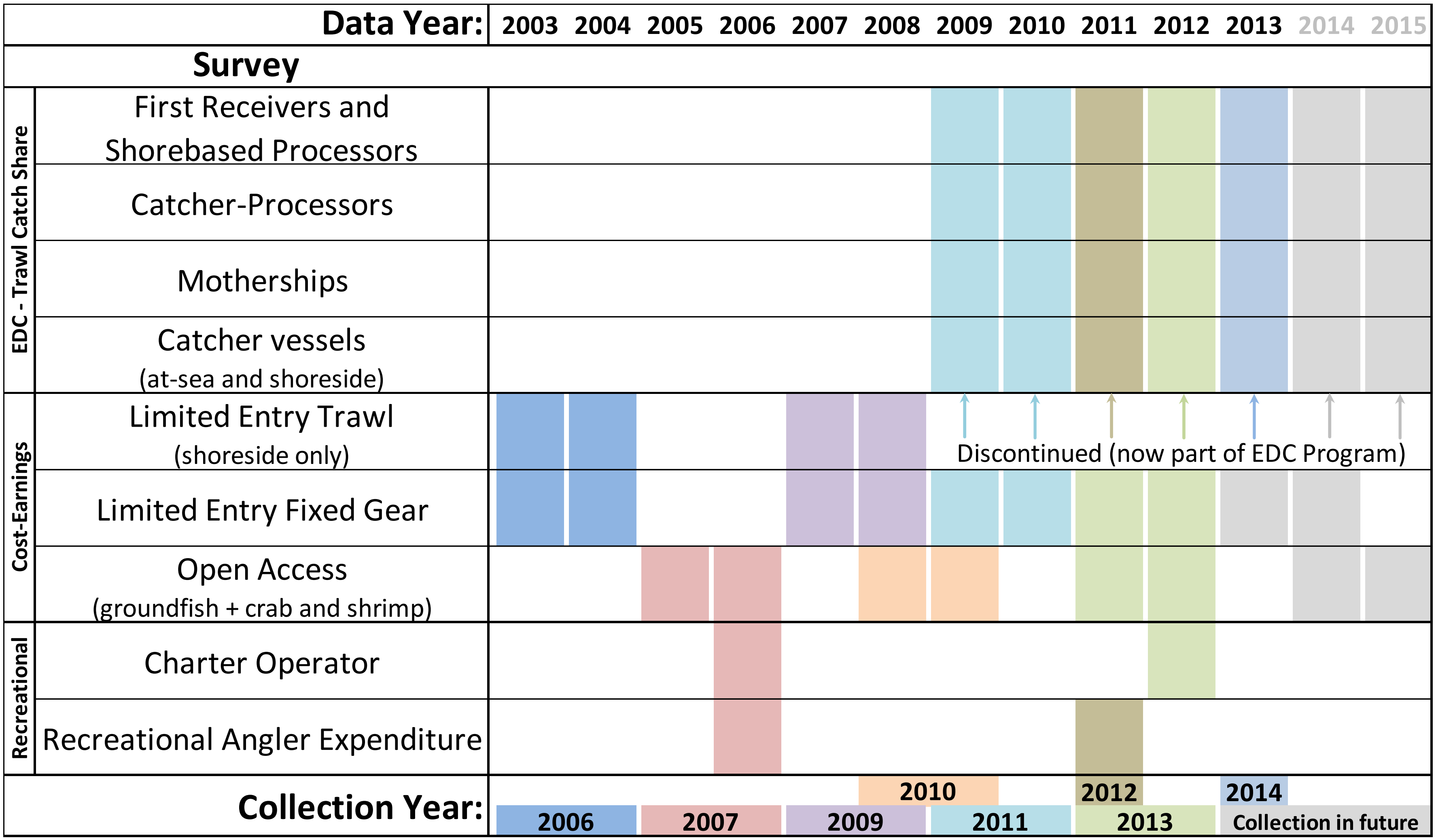
Erin Steiner, Todd Lee, Abigail Harley, Marie Guldin, Lily Hsueh, Lisa Pfeiffer, Su Kim
Economics and Social Science Research Program

November 2014

Thank you

- Industry Participants
- Council and Advisory Bodies
- West Coast Region
- Office of Law Enforcement
- General Council
- NWFSC Economists
- Communications Office

Economic Data Used in Harvest Specification Analysis: IO-PAC and Net Revenue



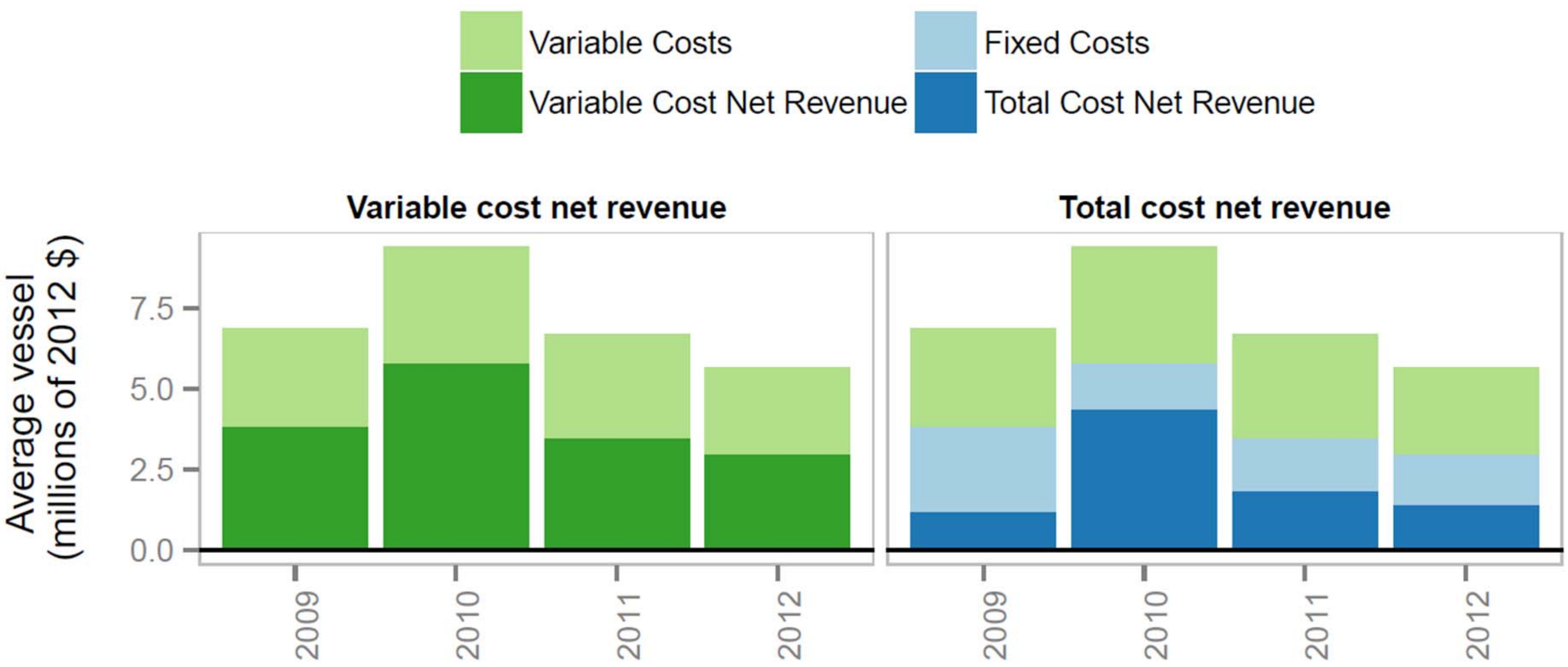
EDC Net Revenue Measures

- Types of Costs
  - Variable Costs (VC)
    - Vary directly with changes in output (e.g., fish harvest, or processed fish production)
    - Vary over a relatively short time period (e.g., a fishing trip, or day of processing)
    - Examples: Fuel, wages, food, bait, utilities, materials and supplies
  - Fixed Costs (FC)
    - Do not vary directly with changes in output
    - Occur over a relatively long time period. They are often periodic.
    - Examples: engine, haul out, gear, machinery, buildings
- Length of time period is important
  - Each instant, hour, day, trip, season, year, multiple years
  - For the EDC think about a day for VC's and a season or year for FC's
- Total Costs = VC + FC

EDC Net Revenue Measures

- Variable Cost Net Revenue: (Revenue − VC)
  - Measures net returns excluding overhead
  - Answers question of how net revenue would change if harvest or production were to increase over the short-run
- Total Cost Net Revenue: (Revenue – VC – FC)
  - Measures net returns including overhead
  - Answers question of longer-term economic viability
  - Lumpiness of FC's means it will likely fluctuate more
- We are exploring options to better address the use of FC's
- Not all costs are included in EDC forms. Excluded costs are mostly fixed costs.

Net Revenue Example



Economic Measures

Economic Net Benefits

- Variable cost net revenue
- Total cost net revenue

IO-PAC

- Income
- Output (sales)
- Employment

Overview of Presentation

- Background and Purpose of EDC
- Overview of the EDC Reports
- Findings
  - Catcher Vessels
  - First Receivers and Shorebased Processors
  - Motherships
  - Catcher Processors
- FISHEyE

EDC Program

- Background:
  - Mandatory Economic Data Collection was initiated as part of the West Coast groundfish catch share program
- Purpose
  - Monitor economic effects of the catch share program
  - MSA requirement of 5 year review
  - Biennial PFMC Groundfish Specification Process
    - Net Revenue Analysis and IO-PAC
  - Other FMP analyses

About the Annual Reports

- Structure
  - Data Summaries
  - NEW Infographics
  - NEW Overviews
- Purpose
  - Document EDC methods
  - Summarize confidential data to provide basic economic information
  - Solicit feedback
- Final versions of theses reports will be published around January 1st
- Future Annual Reports

Web Forms!

First Receiver and Shorebased Processor 2013

Form ID: 7433

Step 1 2 3 4 5 6 **7** 8 9 10 11 12

V. Expenses and Depreciation

Export | Print Responses | Review | Next | Validate | Previous | Save and Exit

12. Provide the total **expenses** on **utilities** at your facility in 2013.

Utility Expense Category	Total Expenses
Electricity	$ 69,400.00
Natural gas	$ 34,932.00
Propane gas for transportation and processing	$ 4,932.00
Other gas (not gasoline)	$ 9,420.00
Water	$ 49,124.00
Sewer, waste, and byproduct disposal	$ 1,239.00

13. Provide the total **expenses** on **rental** or **lease payments** for this facility in 2013.

Rental or Lease Payments	Total Expenses
Rental or lease of buildings, job-site trailers, and other structures (including land)	$ 100,432.00
Rental or lease of processing machinery or equipment	$ 0.00

14. Provide total **expenses** on **repair and maintenance** on facility buildings, machinery, and equipment (see definitions of equipment in step 4) $ N/A

15. Provide the total **depreciation** for all capital investments on buildings, new and used machinery and equipment (see definitions of equipment in step 4) taken in 2013. $ N/A

16. Provide the following information on 2013 **custom processing** of fish you owned that was performed by another processor outside of this facility.

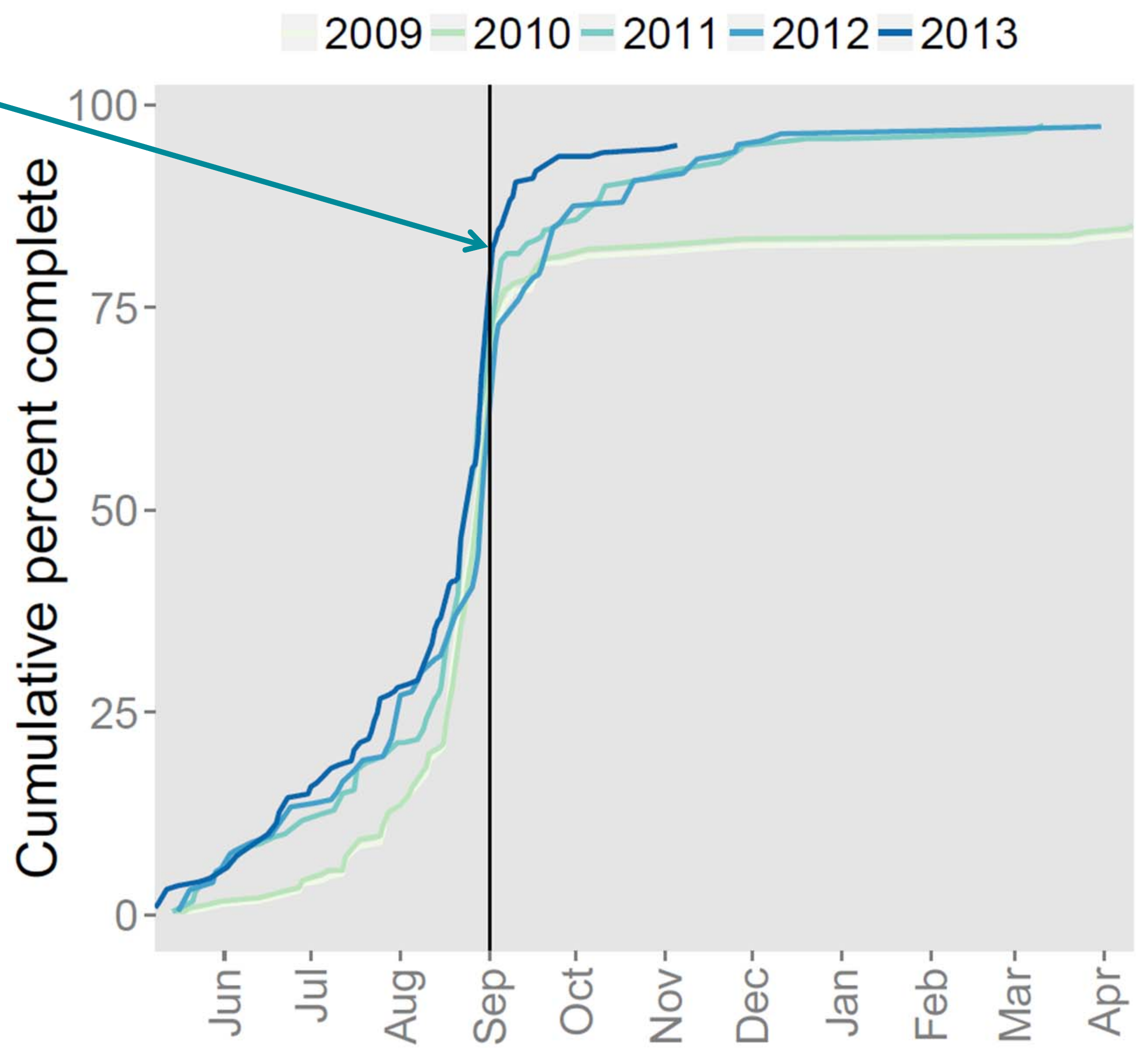
	Total weight of fish supplied to custom processors	Custom Processing Fees Paid	N/A
Whiting	N/A lbs	$ N/A	N/A
Non-Whiting Groundfish	2,349,348.00 lbs	$ 82,083.00	N/A
N/A	N/A lbs	$ N/A	N/A

Add Line

17. Provide the total amount **expensed** during 2013 in each of the categories below for this facility.

Compliance

Due Date: September 1



Sector Overviews

2012 Economic Data Collection (EDC)

West Coast Groundfish Trawl

Catch Share Program

DRAFT

CATCHER VESSELS

FISHERY PARTICIPATION

		Vessels	Days at Sea	Landings (1000 MT)
CATCH SHARE FISHERIES	*At-sea Pacific whiting*	16	38.8	40.7
	Shoreside Pacific whiting	24	55.8	65.8
	DTS trawl	58	40.7	12.3
	Non-whiting, non-DTS trawl	50	24.6	5.7
	Fixed gear with trawl endorsement	27	33.3	1.0
	Fixed gear with fixed gear endorsement	10	22.6	0.3
	Crab	61	36.3	2.1
	Shrimp	39	46.1	11.8
	Halibut	6	27.7	0.1
	Salmon	12	23.7	0.0
	Tuna	15	11.8	0.1
	Alaska	30	108.5	117.8

ECONOMIC SUMMARY*

Vessel Average

110 vessels
$406K revenue
$220K variable cost
$186K variable cost net revenue
$140K fixed cost
$45K total cost net revenue

$4K variable cost net revenue per day

Fleet-wide Totals

110 vessels
$58M revenue
$26M variable cost net revenue
$7M total cost net revenue

ALASKA PARTICIPATION

Alaska: $57M
30 vessels, typically 24 trips to AK per year

NOAA FISHERIES
Northwest Fisheries SCIENCE CENTER

SHORESIDE PARTICIPATION

Total value of catch share groundfish landings
Vessel homeports

Washington: $9.5M
16 vessels

Astoria: $15.8M
37 vessels

Newport: $10.5M
23 vessels

Coos Bay $2.8M
18 vessels

Brookings:
Crecent City:
Eureka:
$4.6M
15 vessels

Fort Bragg: $1.9M
6 vessels

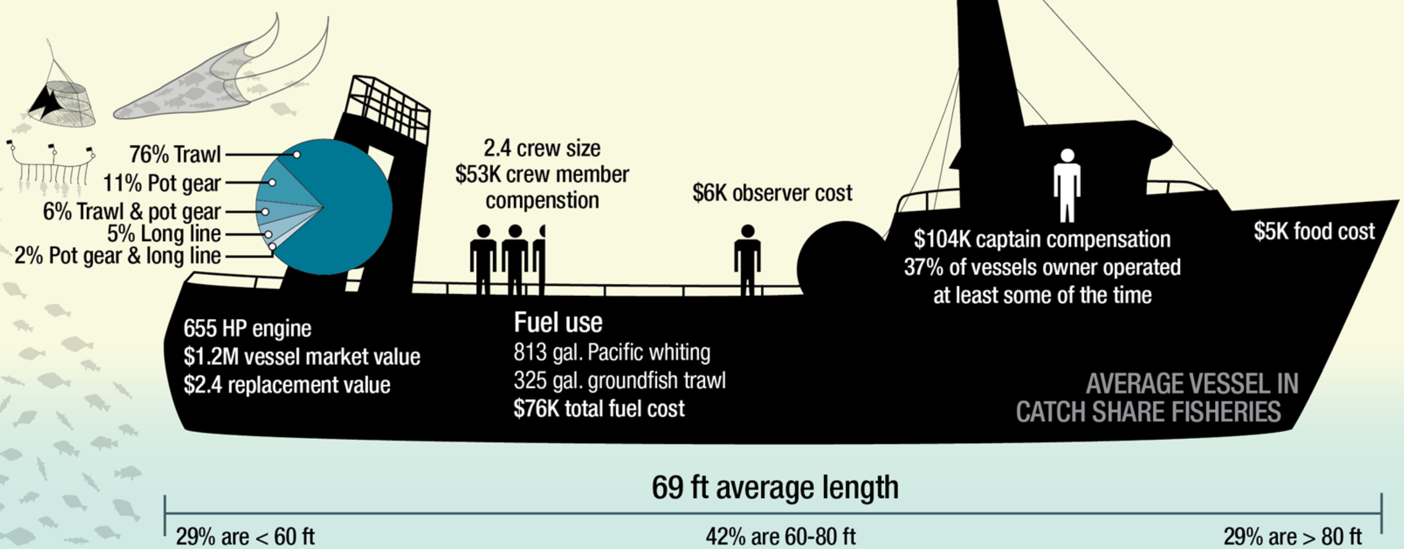
San Francisco: $0.4M
6 vessels

Monterey: $0.6M
4 vessels

Morro Bay: $1.9M
11 vessels

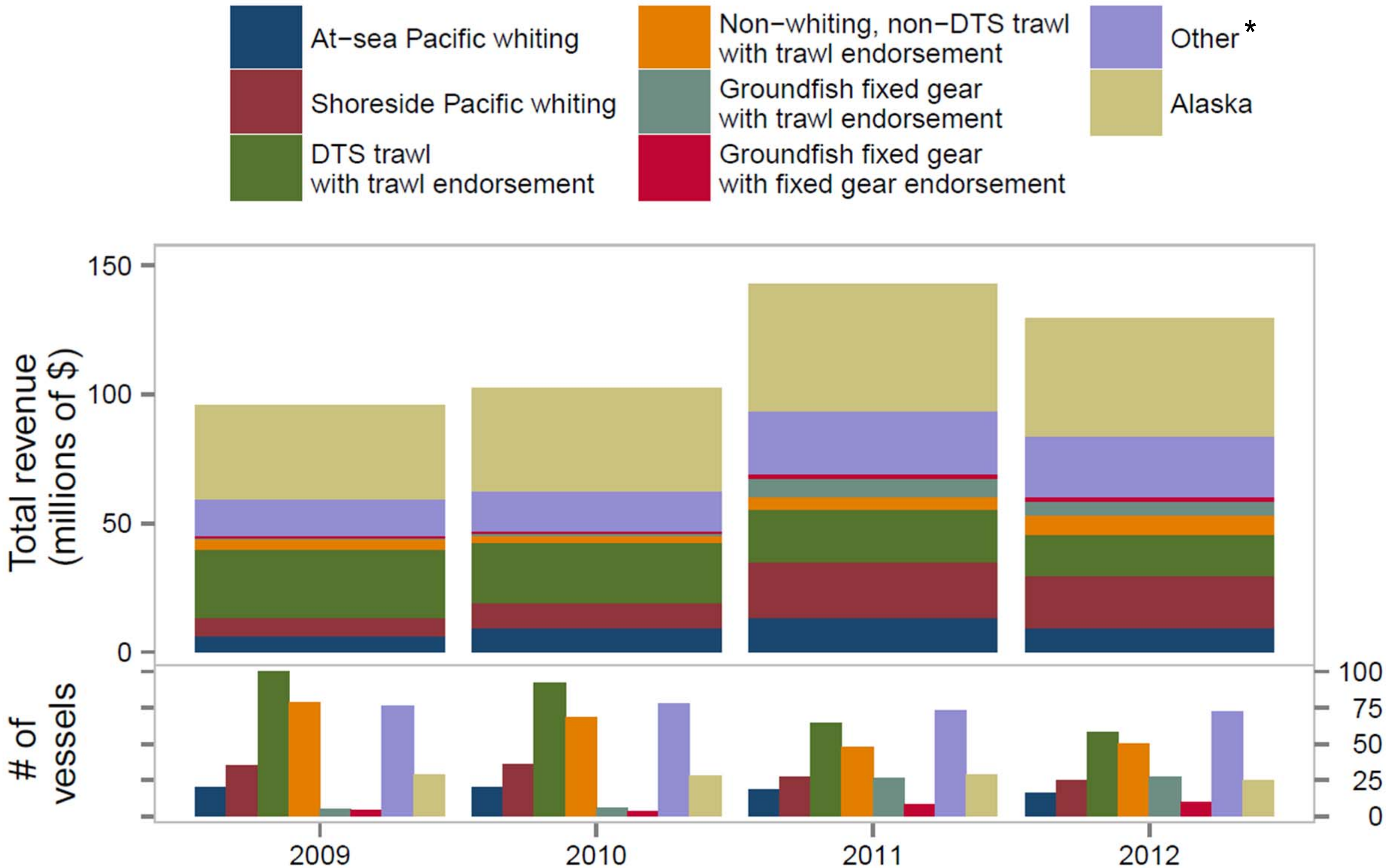
AT-SEA PARTICIPATION

At-sea: $9.3M
16 vessels



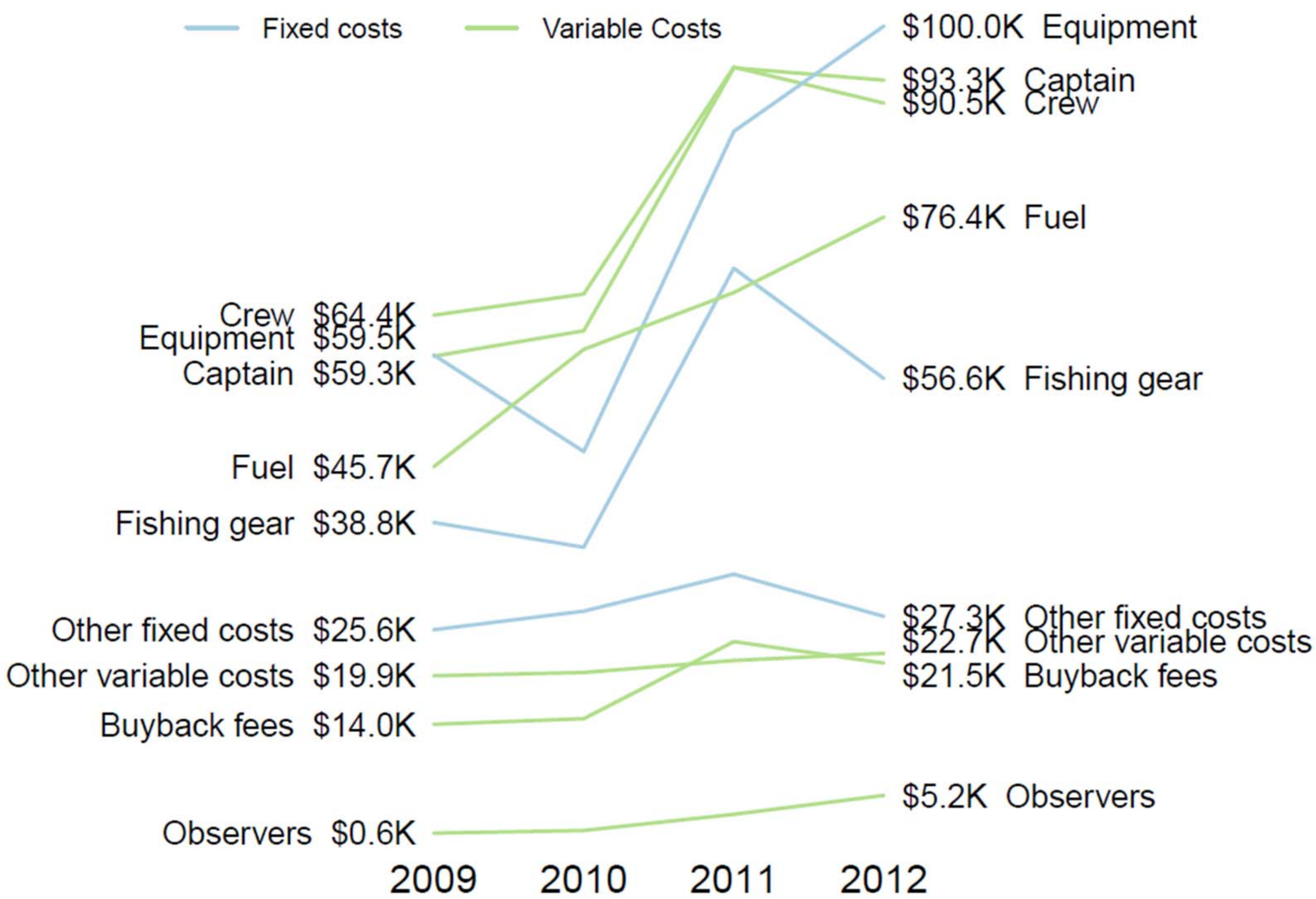
*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

Total revenue and vessel counts

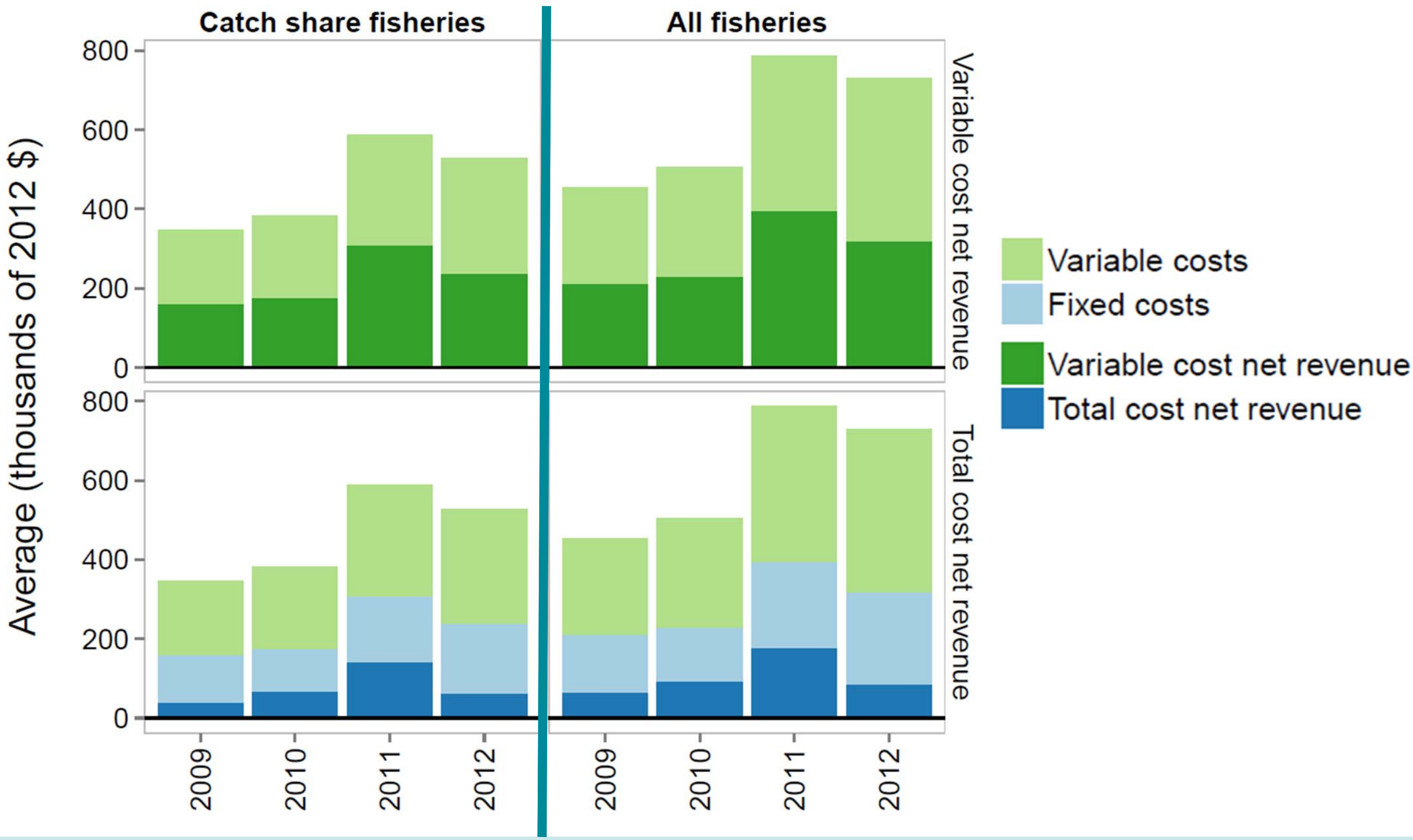


* Includes crab, shrimp, halibut, salmon, tuna

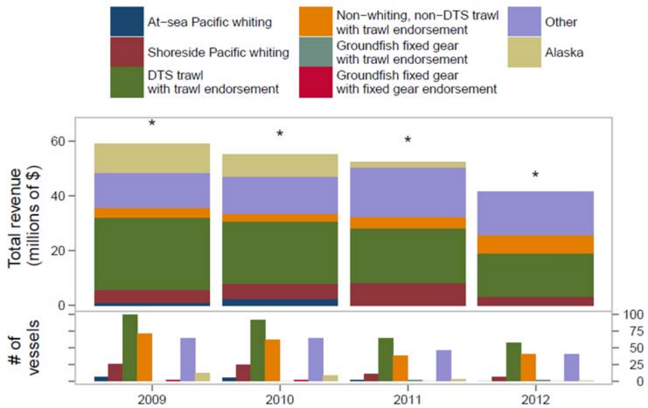
Average Catcher Vessel Catch Share Costs

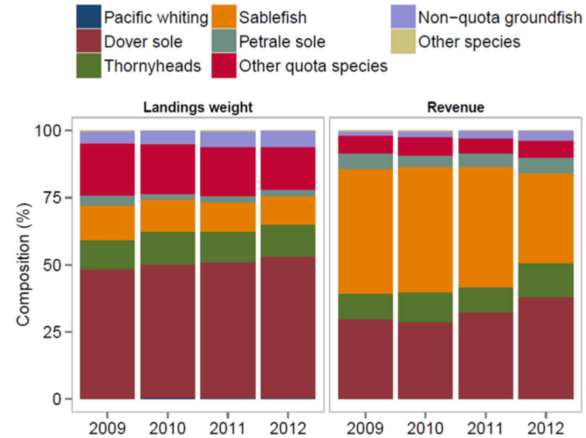


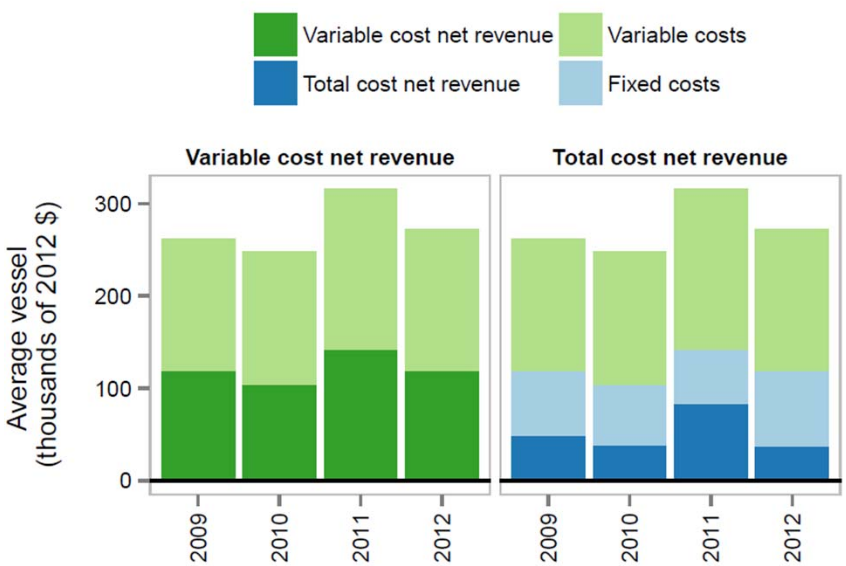
Average Catcher Vessel Net Revenue

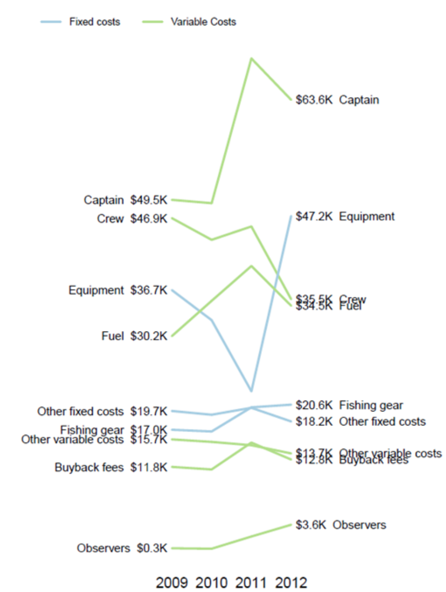


EDC Information by Fishery

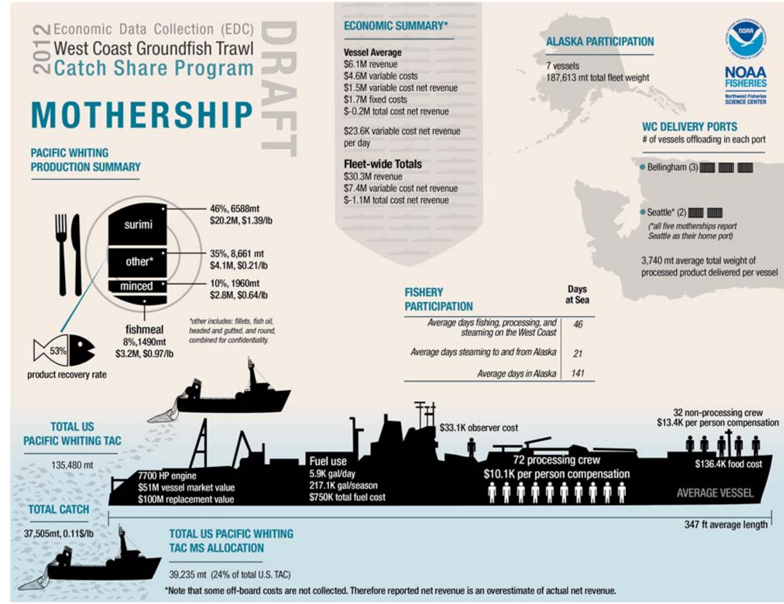


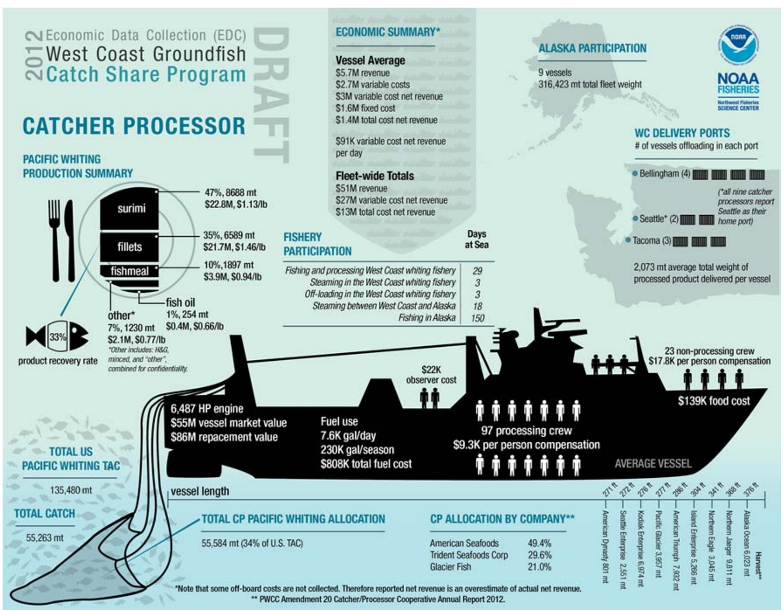


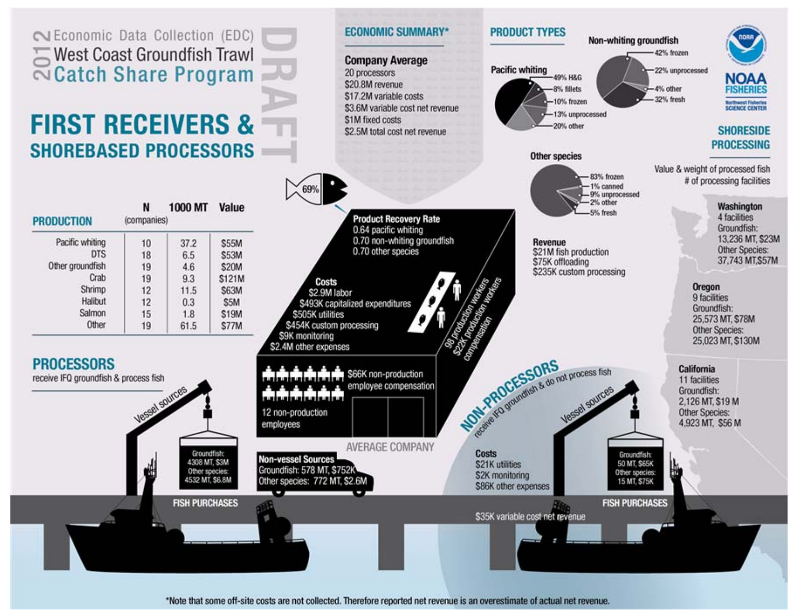




Other sectors

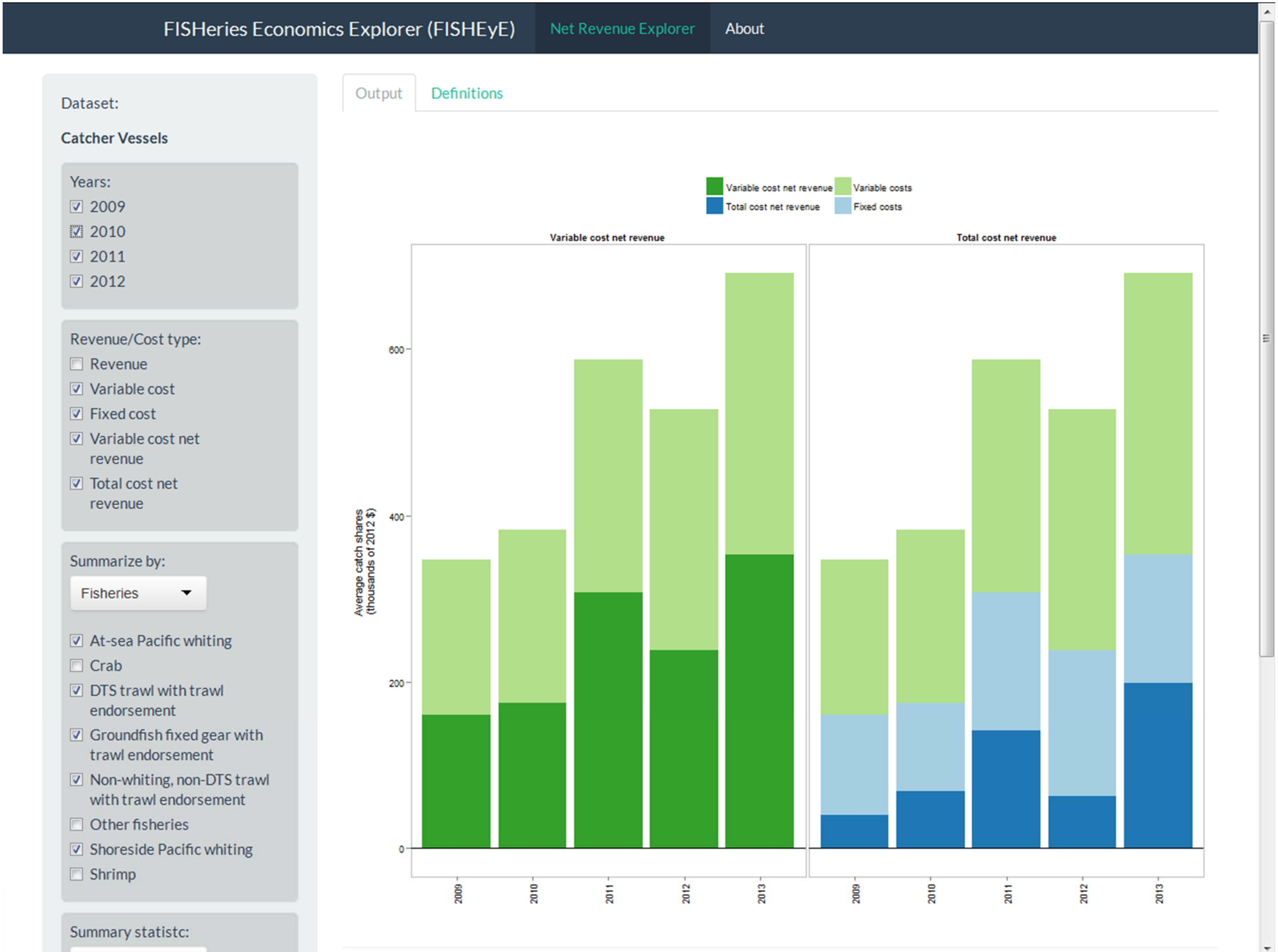


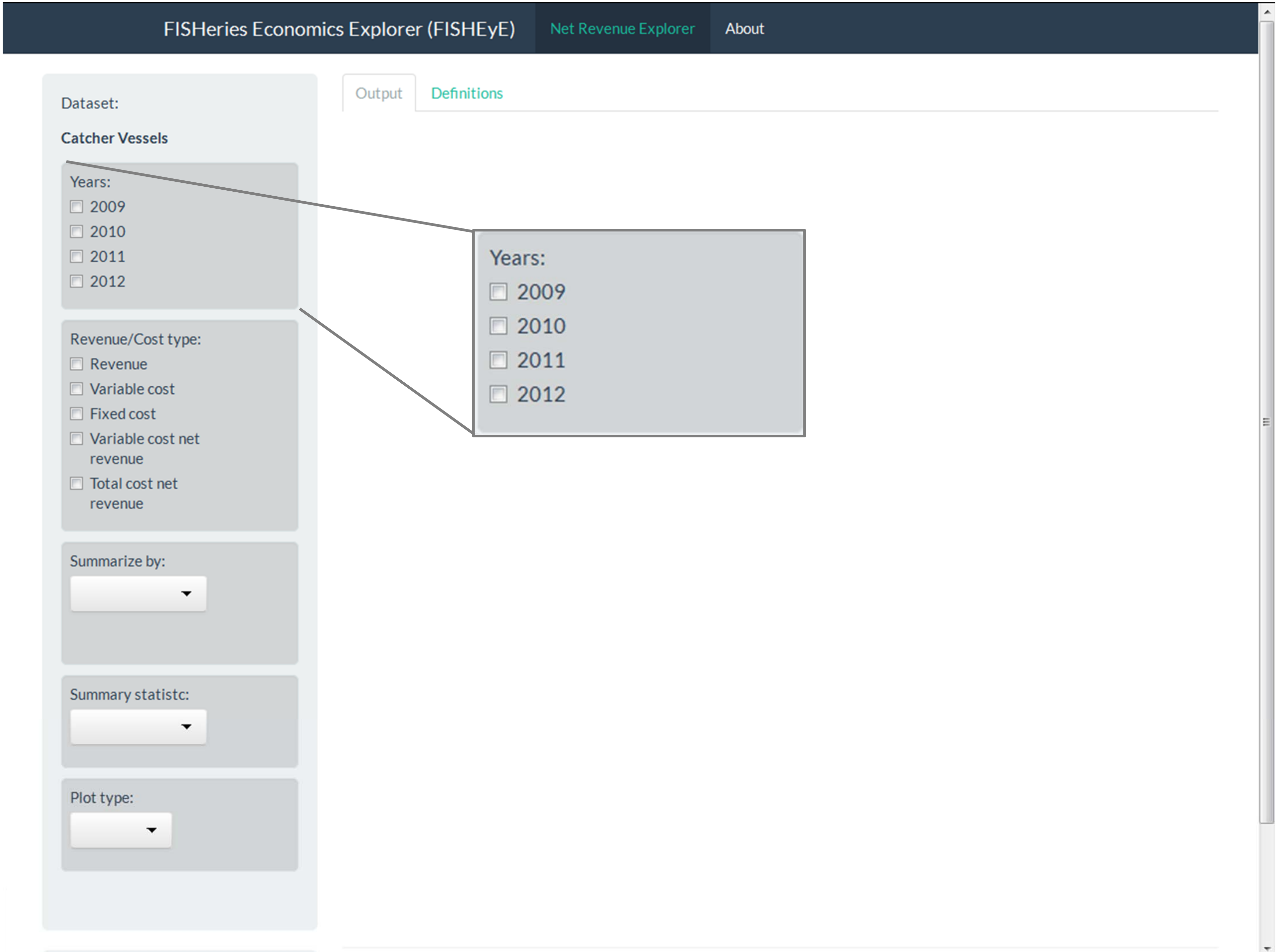


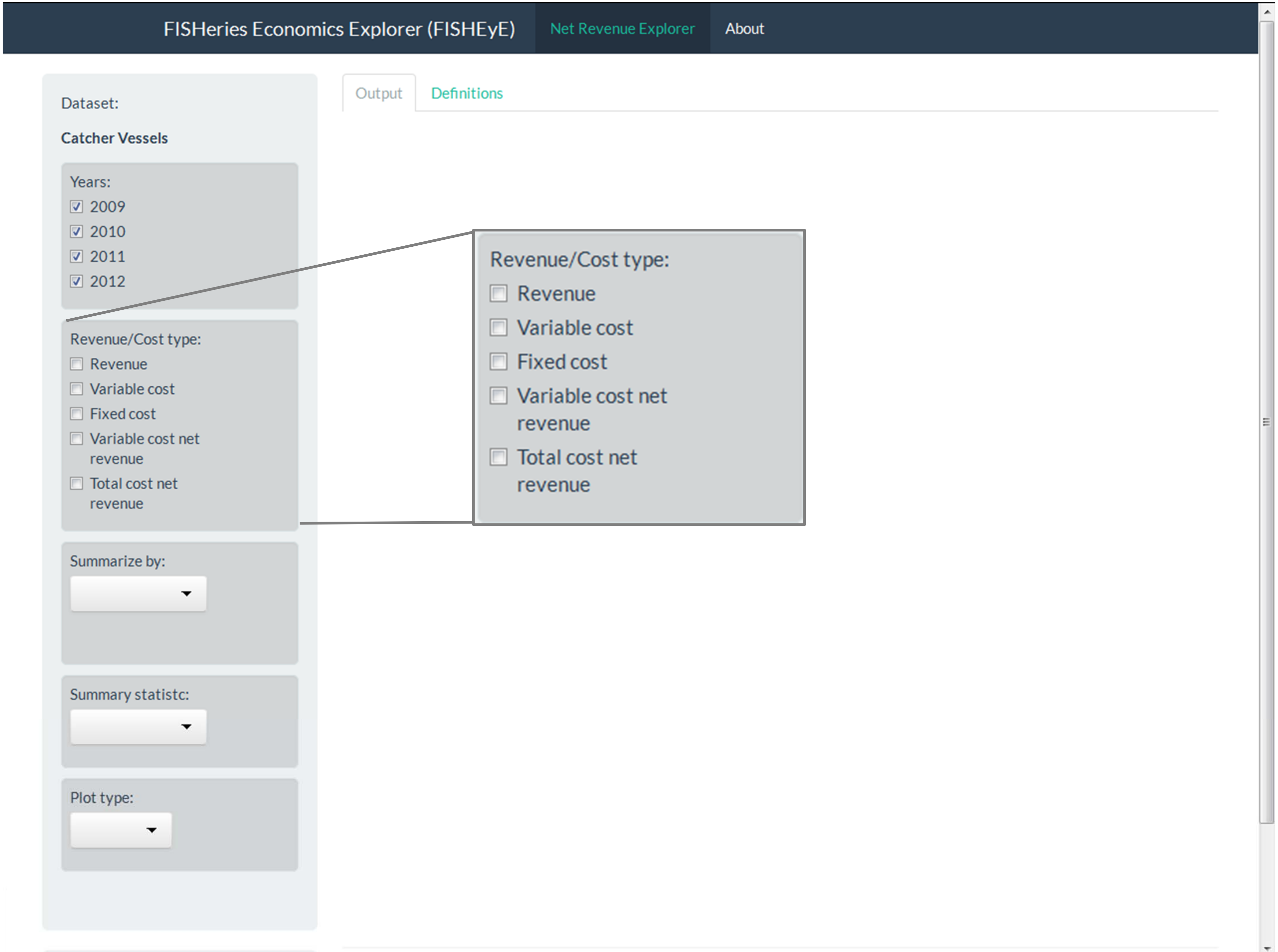


FISHEyE

SSC Econ Subcommittee Recommendation 2: Allow user defined fisheries in the web-based query interface


FISHeries Economics Explorer (FISHEyE)
Net Revenue Explorer
About
Dataset:
Catcher Vessels
Years:
2009
2010
2011
2012
Revenue/Cost type:
Revenue
Variable cost
Fixed cost
Variable cost net revenue
Total cost net revenue
Summarize by:
Fisheries
At-sea Pacific whiting
Crab
DTS trawl with trawl endorsement
Groundfish fixed gear with trawl endorsement
Non-whiting, non-DTS trawl with trawl endorsement
Other fisheries
Shoreside Pacific whiting
Shrimp
Summary statistc:
Output
Definitions
Variable cost net revenue
Variable costs
Total cost net revenue
Fixed costs
Variable cost net revenue
Total cost net revenue
Average catch shares (thousands of 2012 $)
600
400
200
0
2009
2010
2011
2012
2013
2009
2010
2011
2012
2013


FISHeries Economics Explorer (FISHEyE)
Net Revenue Explorer
About
Dataset:
Catcher Vessels
Years:
2009
2010
2011
2012
Revenue/Cost type:
Revenue
Variable cost
Fixed cost
Variable cost net revenue
Total cost net revenue
Summarize by:
Summary statistc:
Plot type:
Output
Definitions
Years:
2009
2010
2011
2012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Years:
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2010
2011
2012
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Revenue
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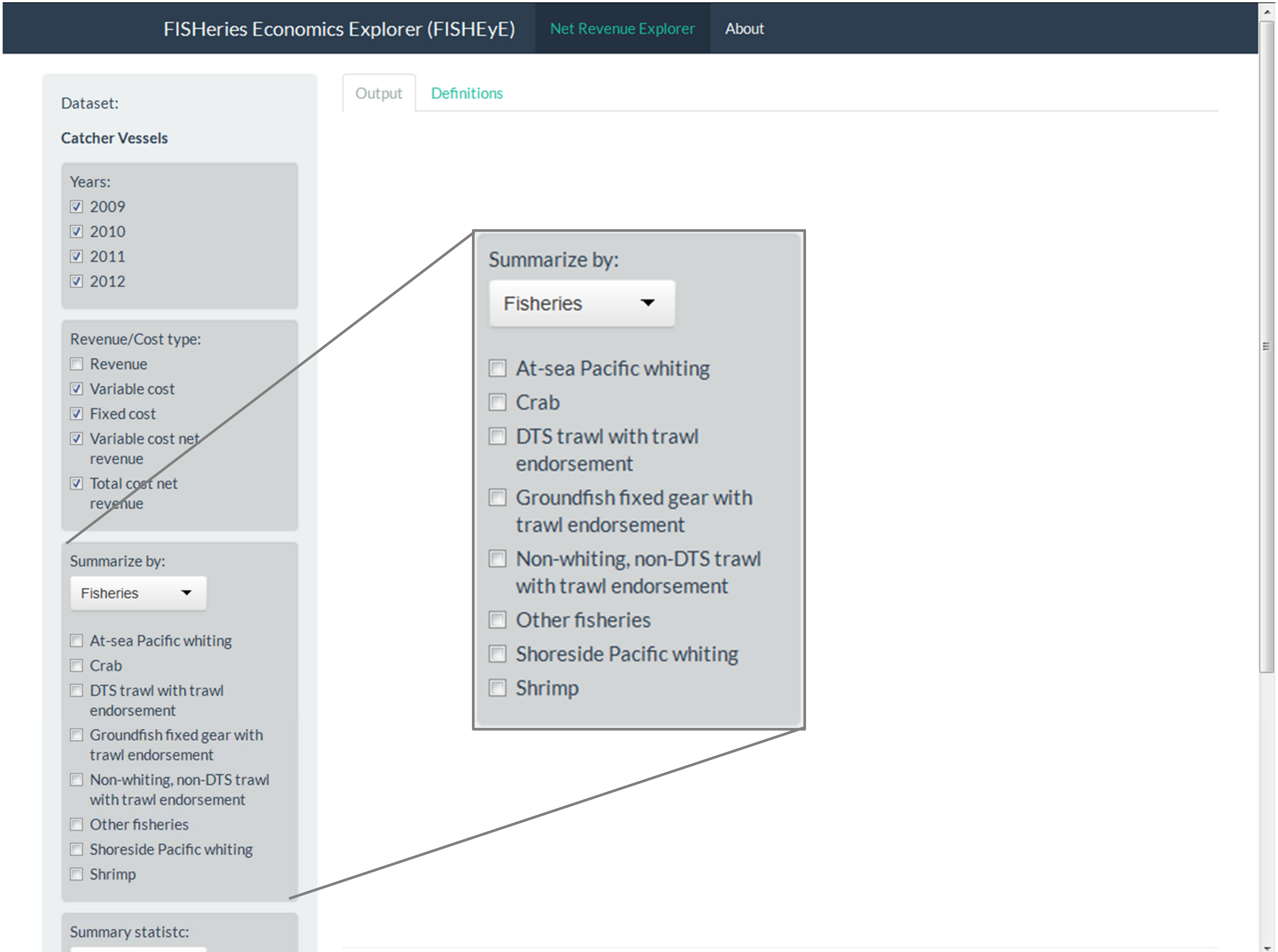
Variable cost net revenue
Total cost net revenue
Summarize by:
Summary statistc:
Plot type:
Output
Definitions
Revenue/Cost type:
Revenue
Variable cost
Fixed cost
Variable cost net revenue
Total cost net revenue


FISHeries Economics Explorer (FISHEyE)
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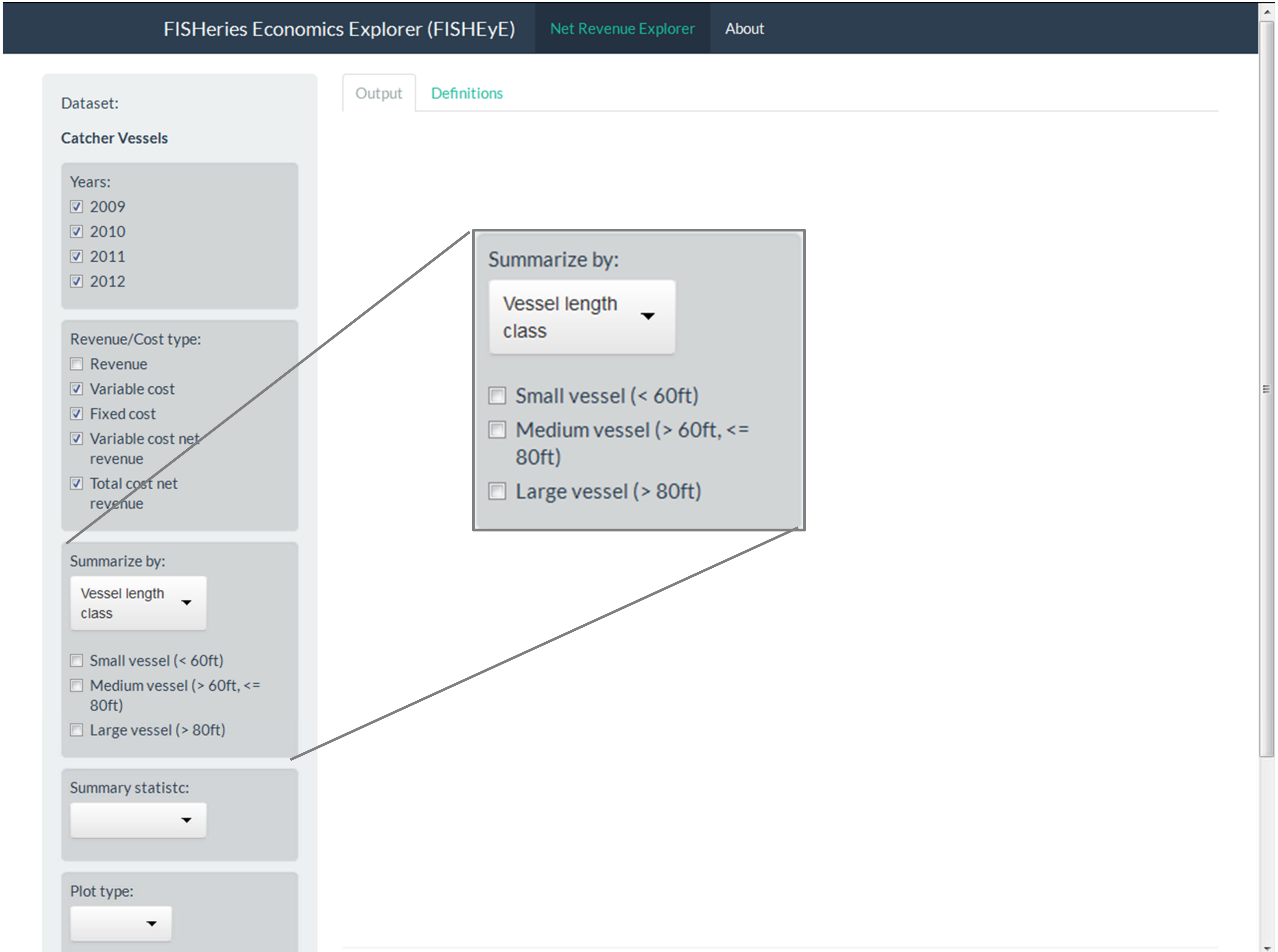
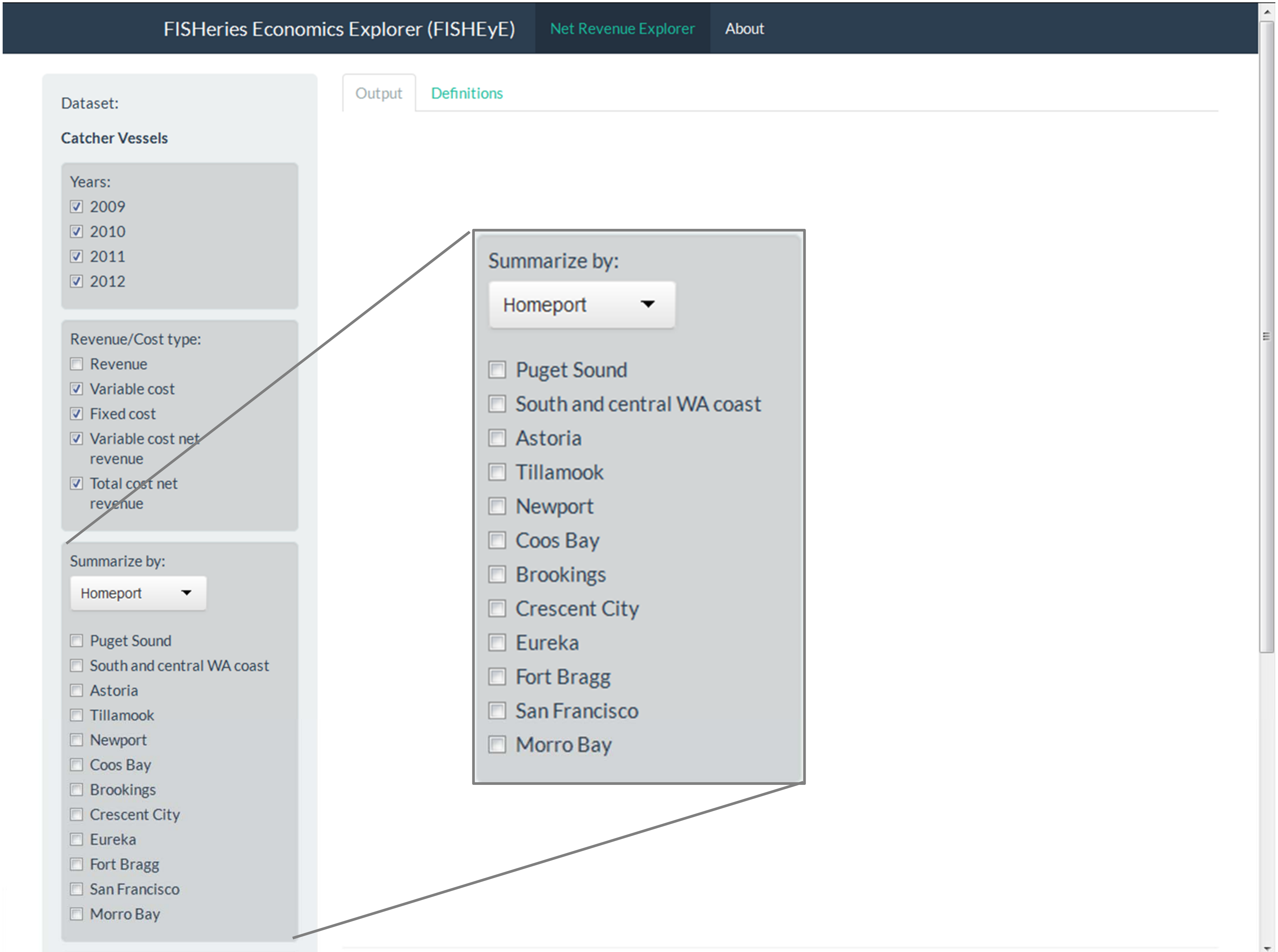
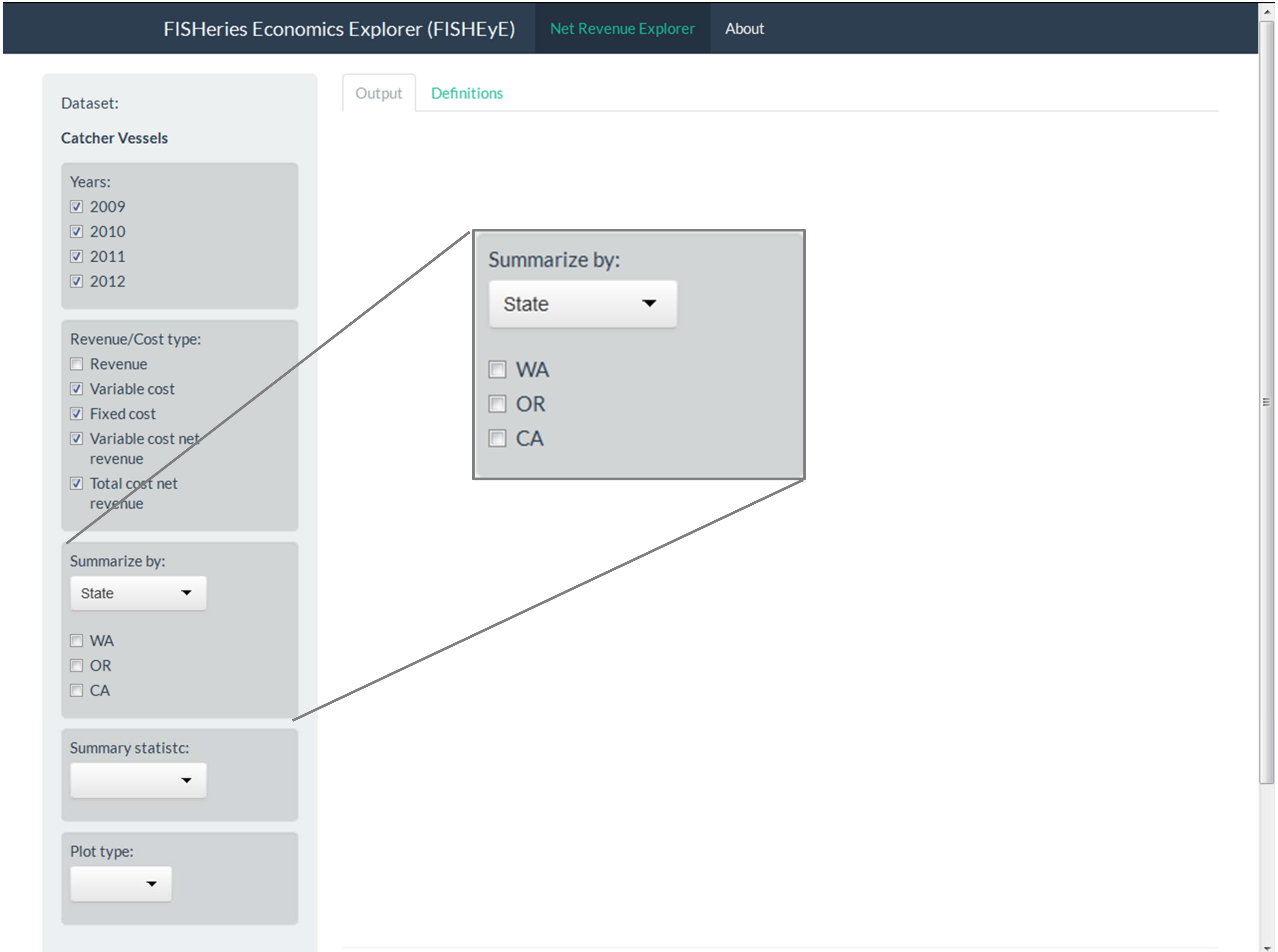
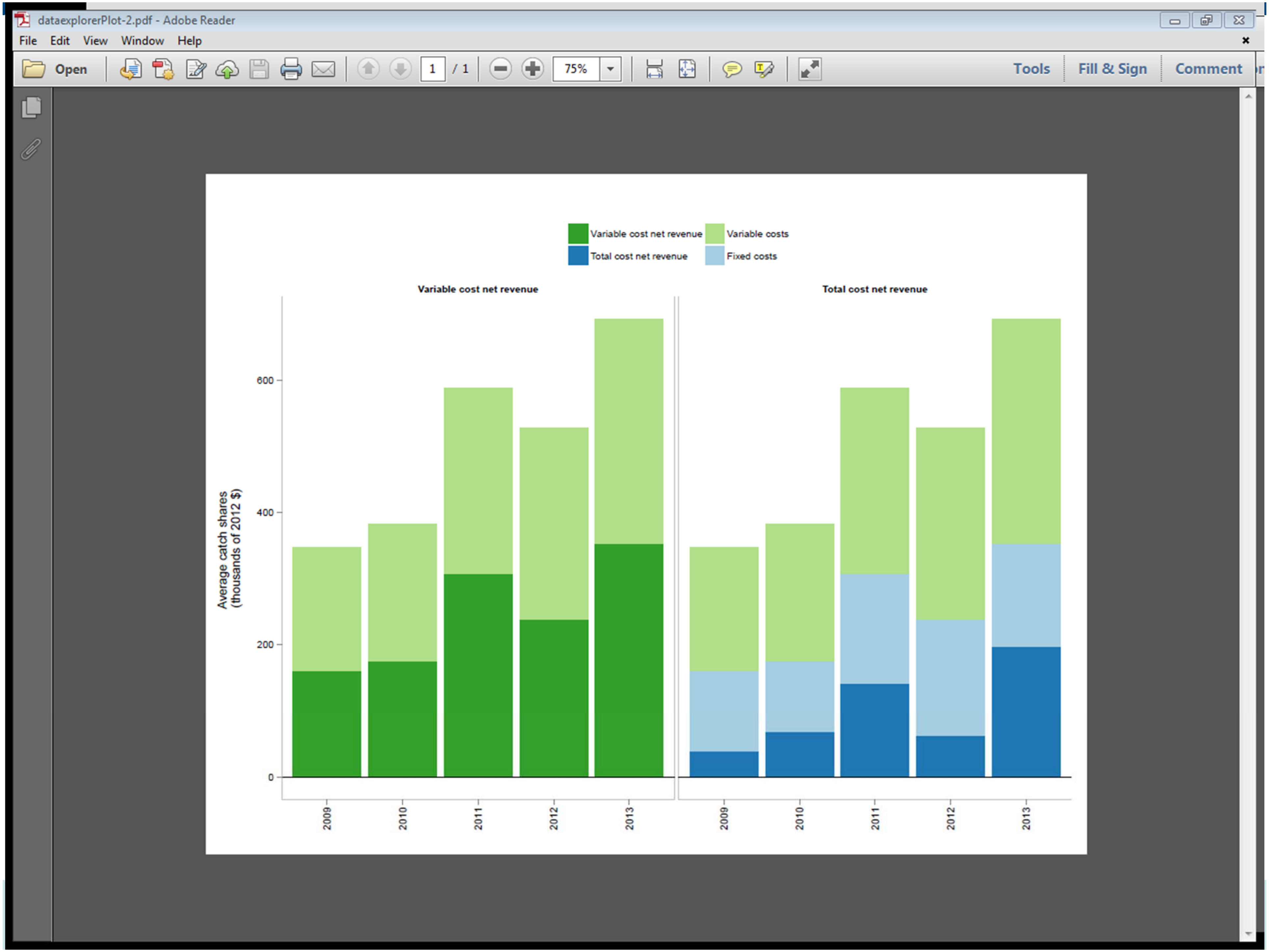
Dataset:
Catcher Vessels
Output
Definitions
Years:
2009
2010
2011
2012
Revenue/Cost type:
Revenue
Variable cost
Fixed cost
Variable cost net revenue
Total cost net revenue
Summarize by:
Fisheries
At-sea Pacific whiting
Crab
DTS trawl with trawl endorsement
Groundfish fixed gear with trawl endorsement
Non-whiting, non-DTS trawl with trawl endorsement
Other fisheries
Shoreside Pacific whiting
Shrimp
Summary statistc:


FISHeries Economics Explorer (FISHEyE)
Net Revenue Explorer
About
Dataset:
Catcher Vessels
Years:
2009
2010
2011
2012
Revenue/Cost type:
Revenue
Variable cost
Fixed cost
Variable cost net revenue
Total cost net revenue
Summarize by:
Vessel length class
Small vessel (< 60ft)
Medium vessel (> 60ft, <= 80ft)
Large vessel (> 80ft)
Summary statistc:
Plot type:
Output
Definitions
Summarize by:
Vessel length class
Small vessel (< 60ft)
Medium vessel (> 60ft, <= 80ft)
Large vessel (> 80ft)


FISHeries Economics Explorer (FISHEyE)
Net Revenue Explorer
About
Dataset:
Catcher Vessels
Years:
2009
2010
2011
2012
Revenue/Cost type:
Revenue
Variable cost
Fixed cost
Variable cost net revenue
Total cost net revenue
Summarize by:
Homeport
Puget Sound
South and central WA coast
Astoria
Tillamook
Newport
Coos Bay
Brookings
Crescent City
Eureka
Fort Bragg
San Francisco
Morro Bay
Output
Definitions


FISHeries Economics Explorer (FISHEyE)
Net Revenue Explorer
About
Dataset:
Catcher Vessels
Years:
2009
2010
2011
2012
Revenue/Cost type:
Revenue
Variable cost
Fixed cost
Variable cost net revenue
Total cost net revenue
Summarize by:
State
WA
OR
CA
Summary statistc:
Plot type:
Output
Definitions
Summarize by:
State
WA
OR
CA



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Open
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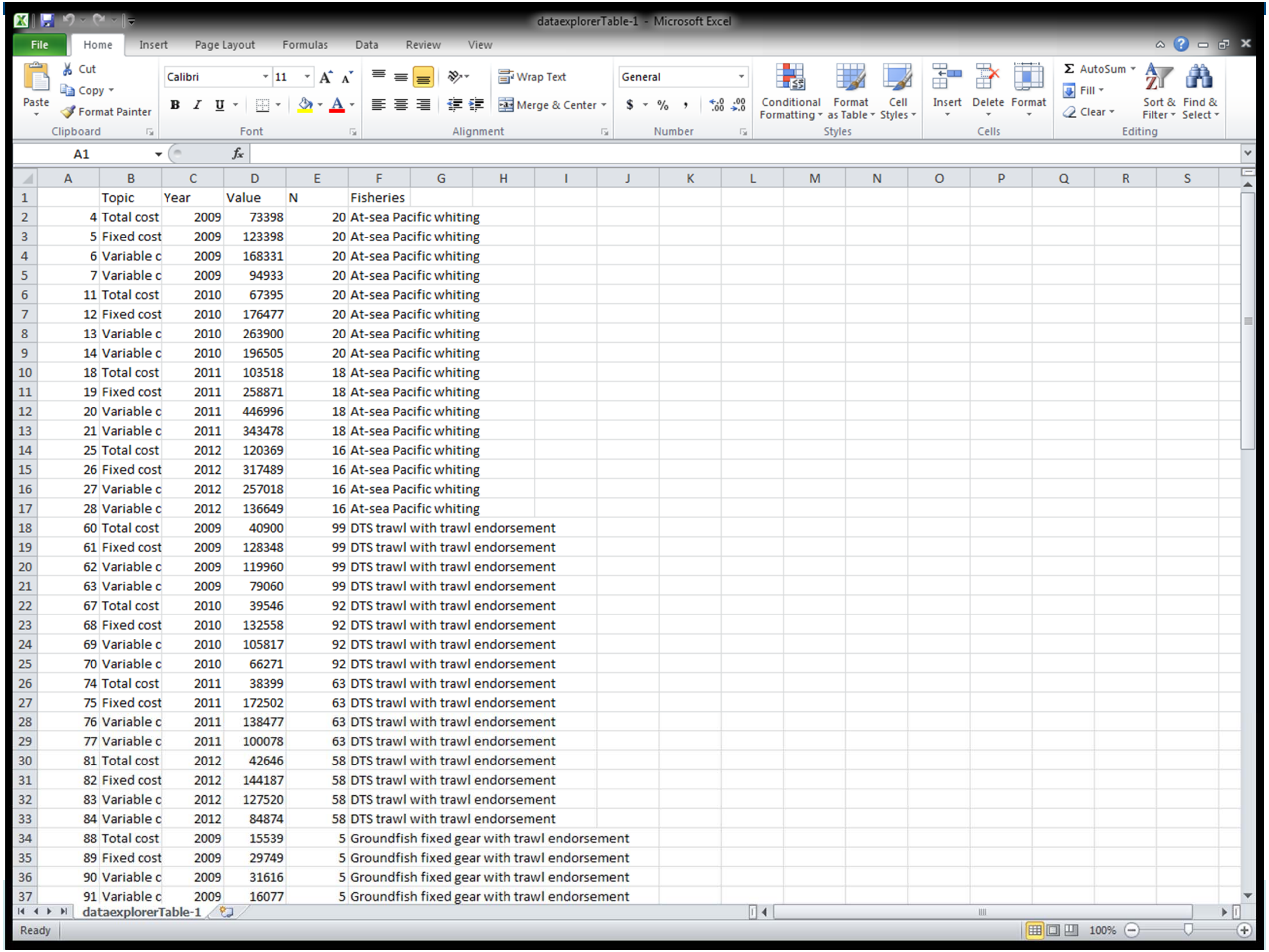
Tools
Fill & Sign
Comment
Variable cost net revenue
Variable costs
Total cost net revenue
Fixed costs
Variable cost net revenue
Total cost net revenue
Average catch shares (thousands of 2012 $)
600
400
200
0
2009
2010
2011
2012
2013



	Topic	Year	Value	N	Fisheries
4	Total cost	2009	73398	20	At-sea Pacific whiting
5	Fixed cost	2009	123398	20	At-sea Pacific whiting
6	Variable c	2009	168331	20	At-sea Pacific whiting
7	Variable c	2009	94933	20	At-sea Pacific whiting
11	Total cost	2010	67395	20	At-sea Pacific whiting
12	Fixed cost	2010	176477	20	At-sea Pacific whiting
13	Variable c	2010	263900	20	At-sea Pacific whiting
14	Variable c	2010	196505	20	At-sea Pacific whiting
18	Total cost	2011	103518	18	At-sea Pacific whiting
19	Fixed cost	2011	258871	18	At-sea Pacific whiting
20	Variable c	2011	446996	18	At-sea Pacific whiting
21	Variable c	2011	343478	18	At-sea Pacific whiting
25	Total cost	2012	120369	16	At-sea Pacific whiting
26	Fixed cost	2012	317489	16	At-sea Pacific whiting
27	Variable c	2012	257018	16	At-sea Pacific whiting
28	Variable c	2012	136649	16	At-sea Pacific whiting
60	Total cost	2009	40900	99	DTS trawl with trawl endorsement
61	Fixed cost	2009	128348	99	DTS trawl with trawl endorsement
62	Variable c	2009	119960	99	DTS trawl with trawl endorsement
63	Variable c	2009	79060	99	DTS trawl with trawl endorsement
67	Total cost	2010	39546	92	DTS trawl with trawl endorsement
68	Fixed cost	2010	132558	92	DTS trawl with trawl endorsement
69	Variable c	2010	105817	92	DTS trawl with trawl endorsement
70	Variable c	2010	66271	92	DTS trawl with trawl endorsement
74	Total cost	2011	38399	63	DTS trawl with trawl endorsement
75	Fixed cost	2011	172502	63	DTS trawl with trawl endorsement
76	Variable c	2011	138477	63	DTS trawl with trawl endorsement
77	Variable c	2011	100078	63	DTS trawl with trawl endorsement
81	Total cost	2012	42646	58	DTS trawl with trawl endorsement
82	Fixed cost	2012	144187	58	DTS trawl with trawl endorsement
83	Variable c	2012	127520	58	DTS trawl with trawl endorsement
84	Variable c	2012	84874	58	DTS trawl with trawl endorsement
88	Total cost	2009	15539	5	Groundfish fixed gear with trawl endorsement
89	Fixed cost	2009	29749	5	Groundfish fixed gear with trawl endorsement
90	Variable c	2009	31616	5	Groundfish fixed gear with trawl endorsement
91	Variable c	2009	16077	5	Groundfish fixed gear with trawl endorsement

FISHEyE plans

- Enhanced functionality
  - Additional sectors (at-sea and shorebased processors)
  - Comparisons
  - “What-if’s”

Feedback?

2012 Economic Data Collection (EDC)
West Coast Groundfish Trawl
Catch Share Program

DRAFT

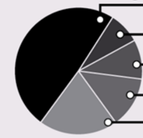
FIRST RECEIVERS & SHOREBASED PROCESSORS

ECONOMIC SUMMARY*

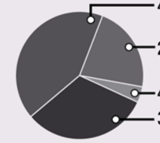
Company Average
20 processors
$20.8M revenue
$17.2M variable costs
$3.6M variable cost net revenue
$1M fixed costs
$2.5M total cost net revenue

PRODUCT TYPES

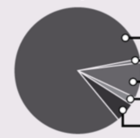
Pacific whiting



Non-whiting groundfish



Other species



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Northwest Fisheries SCIENCE CENTER

SHORESIDE PROCESSING

Value & weight of processed fish
# of processing facilities

Washington
4 facilities
Groundfish:
13,236 MT, $23M
Other Species:
37,743 MT,$57M

Oregon
9 facilities
Groundfish:
25,573 MT, $78M
Other Species:
25,023 MT, $130M

California
11 facilities
Groundfish:
2,126 MT, $19 M
Other Species:
4,923 MT, $56 M

PRODUCTION

	N (companies)	1000 MT	Value
Pacific whiting	10	37.2	$55M
DTS	18	6.5	$53M
Other groundfish	19	4.6	$20M
Crab	19	9.3	$121M
Shrimp	12	11.5	$63M
Halibut	12	0.3	$5M
Salmon	15	1.8	$19M
Other	19	61.5	$77M

69%

Product Recovery Rate
0.64 pacific whiting
0.70 non-whiting groundfish
0.70 other species

Costs
$2.9M labor
$493K capitalized expenditures
$505K utilities
$454K custom processing
$9K monitoring
$2.4M other expenses

98 production workers
$22K production workers compensation

$66K non-production employee compensation

12 non-production employees

AVERAGE COMPANY

Revenue
$21M fish production
$75K offloading
$235K custom processing

PROCESSORS

receive IFQ groundfish & process fish

Vessel sources

Groundfish:
4308 MT, $3M
Other species:
4532 MT, $6.8M

Non-vessel Sources
Groundfish: 578 MT, $752K
Other species: 772 MT, $2.6M

FISH PURCHASES

NON-PROCESSORS

receive IFQ groundfish & do not process fish

Vessel sources

Groundfish:
50 MT, $65K
Other species:
15 MT, $75K

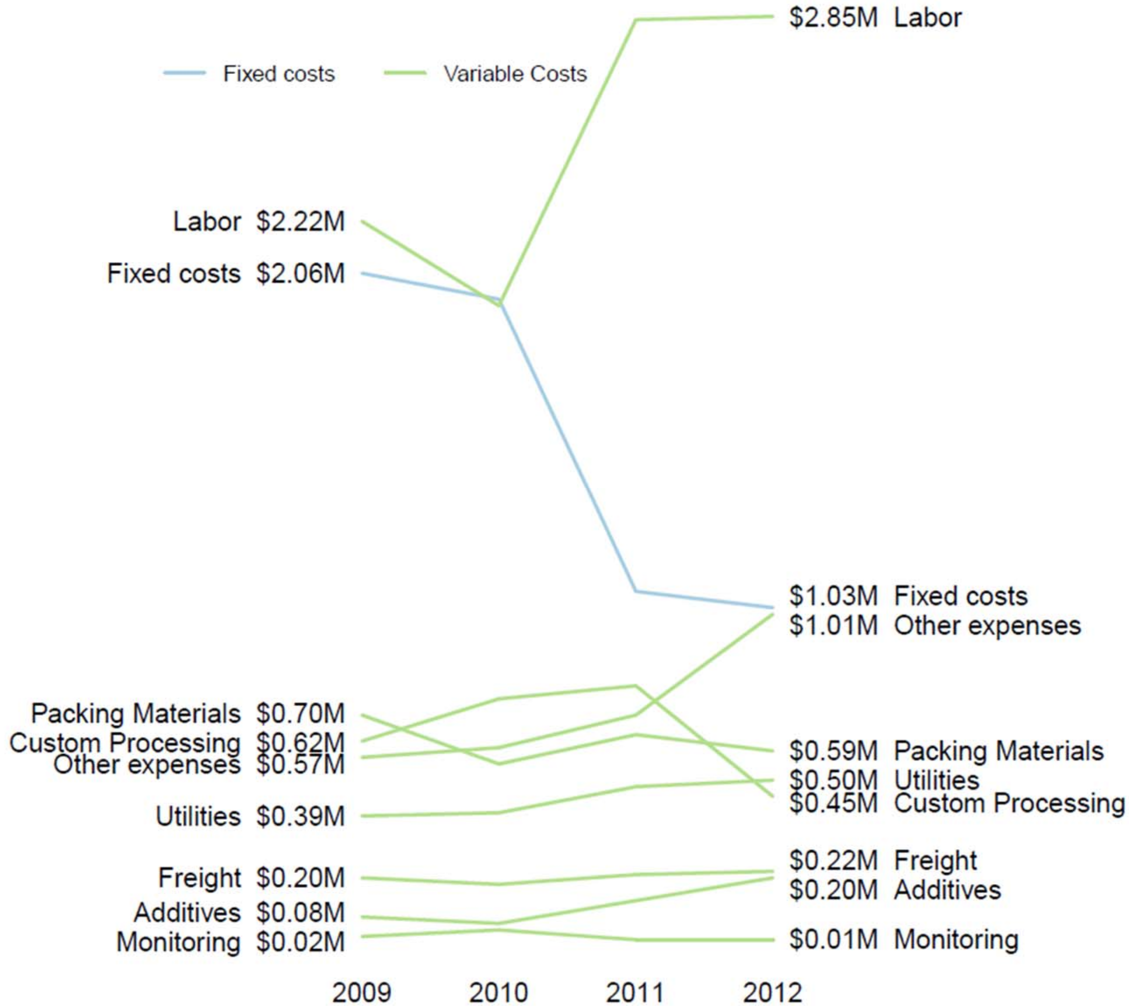
Costs
$21K utilities
$2K monitoring
$86K other expenses

FISH PURCHASES

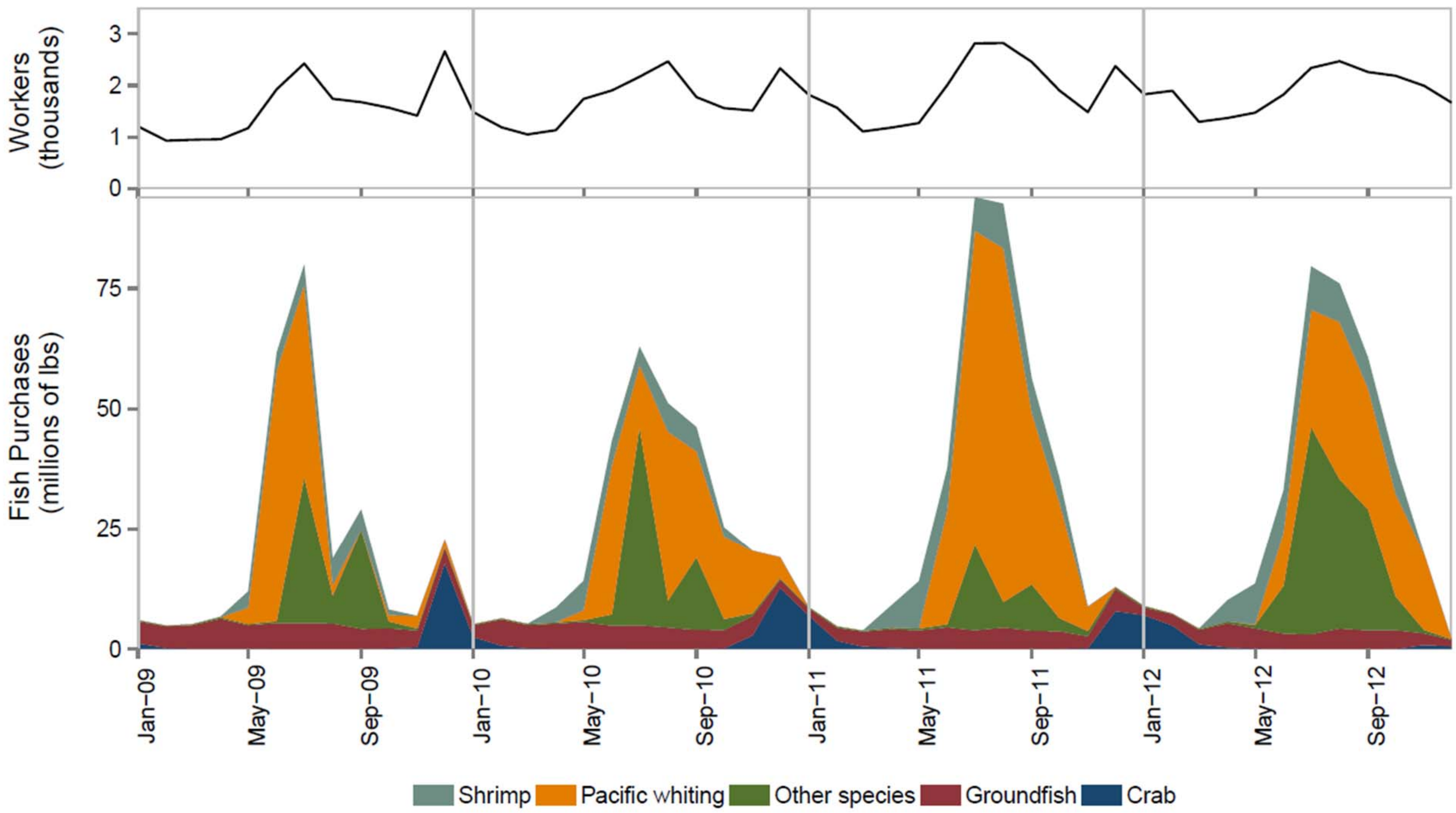
$35K variable cost net revenue

*Note that some off-site costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

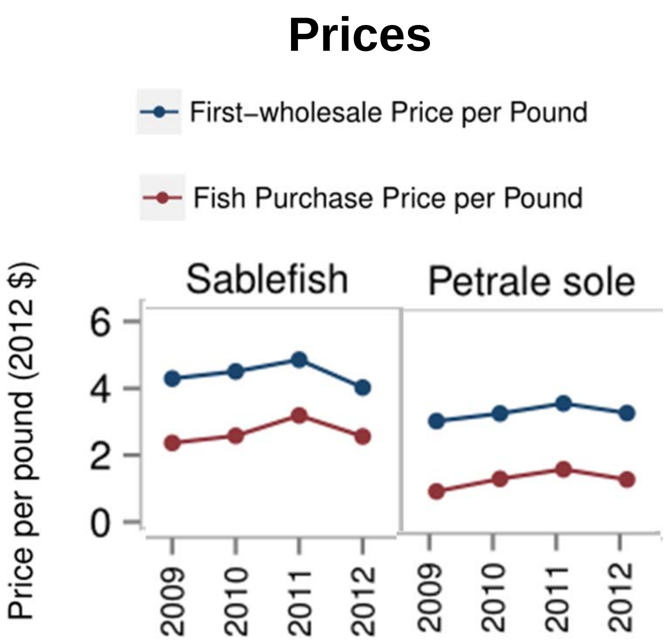
Average Processor Costs

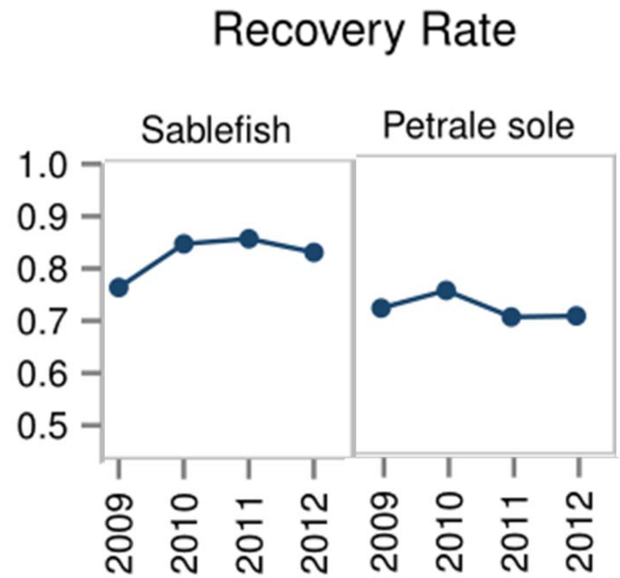


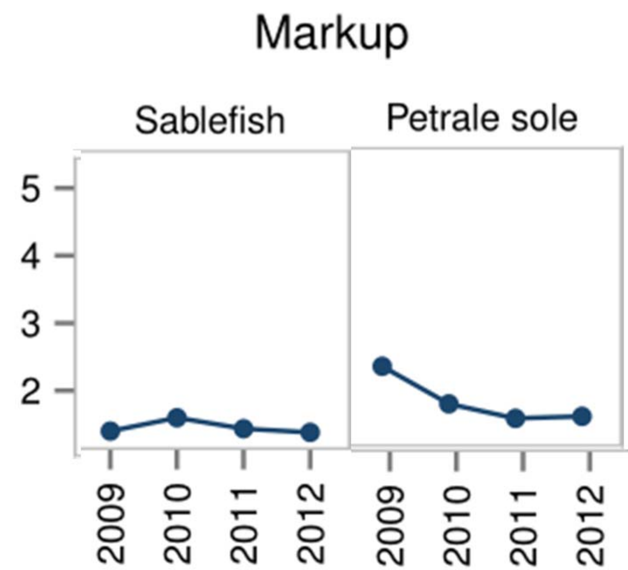
Total Processor Workers and Fish Purchases



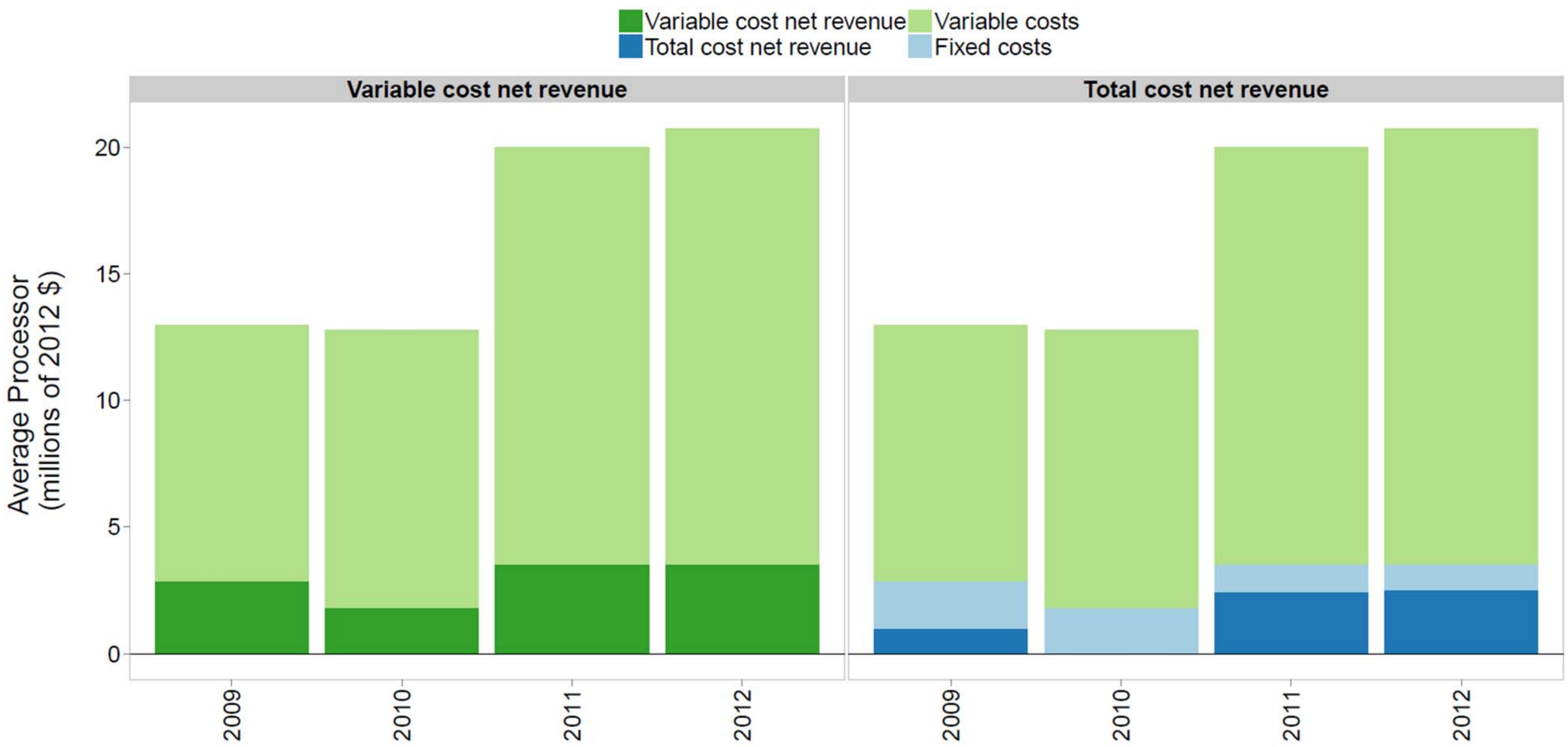
Rates


Prices
First–wholesale Price per Pound
Fish Purchase Price per Pound
Sablefish
Petrale sole
Price per pound (2012 $)
0
2
4
6
2009
2010
2011
2012
2009
2010
2011
2012


Recovery Rate
Sablefish
Petrale sole
0.5
0.6
0.7
0.8
0.9
1.0
2009
2010
2011
2012
2009
2010
2011
2012


Markup
Sablefish
Petrale sole
2
3
4
5
2009
2010
2011
2012
2009
2010
2011
2012

First Receiver and Shorebased Processor Net Revenue



FR Cost Allocation Methods

- Costs are allocated to three broad fisheries categories:
  - Shoreside Pacific whiting
  - Non-whiting groundfish
  - Other fish
- Costs are dissaggregated by:
  - Weight of fish purchased
  - Cost of fish purchased
  - Weight of fish produced
  - Value of fish produced
  - Value Added (Production value – purchase cost)

2012 Economic Data Collection (EDC)
West Coast Groundfish Trawl
Catch Share Program

MOTHERSHIP

DRAFT

PACIFIC WHITING PRODUCTION SUMMARY

surimi — 46%, 6588mt
$20.2M, $1.39/lb

other* — 35%, 8,661 mt
$4.1M, $0.21/lb

minced — 10%, 1960mt
$2.8M, $0.64/lb

fishmeal
8%,1490mt
$3.2M, $0.97/lb

*other includes: fillets, fish oil, headed and gutted, and round, combined for confidentiality.

53%
product recovery rate

ECONOMIC SUMMARY*

Vessel Average
$6.1M revenue
$4.6M variable costs
$1.5M variable cost net revenue
$1.7M fixed costs
$-0.2M total cost net revenue

$23.6K variable cost net revenue per day

Fleet-wide Totals
$30.3M revenue
$7.4M variable cost net revenue
$-1.1M total cost net revenue

ALASKA PARTICIPATION

7 vessels
187,613 mt total fleet weight

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Northwest Fisheries Science Center

WC DELIVERY PORTS

of vessels offloading in each port

Bellingham (3)

Seattle* (2)
(*all five motherships report Seattle as their home port)

3,740 mt average total weight of processed product delivered per vessel

FISHERY PARTICIPATION

	Days at Sea
Average days fishing, processing, and steaming on the West Coast	*46*
Average days steaming to and from Alaska	*21*
Average days in Alaska	*141*

TOTAL US PACIFIC WHITING TAC

135,480 mt

TOTAL CATCH

37,505mt, 0.11$/lb

7700 HP engine
$51M vessel market value
$100M replacement value

Fuel use
5.9K gal/day
217.1K gal/season
$750K total fuel cost

$33.1K observer cost

72 processing crew
$10.1K per person compensation

32 non-processing crew
$13.4K per person compensation

$136.4K food cost

AVERAGE VESSEL

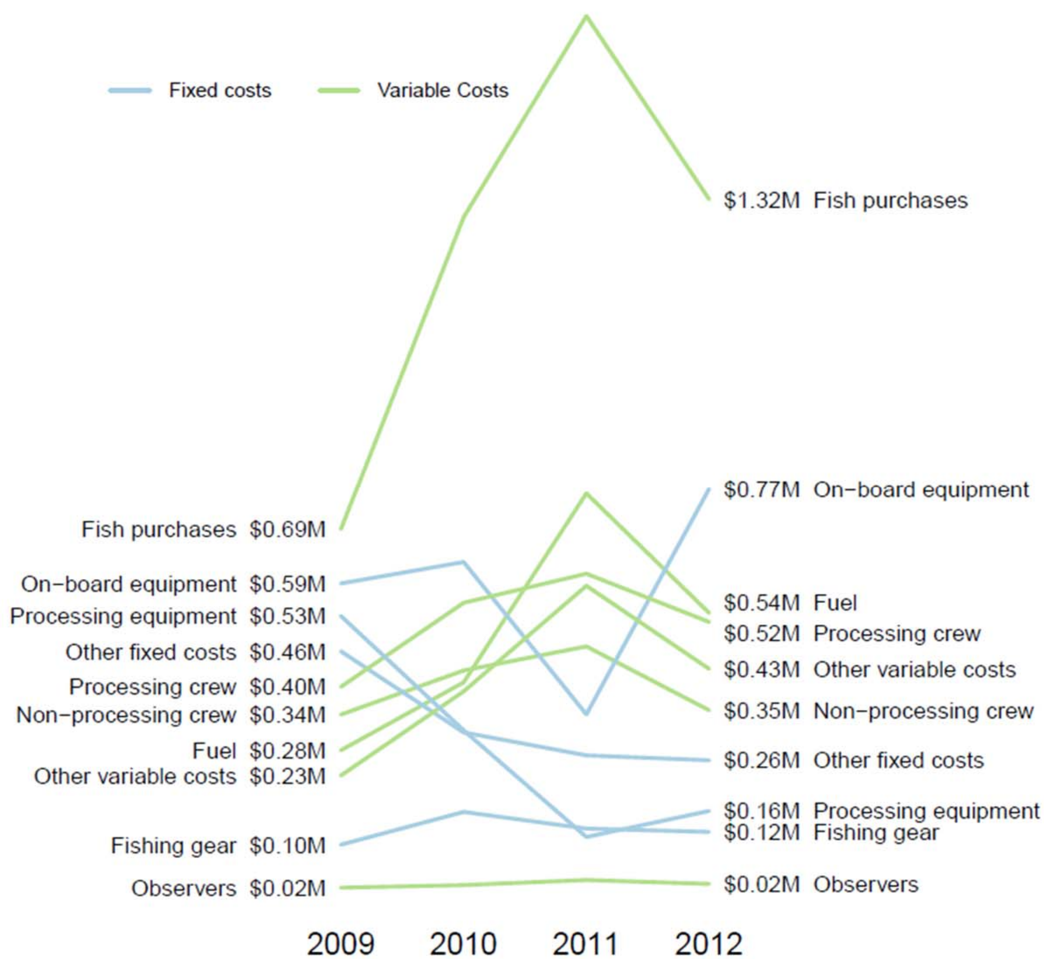
347 ft average length

TOTAL US PACIFIC WHITING TAC MS ALLOCATION

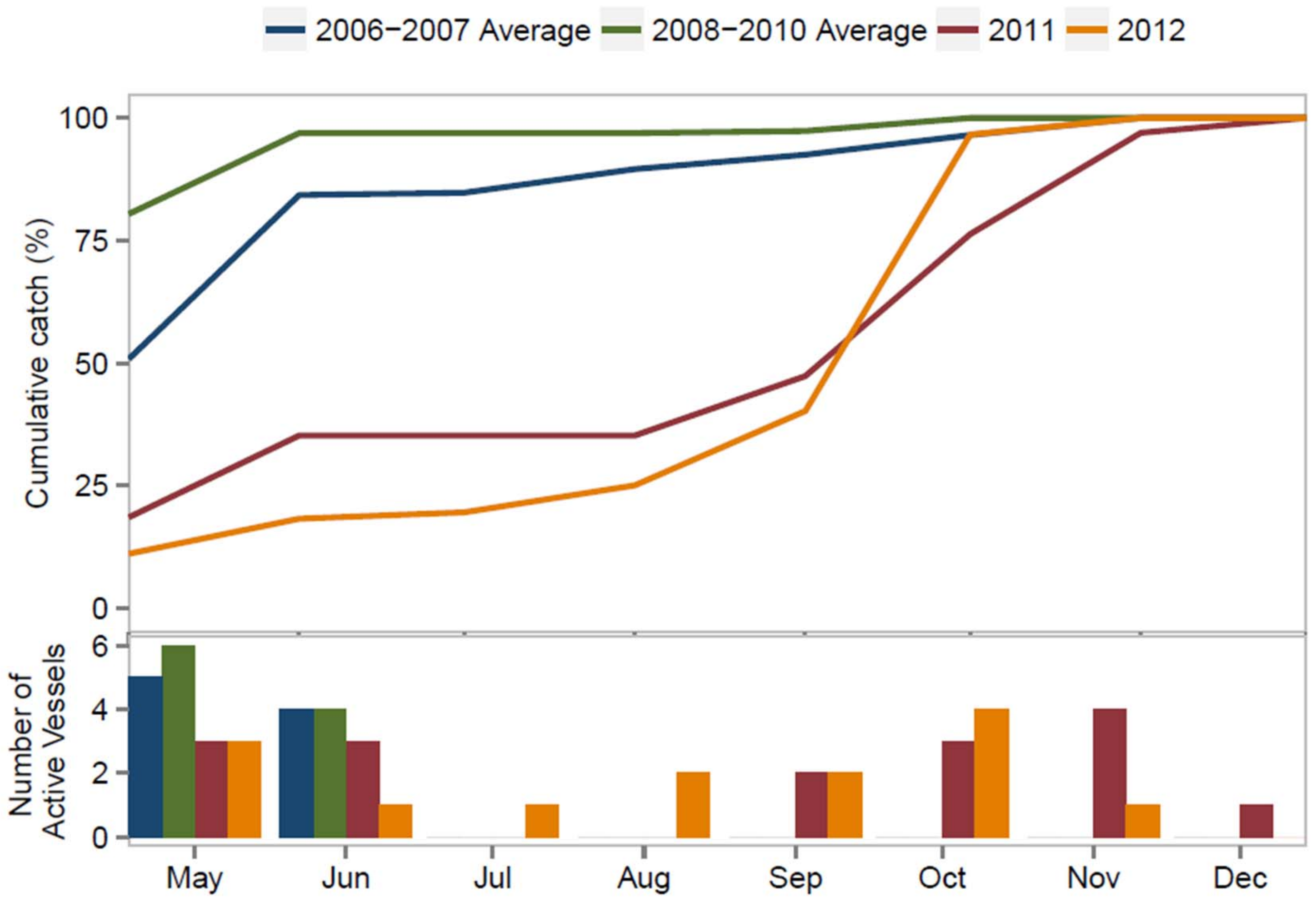
39,235 mt (24% of total U.S. TAC)

*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

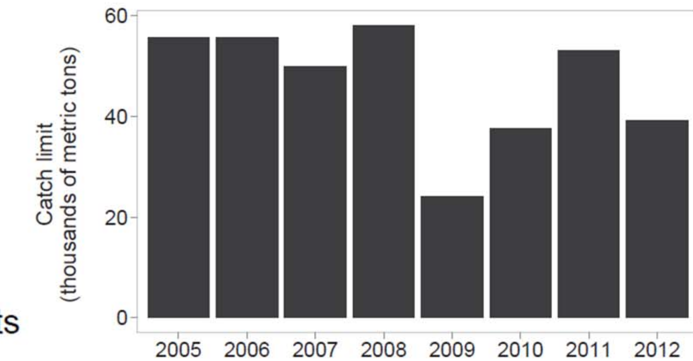
Average Mothership Costs

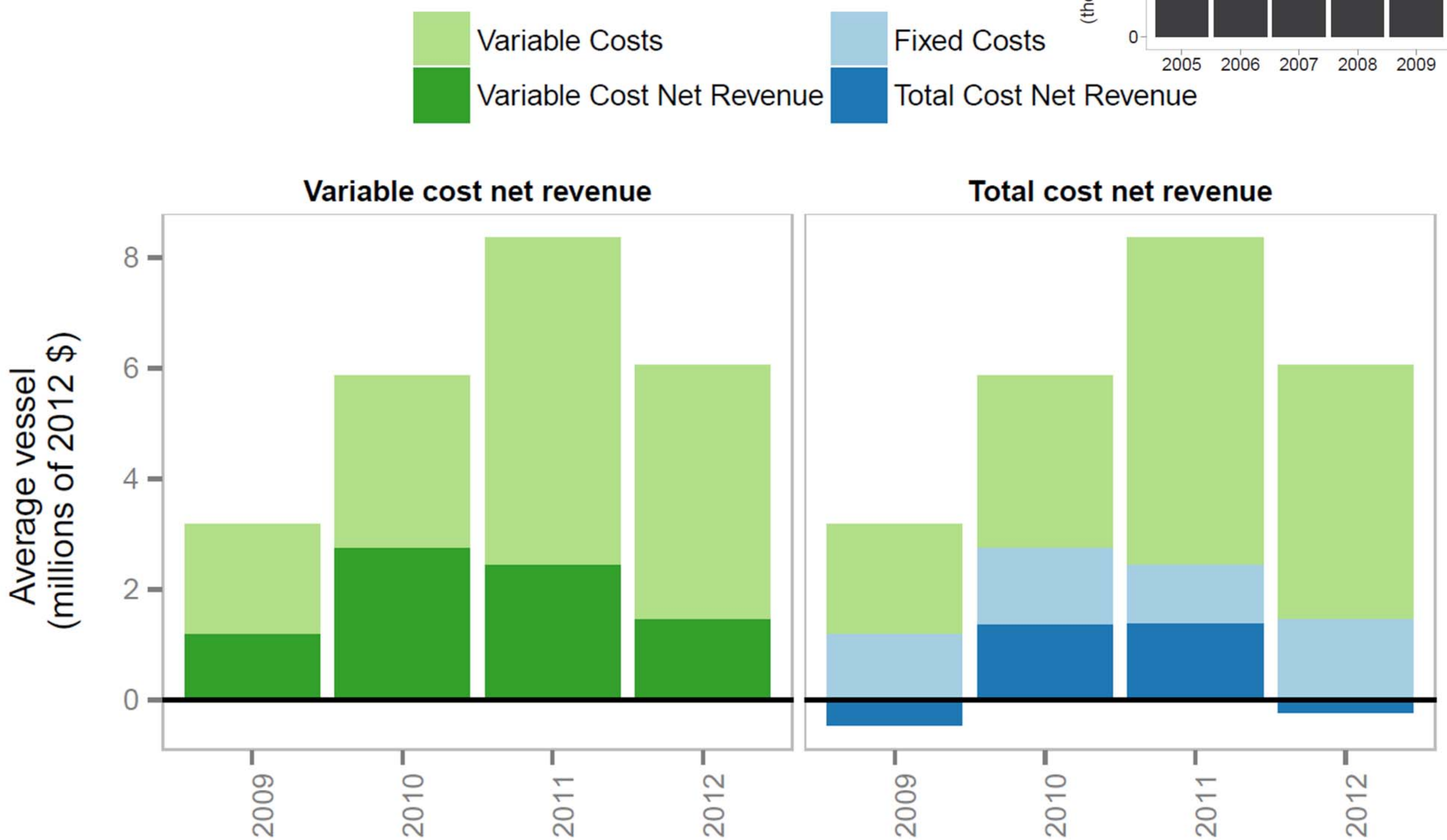


Mothership Timing



Mothership Net Revenue





2012 Economic Data Collection (EDC) West Coast Groundfish Catch Share Program

DRAFT

CATCHER PROCESSOR

PACIFIC WHITING PRODUCTION SUMMARY

- surimi: 47%, 8688 mt, $22.8M, $1.13/lb
- fillets: 35%, 6589 mt, $21.7M, $1.46/lb
- fishmeal: 10%,1897 mt, $3.9M, $0.94/lb
- fish oil: 1%, 254 mt, $0.4M, $0.66/lb
- other*: 7%, 1230 mt, $2.1M, $0.77/lb

*Other includes: H&G, minced, and "other", combined for confidentiality.

33% product recovery rate

ECONOMIC SUMMARY*

Vessel Average

$5.7M revenue
$2.7M variable costs
$3M variable cost net revenue
$1.6M fixed cost
$1.4M total cost net revenue

$91K variable cost net revenue per day

Fleet-wide Totals

$51M revenue
$27M variable cost net revenue
$13M total cost net revenue

ALASKA PARTICIPATION

9 vessels
316,423 mt total fleet weight

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Northwest Fisheries SCIENCE CENTER

WC DELIVERY PORTS

of vessels offloading in each port

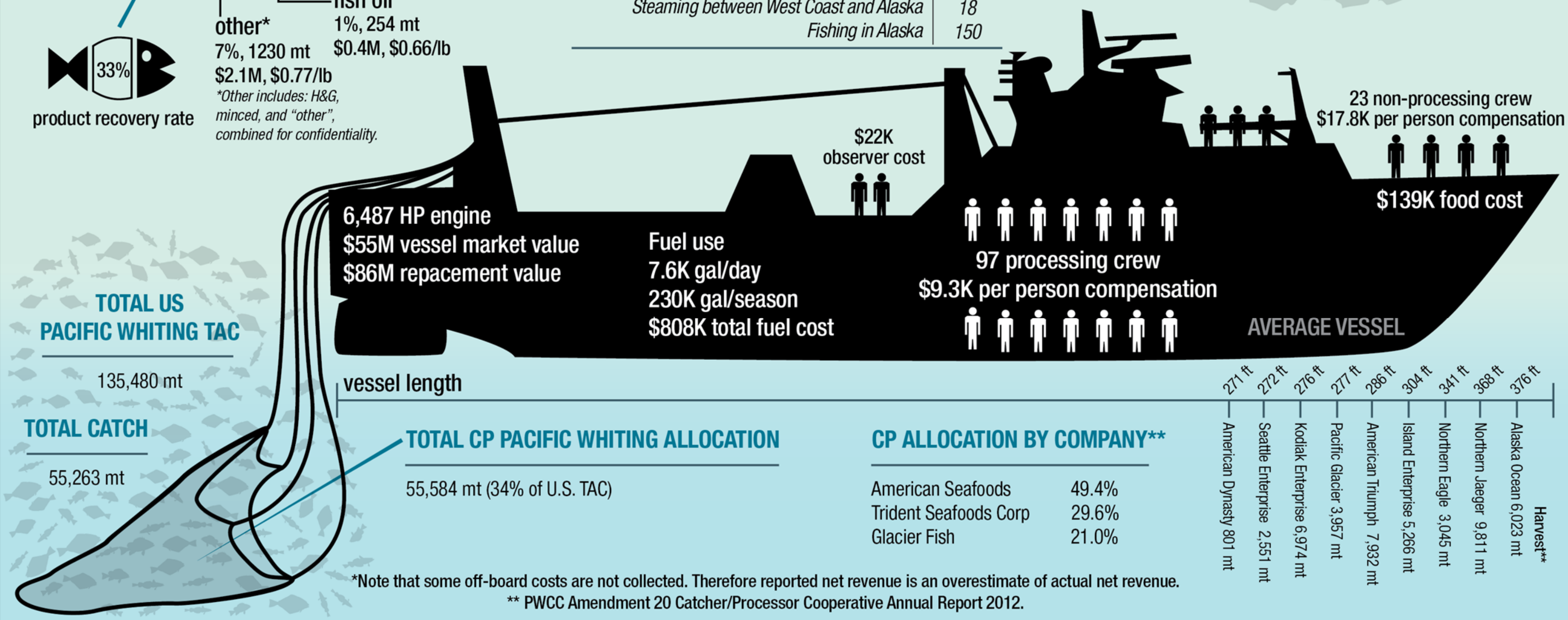
- Bellingham (4)
- Seattle* (2)
- Tacoma (3)

(*all nine catcher processors report Seattle as their home port)

2,073 mt average total weight of processed product delivered per vessel

FISHERY PARTICIPATION

	Days at Sea
Fishing and processing West Coast whiting fishery	*29*
Steaming in the West Coast whiting fishery	*3*
Off-loading in the West Coast whiting fishery	*3*
Steaming between West Coast and Alaska	*18*
Fishing in Alaska	*150*



TOTAL US PACIFIC WHITING TAC

135,480 mt

TOTAL CATCH

55,263 mt

TOTAL CP PACIFIC WHITING ALLOCATION

55,584 mt (34% of U.S. TAC)

CP ALLOCATION BY COMPANY**

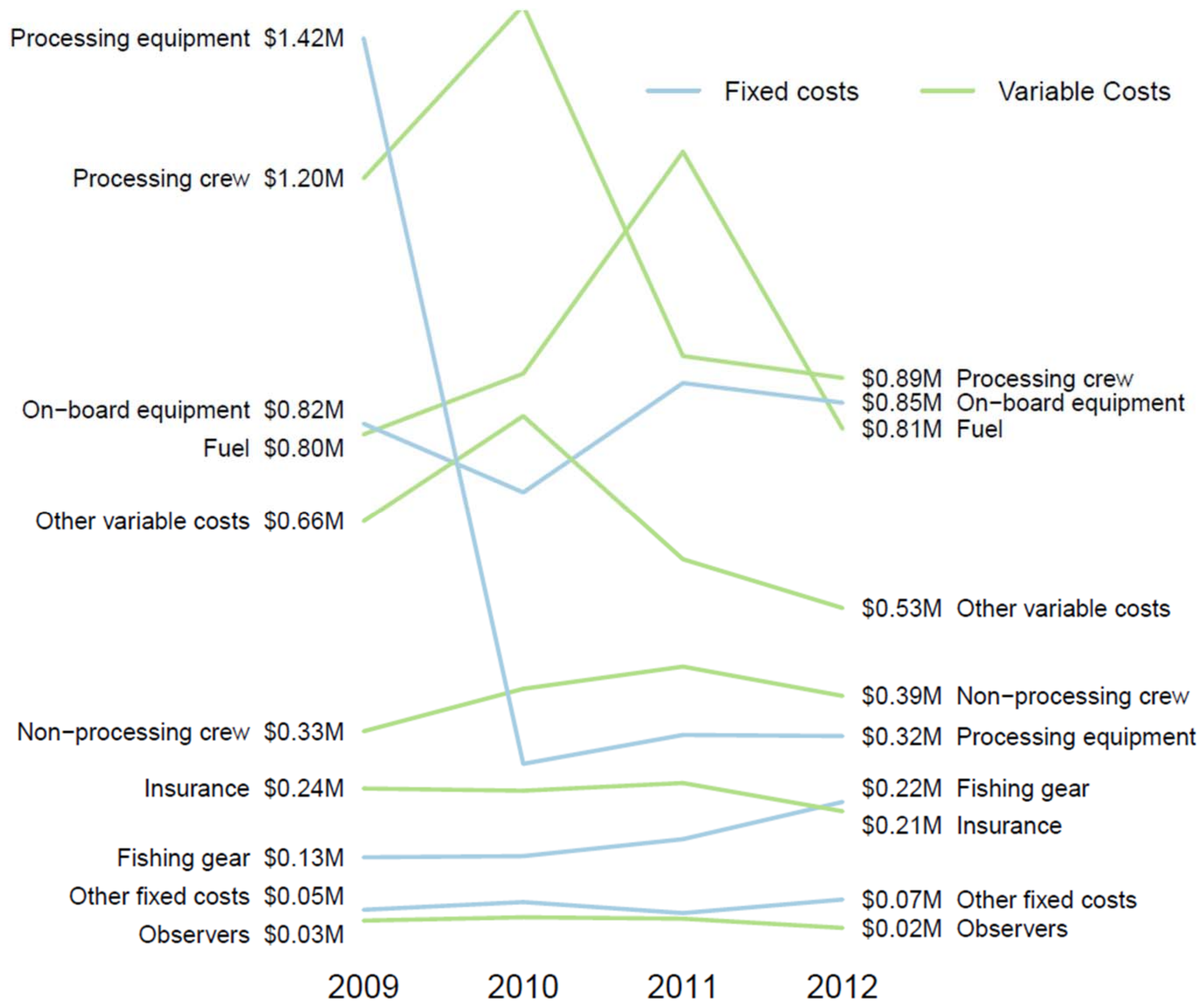
American Seafoods	49.4%
Trident Seafoods Corp	29.6%
Glacier Fish	21.0%

vessel length

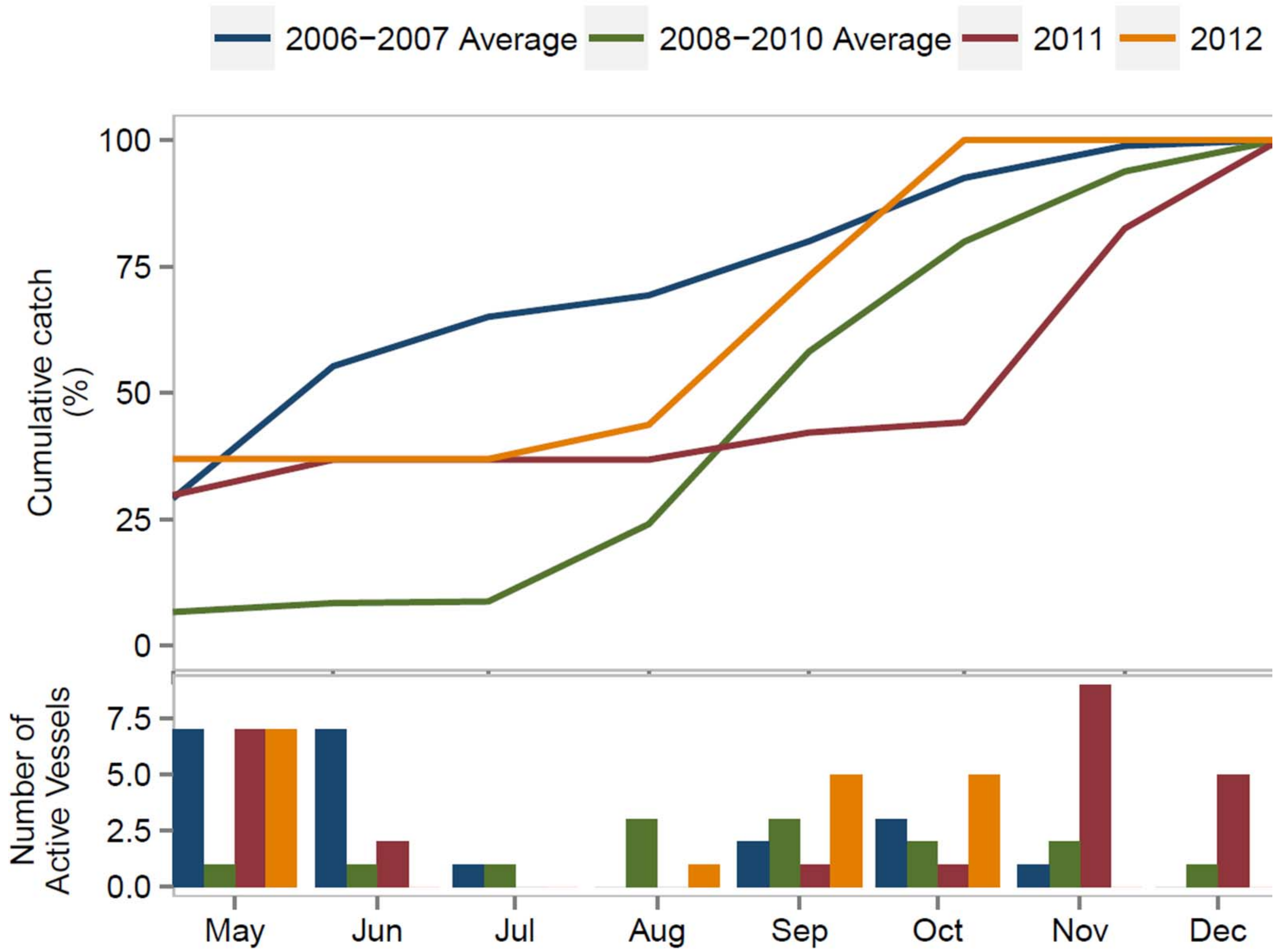
Vessel length	Vessel	Harvest**
271 ft	American Dynasty	801 mt
272 ft	Seattle Enterprise	2,551 mt
276 ft	Kodiak Enterprise	6,974 mt
277 ft	Pacific Glacier	3,957 mt
286 ft	American Triumph	7,932 mt
304 ft	Island Enterprise	5,266 mt
341 ft	Northern Eagle	3,045 mt
368 ft	Northern Jaeger	9,811 mt
376 ft	Alaska Ocean	6,023 mt

*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.
** PWCC Amendment 20 Catcher/Processor Cooperative Annual Report 2012.

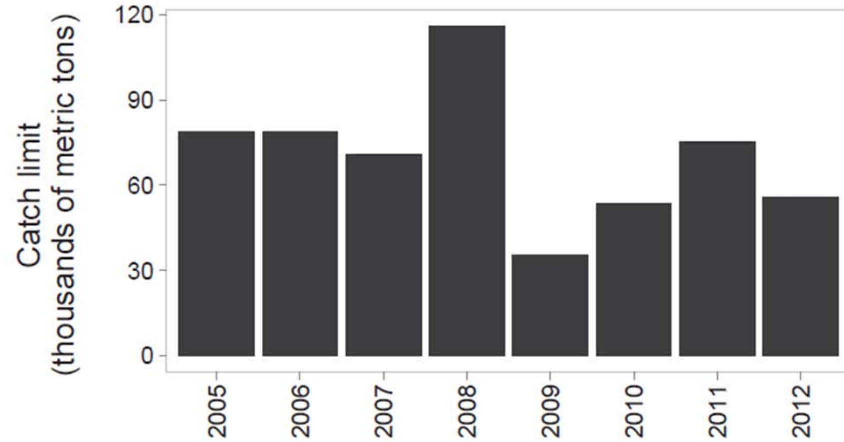
Average Catcher-Processor Costs

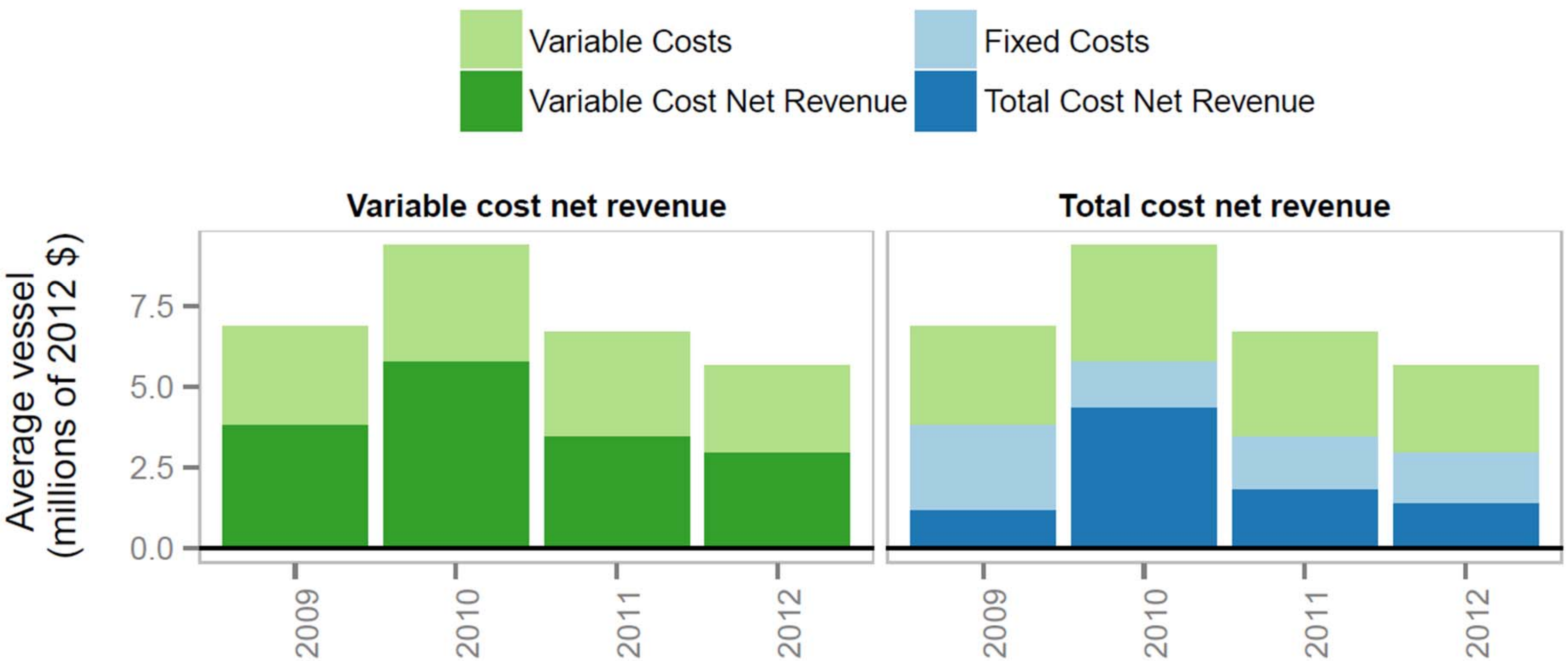


Catcher-Processor Timing



Catcher-Processor Net Revenue





Science, Service, Stewardship

Agenda Item J.5.b
Supplemental NWFSC PowerPoint 2
November 2014

Pacific Coast Groundfish Fishery Social Study: An Overview of Initial Theme Based Results

Suzanne M. Russell
Social Scientist
Ecosystem Management Program
Human Dimensions Team

November 17, 2014

NOAA FISHERIES SERVICE

NOAA FISHERIES SERVICE

Study Parameters

This research aims to measure social & cultural changes in the groundfish fishing industry and related communities as a result of the implementation of the catch shares program.

Research Participation

- ➢ Anyone with a direct connection to the trawl fishery
- ➢ Survey
- ➢ Semi-structured interviews

Year	Response Rate
2010 Overall	63.9%
2012 Overall	51.8%
2010 Trawl	61.8%
2012 Trawl	56.2%

- ➢ Response rate was less in 2012, however, sample size is larger

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Theme Summary

- Graying of the fleet
  - Is supported
  - How to support new entrants?
- Social relationships
  - Show some change, time and new data may provide more clarification
- Program perceptions
  - expectation vs. experience
- Fisheries participation
  - Some shift into fisheries with good markets
  - Concerns for future – changing ocean cycles, may alter availability of multiple species

NOAA FISHERIES SERVICE

Ongoing analysis includes by state, at the community level, and by return response only.

Funding – NOAA Fisheries NS8/Catch Shares

Co-Authors:

Kim Sparks*

Albert Arias-Arthur*

Anna Varney*

Field Researchers:

2010	2012
Tiffany Wilson	Brian Carter
Monica Galligan	Monica Galligan
Stacey Miller	Ruby Moon
Anna Varney	Anna Varney
Jason Davis	Melissa Stevens
Hunter Berns	Keeley Kent
Kristen Hoelting	Sara Wise
Karma Norman	Kim Sparks
	Albert Arias-Arthur

*Pacific States Marine Fisheries Commission

Science, Service, Stewardship

Pacific Coast Groundfish Fishery Social Study: An Overview of Initial Theme Based Results

Suzanne M. Russell
Social Scientist
Ecosystem Management Program
Human Dimensions Team

October 30, 2014

NOAA FISHERIES SERVICE

Agenda Item J.5.b
Supplemental NWFSC Report 6
November 2014

NOAA
FISHERIES
SERVICE

This presentation is an overview of the report provided in briefing book for the November 2014 Pacific Fishery Management Council Meeting

Agenda Item J.5.b. NWFSC Report 6: The Pacific Groundfish Fishery Social Study: An Initial Theme Based Report

NOAA
FISHERIES
SERVICE

- Background
- Research Goal
- Research Design
- Response
- Themed Results
- Summary
- 2015 Data Collection

The views presented here are solely those of the authors and do not represent the views of the National Marine Fisheries Service (NMFS) or the National Oceanic & Atmospheric Administration

NOAA FISHERIES SERVICE

Background

- Social Science legal requirements
  - Magnuson Stevens Fishery Conservation and Management Act - National Standard 8
  - NEPA

- Literature Base – Social Impact of Catch Shares
  - Changing social relationships (McCay 1995)
  - Barriers for new entrants (Dewees 2008)
  - Crew impacts (Copes 1996; McCay and Brandt 2001)
  - Varying impacts depending on community characteristics (Olsen 2011)

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Research Goal

This research aims to measure social & cultural changes in the groundfish fishing industry and related communities as a result of the implementation of the catch shares program.

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Study Parameters

- Multi-year study
- Data collection
  - prior to new program implementation (2010)
  - Post implementation (2012)
  - After each new design element - QS trading (2015)
- Contribute information to the 5 year review
- Contribute information to ongoing and future fisheries management efforts

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Targeted Communities

Study Participants

Research Participation

- Target Fishery Participants
  - Anyone with a direct connection to the trawl fishery

Census of known fishery participants

- List of vessel owners/permit holders
- Secondary research identified pertinent processors

Referrals of all others

- Crew
- Businesses directly tied to the fishery
- Fishermen’s wives/partners

Concerned Fixed Gear participants

- Approached us in 2010
- Accommodated as possible

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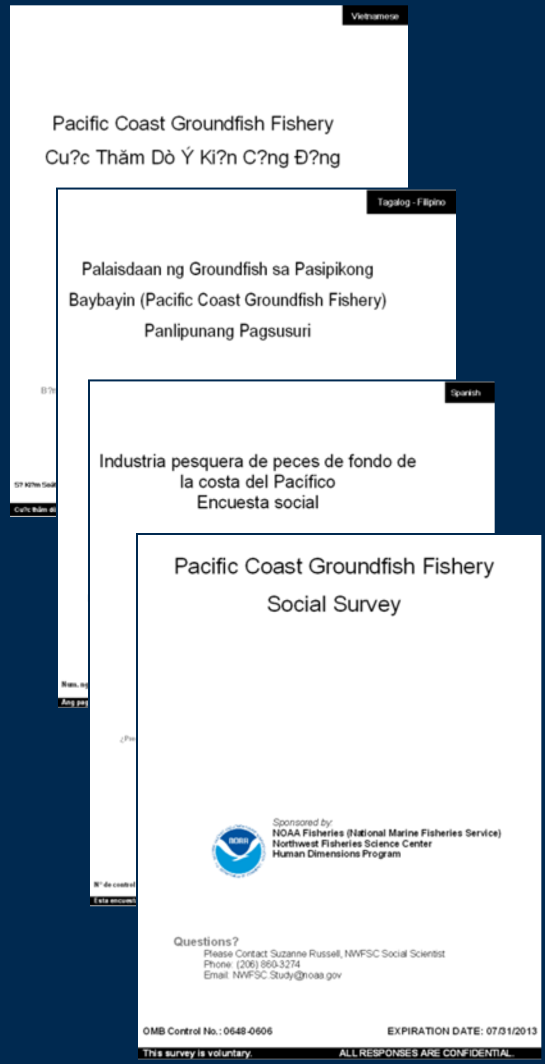
Data Collection

- Survey
  - Primarily In-person
  - Voluntary
  - Confidential
  - One survey for all participants
  - Survey completion matrix
  - Available in 4 languages
- Interviews – Semi-structured
- Photographic Documentation


Vietnamese

Pacific Coast Groundfish Fishery
Cu?c Thăm Dò Ý Ki?n C?ng Đ?ng

Tagalog - Filipino

Palaisdaan ng Groundfish sa Pasipikong
Baybayin (Pacific Coast Groundfish Fishery)
Panlipunang Pagsusuri

Spanish

Industria pesquera de peces de fondo de
la costa del Pacífico
Encuesta social

Pacific Coast Groundfish Fishery
Social Survey

Sponsored by:
NOAA Fisheries (National Marine Fisheries Service)
Northwest Fisheries Science Center
Human Dimensions Program

Questions?
Please Contact Suzanne Russell, NWFSC Social Scientist
Phone: (206) 860-3274
Email: NWFSC.Study@noaa.gov

OMB Control No.: 0648-0606
EXPIRATION DATE: 07/31/2013

This survey is voluntary.
ALL RESPONSES ARE CONFIDENTIAL.

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Responses Rates

	Survey and Interview	Survey Only	Interview Only	Total Survey	Total Interview	Targeted	Response Rate
2010 Overall	201	41	32	242	200	379	63.9%
2012 Overall	235	24	31	259	236	500	51.8%
2010 Trawl	172	38	31	210	171	340	61.8%
2012 Trawl	195	22	25	217	195	386	56.2%

- Response rate was less in 2012, however, sample size is larger

Themed Analysis

- Graying of the Fleet
- Social Relationships
- Program Perceptions
- Fisheries Participation

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Graying of the Fleet

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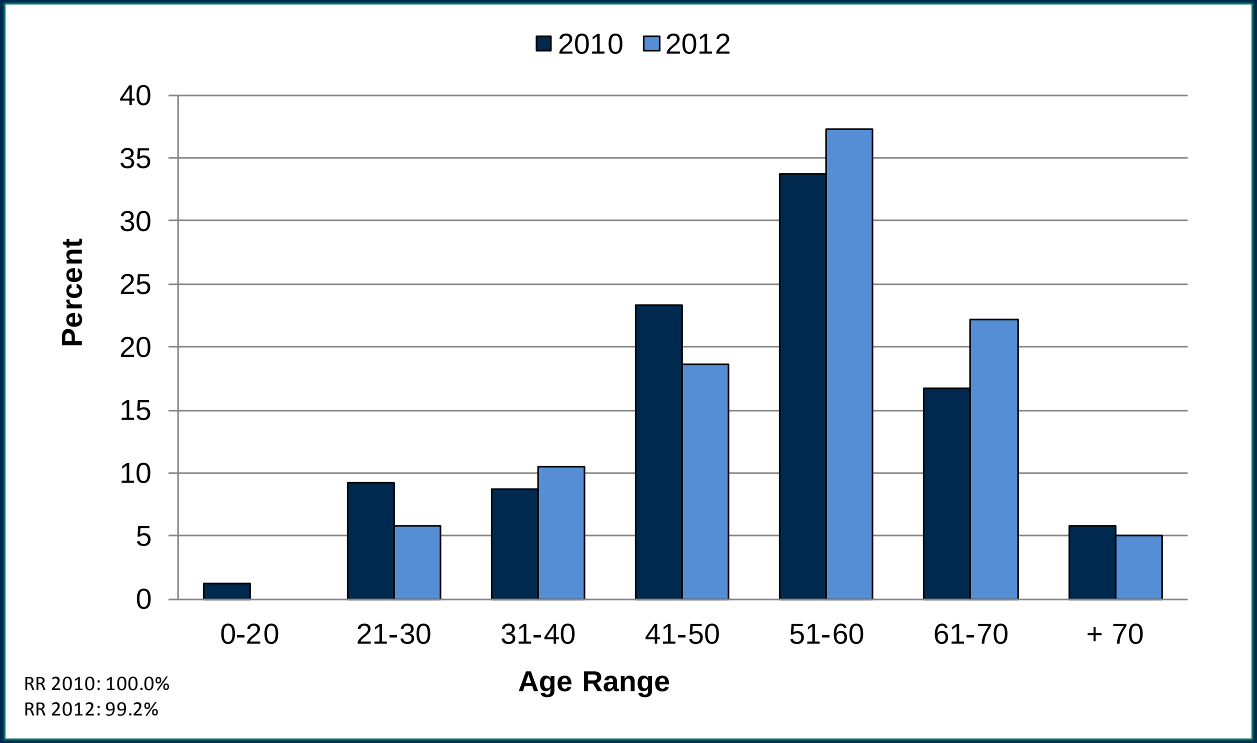
Age Distribution of Trawl Harvesters



- Largest age range 51-60 years old: 2010 = 33.8%, 2012 = 37.8%
- Over 51 years old : 2010 = 56.3%, 2012 = 64.6%

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Interview Quotes Related to 'Graying of the Fleet'

"Now you look on the back deck, everybody has gray beards and gray hair. There are very few younger people coming into it. I think it is due to the uncertainty. They don't know what the future is going to hold for them." (Eureka Fisherman - 2010)

"… We've got a major problem with the aging of the crews. In our fleet, for example, most of our guys are close to 50 years old and older. And we don't see young people getting involved in fishery, it's just not happening.." (Seattle Fisherman - 2012)

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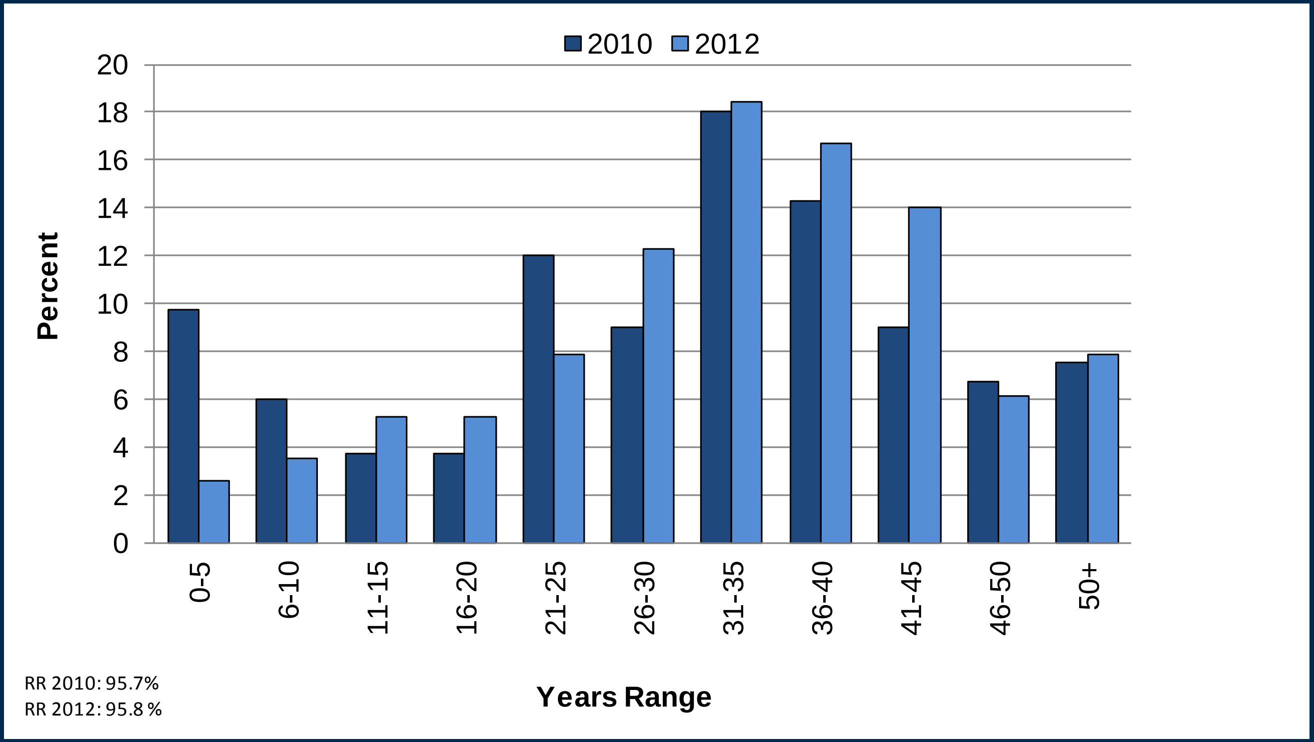
Total Number of Years Fishing



- Largest range is 31-35 years: 2010 = 18%, 2012 = 18.4%
- Over 31 years: 2010 = 55.6%, 2012 = 63.2%
- 0-5 years: 2010 = 9.8%, 2012 = 2.6%

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Interview Quotes Highlighting Reasons for 'Graying of the Fleet'

Financial barriers

"There is no avenue for new entrants, unless you're exceptionally wealthy or exceptionally lucky." (Monterey Fisherman, 2012)

"You know the saddest thing about all of this coming down now….. a young man that's coming into the business and wants to work hard… there's no way in hell he's going to get a million or whatever it takes to get into it. Let alone buy a boat. So unless NMFS comes up with some kind of a…loan program to help crew members or whatever that…I mean there's guys who want to fish, but it's financially impossible to do." (Astoria Fisherman, 2012)

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Interview Quotes Highlighting Reasons for 'Graying of the Fleet'

Loss of knowledge

"We need to support the older guy with the knowledge, as they are needed to mentor the young guys coming in to the fishery. We have to support that natural transition from older to younger practitioners, like an apprentice program would." (Morro Bay Fisherman, 2012)

"Yeah, anybody can go run a shrimp boat. All you gotta know how to do is run the gear up and down. With trawl it is, it's experience. That's the only way you can get it is by doing it." (Eureka Fisherman, 2012)

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Social Relationships

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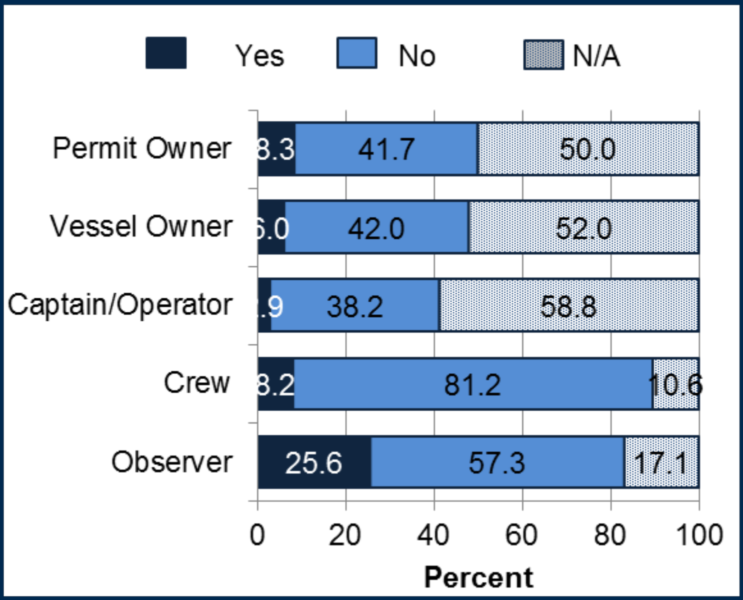
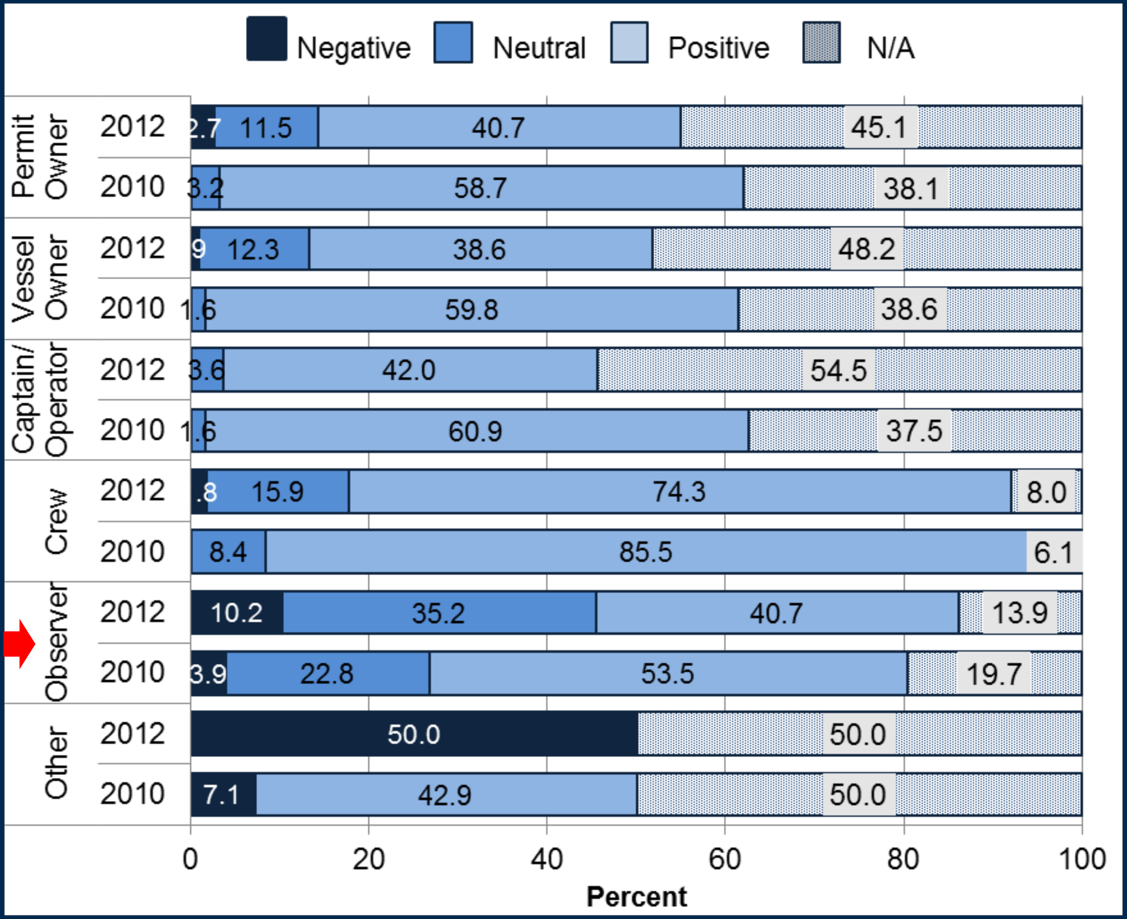
Quality of Relationships

Fishermen's Responses

Change in relationships





Largest change = 25.6% change with Observers

Trends indicate a decrease in positive relationships with vessel owners, crew, and captain/operators

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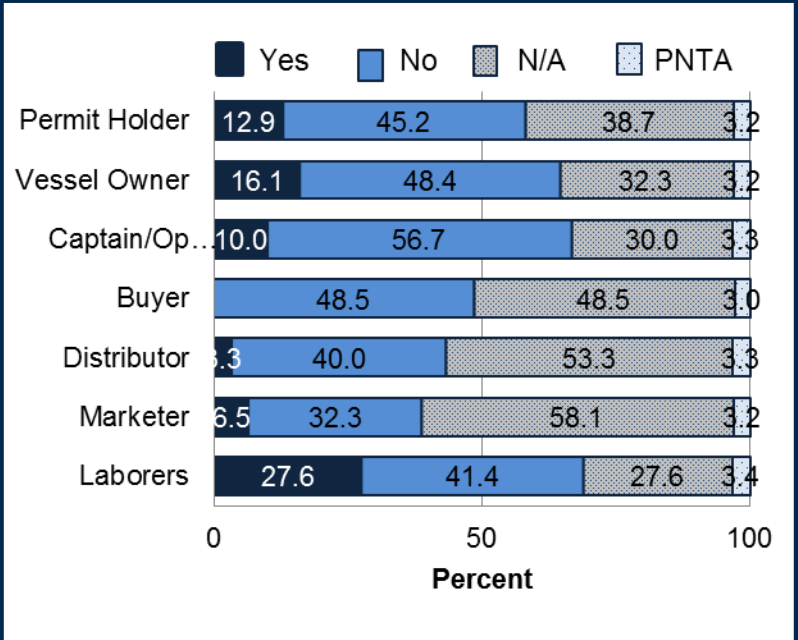
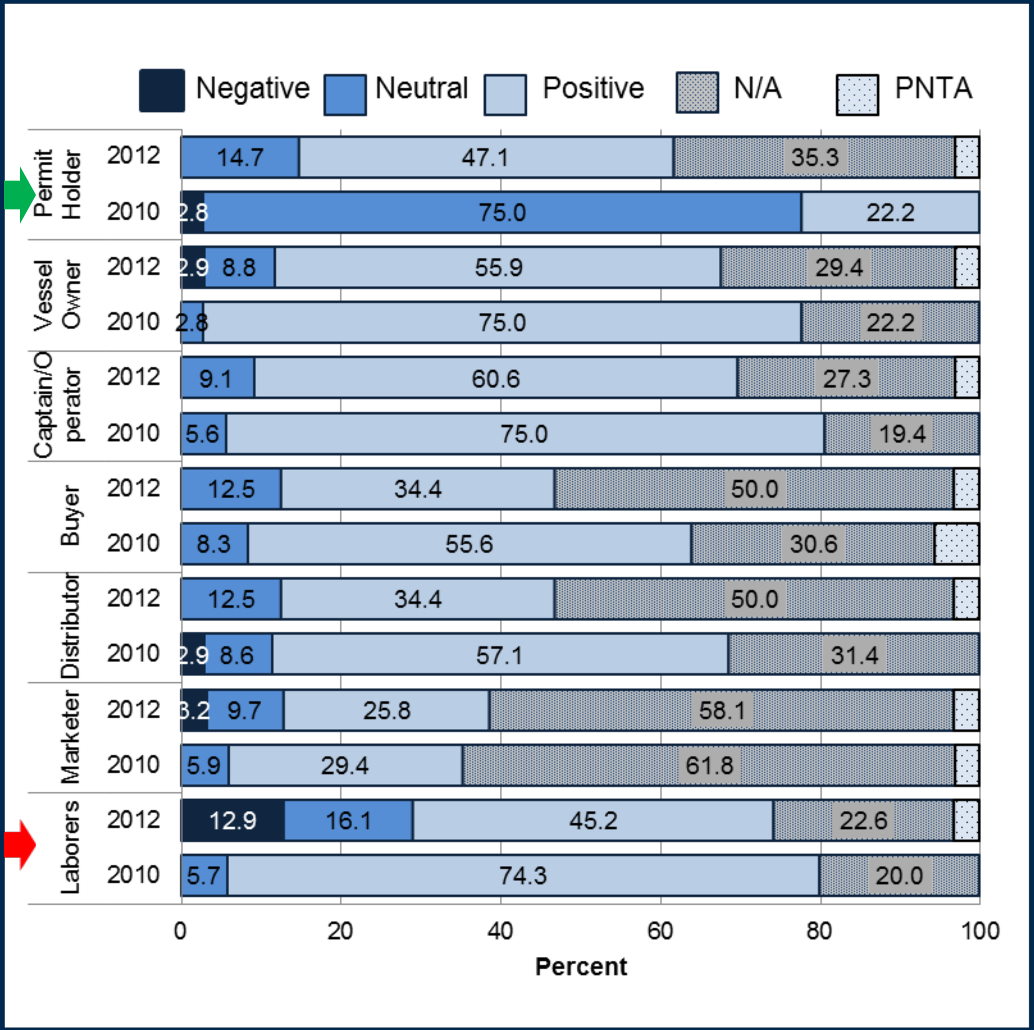
Quality of Relationships

Processor's Responses

Change in relationships



Largest change = 27.6% change with Laborers



Trends indicate a increase in positive relationships with permit holders and decrease in positive relationships with all other roles.

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Program Perspectives

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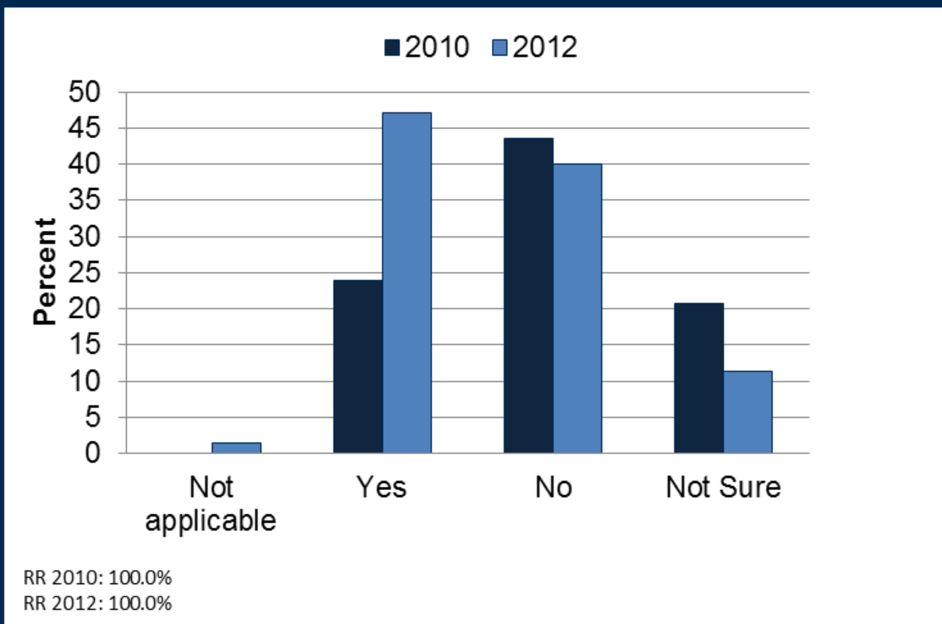
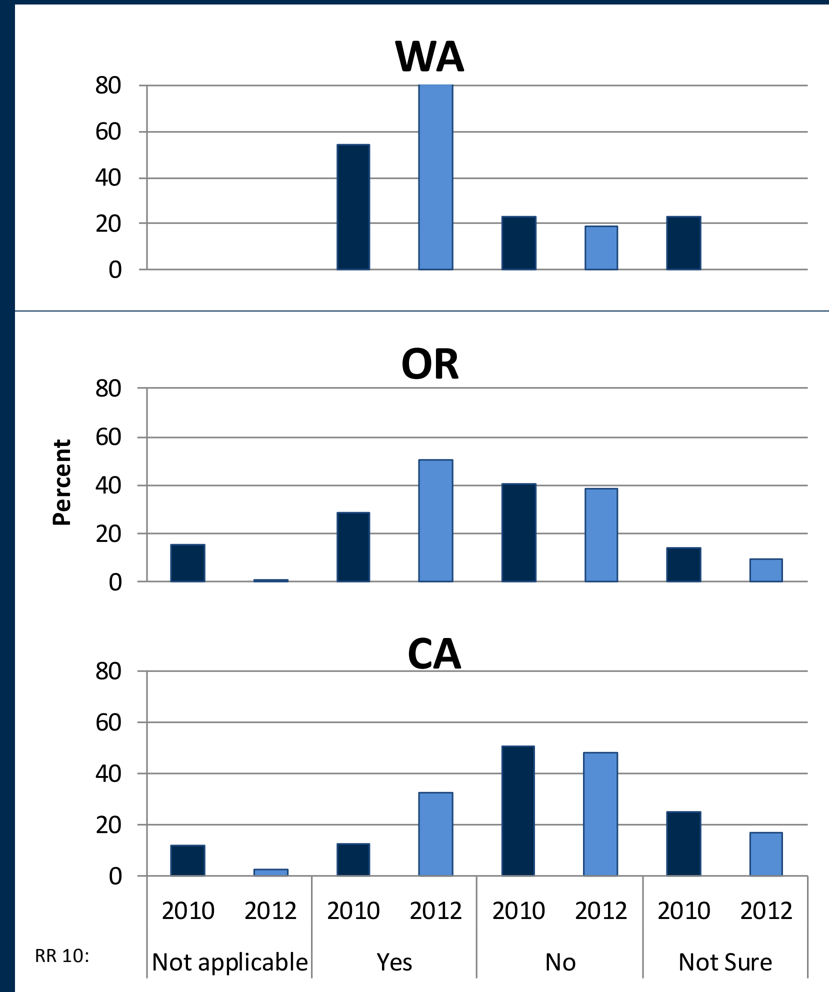
Program Support



More even distribution between Support and Lack of support responses in 2012

By State



Highest levels of support - WA, OR, CA respectively; Highest levels of Not supporting - CA, OR, WA respectively

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Top 5 Reasons Program is Supported

2010	2012
Reduced bycatch	Reduced bycatch
Increase in market value	Increase in individual accountability
Increase in business flexibility	Increase in business flexibility
Improvement of product quality	Increase in safety
More stable income	Increase in market value

Top 5 Reasons Program is Not Supported

2010	2012
Boats leave the fishery and negatively impact the community	Observer coverage is problematic
Loss of business and community infrastructure	Increased cost to enter fishery
Fewer Jobs	Fewer Jobs
Decrease in income	Impact small boats/small businesses negatively
Increased cost to remain in fishery	Increased cost to remain in fishery

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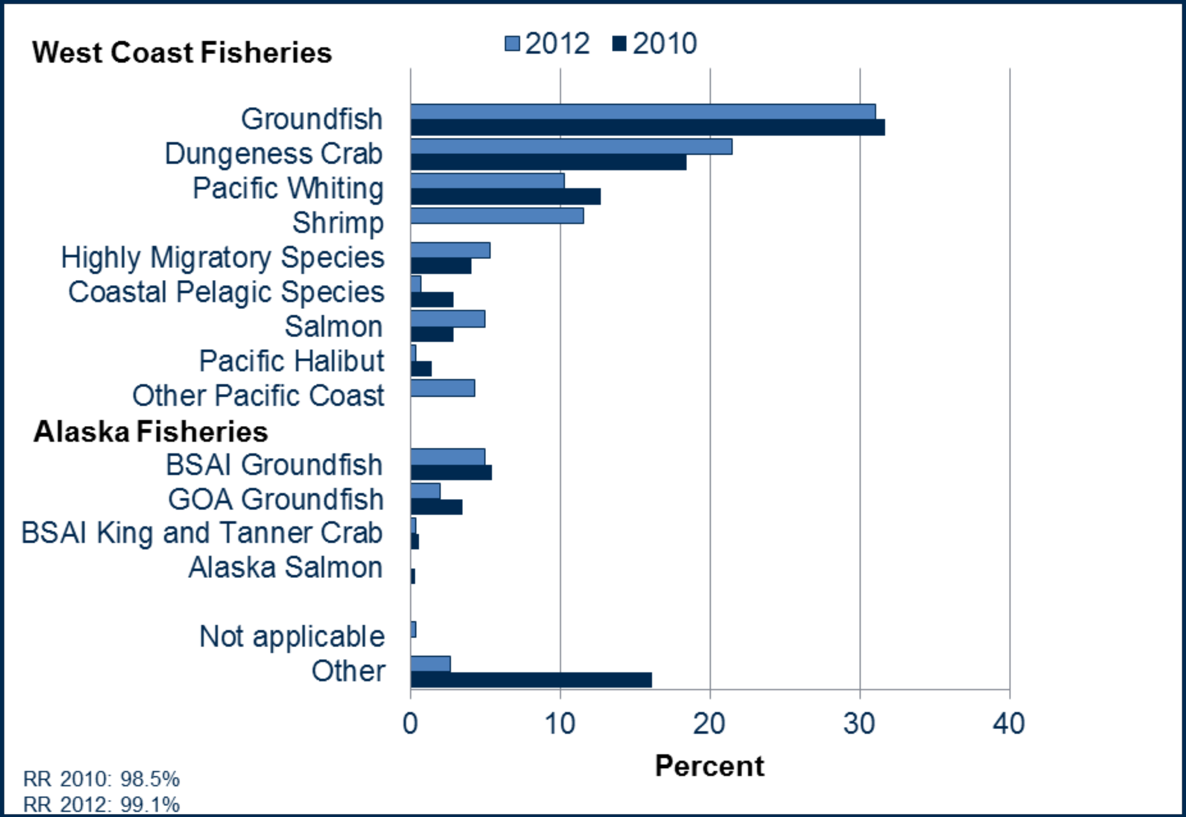
Fisheries Participation

Fisheries Participation



Primary alternate fisheries for groundfish fishermen include Dungeness Crab and Shrimp. NOTE: Shrimp was added as a fishery to the 2012 survey after being identified as an important fishery in the 'other' category in the 2010 results

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Interview Quotes Highlighting Reasons for Changing of species targeted

Change species in response to low quota allocations

"It [species targeted] has changed because of the potential to catch species that you don't have a catch share for……" (San Francisco Fisherman, 2012)

Change species due to bycatch quota

"The other problem with the IFQ program is the incidental catch on the beach. We used to beach fish. Now everybody's afraid to beach fish. I got two pounds of yellow eye. That's a fillet. How am I going to deliver a fillet?.......So it changes the dynamics of fishing" (Crescent City Fisherman, 2012)

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Interview Quotes Highlighting Reasons for Changing of species targeted

Effort shift in other fisheries

"I crab longer than I normally would. And I'm pink shrimp fishing now. …….That's because the market's good, but that can change" (San Francisco Fisherman, 2012)

"I mean, we're able to fish as much as we want for the most part, but this is good shrimp years though. When we get down to poor shrimp years, this whole thing's going to change." (Brookings Fisherman, 2012)

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Summary

- Greying of the fleet is supported
  - How to support new entrants?
- Social relationships show some change, time may provide more clarification
- Program perceptions change based on expectation vs. experience
- Fisheries participation
  - Some shift into fisheries with good markets, concerns future bad years

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Continue Research

- Working on complete comparative technical memorandum of all results
- 2015 Data Collection, pending funding
  - Show additional changes after quota share trading is open

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Funding was provided by NOAA Fisheries NS8/Catch Shares

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Co-Authors:

Kim Sparks*

Albert Arias-Arthur*

Anna Varney*

Field Researchers:

2010	2012
Tiffany Wilson	Brian Carter
Monica Galligan	Monica Galligan
Stacey Miller	Ruby Moon
Anna Varney	Anna Varney
Jason Davis	Melissa Stevens
Hunter Berns	Keeley Kent
Kristen Hoelting	Sara Wise
Karma Norman	Kim Sparks
	Albert Arias-Arthur

*Pacific States Marine Fisheries Commission

Agenda Item J.5.c
Supplemental GAP Report
November 2014

GROUNDFISH ADVISORY SUBPANEL REPORT ON ECONOMIC DATA COLLECTION PROGRAM REPORT ON FISHERY STATUS AND OVERVIEW ON SOCIAL SCIENCE RESEARCH

The Groundfish Advisory Subpanel (GAP) received a presentation from Dr. Todd Lee and Ms. Erin Steiner regarding the current draft Economic Data Collection report for 2012.

The GAP has long recognized the importance of compiling economic data on the groundfish fisheries. Such data is not only useful in reviewing management actions, such as the trawl rationalization program, but also can serve to bolster the analysis of management decisions by demonstrating the potential economic effects of various alternatives. We encourage the Northwest Fisheries Science Center to continue their data collection and economic model development work, including development of the FISHEyE on-line data access tool. There were concerns expressed about the cost of developing FISHEyE and whether it is being paid for through cost recovery.

During the course of the presentation, several questions were raised by GAP members regarding how data are calculated and displayed and some of the input provided by industry members. One of the concerns expressed by GAP members is that there are significant costs of doing business that are not reflected in the report. Dr. Lee and his team explained that they are constantly reviewing their calculations and data outputs and encouraged industry members to meet with them to improve the output.

The GAP also received a presentation from Ms. Suzanne Russell on the social study she is conducting for NMFS on the social aspects of the trawl rationalization program. The study is designed to provide data for appropriate NEPA analysis and can be helpful in conducting the five-year review of the trawl program.

The study notes a particular problem with the “greying” of the fleet, subsequent loss of knowledge, and the potential long-term impact on the fishery. Ms. Russell also provided data on changes in perception of the trawl rationalization program and changes in relationships among participants in the fishery.

The GAP believes that this is a valuable research effort and supports its continuation.

PFMC
11/17/14

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON ECONOMIC DATA COLLECTION PROGRAM REPORT ON FISHERY STATUS AND OVERVIEW ON SOCIAL SCIENCE RESEARCH

Dr. Todd Lee and Ms. Erin Steiner (NWFSC) made a presentation to the Scientific and Statistical Committee (SSC) on the status of the Economic Data Collection (EDC) Program. The presentation focused on reports prepared by the Northwest Fisheries Science Center (NWFSC) that cover four fishery sectors involved in the groundfish catch shares fishery: first receivers/shorebased processors, catcher vessels, catcher-processors, and motherships (Agenda Item J.5.b, NWFSC Reports 1-4). The reports provide detailed information that is useful for understanding the current economic status of the catch shares fishery and evaluating economic effects of the catch shares program. The reports satisfactorily respond to recommendations made by the SSC Economics Subcommittee.

To ensure proper interpretation of results, it is important to note that many of the indicators included in the EDC reports (e.g., revenues, costs, crew compensation) are not specific to groundfish, but pertain to participation in all West Coast fisheries by entities involved in groundfish catch shares. Thus, the values of these economic indicators are contingent on the number of days fished in West Coast fisheries. Due to the lack of cost data for Alaska fisheries, these indicators exclude participation in Alaska fisheries – an omission which is most relevant to entities that participate in the whiting fishery. Also, because the coverage of fixed costs in the EDC surveys is limited to costs directly related to maintenance and operation of vessels and processing facilities and excludes items such as office space, transportation of fish, and accounting services, net revenue estimates derived from these surveys overestimate true net revenue.

Dr. Suzanne Russell (NWFSC) presented a report to the SSC entitled “The Pacific Groundfish Fishery Social Study” (Agenda Item J.5.b, NWFSC Report 5). This report provides an initial look at the results of in-person interviews of groundfish catch share stakeholders from Morro Bay to the Canadian border conducted by Dr. Russell and her research team. These voluntary interviews were administered in the form of standardized surveys or semi-structured questions, and conducted in 2010 (before the catch shares program) and 2012 (after catch shares implementation but before quota trading was allowed). Additional interviews are planned for 2015 (one year after quota trading was allowed), contingent on funding. A more extensive report on this study – including the 2015 interviews – will be provided to the Council for the five-year review of the catch shares program.

The vessel owners and processors interviewed were identified from known sampling frames (limited entry permit holders for the 2010 interviews, quota share permit holders for the 2012 interviews). However, no such frames exist for stakeholders such as crew members, processing plant workers, fishery-related businesses such as fuel suppliers, and fishermen’s spouses. Instead, these latter stakeholders were identified through a process of personal referrals. Samples derived in this manner are not necessarily representative and make it difficult to compare results from the 2010 and 2012 interviews. The SSC recommends that further efforts be made to validate the social changes identified in this study, to the extent possible, with verifiably representative data, such as EDC survey data.

One important aspect of the social study is the attention given to stakeholder groups that are rarely considered in regulatory analysis, largely due to lack of data. The ability to obtain contact information on crew members and processing plant workers would help collect data to ensure that the effects of regulations on these groups receive more attention in the future.

The SSC commends economists and social scientists at the NWFSC for their work on the EDC Program and the Pacific Groundfish Social Study. Both projects involve considerable commitment of time and resources and contribute to an in-depth understanding of the effects of groundfish catch shares.

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11/17/14

METHODOLOGY REVIEW PROCESS COUNCIL OPERATING PROCEDURE

The Pacific Fishery Management Council (Council) is contemplating a new Council Operating Procedure (COP 25) that formalizes the process and schedule for methodology reviews that inform groundfish management decision-making. Council staff drafted COP 25 (Attachment 1) using COP 15, Salmon Estimation Methodology Updates and Review, as a template. Unlike the salmon methodology review process that serves an annual process, the draft COP 25 synchronizes the groundfish methodology review process with the biennial groundfish management process. The focus of COP 25 is on the schedule for groundfish methodology reviews with a goal to complete all methodology reviews before the Council begins the biennial specifications decision-making process in September during odd years. Other details governing the groundfish methodology process, such as the roles and responsibilities of participants and the critical elements of methodology review panel reports are outlined in the Terms of Reference for the Methodology Review Process for Groundfish and Coastal Pelagic Species.

The Council should consider the advice of the Scientific and Statistical Committee and the Groundfish Management Team, as well as other advisors and the public before considering the adoption of COP 25. Final adoption of COP 25, if the Council decides to advance consideration of this COP, is scheduled for the April, 2015 meeting.

Council Action:

Consider establishing a process and schedule for groundfish methodology reviews as a Council Operating Procedure.

Reference Materials:

1. Agenda Item J.6.a, Attachment 1: Proposed Draft of Council Operating Procedure 25.

Agenda Order:

a. Agenda Item Overview — John DeVore
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Consider Establishing a Process and Schedule for Groundfish Methodology Reviews as a Council Operating Procedure

PFMC
10/21/14

Agenda Item J.6.a
Attachment 1
November 2014

25

COUNCIL OPERATING PROCEDURE
Groundfish Estimation Methodology Updates and Review

Approved by Council:

PURPOSE

To establish procedures for the review and Council approval of groundfish estimation methodologies, utilizing the Scientific and Statistical Committee (SSC) and the Groundfish Management Team (GMT). The review of current and proposed methodologies for abundance and harvest projection, exempted fishing permits (EFPs), and conservation objectives is intended to help clarify the technical basis for the Council's management actions in a scheduled matter that avoids ad hoc timing perplexities. The procedure is intended to provide peer review of the technical estimation and modeling procedures, to ensure the best and most objective technical analyses possible, to minimize confusion during the biennial management decision-making process, and to resolve disputes over methodology.

OBJECTIVES AND DUTIES

During the September and November meetings during even years or at other appropriate times, the SSC, in conjunction with the GMT, will identify methodology issues which need documentation and/or merit a full review. The SSC is responsible for reviewing new or changed methodology as opposed to specific applications of the methodology. Examples of issues that could merit a full review include new model algorithms, methods for incorporating base data into models, catch forecasting methods for major PFMC stocks, experimental design of proposed experimental fisheries, and technical changes to stock complexes or conservation objectives. Examples of issues that do not merit full review include updating existing data sets in models, adding new stocks to models, and changing data ranges used to estimate parameters in models. Issues in this latter category will be reviewed within the GMT, and can be implemented without formal review by the SSC and approval of the Council; provided both the Council and SSC receive updates on such changes; however, if warranted, the Council may require additional review by the SSC. Stock assessments would not be part of this COP, as they are governed by specific stock biennial Terms of Reference.

At the November meeting during even years the SSC will inform the Council of the methodologies ready for review and recommend a review schedule. The SSC also will notify the Council of assistance needed from management entities and the GMT to accomplish the review.

The objectives, roles and responsibilities of participants, and the template for methodology review panel reports in the groundfish methodology process are outlined in the latest version of the Terms of Reference for the Methodology Review Process for Groundfish and Coastal Pelagic Species. The appropriate management entities, either themselves or with assistance from the GMT, are expected to provide background information on procedures and data bases for methodologies undergoing full review, as well as early notification and documentation of anticipated changes in procedures for methodologies not under full review in a particular year. Management entities who submit proposals for the Methodology Review, are responsible for ensuring that materials they provide to the SSC and Council are technically sound, clearly documented, and identified by author. Documents should receive internal entity review before being sent to the Council. To provide adequate review time for the SSC, materials must be received in the Council office at least two weeks before scheduled review meetings.

The SSC and GMT will report to the Council at the September meeting during odd years on the results of these reviews and provide recommendations for all proposed methodology changes. During the September meeting during odd years, the Council will adopt all proposed changes to be implemented in the coming biennial management cycle or will provide directions for handling any unresolved methodology problems.

Agenda Item J.6.b
Supplemental GAP Report
November 2014

GROUNDFISH ADVISORY SUBPANEL REPORT ON METHODOLOGY REVIEW PROCESS COUNCIL OPERATING PROCEDURE

The Groundfish Advisory Subpanel (GAP) received a presentation from Council staff on the proposed new COP 25 governing methodology review processes. While the GAP supports the proposed COP in general, it has a concern with one aspect.

The GAP notes that the Terms Of Reference For The Methodology Review Process For Groundfish And Coastal Pelagic Species adopted by the Council provide a specific role for the GAP in methodology reviews, similar to the role played by the GAP in STAR Panels. The Council Operating Procedures (COP) makes no mention of the GAP's role and implies that the GAP is not involved in reviews. We believe the proposed COP should be amended to reflect the appropriate role of the GAP. While the GAP might not be involved in every review, the option provided for an appropriate level of GAP participation that is contained in the Terms of Reference should be recognized.

PFMC
11/17/14

Agenda Item J.6.b
Supplemental GMT Report
November 2014

GROUNDFISH MANAGEMENT TEAM REPORT ON METHODOLOGY REVIEW PROCESS COUNCIL OPERATING PROCEDURE

The Groundfish Management Team (GMT) reviewed the proposed Council Operating Procedure (COP) to formalize the process and schedule for methodology reviews (Agenda Item J.6.a., Attachment 1, November 2014), received an overview from Mr. John DeVore, and offers the following.

The methodology review timeline proposed in the COP essentially follows what the GMT and Scientific and Statistical Subcommittee (SSC) did during the recent biennial harvest specifications and management measures process. While we managed to complete our methodology reviews through an ad hoc approach, we see value in formalizing the process through a COP to avoid confusion by outlining the expectations so all parties are aware.

The bulk of the methodology review matters seem to fall within the proposed schedule, however, we think there should be some flexibility to address emerging issues that arise outside of this schedule. These types of issues often come up over the winter (e.g., after the November Council meeting in odd years) as the GMT is in the process of using catch projection models to analyze potential management measures for projected impacts. **The GMT recommends the COP also provide the opportunity for GMT and SSC interactions outside the intended schedule, if need arises**.

The GMT also reviewed the proposed COP in terms of how the methodology review timeline fits with the biennial management cycle and specifically with regard to GMT responsibilities and data needs relative to the groundfish impact analysis conducted during the biennial harvest specifications and management measures. We considered the availability of data reports such as the Groundfish Mortality Report and the West Coast Groundfish Observer Program (WCGOP) model deliveries (e.g., nearshore and non-nearshore models) relative to the schedule. The GMT typically receives the Groundfish Mortality Report in November and the nearshore and non-nearshore models from the WCGOP in January for use during the current year. The GMT did not identify any new challenges with regard to data delivery schedules and the proposed COP.

The proposed COP describes that reviews of methodologies for abundance and harvest projection, exempted fishing permits and conservation objectives would fall under this COP. The GMT recommends expanding the scope of models reviewed to include impact models other than those designed for catch projection. **The GMT recommends the first sentence in the purpose statement be changed to "To establish procedures for the review and Council approval of <u>groundfish impact analyses</u>, utilizing the SSC and the GMT."** This change is recommended to reflect that the workload includes both groundfish projection models and other analyses to inform the impact analysis. For example, for 2015-2016, the GMT analyzed the probability of exceeding the spiny dogfish annual catch limit, this analysis was improved through SSC input on the methodology.

The GMT also notes that the Purpose statement in the draft COP mentions that the review of current and proposed methodologies would include those for Experimental Fishing Permits

(EFPs) but those are already covered in COP 19. **The GMT recommends removing EFPs from the Purpose statement.**

PFMC
11/18/14

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON METHODOLOGY REVIEW PROCESS COUNCIL OPERATING PROCEDURE

The Scientific and Statistical Committee (SSC) reviewed the draft Council Operating Procedure (COP) 25 for Methodology Reviews for groundfish (Agenda item J.6.a, Attachment 1). The draft COP describes a process to begin in September and November during even years (2016, 2018 …) to review methods associated with deciding new groundfish harvest specifications and would conclude in September of odd years. The SSC recommends that a separate review process be established in the COP with a different timetable for methods used in stock assessments. This process would begin in September of odd years (2015, 2017 …). The reviews would be scheduled during even years and would need to be completed at least by March of odd years so methods would be available for use in stock assessment.

In planning methodology reviews, the SSC will consider what type of review is most appropriate. Reviews can range from reviews by the SSC, reviews by the SSC groundfish and economics subcommittees, and finally to formal reviews conducted under the Terms of Reference (TOR) for methodology reviews where a panel of Center for Independent Experts (CIE) reviewers, outside experts, and SSC members conduct the review. Review with involvement of external reviewers is appropriate for methods that could have a strong impact on Council-managed fisheries or requires particular knowledge to evaluate new methodologies. It is the responsibility of the SSC to recommend to the Council the type of review that is needed.

The last paragraph of the draft COP should clarify that the SSC is responsible for determining whether the methodology is acceptable for use in stock assessments and in analysis of harvest specifications, and then forwarding its recommendations to the Council.

PFMC
11/17/14

RECONSIDERATION OF OPEN ACCESS REGISTRATION UNDER AMENDMENT 22

The Council's Groundfish Strategic Plan adopted in 2000 listed conversion of the current open access fishery to a limited entry system as a management priority. Considerations for this initiative began in September 2006 when the Council set a control date. An Environmental Assessment (EA) was prepared to analyze alternatives for this initiative under Fishery Management Plan Amendment 22 (the EA is available at http://www.pcouncil.org/groundfish/fishery-management-plan/fmp-amendment-22/). In March 2009, the Council ultimately adopted Alternative 2 in the draft EA, which did not convert the open access fishery into a limited entry system but did recommend a simple registration program for fishermen intending to land groundfish in the open access fishery.

In April 2009, the National Marine Fisheries Service notified the Council that in their analysis of the Amendment 22 action, the costs of open access registry to both the government and industry would exceed the benefits. In June 2009, the Council voted against further consideration of Amendment 22, but indicated they may consider a future rescission of the open access registry. In September 2014, in the context of a discussion of workload priorities, the Council scheduled this consideration for the November 2014 meeting agenda.

The Council task under this agenda item is to consider whether to formally rescind their decision to create an open access registry under Amendment 22. The Council should consider the advice of their advisors, public comment, and competing workload priorities in this consideration.

Council Action: Consider whether to rescind or revise the action to create an open access registry originally adopted under FMP Amendment 22.

Reference Materials:

None.

Agenda Order:

a. Agenda Item Overview — John DeVore
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Consider Final Action to Rescind or Revise Council Action of Open Access Registration under Amendment 22

PFMC
10/16/14

GROUNDFISH ADVISORY SUBPANEL REPORT ON RECONSIDERATION OF OPEN ACCESS REGISTRATION UNDER AMENDMENT 22

The Groundfish Advisory Subpanel (GAP) recommends the proposed action to rescind the Amendment 22 decision to create a registry of open access fishermen. Rescinding the registration decision will allow NMFS to focus on higher priority initiatives.

PFMC
11/18/14

CONSIDERATION OF INSEASON ADJUSTMENTS

Management measures for groundfish are set by the Council with the general understanding that these measures will likely need to be adjusted within the biennium to attain, but not exceed, the annual catch limits (ACL). This agenda item will consider inseason adjustments to remaining 2014 fisheries and 2015 fisheries. Potential inseason adjustments include adjustments to Rockfish Conservation Area (RCA) boundaries and adjustments to commercial and recreational fishery catch limits. Adjustments are, in part, based on recent landings and the latest information from the West Coast Groundfish Observer Program.

2014 Pacific Whiting Fishery Catches of Darkblotched Rockfish and Chinook Salmon
On October 17, 2014, an emergency Council meeting was held to consider inseason adjustments to 2014 trawl fisheries related to Pacific whiting, darkblotched rockfish, and the incidental take of Chinook salmon. An emergency Council meeting was necessary because the Pacific whiting mothership cooperative closed itself October 11, 2014 when their darkblotched rockfish allocation was exceeded by 1 metric ton (mt). Approximately 30 percent of the mothership sector Pacific whiting allocation remained unharvested, at a value of approximately $10 million, given recent price structure. Additionally, the National Marine Fisheries Service (NMFS) determined that the Pacific whiting fishery had exceeded the 11,000 Chinook salmon threshold defined in regulation and in the Endangered Species Act (ESA) biological opinion for Chinook salmon. Attainment of the threshold requires NMFS to implement the Ocean Salmon Conservation Zone, which prohibits all vessels from targeting Pacific whiting with midwater gears in waters shallower than 100 fm (see regulations at 660.131(c)(3)), and to reinitiate ESA consultation.

After considering the available information, the Council recommended that NMFS use their automatic authority to reapportion 3 mt of darkblotched rockfish from the catcher-processor sector to the mothership sector and implement the Ocean Salmon Conservation Zone to reduce bycatch of Chinook salmon. The Council recommended using NMFS' automatic authority, as provided for in the groundfish regulations, since implementation would be expeditious, immediately restricting fishing areas to reduce Chinook salmon bycatch and allowing the mothership sector to recommence fishing posthaste. NMFS implemented the darkblotched rockfish reapportionment on October 17, 2014 and the Ocean Salmon Conservation Zone on October 20, 2014 (see http://tinyurl.com/mhe5xfh for the NMFS Public Notice). The Council also recommended NMFS continue to work with the mothership and catcher-processor sectors to ensure measures are taken through their respective cooperatives to fish seaward of 150 fm, on a voluntary basis, to further reduce Chinook salmon bycatch.

The Council also recommended that NMFS, through a routine inseason adjustment, transfer 3 mt from the incidental open access off-the-top deductions[1] from the darkblotched rockfish ACL to

[1] Routine management measures have been previously analyzed, are anticipated to be used inseason, and are defined in regulation. Off-the-top deductions from the ACL account for groundfish mortality in tribal fisheries, scientific research, incidental open access fisheries, and exempted fishing permits. The ACL set-asides, except for tribal fisheries amounts, can be modified through inseason action and made available to other fisheries based on inseason projections.

the catcher-processor sector. Additionally, the Council recommended NMFS use automatic authority to reapportion the unused portion of the Pacific whiting tribal allocation to the shorebased IFQ, mothership, and catcher-processor sectors. Distribution of the tribal allocation to the shorebased IFQ quota would occur only after the shorebased sector was projected to or had attained their original whiting distribution. The Council recommended that, concurrent with the distribution of the tribal quota to the shorebased sector, a Pacific whiting Bycatch Reduction Area be implemented in regulation, which would prohibit all vessels from targeting Pacific whiting with midwater gears shoreward of 150 fm (see regulations at 660.72 and 660.73).

The above-mentioned Council recommendations are intended to achieve the Pacific whiting total allowable catch, while mitigating impacts to overfished and protected species. Detailed information, including the October briefing materials and transmittal letter, can be found on the Council website (http://tinyurl.com/nssrqz4). At the November Council meeting, under Agenda Item J.8, the Groundfish Management Team is expected to provide an update on the fishery progress to date.

2015 Fisheries
In September, NMFS notified the Council that the biennial regulations would likely be delayed beyond January 1, 2015 with implementation expected on March 1, 2015. Under such circumstances, the harvest specifications (e.g., ACLs) and management measures (e.g., season dates and limits) that were in place in January and February of 2014 would be in place for the same period in 2015. The 2014 commercial trip limit and RCA boundaries are provided in Agenda J.8.a, Attachment 1. Guidance on evaluating eligible inseason adjustments for 2015 fisheries can be found in Agenda Item J.8.b, NMFS Report.

Council Action:

Consider information on the status of 2014 fisheries and adopt inseason adjustments for the remaining 2014 fisheries and or 2015, as necessary.

Reference Materials:

1. Agenda Item J.8.a, Attachment 1. 2014 Pacific Coast Groundfish Trip Limits and RCA Boundaries.
2. Agenda Item J.8.b, NMFS Report. National Marine Fisheries Service Report on Inseason Adjustments for 2015.

Agenda Order:

a. Agenda Item Overview — Kelly Ames
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Adopt Recommendations for Adjustments to 2014 and 2015 Groundfish Fisheries

PFMC
10/22/14

National Marine Fisheries Service, West Coast Region
7600 Sand Point Way NE, Seattle, WA 98115
www.westcoast.fisheries.noaa.gov/index.html

Pacific Coast Groundfish
Trip Limits and RCA Boundaries

For Information Contact:
Groundfish Staff, Seattle, WA

July 25, 2014
(206) 526-6140

[see next page]

Table 1 (North) to Part 660, Subpart D -- Limited Entry Trawl Rockfish Conservation Areas and Landing Allowances for non-IFQ Species and Pacific Whiting North of 40°10' N. Lat.

This table describes Rockfish Conservation Areas for vessels using groundfish trawl gear. This table describes incidental landing allowances for vessels registered to a Federal limited entry trawl permit and using groundfish trawl or groundfish non-trawl gears to harvest individual fishing quota (IFQ) species.

Other Limits and Requirements Apply -- Read § 660.10 - § 660.399 before using this table

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TABLE 1 (North)

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	Rockfish Conservation Area (RCA)[1/]:						
1	North of 48°10' N. lat.	shore - modified[2/] 200 fm line[1/]	shore - 200 fm line[1/]	shore - 150 fm line[1/]		shore - 200 fm line[1/]	shore - modified[2/] 200 fm line[1/]
2	48°10' N. lat. - 45°46' N. lat.	100 fm line[1/] - 150 fm line[1/]					
3	45° 46' N. lat. - 40°10' N. lat.	100 fm line[1/] - modified[2/] 200 fm line[1/]	100 fm line[1/] - 200 fm line[1/]				100 fm line[1/] - modified[2/] 200 fm line[1/]

Selective flatfish trawl gear is required shoreward of the RCA; all bottom trawl gear (large footrope, selective flatfish trawl, and small footrope trawl gear) is permitted seaward of the RCA. Large footrope and small footrope trawl gears (except for selective flatfish trawl gear) are prohibited shoreward of the RCA. Midwater trawl gear is permitted only for vessels participating in the primary whiting season. **Vessels fishing groundfish trawl quota pounds with groundfish non-trawl gears, under gear switching provisions at § 660.140, are subject to the limited entry groundfish trawl fishery landing allowances in this table, regardless of the type of fishing gear used. Vessels fishing groundfish trawl quota pounds with groundfish non-trawl gears, under gear switching provisions at § 660.140, are subject to the limited entry fixed gear non-trawl RCA, as described in Tables 1 (North) and 1 (South) to Part 660, Subpart E.**

See § 660.60, § 660.130, and § 660.140 for Additional Gear, Trip Limit, and Conservation Area Requirements and Restrictions. See §§ 660.70-660.74 and §§ 660.76-660.79 for Conservation Area Descriptions and Coordinates (including RCAs, YRCA, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).

State trip limits and seasons may be more restrictive than federal trip limits, particularly in waters off Oregon and California.

4	**Minor nearshore rockfish & Black rockfish**	300 lb/ month
5	**Whiting**	
6	midwater trawl	Before the primary whiting season: CLOSED. -- During the primary season: mid-water trawl permitted in the RCA. See §660.131 for season and trip limit details. -- After the primary whiting season: CLOSED.
7	large & small footrope gear	Before the primary whiting season: 20,000 lb/trip. -- During the primary season: 10,000 lb/trip. -- After the primary whiting season: 10,000 lb/trip.
8	**Cabezon**	
9	North of 46°16' N. lat.	Unlimited
10	46°16' N. lat. - 40°10' N. lat.	50 lb/ month
11	**Shortbelly**	Unlimited
12	**Spiny dogfish**	60,000 lb/ month
13	**Longnose skate**	Unlimited
14	**Other Fish [3/]**	Unlimited

1/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours, and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to the RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

2/ The "modified" fathom lines are modified to exclude certain petrale sole areas from the RCA.

3/ "Other fish" are defined at § 660.11 and include sharks (except spiny dogfish), skates (except longnose skate), ratfish, morids, grenadiers, and kelp greenling.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 1 (South) to Part 660, Subpart D -- Limited Entry Trawl Rockfish Conservation Areas and Landing Allowances for non-IFQ Species and Pacific Whiting South of 40°10' N. Lat.

This table describes Rockfish Conservation Areas for vessels using groundfish trawl gear. This table describes incidental landing allowances for vessels registered to a Federal limited entry trawl permit and using groundfish trawl or groundfish non-trawl gears to harvest individual fishing quota (IFQ) species.

Other Limits and Requirements Apply -- Read § 660.10 - § 660.399 before using this table

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		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	Rockfish Conservation Area (RCA)[1/]:						
1	South of 40°10' N. lat.	100 fm line[1/] - 150 fm line [1/ 2/]					
	Small footrope trawl gear is required shoreward of the RCA; all trawl gear (large footrope, selective flatfish trawl, midwater trawl, and small footrope trawl gear) is permitted seaward of the RCA. Large footrope trawl gear and midwater trawl gear are prohibited shoreward of the RCA. **Vessels fishing groundfish trawl quota pounds with groundfish non-trawl gears, under gear switching provisions at § 660.140, are subject to the limited entry groundfish trawl fishery landing allowances in this table, regardless of the type of fishing gear used. Vessels fishing groundfish trawl quota pounds with groundfish non-trawl gears, under gear switching provisions at § 660.140, are subject to the limited entry fixed gear non-trawl RCA, as described in Tables 1 (North) and 1 (South) to Part 660, Subpart E.**						
	See § 660.60, § 660.130, and § 660.140 for Additional Gear, Trip Limit, and Conservation Area Requirements and Restrictions. See §§ 660.70-660.74 and §§ 660.76-660.79 for Conservation Area Descriptions and Coordinates (including RCAs, YRCA, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).						
	State trip limits and seasons may be more restrictive than federal trip limits, particularly in waters off Oregon and California.						
2	**Longspine thornyhead**						
3	South of 34°27' N. lat.	24,000 lb/ 2 months					
4	**Minor nearshore rockfish & Black rockfish**	300 lb/ month					
5	**Whiting**						
6	midwater trawl	Before the primary whiting season: CLOSED. -- During the primary season: mid-water trawl permitted in the RCA. See §660.131 for season and trip limit details. -- After the primary whiting season: CLOSED.					
7	large & small footrope gear	Before the primary whiting season: 20,000 lb/trip. -- During the primary season: 10,000 lb/trip. -- After the primary whiting season: 10,000 lb/trip.					
8	**Cabezon**	50 lb/ month					
9	**Shortbelly**	Unlimited					
10	**Spiny dogfish**	60,000 lb/ month					
11	**Longnose skate**	Unlimited					
12	**California scorpionfish**	Unlimited					
13	**Other Fish [3/]**	Unlimited					

TABLE 1 (South)

1/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours, and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to the RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

2/ South of 34°27' N. lat., the RCA is 100 fm line - 150 fm line along the mainland coast; shoreline - 150 fm line around islands.

3/ "Other fish" are defined at § 660.11 and include sharks (except spiny dogfish), skates (excluding longnose skate), ratfish, morids, grenadiers, and kelp greenling.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 2 (North) to Part 660, Subpart E -- Non-Trawl Rockfish Conservation Areas and Trip Limits for Limited Entry Fixed Gear North of 40°10' N. lat.

Other limits and requirements apply -- Read §§660.10 through 660.399 before using this table 8012014

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	Rockfish Conservation Area (RCA)[1/]:						
1	North of 46°16' N. lat.	shoreline - 100 fm line[1/]					
2	46°16' N. lat. - 42°00' N. lat.	30 fm line[1/] - 100 fm line[1/]					
3	42°00' N. lat. - 40°10' N. lat.	20 fm depth contour - 100 fm line[1/]					
	See §§660.60 and 660.230 for additional gear, trip limit and conservation area requirements and restrictions. See §§660.70-660.74 and §§660.76-660.79 for conservation area descriptions and coordinates (including RCAs, YRCAs, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).						
	State trip limits and seasons may be more restrictive than Federal trip limits or seasons, particularly in waters off Oregon and California.						
4	**Minor slope rockfish[2/] & Darkblotched rockfish**	4,000 lb/ 2 months					
5	**Pacific ocean perch**	1,800 lb/ 2 months					
6	**Sablefish**	950 lb/ week, not to exceed 2,850 lb/ 2 months			1,000 lb/ week, not to exceed 3,000 lb/ 2 months		
7	**Longspine thornyhead**	10,000 lb/ 2 months					
8	**Shortspine thornyhead**	2,000 lb/ 2 months			2,500 lb/ 2 months		
9	**Dover sole**	5,000 lb/ month South of 42° N. lat., when fishing for "other flatfish," vessels using hook-and-line gear with no more than 12 hooks per line, using hooks no larger than "Number 2" hooks, which measure 0.44 in (11 mm) point to shank, and up to two 1 lb (0.45 kg) weights per line, are not subject to the RCAs.					
10	**Arrowtooth flounder**						
11	**Petrale sole**						
12	**English sole**						
13	**Starry flounder**						
14	**Other flatfish[3/]**						
15	**Whiting**	10,000 lb/ trip					
16	**Minor shelf rockfish[2/], Shortbelly, Widow & Yellowtail rockfish**	200 lb/ month					
17	**Canary rockfish**	CLOSED					
18	**Yelloweye rockfish**	CLOSED					
19	**Minor nearshore rockfish & Black**						
20	North of 42°00' N. lat.	5,000 lb/ 2 months, no more than 1,200 lb of which may be species other than black rockfish or blue rockfish[4/]					
21	42°00' N. lat. - 40°10' N. lat.	8,500 lb/ 2 months, of which no more than 1,200 lb of which may be species other than black rockfish					
22	**Lingcod[5/]**	CLOSED		800 lb/ 2 months			400 lb/ month; CLOSED
23	**Pacific cod**	1,000 lb/ 2 months					
24	**Spiny dogfish**	200,000 lb/ 2 months		150,000 lb/ 2 months	100,000 lb/ 2 months		
25	**Longnose skate**	Unlimited					
26	**Other fish[6/]**	Unlimited					

TABLE 2 (North)

1/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours (with the exception of the 20-fm depth contour boundary south of 42° N. lat.), and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

2/ Bocaccio, chilipepper and cowcod are included in the trip limits for minor shelf rockfish and splitnose rockfish is included in the trip limits for minor slope rockfish.

3/ "Other flatfish" are defined at § 660.11 and include butter sole, curlfin sole, flathead sole, Pacific sanddab, rex sole, rock sole, and sand sole.

4/ For black rockfish north of Cape Alava (48°09.50' N. lat.), and between Destruction Is. (47°40' N. lat.) and Leadbetter Pnt. (46°38.17' N. lat.), there is an additional limit of 100 lb or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

5/ The minimum size limit for lingcod is 22 inches (56 cm) total length North of 42° N. lat. and 24 inches (61 cm) total length South of 42° N. lat.

6/ "Other fish" are defined at § 660.11 and include sharks (except spiny dogfish), skates (except longnose skates), ratfish, morids, grenadiers, and kelp greenling. Cabezon are included in the trip limits for "other fish."

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

National Marine Fisheries Service, West Coast Region

Table 2 (South) to Part 660, Subpart E -- Non-Trawl Rockfish Conservation Areas and Trip Limits for Limited Entry Fixed Gear South of 40°10' N. lat.

Other limits and requirements apply -- Read §§660.10 through 660.399 before using this table

8012014

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	Rockfish Conservation Area (RCA)[1/]:						
1	40°10' N. lat. - 34°27' N. lat.	30 fm line[1/] - 150 fm line[1/]					
2	South of 34°27' N. lat.	60 fm line[1/] - 150 fm line[1/] (also applies around islands)					
	See §§660.60 and 660.230 for additional gear, trip limit and conservation area requirements and restrictions. See §§660.70-660.74 and §§660.76-660.79 for conservation area descriptions and coordinates (including RCAs, YRCAs, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).						
	State trip limits and seasons may be more restrictive than Federal trip limits or seasons, particularly in waters off Oregon and California.						
3	**Minor slope rockfish[2/] & Darkblotched rockfish**	40,000 lb/ 2 months, of which no more than 1,375 lb may be blackgill rockfish					
4	**Splitnose rockfish**	40,000 lb/ 2 months					
5	**Sablefish**						
6	40°10' N. lat. - 36°00' N. lat.	950 lb/ week, not to exceed 2,850 lb/ 2 months			1,000 lb/ week, not to exceed 3,000 lb/ 2 months		
7	South of 36°00' N. lat.	2,000 lb/ week					
8	**Longspine thornyhead**	10,000 lb/ 2 months					
9	**Shortspine thornyhead**						
10	40°10' N. lat. - 34°27' N. lat.	2,000 lb/ 2 months			2,500 lb/ 2 months		
11	South of 34°27' N. lat.	3,000 lb/ 2 months					
12	**Dover sole**	5,000 lb/ month South of 42° N. lat., when fishing for "other flatfish," vessels using hook-and-line gear with no more than 12 hooks per line, using hooks no larger than "Number 2" hooks, which measure 0.44 in (11 mm) point to shank, and up to two 1 lb (0.45 kg) weights per line, are not subject to the RCAs.					
13	**Arrowtooth flounder**						
14	**Petrale sole**						
15	**English sole**						
16	**Starry flounder**						
17	**Other flatfish[3/]**						
18	**Whiting**	10,000 lb/ trip					
19	**Minor shelf rockfish[2/], Shortbelly, Widow rockfish (including Bocaccio and Chilipepper between 40°10' - 34°27' N. lat.)**						
20	40°10' N. lat. - 34°27' N. lat.	Minor shelf rockfish, shortbelly, widow rockfish, bocaccio & chilipepper: 2,500 lb/ 2 months, of which no more than 500 lb may be any species other than chilipepper.					
21	South of 34°27' N. lat.	3,000 lb/ 2 months	CLOSED	3,000 lb/ 2 months	4,000 lb/ 2 months		
22	**Chilipepper**						
23	40°10' N. lat. - 34°27' N. lat.	Chilipepper included under minor shelf rockfish, shortbelly, widow rockfish and bocaccio limits - - See above					
24	South of 34°27' N. lat.	2,000 lb/ 2 months, this opportunity only available seaward of the non-trawl RCA					
25	**Canary rockfish**	CLOSED					
26	**Yelloweye rockfish**	CLOSED					
27	**Cowcod**	CLOSED					
28	**Bronzespotted rockfish**	CLOSED					
29	**Bocaccio**						
30	40°10' N. lat. - 34°27' N. lat.	Bocaccio included under Minor shelf rockfish, shortbelly, widow rockfish & chilipepper limits - - See above					
31	South of 34°27' N. lat.	300 lb/ 2 months	CLOSED	300 lb/ 2 months	500 lb/ 2 months		

TABLE 2 (South)

Table 2 (South). Continued

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
32	**Minor nearshore rockfish & Black rockfish**						
33	Shallow nearshore	600 lb/ 2 months	CLOSED	800 lb/ 2 months	900 lb/ 2 months	800 lb/ 2 months	1,000 lb/ 2 months
34	Deeper nearshore						
35	40°10' N. lat. - 34°27' N. lat.	700 lb/ 2 months	CLOSED	700 lb/ 2 months	900 lb/ 2 months		1,000 lb/ 2 months
36	South of 34°27' N. lat.	500 lb/ 2 months		600 lb/ 2 months			
37	California scorpionfish	1,200 lb/ 2 months	CLOSED	1,200 lb/ 2 months	1,200 lb/ 2 months		
38	**Lingcod**[4/]	CLOSED		800 lb/ 2 months			400 lb/ month; CLOSED
39	**Pacific cod**	1,000 lb/ 2 months					
40	**Spiny dogfish**	200,000 lb/ 2 months		150,000 lb/ 2 months	100,000 lb/ 2 months		
41	**Longnose skate**	Unlimited					
42	**Other fish**[6/]	Unlimited					

TABLE 2 (South)

1/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours (with the exception of the 20-fm depth contour boundary south of 42° N. lat.), and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

2/ POP is included in the trip limits for minor slope rockfish. Blackgill rockfish have a species specific trip sub-limit within the minor slope rockfish cumulative limit. Yellowtail rockfish are included in the trip limits for minor shelf rockfish. Bronzespotted rockfish have a species specific trip limit.

3/ "Other flatfish" are defined at § 660.11 and include butter sole, curlfin sole, flathead sole, Pacific sanddab, rex sole, rock sole, and sand sole.

4/ The commercial mimimum size limit for lingcod is 24 inches (61 cm) total length South of 42° N. lat.

5/ "Other fish" are defined at § 660.11 and include sharks (except spiny dogfish), skates (except longnose skates), ratfish, morids, grenadiers, and kelp greenling. Cabezon and longnose skate are included in the trip limits for "other fish."

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 3 (North) to Part 660, Subpart F -- Non-Trawl Rockfish Conservation Areas and Trip Limits for Open Access Gears North of 40°10' N. lat.

Other limits and requirements apply -- Read §§660.10 through 660.399 before using this table 8012014

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
Rockfish Conservation Area (RCA)[1/]:							
1	North of 46°16' N. lat.	shoreline - 100 fm line[1/]					
2	46°16' N. lat. - 42°00' N. lat.	30 fm line[1/] - 100 fm line[1/]					
3	42°00' N. lat. - 40°10' N. lat.	20 fm depth contour - 100 fm line[1/]					
See §§660.60, 660.330 and 660.333 for additional gear, trip limit and conservation area requirements and restrictions. See §§660.70-660.74 and §§660.76-660.79 for conservation area descriptions and coordinates (including RCAs, YRCAs, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).							
State trip limits and seasons may be more restrictive than Federal trip limits or seasons, particularly in waters off Oregon and California.							
4	**Minor slope rockfish[2/] & Darkblotched rockfish**	Per trip, no more than 25% of weight of the sablefish landed					
5	**Pacific ocean perch**	100 lb/ month					
6	**Sablefish**	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 1,600 lb/ 2 months			350 lb/ day, or 1 landing per week of up to 1,600 lb, not to exceed 3,200 lb/ 2 months		
7	**Thornyheads**	CLOSED					
8	**Dover sole**	3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sanddabs. South of 42° N. lat., when fishing for "other flatfish," vessels using hook-and-line gear with no more than 12 hooks per line, using hooks no larger than "Number 2" hooks, which measure 0.44 in (11 mm) point to shank, and up to two 1 lb (0.45 kg) weights per line are not subject to the RCAs.					
9	**Arrowtooth flounder**						
10	**Petrale sole**						
11	**English sole**						
12	**Starry flounder**						
13	**Other flatfish[3/]**						
14	**Whiting**	300 lb/ month					
15	**Minor shelf rockfish[2/], Shortbelly, Widow & Yellowtail rockfish**	200 lb/ month					
16	**Canary rockfish**	CLOSED					
17	**Yelloweye rockfish**	CLOSED					
18	**Minor nearshore rockfish & Black rockfish**						
19	North of 42°00' N. lat.	5,000 lb/ 2 months, no more than 1,200 lb of which may be species other than black rockfish					
20	42°00' N. lat. - 40°10' N. lat.	8,500 lb/ 2 months, of which no more than 1,200 lb may be species other than black rockfish					
21	**Lingcod[5/]**	CLOSED		400 lb/ month			CLOSED
22	**Pacific cod**	1,000 lb/ 2 months					
23	**Spiny dogfish**	200,000 lb/ 2 months		150,000 lb/ 2 months	100,000 lb/ 2 months		
24	**Longnose skate**	Unlimited					
25	**Other fish[6/]**	Unlimited					

TABLE 3 (North)

Table 3 (North). Continued

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
26	**SALMON TROLL** *(subject to RCAs when retaining all species of groundfish, except for yellowtail rockfish and lingcod, as described below)*						
27	North	Salmon trollers may retain and land up to 1 lb of yellowtail rockfish for every 2 lbs of salmon landed, with a cumulative limit of 200 lb/month, both within and outside of the RCA. This limit is within the 200 lb per month combined limit for minor shelf rockfish, widow rockfish and yellowtail rockfish, and not in addition to that limit. Salmon trollers may retain and land up to 1 lingcod per 15 Chinook per trip, plus 1 lingcod per trip, up to a trip limit of 10 lingcod, on a trip where any fishing occurs within the RCA. This limit only applies during times when lingcod retention is allowed, and is not "CLOSED." This limit is within the per month limit for lingcod described in the table above, and not in addition to that limit. All groundfish species are subject to the open access limits, seasons, size limits and RCA restrictions listed in the table above, unless otherwise stated here.					
28	**PINK SHRIMP NON-GROUNDFISH TRAWL** *(not subject to RCAs)*						
29	North	**Effective April 1 - October 31:** Groundfish: 500 lb/day, multiplied by the number of days of the trip, not to exceed 1,500 lb/trip. The following sublimits also apply and are counted toward the overall 500 lb/day and 1,500 lb/trip groundfish limits: lingcod 300 lb/month (minimum 24 inch size limit); sablefish 2,000 lb/month; canary, thornyheads and yelloweye rockfish are PROHIBITED. All other groundfish species taken are managed under the overall 500 lb/day and 1,500 lb/trip groundfish limits. Landings of these species count toward the per day and per trip groundfish limits and do not have species-specific limits. The amount of groundfish landed may not exceed the amount of pink shrimp landed.					

TABLE 3 (North) cont'd

1/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours (with the exception of the 20-fm depth contour boundary south of 42° N. lat.), and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

2/ Bocaccio, chilipepper and cowcod rockfishes are included in the trip limits for minor shelf rockfish. Splitnose rockfish is included in the trip limits for minor slope rockfish.

3/ "Other flatfish" are defined at § 660.11 and include butter sole, curlfin sole, flathead sole, Pacific sanddab, rex sole, rock sole, and sand sole.

4/ For black rockfish north of Cape Alava (48°09.50' N. lat.), and between Destruction Is. (47°40' N. lat.) and Leadbetter Pnt. (46°38.17' N. lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

5/ The minimum size limit for lingcod is 22 inches (56 cm) total length North of 42° N. lat. and 24 inches (61 cm) total length South of 42° N. lat.

6/ "Other fish" are defined at § 660.11 and include sharks (except spiny dogfish), skates (except longnose skates), ratfish, morids, grenadiers, and kelp greenling. Cabezon are included in the trip limits for "other fish."

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

National Marine Fisheries Service, West Coast Region

Table 3 (South) to Part 660, Subpart F -- Non-Trawl Rockfish Conservation Areas and Trip Limits for Open Access Gears South of 40°10' N. lat.

Other limits and requirements apply -- Read §§660.10 through 660.399 before using this table 8012014

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	Rockfish Conservation Area (RCA)[1/]:						
1	40°10' N. lat. - 34°27' N. lat.	30 fm line[1/] - 150 fm line[1/]					
2	South of 34°27' N. lat.	60 fm line[1/] - 150 fm line[1/] (also applies around islands)					
	See §§660.60 and 660.230 for additional gear, trip limit and conservation area requirements and restrictions. See §§660.70-660.74 and §§660.76-660.79 for conservation area descriptions and coordinates (including RCAs, YRCAs, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).						
	State trip limits and seasons may be more restrictive than Federal trip limits or seasons, particularly in waters off Oregon and California.						
3	**Minor slope rockfish[2/] & Darkblotched rockfish**	10,000 lb/ 2 months, of which no more than 475 lb may be blackgill rockfish					
4	**Splitnose rockfish**	200 lb/ month					
5	**Sablefish**						
6	40°10' N. lat. - 36°00' N. lat.	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 1,600 lb/ 2 months			350 lb/ day, or 1 landing per week of up to 1,600 lb, not to exceed 3,200 lb/ 2 months		
7	South of 36°00' N. lat.	300 lb/ day, or 1 landing per week of up to 1,600 lb, not to exceed 3,200 lb/ 2 months					
8	**Thornyheads**						
9	40°10' N. lat. - 34°27' N. lat.	CLOSED					
10	South of 34°27' N. lat.	50 lb/ day, no more than 1,000 lb/ 2 months					
11	**Dover sole**	3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sanddabs.					
12	**Arrowtooth flounder**						
13	**Petrale sole**						
14	**English sole**	South of 42° N. lat., when fishing for "other flatfish," vessels using hook-and-line gear with no more than 12 hooks per line, using hooks no larger than "Number 2" hooks, which measure 0.44 in (11 mm) point to shank, and up to two 1 lb (0.45 kg) weights per line are not subject to the RCAs.					
15	**Starry flounder**						
16	**Other flatfish[3/]**						
17	**Whiting**	300 lb/ month					
18	**Minor shelf rockfish[2/], Shortbelly, Widow rockfish and Chilipepper**						
19	40°10' N. lat. - 34°27' N. lat.	300 lb/ 2 months	CLOSED	200 lb/ 2 months		300 lb/ 2 months	
20	South of 34°27' N. lat.	750 lb/ 2 months		750 lb/ 2 months	1,000 lb/ 2 months		
21	**Canary rockfish**	CLOSED					
22	**Yelloweye rockfish**	CLOSED					
23	**Cowcod**	CLOSED					
24	**Bronzespotted rockfish**	CLOSED					
25	**Bocaccio**						
26	40°10' N. lat. - 34°27' N. lat.	200 lb/ 2 months	CLOSED	100 lb/ 2 months		200 lb/ 2 months	
27	South of 34°27' N. lat.	100 lb/ 2 months		100 lb/ 2 months	200 lb/ 2 months		

TABLE 3 (South)

Table 3 (South). Continued

<table>
<tr><th></th><th></th><th>JAN-FEB</th><th>MAR-APR</th><th>MAY-JUN</th><th>JUL-AUG</th><th>SEP-OCT</th><th>NOV-DEC</th></tr>
<tr><td>28</td><td>Minor nearshore rockfish & Black rockfish</td><td colspan="6"></td></tr>
<tr><td>29</td><td>Shallow nearshore</td><td>600 lb/ 2 months</td><td>CLOSED</td><td>800 lb/ 2 months</td><td>900 lb/ 2 months</td><td>800 lb/ 2 months</td><td>1,000 lb/ 2 months</td></tr>
<tr><td>30</td><td>Deeper nearshore</td><td colspan="6"></td></tr>
<tr><td>31</td><td>40°10' N. lat. - 34°27' N. lat.</td><td>700 lb/ 2 months</td><td rowspan="2">CLOSED</td><td>700 lb/ 2 months</td><td rowspan="2" colspan="2">900 lb/ 2 months</td><td rowspan="2">1,000 lb/ 2 months</td></tr>
<tr><td>32</td><td>South of 34°27' N. lat.</td><td>500 lb/ 2 months</td><td>600 lb/ 2 months</td></tr>
<tr><td>33</td><td>California scorpionfish</td><td>1,200 lb/ 2 months</td><td>CLOSED</td><td colspan="4">1,200 lb/ 2 months</td></tr>
<tr><td>34</td><td>Lingcod[4/]</td><td colspan="2">CLOSED</td><td colspan="4">400 lb/ month | CLOSED</td></tr>
<tr><td>35</td><td>Pacific cod</td><td colspan="6">1,000 lb/ 2 months</td></tr>
<tr><td>36</td><td>Spiny dogfish</td><td colspan="2">200,000 lb/ 2 months</td><td>150,000 lb/ 2 months</td><td colspan="3">100,000 lb/ 2 months</td></tr>
<tr><td>37</td><td>Longnose skate</td><td colspan="6">Unlimited</td></tr>
<tr><td>38</td><td>Other fish[5/]</td><td colspan="6">Unlimited</td></tr>
<tr><td>39</td><td colspan="7">RIDGEBACK PRAWN AND, SOUTH OF 38°57.50' N. LAT., CA HALIBUT AND SEA CUCUMBER NON-GROUNDFISH TRAWL</td></tr>
<tr><td>40</td><td colspan="7">NON-GROUNDFISH TRAWL Rockfish Conservation Area (RCA) for CA Halibut, Sea Cucumber & Ridgeback Prawn:</td></tr>
<tr><td>41</td><td>40°10' N. lat. - 38°00' N. lat.</td><td>100 fm line[1/] - 200 fm line[1/]</td><td colspan="4">100 fm line[1/] - 150 fm line[1/]</td><td>100 fm line[1/] - 200 fm line[1/]</td></tr>
<tr><td>42</td><td>38°00' N. lat. - 34°27' N. lat.</td><td colspan="6">100 fm line[1/] - 150 fm line[1/]</td></tr>
<tr><td>43</td><td>South of 34°27' N. lat.</td><td colspan="6">100 fm line[1/] - 150 fm line[1/] along the mainland coast; shoreline - 150 fm line[1/] around islands</td></tr>
<tr><td>44</td><td></td><td colspan="6">Groundfish: 300 lb/trip. Species-specific limits described in the table above also apply and are counted toward the 300 lb groundfish per trip limit. The amount of groundfish landed may not exceed the amount of the target species landed, except that the amount of spiny dogfish landed may exceed the amount of target species landed. Spiny dogfish are limited by the 300 lb/trip overall groundfish limit. The daily trip limits for sablefish coastwide and thornyheads south of Pt. Conception and the overall groundfish “per trip” limit may not be multiplied by the number of days of the trip. Vessels participating in the California halibut fishery south of 38°57.50' N. lat. are allowed to (1) land up to 100 lb/day of groundfish without the ratio requirement, provided that at least one California halibut is landed and (2) land up to 3,000 lb/month of flatfish, no more than 300 lb of which may be species other than Pacific sanddabs, sand sole, starry flounder, rock sole, curlfin sole, or California scorpionfish (California scorpionfish is also subject to the trip limits and closures in line 31).</td></tr>
<tr><td>45</td><td colspan="7">PINK SHRIMP NON-GROUNDFISH TRAWL GEAR (not subject to RCAs)</td></tr>
<tr><td>46</td><td>South</td><td colspan="6">Effective April 1 - October 31: Groundfish: 500 lb/day, multiplied by the number of days of the trip, not to exceed 1,500 lb/trip. The following sublimits also apply and are counted toward the overall 500 lb/day and 1,500 lb/trip groundfish limits: lingcod 300 lb/ month (minimum 24 inch size limit); sablefish 2,000 lb/ month; canary, thornyheads and yelloweye rockfish are PROHIBITED. All other groundfish species taken are managed under the overall 500 lb/day and 1,500 lb/trip groundfish limits. Landings of all groundfish species count toward the per day, per trip or other species-specific sublimits described here and the species-specific limits described in the table above do not apply. The amount of groundfish landed may not exceed the amount of pink shrimp landed.</td></tr>
</table>

TABLE 3 (South) cont'd

1/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours (with the exception of the 20-fm depth contour boundary south of 42° N. lat.), and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

2/ POP is included in the trip limits for minor slope rockfish. Blackgill rockfish have a species specific trip sub-limit within the minor slope rockfish cumulative limits. Yellowtail rockfish is included in the trip limits for minor shelf rockfish. Bronzespotted rockfish have a species specific trip limit.

3/ "Other flatfish" are defined at § 660.11 and include butter sole, curlfin sole, flathead sole, Pacific sanddab, rex sole, rock sole, and sand sole.

4/ The commercial mimimum size limit for lingcod is 24 inches (61 cm) total length South of 42° N. lat.

5/ "Other fish" are defined at § 660.11 and include sharks (except spiny dogfish), skates (except longnose skate), ratfish, morids, grenadiers, and kelp greenling. Cabezon are included in the trip limits for "other fish."

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

NATIONAL MARINE FISHERIES SERVICE REPORT ON INSEASON ADJUSTMENTS FOR 2015

The final 2015-2016 harvest specifications and management measures will likely be implemented March 1, 2015. Therefore, 2014 harvest specifications and management measures will stay in place for the start of the 2015 calendar year. For harvest specifications, this means that the 2014 ACLs are the limits that we are managing to at the start of 2015. For management measures, this generally means that the seasons and limits that were in place in Jan-Feb 2014 will be in place in Jan-Feb 2015, if no inseason action is taken.

For inseason changes for January 1, 2015, the Council should consider the management measures that were in place in January-February 2014 and whether or not those measures are appropriate for January-February 2015. Inseason modifications appropriate to start 2015 fisheries would keep catches below 2014 ACLs, but would allow harvest opportunities for species with catches tracking below projections during the 2014 fishery. Management measures that are not currently considered “routine”, and were recommended through the 2015-2016 harvest specifications and management measures, will be implemented through the 2015-2016 notice and comment rulemaking.

As noted above, the final 2015-2016 harvest specifications and management measures will likely be implemented March 1, 2015. With regards to management measures implemented through this rulemaking, the Council has an opportunity at the November 2014 meeting to consider adjustments to those “routine” management measures. Inseason modifications appropriate for March 1, 2015 fisheries would keep catches below 2015 ACLs, but would allow harvest opportunities for species with catches tracking below projections during the 2014 fishery. Changes to “routine” management measures for March 1, 2015 should consider recently available fishery information and performance of 2014 fisheries. NMFS advises that any recommended changes for March 1, 2015 be submitted to NMFS during the public comment period on the 2015-2016 harvest specifications and management measures proposed rule. Management measures that are not currently considered “routine”, and were recommended through the 2015-2016 harvest specifications and management measures, will be implemented through the 2015-2016 notice and comment rulemaking.

From: Wildlife CDFWNews
Sent: Wednesday, November 05, 2014 6:44 AM
To: Wildlife CDFWNews
Subject: California Scorpionfish Fishery to Close Nov. 15

California Department of Fish and Wildlife News Release

Nov. 5, 2014

Contacts:
Joanna Grebel, CDFW Marine Region (831) 601-2279
Carrie Wilson, CDFW Communications (831) 649-7191

California Scorpionfish Fishery to Close Nov. 15

The California Department of Fish and Wildlife (CDFW) will close both the commercial and recreational fishery for California scorpionfish *(Scorpaena guttata)* on Saturday, Nov. 15 at 12:01 a.m. The fishery will remain closed statewide through the end of the year.

Based on recent catch estimates from the sport fishery and landing receipt totals from the commercial fishery, CDFW projects that the 2014 annual catch limit (ACL) for California scorpionfish will be exceeded unless the fishery is closed.

The latest estimates indicate over 110 metric tons of California scorpionfish have been taken to date. The ACL specified in federal regulation for 2014 is 117 metric tons. Pursuant to the California Code of Regulations, Title 14, sections 27.20(e) and 52.09, CDFW has the authority to close the fishery at the time the total allowable catch is exceeded, or expected to be reached.

California scorpionfish is a nearshore species found primarily in Southern California. It is important to both commercial and recreational fisheries.

Although fishing for rockfish and other groundfish will remain open in Southern California through the end of the year, CDFW urges individuals to avoid fishing in areas where California scorpionfish are known to occur. If taken, scorpionfish should be immediately returned back to the water to minimize injury and mortality.

For more information regarding groundfish regulations, please visit the CDFW Marine Region Groundfish Central website at www.dfg.ca.gov/marine/groundfishcentral.

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CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE REPORT ON CALIFORNIA SCORPIONFISH AND BLACK ROCKFISH

The California Department of Fish and Wildlife (CDFW) provides the following update on the progress of the 2014 California scorpionfish fishery as well as potential modifications to the 2015-2016 recreational fishery for California scorpionfish and black rockfish.

California Scorpionfish

On November 15, 2014CDFW closed the recreational and commercial California scorpionfish fishery statewide due to projected attainment of a federally established annual catch limit (ACL) (Agenda Item J.8.b, Supplemental CDFW Report). Impacts in the recreational fishery were higher than projected due to an unexpected increase in directed targeting and effort during these months.

Given that the ACL in 2015 and 2016 will be decreasing (114 mt and 111 mt, respectively) modifications to the recreational fishery will likely be necessary to ensure that harvest stays within allowable limits. Table 1 provides a summary of monthly landings by sector during 2011 and 2014. The CDFW is committed to working with both industry and National Marine Fisheries Service to ensure that necessary measures are taken so stay within established limits.

Black Rockfish

During every biennial specifications and management process a decision must be made on which years of data should be used and what the cut-off date for new information should be. It has been acknowledged that there are drawbacks to using older data to project impacts in future years, yet this approach was chosen in order to increase the likelihood of meeting a January 1 implementation date. As new data become available, they can be taken into consideration and changes to management measures made where appropriate.

For the 2015 and 2016 process, the “most recent year” of data used in modeling the recreational fishery was 2012. Recent data for black rockfish indicate that effort in 2013 and 2014 is much higher than in previous years and higher than what was accounted for during 2015-2016 regulation development (Table 2). If this higher effort continues into 2015 and 2016 and/or other circumstances result in further increases, the recreational allocation for black rockfish may be exceeded.

Given the most recent information on fishery performance, CDFW recommends implementing a 5-fish sub-bag limit on black rockfish within the overall 10-fish bag limit for rockfish, cabezon, and greenling. A 5-fish sub-bag limit is expected to spread the fishing opportunity throughout the year while keeping mortality within allowable limits.

Table 1. Recreational and commercial landings (in metric tons) of California scorpionfish, 2011-2014.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2011	Rec	4.5	6.1	4.2	7.2	7.5	5.6	17.9	17.4	8.7	7.4	4.7	8.4	99.6
	Com	0.2	0.4	0.0	0.0	0.4	1.2	0.9	0.3	0.1	0.2	0.3	0.6	4.6
2012	Rec	7.9	9.3	3.7	6.7	12.2	16.7	7.7	29.7	9.7	6.8	2.9	3.0	116.3
	Com	0.3	0.2	0.0	0.0	0.3	0.6	0.9	0.6	0.4	0.2	0.2	0.1	3.9
2013	Rec	3.2	9.0	3.2	5.9	17.1	22.3	27.4	8.9	3.3	3.5	5.1	3.3	112.2
	Com	0.1	0.2	0.0	0.0	0.5	0.8	0.5	0.4	0.1	0.1	0.0	0.0	2.7
2014	Rec	8.0	5.1	2.3	5.2	19.3	37.4	19.9	10.9	7.4				115.5
	Com	0.0	0.0	0.1	0.0	0.3	0.2	0.3						0.9

Table 2. Recreational mortality of black rockfish (in metric tons) in California by district and month, 2011-2013.

2011													
District	**Jan**	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
	0.6	0.0	0.0	0.5	11.4	37.2	41.3	43.2	14.7	16.0	7.2	6.4	178.5
Southern				0.0									0.0
						0.0	0.0						0.0
Central		0.0	0.0		0.3	0.5	7.2	2.8	1.8	1.5	0.9	1.2	16.3
SF					0.2	3.9	4.1	10.2	5.0	6.6	6.2	5.0	41.2
Mendo				0.3	2.3	4.4	5.4	5.0	2.1	1.4	0.1	0.1	21.1
Northern	0.6	0.0		0.2	8.6	28.4	24.6	25.2	5.8	6.5		0.0	99.9

2012													
District	**Jan**	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
	0.0	0.0	0.2	0.0	21.9	27.1	56.8	43.3	22.3	25.4	9.4	3.9	210.4
Southern												0.0	0.0
							0.0				0.0		0.0
Central		0.0	0.0	0.0	4.3	2.1	3.0	5.1	3.8	3.3	2.4	0.9	24.9
SF					0.0	5.0	14.8	11.4	12.6	12.7	4.7	3.0	64.2
Mendo			0.2	0.0	3.3	3.5	11.1	7.7	1.7	0.5	2.3		30.4
Northern	0.0			0.0	14.3	16.4	27.8	19.2	4.2	9.0			90.9

2013													
District	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
	0.0	0.0	1.6	1.5	17.8	39.4	74.5	100.0	53.2	33.9	24.7	15.9	362.6
Southern													
			0.0	0.0							0.0		0.0
Central	0.0		0.1		6.8	6.5	8.3	8.0	6.1	8.3	5.4	5.9	55.4
SF		0.0	0.0	0.0		14.7	37.8	36.9	28.4	19.4	17.5	9.9	164.5
Mendo			1.4	0.0	3.6	2.4	8.5	15.9	6.3	1.3	0.4	0.0	39.8
Northern		0.0	0.1	1.5	7.4	15.8	19.9	39.3	12.4	5.0	1.4	0.1	102.9

GROUNDFISH ADVISORY SUBPANEL REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS

The Groundfish Advisory Subpanel (GAP) met with the Groundfish Management Team (GMT) to discuss possible inseason adjustments. The GMT discussion was led by Mr. Dan Erickson. The GAP offers the following recommendations and comments on proposed inseason adjustments to ongoing and 2015-2016 groundfish fisheries.

<u>California Recreational Fishery</u>

Black Rockfish

Recent data indicates recreational effort in 2013 and 2014 for black rockfish is much higher than in previous years, and higher than was accounted for in the proposed 2015-2016 management specifications. With this higher effort there is a chance that the recreational allocation of black rockfish may be exceeded. California Department of Fish and Wildlife (CDFW) has recommended implementing a 5 fish sub-bag limit of black rockfish within the overall 10 fish total bag limit for rockfish, cabezon, and greenling (RCG complex). This 5-fish sub-bag limit is projected to keep mortality within allowable limits. The GAP supports this recommendation.

California Scorpionfish

California Department of Fish and Wildlife implemented an emergency closure on November 15, 2014 for both recreational and commercial scorpionfish fishing statewide due to projected attainment of the annual catch limit (ACL) of California scorpionfish. A higher than projected impact in the recreational fishery occurred due to an unexpected increase in targeting and effort. The ACL in 2015 will be decreasing from the current 117 mt down to 114 mt, thus modifications to the recreational fishery will be necessary to keep mortality within allowable limits.

Therefore, the GAP is recommending the Council consider closing the California recreational scorpionfish fishery for the months of September, October, November, and December. This option is preferred by the majority of southern California commercial passenger fishing vessel operators. Even with this option, some transfer of the commercial allocation to the recreational sector will be required to maintain the fishery. Recent catch history in the commercial sector has been one of very low attainment of scorpionfish. It is also hoped that better inseason catch accounting for the recreational fishery may be established to better inform the fishery of any potential problems that might be occurring.

<u>Limited Entry Trawl Fishery</u>

Finally, the GAP urges National Marine Fisheries Service (NMFS) to ensure that there are sufficient quota pounds in accounts on January 1, 2015 to prosecute fisheries. In previous years we have run into problems when there is not enough quota to prosecute trawl fisheries (this has occurred with both whiting and halibut in the non-whiting trawl fishery). The GAP urges NMFS to populate quota share accounts with the largest amount of quota pounds that they can to ensure no interruption to fishing activities.

PFMC
11/17/14

THE GROUNDFISH MANAGEMENT TEAM REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS

The Groundfish Management Team (GMT) considered the most recent information on the status of ongoing fisheries, research, and requests from industry, and report that there is no need for inseason action for the remainder of 2014 or for the start of the 2015 seasons.

1. INFORMATIONAL ITEMS

1.1. California Recreational

California Scorpionfish: The California Department of Fish and Wildlife (CDFW) closed both the commercial and recreational fishery for California scorpionfish on Saturday, November 15th. The fishery will remain closed statewide through the end of the year. The annual catch limit (ACL) specified in federal regulation for 2014 is 117 metric tons (mt). Based on recent catch estimates from the recreational fishery and landing receipt totals from the commercial fishery, CDFW projected that the 2014 ACL for California scorpionfish would be exceeded unless the fishery was closed.

Given that the ACL in 2015 and 2016 will be decreasing (114 mt and 111 mt, respectively) CDFW recommended that modifications be made to the recreational fishery to ensure that harvest stays within allowable limits. The Groundfish Advisory Subpanel (GAP) requested CDFW analyze the impacts of a recreational closure during the months of September through December to reduce mortality during the 2015 season. Analysis of this season results in a projected mortality of 95.7 mt for all sectors providing a residual of 18.3 mt between projected mortality and the ACL.

Black Rockfish: The GMT was briefed that the CDFW recommends instituting a five fish sub-bag limit for black rockfish within the ten fish rockfish, cabezon and greenling (RGB) bag limit in the recreational fishery in 2015. Updated catch projections incorporating data from 2013 and 2014 indicate that the California harvest guideline could be exceeded without reductions to either the season length or bag limit. Under the current RCG bag limit, up to ten black rockfish can be retained. The five fish sub-bag limit is projected by CDFW to result in 319.3 mt of mortality in the recreational fishery. Combined with the projected mortality of 59 mt in the commercial nearshore fishery, the total mortality projected for 2015 is 378.3 mt, which is well below the 419 mt statewide harvest guideline.

1.2. Comment on the 2013 Groundfish Mortality Report

The West Coast Groundfish Observer Program recently published the 2013 Groundfish Mortality Report (REVISED Informational Report 4, November 2014). The GMT will review and discuss this document at the January GMT meeting, and provide comments to the Council during the March or April 2015 Council meetings, if needed.

1.3. Shoreside Whiting Catch and Attainment Update for 2014

Figure 1 and Table 1 provide information regarding catch of Pacific whiting by the shoreside whiting trawl fishery. Table 1 provides historical whiting catch (2011 – 2013) relative to the updated catch for 2014 (data were acquired on November 17, 2014) as (a) cumulative catch throughout each year and (b) monthly catch each year. This information provides some idea of attainment rates in the past relative to the current rate of attainment. Table 1 shows annual whiting allocations, reapportionments, and catch for 2011 – 2014.

1.4. Preliminary Catch Estimates for the Non-Tribal Trawl Fisheries

Table 2 provides catch updates for Pacific whiting, overfished species, and Chinook salmon for non-Tribal trawl fisheries. Within the shorebased Individual Fishing Quota (IFQ) fishery, salmon catch is separated by (a) midwater whiting trips, (b) midwater widow/yellowtail rockfish trips, and (c) bottom trawl trips.

1.5. Scorecard Update

Overfished species scorecards are presented for 2014 (Table 3) and 2015 (Table 4). The 2014 scorecard reflects the recent rule making that transferred 3.0 mt of darkblotched rockfish from the Mothership sector to the Catcher Processor (C/P) sector, and 3.0 mt of darkblotched rockfish from Incidental Open Access to the C/P sector (Federal Register Notice, Vol. 79, No. 218, Pg. 67905-67906, November 12, 2014).

Shoreside Whiting Catch and Attainment Update for 2014

Figure 1. Cumulative Pacific whiting catch for the shoreside limited entry trawl fishery for 2011 – 2014. *Left panel:* cumulative monthly attainment of whiting trips from June through December of 2011-2013, and June through October of 2014. *Right panel:* monthly catch of Pacific whiting on whiting trips over the same period. These data show that directed shorebased whiting catch typically plateaus by November of each year. November of 2012 showed substantial catch due to a late reapportionment of tribal pounds. These data were from the NMFS West Coast IFQ Vessel Accounts System, queried on November 4, 2014.

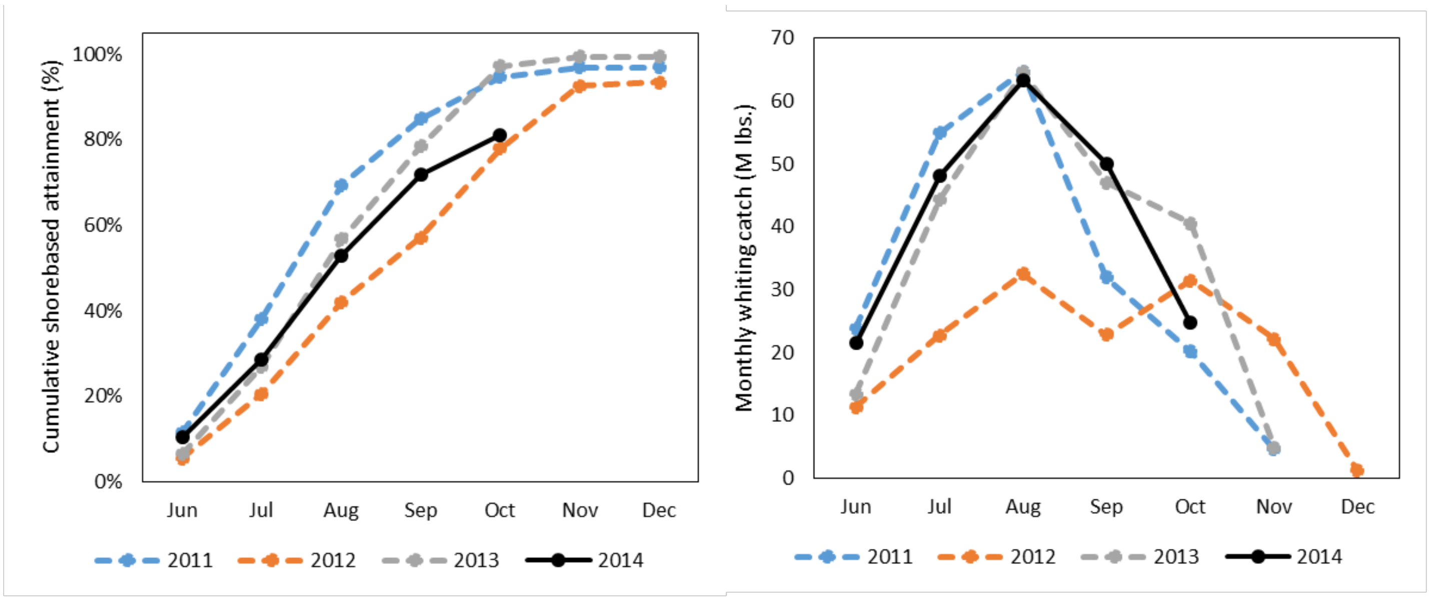

Table 1. Shoreside whiting attainment for 2011 – 2014. Data downloaded 11/17/2014 from NMFS vessel accounts QP data base for 2014 results and 10/31/2014 from PacFIN Answers for the remaining years.

Year	Shoreside Initial Allocation	Shoreside Allocation + Reapportionment	Year-end PacFIN Landings	% of Year-end Allocation (PacFIN)	WGCOP Total Mortality
2011	92,818	92,818	89,826	97%	90,759
2012	56,902	68,662	65,171	95%	65,416
2013	85,697	98,297	96,857	99%	97,327
2014	108,935	119,435	97,555	82%	

Preliminary Catch Estimates for the Non-Tribal Trawl Fisheries.

Table 2. Preliminary catch estimates for the non-tribal trawl fisheries. Groundfish values are in metric tons (mt) whereas Chinook salmon are in numbers of fish. For the shorebased IFQ sector, groundfish estimates include all gear types (bottom trawl, midwater, and fixed gears). Chinook numbers for the shorebased IFQ sector include those from midwater trawl which is further stratified by target strategy (Pacific whiting and yellowtail/widow) as well as bottom trawl.

Sector	Species	Catch to Date (MT for GF, # For Chinook)	Allocation (mt)	% Attainment	Amount Remaining (mt)
MS a/	Whiting	60,167	73,049	82%	12,882.0
	Darkblotched	7.2	9.3	78%	2.1
	Canary	0.4	5.4	7%	5.0
	Widow	39.7	120.0	33%	80.3
	POP	3.6	7.2	50%	3.6
	Chinook Salmon	2,902	0.05	ratio of Chinook # per Whiting MT	
CP a/	Whiting	102,165	103,486	99%	1,321.0
	Darkblotched	3.4	9.0	38%	5.6
	Canary	0.3	7.6	4%	7.3
	Widow	16.6	170.0	10%	153.5
	POP	0.3	10.2	3%	9.9
	Chinook Salmon	3,780	0.04	ratio of Chinook # per Whiting MT	
SB IFQ b/	Whiting	97,555	119,435	82%	21,880.27
	Darkblotched	73.2	278.4	26%	205.22
	Canary	10.5	41.1	26%	30.60
	Widow	448.9	993.8	45%	544.94
	POP	34.2	112.3	30%	78.09
	Chinook MDT Total c/	7,551	0.08	ratio of Chinook # MDT per Whiting MT	
	---Chinook PWHT Only	6,757	0.07	ratio of Chinook # PWHT Only per Whiting MT	
	---Chinook YT/Widow Only	794			
	Chinook Bottom Trawl d/	872			

a/ Data queried from NORPAC on 11/16/2014.
b/ Data queried from the NMFS vessel Accounts QP database on 11/17/2014 and includes all gear types (midwater, bottom trawl, and fixed gears), both landings and discards (http://www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/index.html).
c/ Chinook salmon MDT Total includes impacts from all midwater gear types (both whiting and yellowtail/widow target strategies) based on a query from 11/16/2014. Impacts by target strategies are provided as well.
d/ Chinook salmon Bottom Trawl data includes only those impacts from bottom trawl gears.

Table 3. Overfished Species Scorecard for 2014 as of November.

Scorecard for November 2014. Allocations[a] and projected mortality impacts (mt) of overfished groundfish species for 2014.

Fishery	Bocaccio b/		Canary		Cowcod b/		Dkbl		Petrale		POP		Yelloweye	
***Date*: 17 November 2014**	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts
Off the Top Deductions	8.4	9.3	17.5	17.2	0.1	0.2	**17.8**	17.5	234.0	234.0	16.5	13.2	5.8	5.5
EFPc/	6.0	6.0	1.5	1.5	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Research d/	1.7	2.6	4.5	4.5	0.1	0.2	2.1	2.1	11.6	11.6	5.2	5.2	3.3	3.0
Incidental OA e/	0.7	0.7	2.0	2.0	--	--	**15.4**	15.0	2.4	2.4	0.4	0.6	0.2	0.2
Tribal f/			9.5	9.2			0.1	0.2	220.0	220.0	10.9	7.4	2.3	2.3
Bottom Trawl			0.8	0.8			0.1	0.1	45.4	70.0	3.7	3.7		0.0
Troll			0.5	0.5			0.0							0.0
Fixed gear			0.3	0.3			0.0						2.3	2.3
mid-water			3.6	3.6			0.0							0.0
whiting			4.3	4.9				0.3			7.2	11.1		
Trawl Allocations	79.0	79.0	54.1	54.1	1.0	1.0	**296.7**	296.7	2,383.0	2,383.0	129.7	129.7	1.0	1.0
-SB Trawl	79.0	79.0	41.1	41.1	1.0	1.0	**278.4**	278.4	2,378.0	2,378.0	112.3	112.3	1.0	1.0
-At-Sea Trawl			13.0	13.0			15.4	15.4	5.0	5.0	17.4	17.4		
a) At-sea whiting MS			5.4	5.4			**9.3**	**9.3**			7.2	7.2		
b) At-sea whiting CP			7.6	7.6			**9.0**	**9.0**			10.2	10.2		
Non-Trawl Allocation	249.6	125.4	47.4	26.4	1.9	0.8	15.5	4.5	35.0	2.2	**6.8**	0.2	11.2	10.3
Non-Nearshore	76.2		3.7										1.1	
LE FG				0.8				3.6				0.2		0.4
OA FG				0.1				0.7				0.0		0.0
Directed OA: Nearshore	0.9	0.4	6.4	6.5		0.0		0.2					1.2	1.1
Recreational Groundfish														
WA			3.2	0.9				--		--		--	2.9	2.9
OR			11.1	4.7				--		--		--	2.6	2.5
CA	172.5	125.0	23.0	13.4		0.8		--		--		--	3.4	3.4
TOTAL	337.0	213.7	119.0	97.7	3.0	2.1	330.0	**318.7**	2,652.0	2,619.2	153.0	143.1	18.0	16.8
2014 Harvest Specification	**337**	**337**	**119**	**119**	**3.0**	**3.0**	**330**	**330**	**2,652**	**2,652**	**153**	**153**	**18**	18
Difference	0.0	123.3	0.0	21.3	0.0	0.9	0.0	11.3	0.0	32.8	0.0	9.9	0.0	1.2
Percent of ACL	100.0%	63.4%	100.0%	82.1%	100.0%	68.7%	100.0%	96.6%	100.0%	98.8%	100.0%	93.5%	100.0%	93.4%

Key		
	(hatched)	= not applicable
	--	= trace, less than 0.1 mt
	(black)	= Fixed Values
	(light blue)	= off the top deductions

a/ Formal allocations are represented in the black shaded cells and are specified in regulation in Tables 1b and 1e. The other values in the allocation columns are 1) off the top deductions, 2) set asides from the trawl allocation (at-sea petrale only) 3) ad-hoc allocations recommended in the 2013-14 EIS process, 4) HG for the recreational fisheries for canary and YE.

b/ South of 40°10' N. lat.

c/ EFPs are amounts set aside to accommodate anticipated applications. Values in this table represent the estimates from the 13-14 biennial cycle, which are currently specified in regulation.

d/ Includes NMFS trawl shelf-slope surveys, the IPHC halibut survey, and expected impacts from SRPs and LOAs.

e/ The GMT's best estimate of impacts as analyzed in the 2013-2014 Environmental Impact Statement (Appendix B), which are currently specified in regulation.

f/ Tribal values in the allocation column represent the the values in regulation. Projected impacts are the tribes best estimate of catch.

Table 4. Overfished Species Scorecard for 2015.

Scorecard for 2015[#]. Allocations[a] and projected mortality impacts (mt) of overfished groundfish species for 2015.

Fishery	Bocaccio b/		Canary		Cowcod b/		Dkbl		Petrale		POP		Yelloweye	
Date: 17 November 2014	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts	Allocation a/	Projected Impacts
Off the Top Deductions	8.3	8.3	15.2	15.2	2.0	2.0	20.8	20.8	236.6	236.6	15.0	15.0	5.8	5.8
EFPc/	3.0	3.0	1.0	1.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Research d/	4.6	4.6	4.5	4.5	2.0	2.0	2.1	2.1	14.2	14.2	5.2	5.2	3.3	3.3
Incidental OA e/	0.7	0.7	2.0	2.0	--	--	18.4	18.4	2.4	2.4	0.6	0.6	0.2	0.2
Tribal f/			7.7	7.7			0.2	0.2	220.0	220.0	9.2	9.2	2.3	2.3
Bottom Trawl			0.8	0.8			0.2	0.2	45.4	70.0	3.7	3.7		0.0
Troll			0.5	0.5			0.0							0.0
Fixed gear			0.3	0.3			0.0						2.3	2.3
mid-water			3.6	3.6			0.0							0.0
whiting			4.3	4.9				0.3			7.2	11.1		
Trawl Allocations	81.9	81.9	56.9	56.9	1.4	1.4	301.3	301.3	2,544.4	2,544.4	135.9	135.9	1.0	1.0
-SB Trawl	81.9	81.9	41.1	41.1	1.4	1.4	285.6	285.6	2,539.4	2,539.4	118.5	118.5	1.0	1.0
-At-Sea Trawl			13.7	13.7			15.7	15.7	5.0	5.0	17.4	17.4		
a) At-sea whiting MS			5.6	5.6			6.5	6.5			7.2	7.2		
b) At-sea whiting CP			8.0	8.0			9.2	9.2			10.2	10.2		
Non-Trawl Allocation	258.8	117.6	49.9	26.4	2.6	1.2	15.9	4.9	35.0		7.2	0.3	11.2	9.7
Non-Nearshore	79.1		3.7					4.7				0.3	1.1	0.5
LE FG				0.8						0.3				
OA FG				0.1								0.0		
Directed OA: Nearshore	1.0	0.4	6.4	6.5				0.2		0.0			1.2	1.3
Recreational Groundfish														
WA			3.2	0.9				--		--		--	2.9	2.8
OR			11.1	4.7				--		--		--	2.6	2.2
CA	178.8	117.2	23.0	13.4		1.2		--		--		--	3.4	2.9
TOTAL	349.0	207.8	122.0	98.5	6.0	4.6	338.0	327.0	2,816.0	2,781.0	158.1	151.2	18.0	16.5
2015 Harvest Specification	349	337	122	119	6.0	6.0	338	330	2,816	2,816	158	158	18	18
Difference	0.0	129.2	0.0	20.5	0.0	1.4	0.0	3.0	0.0	35.0	-0.1	6.8	0.0	1.5
Percent of ACL	100.0%	61.7%	100.0%	82.8%	100.0%	76.7%	100.0%	99.1%	100.0%	98.8%	100.1%	95.7%	100.0%	91.8%

Key		
	(hatched)	= not applicable
	--	= trace, less than 0.1 mt
	(black)	= Fixed Values
	(light blue)	= off the top deductions

[#] when the final 2015-2016 harvest specifications and management measures rule publishes

a/ Formal allocations are represented in the black shaded cells and are specified in regulation in Tables 1b and 1e. The other values in the allocation columns are 1) off the top deductions, 2) set asides from the trawl allocation (at-sea petrale only) 3) ad-hoc allocations recommended in the 2013-14 EIS process, 4) HG for the recreational fisheries for canary and YE.

b/ South of 40°10' N. lat.

c/ EFPs are amounts set aside to accommodate anticipated applications. Values in this table represent the estimates from the 13-14 biennial cycle, which are currently specified in regulation.

d/ Includes NMFS trawl shelf-slope surveys, the IPHC halibut survey, and expected impacts from SRPs and LOAs.

e/ The GMT's best estimate of impacts as analyzed in the 2015-2016 Environmental Impact Statement (Appendix B), which are currently specified in regulation.

f/ Tribal values in the allocation column represent the the values in regulation. Projected impacts are the tribes best estimate of catch.

Agenda Item J.8.b
Supplemental GMT Report 2
November 2014

GROUNDFISH MANAGEMENT TEAM INFORMATIONAL REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS

At the June 2012 meeting, the Council requested the Groundfish Management Team (GMT) provide landings information by sector for aurora, rougheye, shortraker, China, copper, and quillback rockfish under the inseason agenda item (see Council meeting minutes at http://tinyurl.com/ldaaoqo). Blackspotted rockfish will be reported along with rougheye rockfish beginning in 2015. The purpose of presenting this data is to gain a better understanding of how catch accrues by sector throughout the year for these species. This information is not intended to inform inseason action. Per the Council request, the GMT prepared a landings report (Table 1, Table 2, and Table 3) of these selected species. The query date for these tables was October 24, 2014.

Data and Methods.—This report originates from a database reporting tool housed within PacFIN, and is a collaborative effort among staff of the Pacific States Marine Fisheries Commission, Pacific Fishery Management Council (PFMC), National Marine Fisheries Service (NMFS), and GMT members. The current report includes landings estimates from commercial fisheries sectors (PacFIN VDRFD table, see PacFIN data completeness estimates in next paragraph), retained and discarded catch estimates for the at-sea sectors (NORPAC 4900 Species Comp. table in PacFIN), and retained and dead discard estimates from recreational fisheries (via RecFIN). The PacFIN commercial landings data were more than 90 percent complete through August in Washington, September in Oregon, and June in California, at the time of this query (October 24, 2014). NORPAC data were loaded to repository for this database tool on October 24, 2014 and RecFIN data were loaded on October 21, 2014. RecFIN data were complete through August 31, and NORPAC data run only two days behind, which would make these data complete through October 22.

The reason we use individual fishing quota (IFQ) landings from PacFIN is because “real-time” IFQ e-tickets don’t have species compositions applied within rockfish complexes. Therefore, we must reference the PacFIN VDRFD table, where these compositions have been applied. These data then run at the completion dates and rates listed in the preceding paragraph for PacFIN commercial landings data.

Average annual discard estimates for the shorebased sectors are included in Tables 1 through 3 and calculated from the most recent two years of available data (West Coast Groundfish Observer Program, 2011 and 2012) as a proxy. The GMT notes that it has not had the time to update the discard estimates with the most recent WCGOP data as of this statement.

Results and Table Description.— Three tables are presented in this report. Table 1 summarizes catch by species and management area, Table 2 summarizes catch by species and sector~~,~~ for the area north of 40°10' N. latitude only, and Table 3 does the same for the area south of 40°10' N. latitude. Footnotes in Table 1 include the anticipated 2015 component overfishing limits (OFLs) to inform how current catches relate to potential future harvest specifications (i.e., 2015).

Component OFLs were taken from the 2013-14 and 2015-16 Biennial Harvest Specifications Final Environmental Impact Statement. The catch estimates given here may not match exactly with every sector estimate obtained separately from independent databases, due to reporting time lags and data capture date.

It is important to note that since OFLs are set for stock complexes, rather than for individual stocks within a complex, the Scientific and Statistical Committee (SSC) recommends against using these OFL contribution values to evaluate whether overfishing is occurring for component stocks (see Agenda Item I.3.b., Supplemental SSC Report, April 2012). In addition, NMFS pointed out in Agenda Item H.4.b., Supplemental NMFS Report, November 2013, that although the Minor Slope North and Minor Slope South complexes are divided at 40°10' N. latitude, combining northern and southern individual stock contributions to the OFL is more informative when determining management performance of these stocks coastwide (also see Agenda Item F.8.b. Supplemental SSC Report, June 2013). Also note that in Table 1, total mortality is compared to the 2014 component OFL whereas comparisons with the 2015 component OFL are provided in the footnotes, if different from the 2014 component OFL.

Table 1. Inseason 2014 catch estimates for selected species identified at the June 2012 PFMC meeting. Estimates include 2014 commercial landings for shorebased fisheries as well as 2014 landings and discards for at-sea and recreational sectors. Average annual observer discard over the most recent two years of available data is presented as a proxy for shorebased commercial sectors. For informational purposes; not intended for inseason Council action. Query date: October 24, 2014. See text for data source descriptions, completeness information, and other important information.

Species a/	North/ South of 40º10'	2014 inseason retained (mt)	2014 at-sea & recreational inseason discard (mt)	Average annual shorebased observer discard (mt)	Total mortality (mt)	2014 component OFL	% of the 2014 component OFL	
							North/ South of 40º10'	Areas combined
Aurora rockfish b/	North	10.13	0.00	3.04	13.17	*15.40*	*86%*	40%
	South	0.89	0.00	2.39	3.29	*26.10*	*13%*	
China rockfish c/	North	7.52	0.35	0.16	8.04	*9.80*	*82%*	61%
	South	6.26	0.31	1.48	8.06	*16.60*	*49%*	
Copper rockfish d/	North	5.85	0.30	0.03	6.18	*26.00*	*24%*	45%
	South	66.72	2.11	0.11	68.94	*141.50*	*49%*	
Quillback rockfish	North	6.38	0.22	0.13	6.73	*7.40*	*91%*	57%
	South	0.58	0.00	0.00	0.58	*5.40*	*11%*	
Rougheye rockfish e/	North	73.22	1.10	14.88	89.20	*71.10*	*125%*	126%
	South	1.08	0.00	0.15	1.23	*0.40*	*307%*	
Shortraker rockfish	North	25.67	0.01	2.23	27.91	*18.70*	*149%*	148%
	South	0.00	0.00	0.00	0.00	*0.10*	*1%*	
Shortraker/rougheye f/	North	0.00	0.00	19.43	19.43	*NA*	*NA*	NA

a/ Blackspotted rockfish landings in the northern area were 0.33mt, and in the South they were 0.11mt. Average annual discard was estimated at 0.00mt from WCGOP data (2011-2012). Blackspotted is included as a footnote because it will be combined with rougheye rockfish reporting in 2015 and was included with rougheye rockfish in the most recent (2013) stock assessment.

b/ Aurora rockfish 2015 component OFLs are 17.4 mt north of 40°10' and 74.3 mt south of 40°10'; percentage of 2015 component OFLs are 76 percent and 4 percent, respectively

c/ China rockfish 2015 component OFL is 7.2 mt north of 40º10’ and 55.2 mt south of 40º10’; percentage of 2015 component OFLs are 112 percent and 15 percent, respectively.

d/ Copper rockfish 2015 component OFL is 10.6 mt north of 40º10’ and 301.1 mt south of 40º10’; percentage of 2015 component OFLs are 58 percent and 30 percent, respectively.

e/ Rougheye rockfish 2015 component OFLs are 201.9 mt north of 40°10' and 4.1 mt south of 40°10'; percentage of 2015 component OFLs are 44 percent and 30 percent respectively

f/ Shortraker/rougheye rockfish market category: If we assume that this category is composed of the same proportions of shortraker and rougheye rockfish as if we were to combine their individual values in the “Total mortality” column (0.28 and 0.72 respectively), then the new rougheye estimate for the northern area would be 103.2mt, or 116 percent of its component OFL, and shortraker would be 33.3mt, or 178 percent of its component OFL.

Table 2. Inseason 2014 catch estimates of selected species, in the management area *North of 40°10' N. latitude only*, identified in the June 2012 PFMC meeting. Estimates include commercial landings for shorebased fisheries as well as 2014 landings and discards for at-sea and recreational sectors. Average annual observer discard over the most recent two years of available data is presented as a proxy for shorebased commercial sectors. For informational purposes; not intended for inseason Council action. Query date: October 24, 2014. See text for data source descriptions, completeness information, and other important information.

Species a/	Sector	2014 inseason retained (mt)	2014 at-sea & recreational inseason discard (mt)	Average annual shorebased observer discard (mt)	Total mortality (mt)	Sector distribution (%)
Aurora rockfish	At-sea hake CP	0.07	0.00	0.00	0.07	1%
	IFQ fixed gear	0.01	0.00	0.00	0.01	0%
	IFQ trawl gear	9.58	0.00	2.84	12.42	94%
	Incidental/miscellaneous	0.40	0.00	0.12	0.53	4%
	Non-nearshore fixed gear	0.04	0.00	0.08	0.12	1%
	Shoreside hake	0.02	0.00	0.00	0.02	0%
	Treaty	0.00	0.00	0.00	0.00	0%
China rockfish	CA recreational	0.63	0.01	0.00	0.64	8%
	Nearshore fixed gear	3.59	0.00	0.16	3.75	47%
	OR recreational	1.39	0.07	0.00	1.46	18%
	WA recreational	1.92	0.27	0.00	2.19	27%
Copper rockfish	CA recreational	1.32	0.03	0.00	1.36	22%
	Incidental/miscellaneous	0.05	0.00	0.00	0.05	1%
	Nearshore fixed gear	0.91	0.00	0.03	0.94	15%
	OR recreational	2.06	0.02	0.00	2.08	34%
	WA recreational	1.52	0.25	0.00	1.76	28%

a/ Blackspotted rockfish landings in the North were reported as 0.33mt, 76 percent of which was in the Non-nearshore fixed gear sector, 17 percent was from the IFQ fixed gear sector, four percent from IFQ trawl, and three percent Treaty.

Table 2. Continued.

Species a/	Sector	2014 inseason retained (mt)	2014 at-sea & recreational inseason discard (mt)	Average annual shorebased observer discard (mt)	Total mortality (mt)	Sector distribution (%)
Quillback rockfish	CA recreational	1.23	0.03	0.00	1.26	19%
	IFQ trawl gear	0.17	0.00	0.01	0.18	3%
	Incidental/miscellaneous	0.05	0.00	0.00	0.05	1%
	Nearshore fixed gear	1.10	0.00	0.12	1.22	18%
	OR recreational	2.79	0.12	0.00	2.91	43%
	WA recreational	1.04	0.07	0.00	1.11	17%
Rougheye rockfish	At-sea hake CP	2.91	0.89	0.00	3.80	4%
	At-sea hake MS	0.46	0.21	0.00	0.68	1%
	IFQ fixed gear	1.98	0.00	6.22	8.21	9%
	IFQ trawl gear	33.21	0.00	0.05	33.26	37%
	Incidental/miscellaneous	0.52	0.00	0.01	0.53	1%
	Nearshore fixed gear	0.00	0.00	0.00	0.00	0%
	Non-nearshore fixed gear	18.72	0.00	8.55	27.27	31%
	Shoreside hake	7.80	0.00	0.01	7.81	9%
	Treaty	7.61	0.00	0.04	7.65	9%
Shortraker rockfish	At-sea hake ms	0.00	0.01	0.00	0.01	0%
	IFQ fixed gear	0.15	0.00	0.62	0.77	3%
	IFQ trawl gear	21.20	0.00	0.02	21.22	76%
	Incidental/miscellaneous	0.16	0.00	0.00	0.16	1%
	Nearshore fixed gear	0.00	0.00	0.00	0.00	0%
	Non-nearshore fixed gear	3.70	0.00	1.59	5.30	19%
	Shoreside hake	0.15	0.00	0.00	0.15	1%
	Treaty	0.32	0.00	0.00	0.32	1%
Shortraker/rougheye rockfish	IFQ fixed gear	0.00	0.00	1.17	1.17	6%
	IFQ trawl gear	0.00	0.00	0.00	0.00	0%
	Non-nearshore fixed gear	0.00	0.00	18.26	18.26	94%

Table 3. Inseason 2014 catch estimates of selected species, in the management area *South of 40°10' N. latitude only*, identified in the June 2012 PFMC meeting. Estimates include commercial landings for shorebased fisheries as well as 2014 landings and discards for at-sea and recreational sectors. Average observer discard over the most recent two years of available data is presented as a proxy for shorebased commercial sectors. For informational purposes; not intended for inseason Council action. Query date: October 24, 2014. See text for data source descriptions, completeness information, and other important information.

Species a/	**Sector**	**2014 inseason retained (mt)**	**2014 at-sea & recreational inseason discard (mt)**	**Average annual shorebased observer discard (mt)**	**Total mortality (mt)**	**Sector distribution (%)**
Aurora rockfish	IFQ fixed gear	0.00	0.00	0.01	0.01	0%
	IFQ trawl gear	0.83	0.00	2.11	2.94	90%
	Non-nearshore fixed gear	0.06	0.00	0.27	0.33	10%
China rockfish	CA recreational	5.99	0.31	0.00	6.30	78%
	Incidental/miscellaneous	0.02	0.00	0.00	0.02	0%
	Nearshore fixed gear	0.26	0.00	1.48	1.74	22%
Copper rockfish	CA recreational	64.71	2.11	0.00	66.81	97%
	Incidental/miscellaneous	0.13	0.00	0.00	0.14	0%
	Nearshore fixed gear	1.88	0.00	0.11	1.99	3%
Quillback rockfish	CA recreational	0.56	0.00	0.00	0.56	96%
	Nearshore fixed gear	0.02	0.00	0.00	0.02	4%
Rougheye rockfish	IFQ trawl gear	0.00	0.00	0.00	0.00	0%
	Non-nearshore fixed gear	1.08	0.00	0.15	1.23	100%
Shortraker rockfish	IFQ trawl gear	0.00	0.00	0.00	0.00	100%

a/ Blackspotted rockfish rockfish landings were reported in the South at the level of 0.11 in the non-nearshore fixed gear sector.