OMNIBUS REGULATION CHANGE PRIORITIES

Under this agenda item, the Council is scheduled to identify priority management measures, including trawl rationalization trailing actions and limited entry fixed gear-related actions, for future consideration. The Council should also provide initial guidance on the process and schedule for developing and adopting alternatives. Under Agenda Item I.6, Future Council Meeting Agenda and Workload Planning, the Council will schedule the priority groundfish management measures while taking into account the workload associated with previously scheduled groundfish matters as well as matters associated with other Fishery Management Plans (FMP).

Also under Agenda Item J.1, the Council will be provided an opportunity to respond to proposed rules or rule-making questions identified by the National Marine Fisheries Service (NMFS), if any.

New Groundfish Management Measures

The Council adopted a process whereby only adjustments to routine management measures[1] would be considered during the process to establish biennial harvest specifications and management measures. The recommendation for narrowing the types of management measures considered during the biennial process was intended to reduce workload during the biennial process and increase the probability that harvest specifications would be implemented January 1. New management measures[2] would be considered outside of the biennial process, and specifically, a call for new management measure proposals would be conducted at the June Council meeting in even-numbered years (e.g., 2014).

At the June 2014 meeting, the Council established a list of potential management measure topics and postponed prioritization and scheduling to the September Council meeting. Agenda Item J.1.a, Attachment 1 contains an unprioritized list of management measures adopted by the Council in June.[3] Under Agenda Item J.1, the Council is scheduled to identify priority management measures and provide initial guidance on process and schedule. For actions to be implemented by the start of 2016, alternatives for analysis will have to be finalized at the November Council meeting and final action taken by April 2015. The Council may wish to consider various criteria, such as the Groundfish Strategic Plan, FMP goals and objectives, and National Standards, when determining the priority management measures for implementation (Agenda Item J.1.a, Attachment 2).

To facilitate Council decision-making, NMFS reviewed rules completed in 2014 and in progress for completion (Agenda Item J.1.b, NMFS Report 1) and has provided input on the agency's

[1] Routine management measures are defined in regulation and a range of alternatives have been previously analyzed.
[2] New management measures are those for which the environmental impacts have not been previously analyzed and/or have not been previously implemented in regulations.
[3] Management measures 1-60 are ordered by category and sector while items 61-75 represent the additions from the June Council meeting, which are not ordered by category and sector.

priorities and which items must be done in a timely manner to comply with legal requirements, set harvest levels, and respond to litigation (Agenda Item J.1.b, NMFS Report 2). NMFS Report 2 also provides initial timelines for NMFS priority items, to inform groundfish management workload planning for 2015 and 2016. Additionally, at its June meeting, the Council accepted an Enforcement Consultants report recommending some preliminary staff work on the vessel monitoring system ping rate issue (pursuant to Council requests for information at its April 2014 meeting). In response, two NMFS Office of Law Enforcement (OLE) reports have been provided. The first summarizes incursions and the recent history of enforcement actions and provides the form letter sent to individuals as soon as an incursion is detected (NMFS OLE Report 1). The second summarizes the results from a VMS provider survey (NMFS OLE Report 2). The questions for the survey were developed by NMFS OLE and the survey administered by Council staff.

The Oregon Department of Fish and Wildlife (ODFW) provided a report (Agenda Item J.1.c, ODFW Report) on recovering derelict crab gear during groundfish trips, which is Item 70 in Attachment 1. Additionally, public comment received by the public comment deadline is included in the briefing materials. The Washington Department of Fish and Wildlife (WDFW) provided a report (Agenda Item J.1.c, WDFW Report) on the consideration of a state rule which would require sorting of additional slope rockfish species.

Under Agenda Item I.6, the Council will schedule the groundfish management measures while taking into account other workload priorities. At that time, it is also expected that the Advisory Bodies, Council staff, and WCR staff will assess in greater detail the workload requirements for the highest priority management measures identified by the Council under Agenda Item J.1.

New Rule Clarifications for Trawl Trailing Actions

At this time there are a number of issues on which the Council has taken action for which implementation is in progress. Agenda Item J.1.b NMFS Report 1 lists the status of NMFS rulemakings over 2014. For two of these, the chafing gear rule and the observer/catch monitoring rule, proposed rules have been published and the comment periods completed, but the final rules had not been published as of the briefing book deadline. For three others, fixed gear trawl permit stacking (joint registration), the whiting cleanup rule, and shorebased whiting season date changes, the proposed rules have yet to publish. This agenda item provides the Council an opportunity to comment on any published proposed rules (the whiting cleanup rule in particular) and respond to implementation questions identified by NMFS, if any.

<u>Council Task</u>:

1. **Identify the priority of management measures and provide initial guidance on process and scheduling.**
2. **Consider comments on proposed rule and new rule clarifications, if any.**

Reference Materials:

1. Agenda Item J.1.a, Attachment 1: Groundfish Management Measures for Council Consideration.
2. Agenda Item J.1.a, Attachment 2: Considerations for Identifying Groundfish Management Measure Priorities.
3. Agenda Item J.1.b, NMFS Report 1: Rulemaking Plan for 2014.
4. Agenda Item J.1.b, NMFS Report 2: NMFS Groundfish Priorities.
5. Agenda Item J.1.b, NMFS OLE Report 1: OLE VMS/Incursion Violation Investigation Summary.
6. Agenda Item J.1.b, NMFS OLE Report 2: VMS Unit Cost and Capabilities Survey Results – August 2014.
7. Agenda Item J.1.c, ODFW Report: Oregon Department of Fish and Wildlife Report on Recovering Derelict Crab Gear During Groundfish Trips.
8. Agenda Item J.1.c, WDFW Report: Washington Department of Fish and Wildlife Report on the Council's Recommended 2015-2016 Sorting Requirements for Slope Rockfish.
9. Agenda Item J.1.d, Public Comment.

Agenda Order:

a. Situation Summary — Kelly Ames
b. NMFS Report — Frank Lockhart
c. Reports and Comments of Advisory Bodies and Management Entities
d. Public Comment
e. **Council Action:** Identify Priority of Management Measure Changes, Provide Initial Guidance on Process and Schedule, and Consider Comments on Proposed Rules or New Rule Clarifications, If Any

PFMC
08/18/14

GROUNDFISH MANAGEMENT MEASURES FOR COUNCIL CONSIDERATION

Section A of this document provides a summary of current groundfish workload based on past Council actions. Section B contains immediate and long term commitments excerpted from the September 2014 Council agenda (Agenda Item A.4) and the Preliminary Year-at-a-Glance Summary (Agenda Item I.6.a, Attachment 1) for groundfish, Pacific halibut, and ecosystem based management. Section C contains the unprioritized list of potential groundfish management measures, based on Council action at the June 2014 meeting.

Acronyms and abbreviations used in the following table:

COP – Council Operating Procedure
CP – Catcher Processor
EC – Ecosystem Component
IFQ – Individual Fishing Quota
LEFG – Limited Entry Fixed Gear
MS – Mothership
OA – Open Access
QP – Quota Pounds
QS – Quota Shares
Rec – Recreational
TOR – Terms of Reference
VMS – Vessel Monitoring System

Table 1. Unprioritized list of groundfish related workload items and initial candidate groundfish management measures.

	Sector	**Short Title**
A. Items on Which Council Action Has Been Completed Which Still Entail Some Workload[1]		
1.	Tribal, Trawl, Non-Trawl, Rec	2015-2016 Harvest Specifications and Management Measures and Amendment 24
2.	Trawl and Non-Trawl	Seabird Rule - Mandatory Streamers for vessels ≥ 55’
3.	Trawl and Non-Trawl	Clarify Catch Accounting Rules for Amendment 21
4.	Trawl and Non-Trawl	Fishery Declaration Enhancements
5.	Trawl IFQ, MS, & CP	Cost Recovery Corrections
6.	Trawl IFQ & MS	Electronic Monitoring Exempted Fishing Permits
7.	Trawl IFQ & MS	Pacific Dawn Lawsuit Appeal to District Court (Whiting Allocation)
8.	Trawl IFQ, MS, & CP	Whiting Cleanup Rule, Including Maximized Retention Regulations
9.	Trawl CP	Glacier Fish Co Lawsuit (Cost Recovery)
10.	Trawl IFQ and Non-trawl	Joint Registration and Prohibition of Processing IFQ Sablefish
11.	Trawl IFQ	Move Shorebased Whiting Season Opening Dates
12.	Trawl IFQ	Continue Adaptive Management Program Pass-Through
13.	Trawl IFQ	Update eTicket for Web-based Submissions
14.	Trawl IFQ	Rule for Redistribution of Excessive Aggregate NonWhiting QS
15.	LEFG	Revise Limited Entry Fixed Gear Permit Control Rule
16.	LEFG and OA	Require E-Tickets for Sablefish Landings
17.	LEFG and OA	Sablefish North of 36 Degrees - Allocation Correction

[1] Workload primarily involves NMFS and Council staff; however GMT and state staffs may be involved. Several items in this category are also covered under Agenda Item J.1.b, NMFS Report 1.

	Sector	Short Title	
18.	LEFG and OA	Logbooks for Fixed Gear	
19.	OA	Amendment 22 - Open Access License Limitation	
B. Immediate and Long-Term Commitments[2]			
Includes updated time frames based on the September Council Agenda (Agenda A.4) and the Year at a Glance (Agenda Item C.6.a, Attachment 1)			
20.	Trawl, Non-Trawl, Rec	Inseason Management (Sept 2014 and beyond, excluding March 2015)	
21.	Trawl, Non-Trawl, Rec	Adopt Final Stock Assessment Plan and TOR for 2015 (Sept 2014)	
22.	Trawl, Non-Trawl, Rec	Develop a COP for Groundfish Methodology Review Process (Nov 2014 and Apr 2015)	
23.	Trawl, Non-Trawl, Rec	Omnibus Regulations Changes (Sept and Nov 2014, Mar-Sept 2015)	
24.	Tribal, Trawl, Non-Trawl, Rec	Essential Fish Habitat: Phase 3 of the 5 Year Review (April 2015)	
25.	Trawl, Non-Trawl, Rec	Amendment 25: Comprehensive Ecosystem-Based Amendment (Sept 2014 and Mar 2015)[3]	
26.	Trawl, Non-Trawl, Rec	2015 Pacific Halibut Catch Sharing Plan (Sept and Nov 2014) and 2016 CSP (Sept 2015)[4]	
27.	Trawl, Non-Trawl, Rec	2015 Incidental Regulations for Pacific Halibut (Mar and Apr 2015)[4]	
[5]	Trawl, Non-Trawl, Rec	Pacific Whiting Harvest Specifications and Set-Asides (April 2015)	
28.	Trawl, Non-trawl, Rec	Stock Assessments for 2017-2018 Biennium (June and Sept 2015)	
29.	Trawl, Non-Trawl, Rec	Start of the Process to Establish 2017-2018 Specifications and Regulations (June 2015)	
30.	Trawl IFQ & MS	Electronic Monitoring Regulations (Sept and Nov 2014, June 2015)	
Items on the Horizon			
31.	Non-Trawl	Discard Mortality Rates for Commercial Nearshore Fisheries (TBD)	
32.	Trawl IFQ, MS, & CP	Five Year Trawl Rationalization Program Review (Starts in 2016)	
33.	Trawl IFQ	QS/QP Control Rule - Safe Harbor for Risk Pools - post 5-year review	
34.	Trawl IFQ	Resolve Long-term Whiting Surplus Carryover Provision - post 5-year review	
C. Candidate Items for Prioritization in September			
35.	Trawl, Non-Trawl, Rec	Rebuilding Revision Rules (signal vs. noise)	
36.	Trawl, Non-Trawl, Rec	Further Consideration for Reorganizing Stock Complexes	
37.	Trawl and Non-Trawl	Groundfish Conservation Areas for Rougheye Rockfish	
38.	Trawl and Non-Trawl	New Dressed to Round Conversion Factors for Sablefish	
39.	Trawl and Non-Trawl	Increase VMS Ping Rates	

[2] This list contains groundfish, Pacific halibut, and ecosystem based management items. Several matters contained in the "Other Category" on the Year at a Glance may also involve groundfish staff but were excluded from the list (e.g., the Electronic Technology Plan, Recreational Policy Update, etc.).
[3] Item involves amending the groundfish Fishery Management Plan and thus groundfish staff.
[4] Item may involve groundfish considerations and/or staff that also work on groundfish.
[5] Pacific whiting harvest specifications and set-asides were inadvertently excluded from the list created in June 2014. This item was added to the September 2014 list left unnumbered in order to maintain the numbering established in June.

	Sector	Short Title	
40.	Trawl and Non-Trawl (LE)	Eliminate Permit Size Endorsements	
41.	Trawl and Non-Trawl	Seabird Avoidance Devices for Vessels less than 55 feet	
42.	Trawl IFQ, MS & CP	Revise Length of Time Required for the Trawl Fleet to Retain Records	
43.	Trawl IFQ (& MS &CP?)	Fishery Declaration Enhancements (With Gear Stowed and Testing Gear)	
44.	Trawl IFQ, MS & CP	Year Round Whiting Season and Other Modifications	
45.	Trawl IFQ, MS & CP	Revise Regulations on At-Sea and Shoreside Flow Scales	
46.	Trawl IFQ	Gear Use - Multiple Gears Onboard and Use	
47.	Trawl IFQ and LE Pot	Remove Certain Area-Management Restrictions	
48.	Trawl IFQ	Remove Certain Restrictions on Trawl Gear Configuration	
49.	Trawl IFQ	Resolve Long-term Non-Whiting Surplus Carryover Provision	
50.	Trawl IFQ	Carryover when Management Units Change	
51.	Trawl IFQ	Allow Trading of Previous Year Quota Pounds in Current Year	
52.	Trawl IFQ	Widow Rockfish QS Reallocation	
53.	Trawl IFQ	Discard Survival Credit for Lingcod and Sablefish	
54.	Trawl IFQ	Require Posting of First Receiver Site Licenses	
55.	Trawl IFQ	Develop Criteria for Distributing Adaptive Management Program QP	
56.	LEFG	Cost Recovery for the Permit Stacking Program	
57.	LEFG and OA	Commercial Gear Restriction for Targeting Flatfish in CA	
58.	LEFG and OA	Retain Halibut in the Sablefish Fishery (South of Pt. Chehalis)	
59.	Recreational	50 fm Depth Restriction (WA and OR)	
60.	Recreational	Mid-water Sport Fishery (OR and CA)	
61.	Trawl, Non-Trawl, Rec	Further Consideration for Ecosystem Component Species	
62.	Trawl, Non-Trawl, Rec	Analysis of a Multi-Year Average Catch Policy	
63.	Non-trawl	Mortality Rates for Descending Devices in the Rod-and-Reel Fishery	
64.	Trawl, Non-Trawl, Rec	Management Model Review and Refinement	
65.	Trawl IFQ & MS	Allow Between Sector Transfer of Rockfish from IFQ to MS	
66.	Trawl, Non-Trawl, Rec	Create 60-Mile Bank RCA Lines	
67.	Trawl, Non-Trawl	Reconsider Blackgill Allocation	
68.	Trawl, Non-Trawl, Rec	Evaluate Nearshore Management Approaches, Including Deferral	
69.	LE FG	Combine the Fixed Gear LE DTL Fishery and Tier Fishery	
70.	Trawl, Non-Trawl	Provide for Retrieval of Derelict Crab Pots in RCAs	
71.	Trawl	Allow Between Sector Transfer of Unneeded Overfished Species	
72.	LE FG	Require Permit Price Reporting for LE FG Permit Transfers	
~~73.~~	~~LE FG~~	~~Convert Daily Trip Limits to a Tier Endorsement~~[6]	
74.	LE FG	Combine Longline and Fishpot into a Single Fixed Gear Limited Entry Gear Endorsements	
75.	Trawl, Non-Trawl	Move the Seaward Non-Trawl RCA Line Closer to Shore for Pot Vessels	
76.	LE FG	Require All Fishpots be Returned to Shore at the End of Each Trip	

[6] This item is a duplicate of item #69.

A. Items on Which Council Action Has Been Completed Which Still Entail Some Workload

1. Tribal, Trawl, Non-Trawl, and Rec – 2015-2016 Harvest Specifications and Management Measures and Amendment 24

The process to adopt the 2015-2016 harvest specifications and management measures, including non-electronic monitoring EFPs, and Amendment 24 culminates at this meeting with final action scheduled under Agenda Item F.7. Over the summer and fall, Council, NMFS, and state staffs will be responding to comments on the draft Environmental Impact Statement (EIS), preparing the final EIS, and preparing the regulations necessary to implement Council action. The anticipated rulemaking schedule is outlined in Agenda Item F.1.b, NMFS Report.

2. Trawl and Non-Trawl - Seabird Rule - Mandatory Streamers $\geq$ 55'

At the November 2013 meeting, the Council recommended that streamer lines be required during setting operations on commercial fixed gear vessels 55 feet or greater in length with a safety exception in the event of rough weather, which would be triggered by a National Weather Service forecast of a gale force wind warning. In January 2014, Council staff transmitted regulations necessary to implement the Council action. NMFS advises that rulemaking is in progress and the proposed rule is anticipated this summer (see Agenda Item F.1.b, NMFS Report).

3. Trawl and Non-Trawl - Clarify Catch Accounting Rules for Amendment 21

At its June 2012 meeting, as part of the preferred alternative for the 2013-2014 harvest specification and management measures, the Council recommended reinstating catch accounting language in the FMP that was inadvertently deleted when Amendment 21 was implemented. Changes to the FMP language were also recommended to further clarify the decision rules for determining the allocation against which a vessel's catch would count (i.e., whether it would count against the limited entry allocation or the open access allocation). The Council and NMFS staff has made progress on some draft FMP language; however, due to competing workload, language for Council consideration has not yet been fully developed.

4. Trawl and Non-Trawl - Fishery Declaration Enhancements

At its June 2013 meeting, the Council took action to require that vessels activating VMS units make a fishery declaration at the time of activation, even if they are not entering a groundfish fishery at that time. Additionally, the Council recommended that, for clarity purposes, category 24 in the current list of declarations (660.13(d)(5)(iv)) be modified from "other gear" to "other," to encompass declarations to participate in fisheries not specifically named in the declaration list and for research activities.

5. Trawl IFQ, MS, & CP - Cost Recovery Corrections

After cost recovery was implemented for the trawl rationalization program in January 2014, NMFS announced clarifications to the regulations through a public notice (see NMFS public notice, NMFS-SEA-14-12, March 20, 2014). The clarifications were on (1) fish buyer's use of principal from a deposit account in cases of credit card payment to Pay.gov (IFQ & MS), and (2) in the CP sector, only retained groundfish are subject to the cost recovery fee. In the future, NMFS intends to revise the associated regulatory language for these issues and, if further issues arise, may have additional cost recovery corrections or clarifications.

6. Trawl IFQ & MS - Electronic Monitoring Exempted Fishing Permits

The Council is also in the middle of considering exempted fishing permits (EFPs) to allow some vessels to use electronic monitoring in lieu of at-sea compliance observers. Council action might be completed at this meeting (see Agenda Item F.5 for additional background), however, substantial ongoing effort by NMFS staff would be required to have the EFPs in place during the 2015 fishery.

7. Trawl IFQ & MS - Pacific Dawn Lawsuit Appeal to District Court (Whiting Allocation)

On May 13, 2014, an appeal to the Ninth Circuit Court was filed in the Pacific Dawn lawsuit challenging the allocation of whiting IFQ and mothership sector catch history allocations. Responding to this appeal will require the time of NOAA GC attorneys, as well as other NMFS staff, who are also integral to making progress on the development and implementation of groundfish actions.

8. Trawl IFQ, MS, & CP - Whiting Cleanup Rule, Including Maximized Retention Regulations

The proposed whiting cleanup rule would establish criteria for a whiting trip (at least 50% of the landing by weight must be whiting), re-establish regulations needed to cover the disposition of catch in the maximized retention fishery, and clarify the ability of midwater gear to be used to target all groundfish species in the RCAs north of 40°10′ north latitude after the whiting opening. This rule is expected to be finalized by December 2014 (see Agenda Item F.1.b, NMFS Report).

9. Trawl CP - Glacier Fish Co Lawsuit (Cost Recovery)

On January 9, 2014, Glacier Fish Company LLC filed a suit in relation to the cost recovery regulations challenging the categorization of the catcher-processor co-op program as a limited access privilege program, challenging the status of co-op members as limited access privilege holders, claiming that the cost recovery regulations were not properly promulgated, and claiming adequate documentation of the basis of the cost figure has not been provided. Responding to this suit will require the time of NOAA GC attorneys, as well as other NMFS staff, who are also integral to making progress on the development and implementation of groundfish actions.

10. Trawl IFQ and Non-Trawl - Joint Registration and Prohibition of Processing IFQ Sablefish

At its April 2012 meeting, the Council recommended allowing a fixed gear permit and a trawl permit to be registered to the same vessel at the same time. Implementation is expected by the winter of 2014/2015, as part of the upcoming Sablefish Rule (see Agenda Item F.1.b, NMFS Report).

11. Trawl IFQ - Move Shorebased Whiting Season Opening Dates

At its November 2012 meeting, the Council recommended moving the shoreside sector primary whiting season opening date to May 15, starting in 2013 to the extent that such a change could be made without requiring a plan amendment. It is expected that the season date change can be made for all areas north of 40°30′ north latitude. The current April 15 opening will remain in place south of that line. Implementation is expected by May 2015 (see Agenda Item F.1.b, NMFS Report).

12. Trawl IFQ - Continue Adaptive Management Program Pass-Through

Under this agenda item, the Council will likely extend the current AMP pass-through for a number of additional years (see Agenda Item F.3.a, Attachment 1). A regulatory action, completed by the end of the year, will be required to implement that extension (see Agenda Item F.1.b, NMFS Report).

13. Trawl IFQ - Update eTicket for Web-based Submissions

Pacific States Marine Fisheries Commission is improving the trawl IFQ e-Ticket system by moving to a web-based platform. This will require some regulatory changes and may be implemented over the winter of 2014/2015, as part of the upcoming Sablefish Rule (see Agenda Item F.1.b, NMFS Report), if the Council recommends e-tickets for the sablefish fishery (see Item 16).

14. Trawl IFQ - Rule for Redistribution of Excessive Aggregate NonWhiting QS

Current regulations require forfeiture of QS held in excess of control limits as of November 30, 2015. There is no guidance in the regulations for which QS would be revoked if a QS permit owner does not get their individual and collective QS amounts under the aggregate nonwhiting QS control limit. This issue may not require Council action and may only be a clarification of policy if the situation arises. In the interim, QS permit owners are encouraged to get their own QS permits/accounts under the QS control limits listed at 660.140(d)(4)(i) by November 30, 2015, so that NMFS does not have to take an administrative action. NMFS notified QS permit owners that were over QS control limits of the amounts they were over when NMFS issued initial QS permits. Later in 2014, NMFS will again notify QS permit owners that are over QS control limits. NMFS has several tools available on the QS Permit and Accounts website at: http://www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/quota_share_permits_accounts.html. The website includes the table of IFQ accumulation limits (i.e., QS control limits), and tools for QS permit owners to calculate their non-whiting groundfish aggregate QS to determine if they are over the limit.

15. LEFG - Revise Limited Entry Fixed Gear Permit Control Rule

At this meeting, the Council will decide whether or not to recommend a revision to the limited entry fixed gear permit control rule (Agenda Item F.6). If the Council recommends such revisions, the recommendation will be in the NMFS approval and implementation phase by the time of the September Council meeting, with the attendant workload for NMFS and Council staff, including regulatory deeming. Implementation would be expected by the winter of 2014/2015, as part of the upcoming Sablefish Rule (see Agenda Item F.1.b, NMFS Report).

16. LEFG and OA - Require E-Tickets for Sablefish Landings

At this meeting, the Council will decide whether or not to recommend that electronic fish tickets be required for limited entry fixed gear and open access sablefish landings (Agenda Item F.6). If the Council recommends such regulations, the recommendation will be in the NMFS approval and implementation phase by the time of the September Council meeting, with the attendant workload for NMFS and Council staff, including regulatory deeming. Implementation would be expected by the winter of 2014/2015, as part of the upcoming Sablefish Rule (see Agenda Item F.1.b, NMFS Report).

17. LEFG and OA - Sablefish North of 36 Degrees - Allocation Correction

The May 2014 version of the groundfish FMP accurately represents the Council intent for sablefish catch accounting and allocations. That is, consistent with the Amendment 6 catch accounting rules, sablefish landed north of 36 deg. N. lat. by vessels registered to a LE fixed gear permit, regardless of their intended target (i.e., groundfish or non-groundfish species), will be debited against the LE fixed gear daily trip limit allocation (LE DTL). Sablefish landings by vessels not registered to a LE permit, regardless of their intended target (e.g. groundfish or non-groundfish species), will be debited against the OA fixed gear daily trip limit allocation (OA DTL). Action is needed to revise the groundfish regulations to be consistent with the FMP.

18. LEFG and OA - Logbooks for Fixed Gear

At its June 2008 meeting, as part of the preferred alternative for the 2009-2010 harvest specification and management measures, the Council recommended that NMFS develop and implement a mandatory Federal logbook for limited entry and open access fixed gear vessels. The Council's Groundfish Management Team, the West Coast Groundfish Observer Program, NMFS, and state staffs worked with Pacific States Marine Fisheries Commission to prepare a draft fixed gear logbook. The logbook has not been finalized and implemented due to concerns raised by NMFS, including lack of funding.

19. OA - Amendment 22 - Open Access License Limitation

In June 2009, the Council recommended a registration program for fishermen intending to land groundfish in the open access fishery, whether targeting those species or taking them incidentally while fishing for non-groundfish species (e.g., salmon, pink shrimp, California halibut) or nearshore species (e.g., cabezon, black rockfish). The Council has taken final action on Amendment 22 yet the registration program has not been implemented. More recently, some OA vessels are required to have an authorization on board under the Marine Mammal Protection Act (i.e., sablefish pot vessels) and NMFS is having difficulty getting addresses for those vessels. An OA registration system would address this issue.

B. Immediate and Long-Term Commitments

20. Trawl, Non-Trawl, and Rec - Inseason Management (Sept 2014 and beyond, excluding March 2015)

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 ACLs. On the Year at a Glance, inseason adjustments are scheduled to be discussed at the Sept-Nov 2014 meetings as well as in 2015 (except March).

21. Trawl, Non-Trawl, and Rec - Adopt Final Stock Assessment Plan and TOR for 2015 (Sept 2014)

In September and November of the even numbered years (e.g., 2014), the Council develops a stock assessment plan for the upcoming biennium and a Terms of Reference (TOR) for conducting the assessments.

22. Trawl, Non-Trawl, and Rec - Develop a COP for Groundfish Methodology Review Process (Nov 2014 and April 2015)

The Council recommended developing a Council Operating Procedure (COP) for conducting groundfish methodology reviews, similar to COP 15 for salmon. The Council is scheduled to adopt the COP at the September and November 2014 meetings.

23. Trawl, Non-Trawl, Rec – Omnibus Regulation Changes (Sept and Nov 2014, Mar-Sept 2015)

On the Year at a Glance, Omnibus Regulation changes are scheduled to be discussed at the Sept-Nov 2014 meetings as well as in 2015. Any prioritized management measures (e.g., those included under Category C: Candidate Items for Prioritization) could be considered under the Omnibus Regulation Changes agenda item.

24. Tribal, Trawl, Non-Trawl, and Rec - Essential Fish Habitat – Phase 3 of the 5 Year Review (Mar 2015)

As the first step in the Phase 3 process, the Council requested that the Northwest and Southwest Fisheries Science Centers investigate the question of Essential Fish Habitat (EFH) effectiveness, accuracy, and completeness and to present their findings in the advance Briefing Book for consideration at the September 2014 Council meeting. At the September 2014 meeting, the Council is tentatively scheduled to initiate a fishery management plan amendment, including alternatives for refining elements of groundfish EFH as warranted by new information, the Science Center evaluation, and proposals received.

25. Trawl, Non-Trawl, and Rec - Amendment 25: Comprehensive Ecosystem-Based Amendment (Sept 2014 and Mar 2015)

In April 2014, The Council approved a range of alternatives for protecting unfished and unmanaged forage fish species and identified the Ecosystem Trophic Role pathway as a preliminary preferred alternative. Under this pathway, protective measures for forage species would be added to each of the Council's four FMPs, perhaps under an omnibus process

aggregating the four actions into one process. The Council is scheduled to review the alternatives and proposed amendatory language for the groundfish FMP at the September 2014 Council meeting.

26. Trawl, Non-Trawl, Rec – 2015 Pacific Halibut Catch Sharing Plan (Sept and Nov 2014) and 2016 CSP (Sept 2015)

Each September and November meeting, the Council considers proposed changes to the Pacific halibut regulations and Catch Sharing Plan (CSP) for Area 2A. Starting in 2014, in response to recent unusually high harvests of Pacific halibut off Southern Oregon and Northern California, the Council established a new management line at the Oregon/California border, creating separate Oregon and California subareas with area-specific CSP allocations and management measures. The Council is scheduled to consider, at the September and November 2014 meetings, whether additional changes to the 2A CSP allocations are necessary and whether additional adjustments to management measures are necessary to comply with allocation provisions of the CSP. The anticipated rulemaking schedule is outlined in Agenda Item F.1.b, NMFS Report.

27. Trawl, Non-Trawl, Rec – 2015 Incidental Regulations for Pacific Halibut (Mar and Apr 2015)

Regulations governing incidental harvest of halibut in the salmon troll fishery and primary fixed gear fishery for sablefish north of Point Chehalis require the Council to adopt halibut landing restrictions to allow incidental harvest while assuring quotas are not exceeded. The Council is scheduled to recommend incidental halibut regulations at the March and April 2015 meetings.

28. Trawl, Non-Trawl, Rec - Stock Assessments for 2017-2018 Biennium (June and Sept 2015)

At this meeting, under Agenda Item F.8, the Council is scheduled to adopt for public review the list of stocks to be assessed in 2015 for use in 2017 and beyond and a stock assessment review schedule. The first stock assessment is scheduled for Council adoption in June 2015.

29. Trawl, Non-Trawl, Rec - Start of the Process to Establish 2017-2018 Specifications and Management Measures (June 2015)

In most cycles, the start of the process to establish the biennial regulations begins in June of the odd numbered years (e.g., June 2015).

30. Trawl IFQ & MS - Electronic Monitoring Regulations (Sept and Nov 2014, June 2015)

The Council has received funding and is in the middle of a process for the consideration of electronic monitoring as a replacement for the monitoring function of at-sea observers. This action is currently scheduled for completion by the September Council meeting though it appears likely that further deliberations will be required for at least some sectors. See Agenda Item F.2 for additional background.

31. Non-Trawl – Discard Mortality Rates for Commercial Nearshore Fisheries (TBD)

The GMT is reviewing the current discard mortality rates used in the commercial nearshore bycatch model and by the West Coast Groundfish Observer Program (WCGOP) in the annual groundfish mortality report. There is little documentation for the discard mortality rates (100 percent) for some rockfish in the deeper depth strata (e.g., deeper than 20 fathoms), which is higher than the rate used in the recreational fisheries with similar gears. In the event new discard rates are derived by the GMT, the SSC would need to review and recommend Council adoption.

32. Trawl - Five Year Trawl Rationalization Program Review (Starts in 2016)

The trawl rationalization program will complete its fifth year at the end of 2015. Planning for the review might begin during 2015 but the compilation of data sets for the review will not occur until sometime during 2016 – when the final data becomes available.

33. Trawl - QS/QP Control Rule - Safe Harbor for Risk Pools - post 5-year review

At its September 2011 meeting, the Council recommended providing risk pools a safe harbor from the QS control rules. At its September 2013 meeting, the Council agreed that risk pools appeared to be functioning adequately under current regulations and that implementation of this recommendation could wait until the five year program review.

34. Trawl - Resolve Long-term Whiting Surplus Carryover Provision - post 5-year review

A workshop was held on November 2, 2012 to explore possibilities for fully implementing whiting surplus carryover in 2013 and a report was presented to the Council at its November 2012 meeting. The Council decided that it will review this issue again during the 5 year program review, scheduled for 2016.

C. Candidate Items for Prioritization in September

35. Trawl, Non-Trawl, and Rec - Rebuilding Revision Rules (signal vs. noise)

The Council recommended consideration of rebuilding revision rules during Amendment 24 and the 2015-2016 harvest specifications and management measures process. Such rules involve assessing adequacy of progress toward rebuilding and altering rebuilding plans, given a change in stock status. Some have referred to the rebuilding revision rules as separating the signal (true rebuilding) from the noise (variability in the estimates). The management strategy evaluation necessary to inform potential rebuilding revision rules is ongoing and will not be completed in time to be implemented with Amendment 24.

36. Trawl, Non-Trawl, and Rec - Further Consideration for Reorganizing Stock Complexes

During the past few cycles, the Council has made progress evaluating the performance of the existing stock complexes relative to the revised National Standard 1 Guidelines. In the event the Council wishes to further consider reorganizing the stock complexes, such work should be completed prior to the start of the biennial analysis (e.g., June 2015 prior to the 2017-2018 cycle).

37. Trawl and Non-Trawl - Groundfish Conservation Areas for Rougheye Rockfish

During the development of the 2015-2016 harvest specifications and management measures, the Council recommended an analysis be conducted to explore the impacts of implementing a Groundfish Conservation Area to reduce the catch of rougheye and blackspotted rockfish. Due to complexities in the analysis and competing workload in the 2015-2016 process, the Council recommended that this measure be discussed and prioritized accordingly during the omnibus regulation changes process.

38. Trawl and Non-Trawl - New Dressed to Round Conversion Factors for Sablefish

New information may be coming available on dressed to round conversion factors for sablefish, including conversion factors for product forms that are currently not covered with existing factors.

39. Trawl and Non-Trawl - Increase VMS Ping Rates

An Administrative Law Judge ruling on the F/V RISA LYNN case has raised question as to whether or not the current hourly locational pings used in the VMS system are sufficient to enforce area closures. This possible need to increase ping rates was first brought to the Council's attention at its November 2013 meeting and discussed in more detail at its March 2014 meeting, at which NMFS Office of Law Enforcement (Agenda Item H.1.b, NMFS OLE Report, March 2014) and the Enforcement Consultants (Agenda Item H.1.c, EC Report, March 2014) each provided reports. Additionally, the Groundfish Advisory Subpanel identified alternative tools for addressing the concern: "data loggers in conjunction with electronic logbooks, specific polygons in the RCA, automatic identification systems, and more." (Agenda Item H.1.c, GAP Report, March 2014). At that time, the Council deferred further action until this meeting in order to determine the relative priority for this issue among other potential groundfish actions.

VMS ping rate issues for groundfish are also relevant to Highly Migratory Species FMP and thus VMS items could be combined into a single agenda item addressing both FMPs.

40. Trawl and Non-Trawl (LE) – Eliminate Permit Size Endorsements

Gear Workshop Report from the November 2012 Council meeting (Agenda Item I.5.a, Attachment 4 – Gear Workshop Report) stated: "The trawl permit length endorsement and associated permit transfer provisions are no longer needed as vessel capacity is no longer an issue under the IFQ program. However, there may be impacts to non-target species and to target species taken with fixed gear under gear switching that will need to be taken into account." It has also been suggested that the size endorsements are no longer needed for the fixed gear sablefish endorsed permits." This issue was also been identified in The Trawl Rationalization Regulatory Evaluation Committee (TRREC) Report from the November 2011 Council meeting (Agenda Item E.7.b, Supplemental TRREC Report).

41. Trawl and Non-Trawl – Seabird Avoidance Devices for Vessels less than 55 feet

In 2012, the U.S. Fish and Wildlife Service (USFWS) published a biological opinion considering the effects of West Coast groundfish fisheries to Endangered Species Act (ESA) listed marine species, including seabirds. The opinion includes reasonable and prudent measures (RPMs), terms and conditions, and conservation recommendations to minimize take of seabirds, particularly the endangered short-tailed albatross. The RPMs stipulate that NMFS shall 1) minimize the risk of short-tailed albatross interactions with commercial hook and line gear, 2) establish a work group as an advisory body to NMFS and USFWS for the purposes of reducing risk to short-tailed albatross (and other ESA-listed species), 3) monitor and report all observed, reported, and estimated short-tailed albatross take as well as report on the efficacy of avoidance and minimization measures, and 4) facilitate the salvage of short-tailed albatross carcasses taken by longline gear. In 2013, the Council recommended streamer line regulations for vessels 55 feet and greater (see item #39); however regulations are also needed for vessels less than 55 feet. SeaGrant research results are expected in 2015 and should inform the development of these regulations.

42. Trawl IFQ, MS & CP - Revise Length of Time Required for the Trawl Fleet to Retain Records

As described in September 2013 (Agenda Item G.9.a, Attachment 1), consider revising regulations that require the trawl fleet to retain records for three years and make them available upon request (660.113(a)(2)) to clarify how that works with regulations that require retention of records on board for 15 days into the next cumulative limit period (660.13(c)).

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

It has been suggested that declarations for transiting with gear stowed and for testing trawl gear (with no retention) be implemented and that on trips with these declarations no observer coverage would be required.

44. Trawl IFQ, MS & CP - Year Round Whiting Season and Other Modifications

The November 2011 TRREC Report recommended as a first priority the movement of all shorebased whiting season start dates to May 15 and elimination of the 5 percent cap on the early season California fishery. Council action to move the shoreside season openings for the area north of 40°30′ north latitude (see Item 15) has been completed but the April 15 start date for the area south of that line remains, along with the 5 percent cap have not been implemented (due to the need for a FMP amendment to modify these provisions). The TRREC recommended as a secondary priority the consideration of a year round whiting season.

45. Trawl IFQ, MS & CP - Revise Regulations on At-Sea and Shoreside Flow Scales

As described in September 2013 (Agenda Item G.9.a, Attachment 1), NMFS Alaska Region is currently revising at-sea flow scale regulations for the North Pacific because incidences of manipulation were discovered. West coast trawl rationalization program regulations at 660.15 may need to be revised in coordination with revisions to North Pacific regulations which are expected for 2015. New regulations are required to address the need for daily scale testing criteria for the new shoreside flow scales.

46. Trawl IFQ - Gear Use - Multiple Gears Onboard and Use

TRREC Report from the November 2011 Council meeting and the Gear Workshop Report from the November 2012 Council meeting (see item #39) both contained recommendations for the carrying and use of multiple gear types on a single trip, including both trawl and fixed gears.

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

Both the TRREC and Gear Workshop Reports (see item #39) included recommendations relative to area management restrictions. The TRREC report identified this issue as a general topic for consideration, plus the need to consider allowing vessels to fish in more than one area. The Gear Workshop report recommended allowing year-round use of midwater gear in the RCA be considered and elimination of the selective flatfish gear requirement in place shoreward of the RCA. It also recommended that the use of midwater gear be allowed in in all groundfish essential fish habitat conservation areas coastwide and year round (except that targeting on whiting would be subject to whiting regulations); and that vessels be allowed to move fixed gear across management lines without going to shore (currently that movement is considered to be fishing in two areas on the same trip).

48. Trawl IFQ - Remove Certain Restrictions on Trawl Gear Configuration

The TRREC (see item #39) suggested that with the individual incentives provided by the trawl rationalization program it would be possible to "Eliminate codend, chafing gear, mesh size and selective flatfish trawl gear requirements and restrictions" but that large and small footrope distinctions would have to remain due to EFH considerations—though they might be modified. For similar reasons, the Gear Workshop (see item #39) recommended reducing the minimum mesh size for bottom trawl by ½ inch, to 4 inches and also recommended eliminating the selective flatfish trawl requirement. One particular obstacle presented by the selective flatfish requirement is that the nets are two seamed nets and it is not possible to put rockfish excluders in two seamed nets.

49. Trawl IFQ - Resolve Long-term Non-Whiting Surplus Carryover Provision

The trawl IFQ program allows up to 10 percent of a vessel's QP to be carried from one year to the next, either as a deficit covered with following year QP or an unused surplus which can be fished in the following year. Concern that the surplus carryover provision might be interpreted as violating allowable catch limits has led NMFS to not issue surplus carryover for some species in some years. A consultative process between NMFS and the Council was developed as part of the 2013-2014 biennial specifications, to inform the NMFS decision process about whether or not to issue the surplus carryover. However, there continues to be uncertainty each year as to whether or not surplus quota pounds from the previous year will be reissued. The uncertainty

may be encouraging vessels to fish into deficit to avoid the loss of QP which would occur if surplus QP are not reissued. The Council has requested further analysis and development of options to ensure that, in the long term, the surplus carryover provisions can be implemented with greater certainty.

50. Trawl IFQ - Carryover When Management Units Change

As described in September 2013 (Agenda Item G.9.a, Attachment 1), the regulations do not cover how carryover should be handled when there is a reallocation as a result of changes in management areas (area subdivision, combination, or line movement) or subdivision of a species group that cause shifts in the distribution of QS. This issue was identified with the recent geographic subdivision of lingcod and relates to 660.140(c)(3)(vii).

51. Trawl IFQ - Allow Trading of Previous Year Quota Pounds in Current Year

At the April 2013 Council meeting, it was proposed that the trading of QP issued for a previous year be allowed to occur in the current year up until the last landings data for the previous year is in the catch and QP accounting system. This would allow greater flexibility for the fleet as a whole to use unused QP from a previous year to cover catch in that year. For example, in situations where a vessel was in deficit at the end of the year, during the subsequent calendar year it might acquire QP from a vessel that had a surplus at the end of that same year, rather than having to use QP from the subsequent year to cover previous year catch. Further action on this issue was deferred, to be take up as part of the next trawl rationalization trailing action package.

52. Trawl IFQ - Widow Rockfish QS Reallocation

At its April 2012 meeting, the Council decided to consider reallocation of the widow rockfish QS, now that widow rockfish is rebuilt. At its June 2012 meeting, the Council decided that for widow rockfish QS, the moratorium on QS trading should be continued until December 31, 2014, or until the widow rockfish reallocation process is complete, whichever comes first. Consequently, the Council recommended and NMFS implemented an indefinite extension on the widow rockfish QS moratorium through the reconsideration of the allocation of whiting (78 FR 18879, March 28, 2013). Therefore, while QS trading started for all other species in January 2014, the moratorium continues for widow rockfish QS. Some implementation issues have resulted due to the moratorium on transfer of widow rockfish QS affecting QS owners wanting to leave the fishery or change business arrangements. QS permit owners who are trying to retire or otherwise sell their QS are stuck with their widow QS until such time as the Council makes a decision on reallocation. Even though they will just be carrying one IFQ species in their QS account, they still will have the same renewal, paperwork, and QP transfer burden as all other QS owners and could result in stranded widow QP. Similarly, situations have occurred where a corporation is dissolved, wants to change ownership, or wants to change their structure by registering in a new state, perhaps with a new tax ID number. With the moratorium on widow QS transfer, the corporation will have to decide if it is in their best interest to dissolve and risk losing widow QS or remain a corporation to keep their widow QS until it is transferrable.

53. Trawl IFQ - Discard Survival Credit for Lingcod and Sablefish

The annual estimates of groundfish mortality, prepared by the West Coast Groundfish Observer Program, include discard survival credits for sablefish (50 percent for trawl, 20 percent for fixed gear) and lingcod (50 percent mortality for trawl). However, within the shorebased IFQ

program, total catch, regardless of survival, is debited from vessel QP accounts and tracked inseason against the trawl allocation and annual catch limits. Industry has requested the consideration of an IFQ survival credit for discarded lingcod and sablefish, and particularly for the discard of small sized lingcod—for which discard is currently required.

54. Trawl IFQ - Require Posting of First Receiver Site Licenses

As described in September 2013 (Agenda Item G.9.a, Attachment 1), add a requirement that first receivers possess and display a valid first receiver site license at each processing site. This would be similar to existing requirements at 660.12(d)(1) and 660.25(b)(1)(iii) that require vessels registered to limited entry permits to carry valid permit onboard the vessel.

55. Trawl IFQ - Develop Criteria for Distributing Adaptive Management Program QP

Under the Amendment 20 trawl rationalization program, the shoreside IFQ program includes a set aside of 10 percent of the nonwhiting QS (including halibut individual bycatch quota, IBQ) for an Adaptive Management Program (AMP). The AMP QP, issued each year for those QS, are to be distributed to address the following objectives: community stability; processor stability; conservation; unintended/unforeseen consequences of IFQ management; and facilitating new entrants. However, to date, the QP associated with this program have been passed through to QS holders on a pro rata basis in proportion to their QS holdings. Under this agenda item, the Council will be considering whether and for how long to continue that pass-through (see Agenda Item F.3.a, Attachment 3). Regardless of that decision, it will take some time to develop and analyze alternative criteria for distribution of the AMP QP. The Council may wish to prioritize beginning work on these criteria in anticipation of having that work completed on time for the expiration of the next pass-through period (if there is one).

56. LE FG - Cost Recovery for the Permit Stacking Program

The limited entry fixed gear sablefish stacking program is considered a limited access privilege program (a LAPP). The MSA requires LAPPs to develop a methodology and means to identify and assess cost of management, data collection and analysis, and enforcement programs that are directly related to and in support of the LAPP. Further, the Secretary of Commerce is authorized to establish and collect fees paid by holders of limited access privileges that will cover the costs of management, data collection and analysis, and enforcement activities; not to exceed 3 percent of the ex-vessel value of the fish harvested under the program. The LEFG sablefish program was established prior to the addition of these requirements in the MSA and, to this point, a means to identify costs or policy to establish a cost recovery program have not been developed. This issue is discussed further in the fixed gear sablefish program sablefish review (Agenda Item, F.6.a, Attachment 1, June 2014).

57. LEFG and OA - Commercial Gear Restriction for Targeting Flatfish in CA

In California, commercial vessels using a specific gear configuration designed to target flatfish species are authorized to fish in several Groundfish Conservation Areas, including the non-trawl RCA, Cowcod Conservation Area, Farallon Islands, and Cordell Banks. During the development of the 2015-2016 harvest specifications and management measures, the Council recommended an analysis be conducted to explore the impacts of either removing or modifying restrictions on the gear and where those vessels can fish. Due to complexities surrounding the analysis and

competing workload in the 2015-2016 process, the Council recommended that this measure be discussed and prioritized accordingly during the omnibus regulation changes process.

58. LEFG and OA - Retain Pacific Halibut in the Sablefish Fishery (South of Pt. Chehalis, WA)

At the September 2010 meeting, the Council recommended an analysis be conducted to explore the impacts of allowing incidental Pacific halibut retention in the sablefish fixed gear fishery south of Point Chehalis, Washington; which could include both limited entry and open access sectors. The analysis was intended to be completed in time to inform the development of the 2012 Pacific Halibut Catch Sharing Plan, though there was some discussion such a timeline was ambitious. Initial queries indicate that no analysis of the measure has been completed to date.

59. Recreational - 50 fm Depth Restriction (WA and OR)

Federal regulations provide coordinates for a 50 fm recreational Rockfish Conservation Area. During the development of the 2015-2016 harvest specifications and management measures, Washington and Oregon recommended analyzing the impacts of implementing the 50 fm line, if recommended. Due to the complexities surrounding the analysis and competing workload in the 2015-2016 process, the Council recommended that this measure be discussed and prioritized accordingly during the omnibus regulation changes process.

60. Recreational - Mid-water Sport Fishery (OR and CA)

In June 2013, the Council voted to move forward with evaluation of a midwater sport fishery in Oregon and California, as proposed in Agenda Item F.3.c, June, 2013, Holloway Proposal, with a potential implementation of January 1, 2015. This topic was originally scheduled for Council action in November 2013 and March 2014; however, the analysis was delayed due to competing workload.

61. Trawl, Non-Trawl, and Rec - Further Consideration for Ecosystem Component Species

In June 2014, the Council designated the following as ecosystem component species (EC): all the endemic skates, except longnose skate; all endemic grenadier; spotted ratfish; soupfin shark; and finescale codling. The GMT recommended, and the Council added to this list, consideration of management measures for EC species. For example, sorting and reporting requirements could be implemented to ensure adequate monitoring for EC species. Management measures could also be developed to minimize bycatch and bycatch mortality of EC species consistent with National Standard 9.

62. Trawl, Non-Trawl, and Rec - Analysis of a Multi-Year Average Catch Policy

National Standard 1 Guidelines (see 74FR3178) references an approach whereby management performance and the need to adjust management measures would be evaluated by comparing the multi-year average catch against an average annual catch limit (ACL). Such an approach could provide stability for industry, reduce inseason workload for the Council and NMFS, and might allow full implementation of the trawl IFQ program carryover provisions.

63. Non-Trawl – Mortality Rates for Descending Devices in the Rod-and-Reel Fishery

In March 2014, the Council adopted new depth-based mortality rates for cowcod, canary rockfish, and yelloweye rockfish discarded in recreational fisheries using descending devices to mitigate barotrauma. The West Coast Groundfish Observer Program is recording information about the use of descending devices in the commercial rod-and-reel fishery and appropriate discard mortality rates for this sector may need to be developed.

64. Trawl, Non-Trawl, and Rec – Management Model Review and Refinement

This item is not a management measure *per se*, but an acknowledgement of the workload associated with refining the GMT projection models that inform management measures for the biennium as well as inseason management. To the extent considerable structural model changes are recommended, SSC review and Council adoption would be necessary.

65. Trawl IFQ & MS – Allow Between Sector Transfer of Rockfish QP from IFQ to MS

This measure would allow participants in the MS sector access to quota pounds (QP) in their shorebased IFQ accounts for four rockfish species (canary, darkblotched, widow and POP). The total QP that could be transferred to the MS sector would be limited to the total associated with the QS amount allocated equally to permits from the buyback that also received a MS catcher vessel endorsement. Transfers would only be allowed if the amount of the abovementioned rockfish species were prohibiting attainment of the Pacific whiting allocation.

66. Trawl, Non-Trawl, and Rec - Create 60-Mile Bank RCA Lines

An area known as the 60-mile bank is a cowcod-rich area along the U.S./Mexico border. This area is not marked with RCA lines, leaving it unenforceable. Coordinates for defining the 60-mile bank would be established and implemented in regulation under this management measure.

67. Trawl, Non-Trawl – Reconsider Blackgill Allocation

Blackgill rockfish south of 40°10' N. latitude is managed in the Minor Slope Rockfish Complex south of 40°10' N. latitude. Amendment 21 allocated Minor Slope Rockfish Complex south of 40°10' N. latitude 63 percent to trawl and 37 percent to non-trawl based on landings data from 2003-2005 for the complex. In 2011, blackgill rockfish was assessed and starting in 2013-2014 a harvest guideline was established equal to the 40-10 adjusted ACLs calculated for the stock (106 mt and 110 mt, respectively). The GAP informed the Council that complications have arisen between the traditional non-trawl fixed-gear fleet and the IFQ fixed-gear fleet in the Conception management area due to increased targeting of blackgill by the IFQ fleet. The GAP recommended, and the Council added to this list, a reconsideration of the blackgill rockfish allocation.

68. Trawl, Non-Trawl, and Rec - Evaluate Nearshore Management Approaches, Including Deferral

In developing regulations for 2015-2016, several complications arose regarding the data used to inform harvest specifications and management measures for nearshore species.[7] This management measure would explore a range of nearshore management approaches, including deferral of nearshore management to the West Coast states.

69. LE FG – Combine the Fixed Gear LE DTL Fishery and Tier Fishery

This measure would analyze the impacts of discontinuing the limited entry daily trip limit fishery by moving the sablefish allocated for the DTL fishery (15%) into the tier fishery and adding a new tier for unendorsed sablefish permits (frequently referenced as the "zero-tier" permits). The analysis would include selection of a window period and conversion of the pounds caught during that period to specific permits. The GAP believes such a measure would increase economic efficiency.

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

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

71. Trawl – Allow Between Sector Transfers of Unneeded Overfished Species

This measure would be specific to the within trawl use of choke species and is not intended to include discussion or promote changes to any of the existing allocations. The goal of this suggestion is to begin the conversation about how choke species can be better utilized and/or shared within the trawl sectors to ensure attainments of optimum yield for all target species. Item 65 of this list is a narrower version of this policy issue.

72. LE FG – Require Permit Price Reporting for LE FG Permit Transfers

The SSC recommended, and the Council added to the list, the collection of permit price data when limited entry fixed gear permits are transferred (Agenda Item F.6.b, Supplemental SSC Report, September 2014).

~~**73. LE FG – Convert Daily Trip Limits to a Tier Endorsement**~~

This item appears to be a duplicate of item #69 LEFG – Combine the Fixed Gear LE DTL Fishery and Tier Fishery.

74. LE FG – Combine Longline and Fishpot into a Single Fixed Gear Limited Entry Endorsement

[7] See Agenda Item D.5.b Supplemental WDFW/ODFW/CDFW Report, March 2014; Agenda Item D.5.b Supplemental WDFW Report, March 2014; Agenda Item C.4.b, ODFW Report, April 2014, Agenda Item C.4.b, WDFW Report, April 2014; Agenda Item F.7.b, Supplemental WDFW/ODFW Report, June 2014 and Agenda Item F.7.b, Supplemental CDFW Report 1, June 2014

This measure would allow the existing tier permits to be fished either with longline gear or pot gear. The GAP believes this measure could reduce rockfish bycatch, which is increasingly necessary given the reallocation of yelloweye rockfish from the non-nearshore to the nearshore sector as well as the request to reduce catches of shortraker and rougheye rockfishes. This measure was scoped in the 2009-2010 Environmental Impact Statement and would require an FMP amendment.

75. Trawl and Non-Trawl - Move the Seaward Non-Trawl RCA Line Closer to Shore for Pot Vessels

This measure would reduce the seaward extent of the non-trawl RCA, for example changing the seaward boundary from 100 fm to 75 fm. Changing the seaward boundary would reduce the area closed by the non-trawl RCA and allow pot gear to be deployed shallower. This measure may provide greater access to target species while minimizing bycatch since pot gear has demonstrated lower rockfish bycatch rates.

76. LE FG – Require all Fish Pots be Returned to Shore at the End of Each Trip

This measure would require that all fish pots be returned to shore at the end of a fishing trip.

CONSIDERATIONS FOR IDENTIFYING GROUNDFISH MANAGEMENT MEASURE PRIORITIES

The following are some of the factors the Council may wish to consider when identifying groundfish management measure priorities.

Magnuson Stevens Act National Standards

Section 301(a) of the MSA states: "Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the following national standards for fishery conservation and management" The following are those national standards (NS):

NS-1	Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
NS-2	Conservation and management measures shall be based upon the best scientific information available.
NS-3	To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
NS-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 allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
NS-5	Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.
NS-6	Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

NS-7 Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

NS-8 Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), 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 (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

NS-9 Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

NS-10 Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The Council FMP Goals and Objectives

With respect to goals and objectives, the Council's FMP reads as follows

> 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]

Trawl Rationalization Goals and Objectives (Amendment 20)

Trawl Rationalization goals and objectives from Amendment 20 are as follows.

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 impacts resulting 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.

Sablefish Permit Stacking Program (Amendment 14)

Key objectives of Amendment 14 and the permit stacking program were further defined as follows.

Key Objective	Consistency with Management Objectives of the FMP and MSA
1. Rationalize the fleet and promote efficiency	Capacity reduction is one of the key elements of the Council's strategic plan. The strategic plan generally approaches capacity reduction by reducing the number of fishing vessels. This reduction does not of itself imply the rationalization of the fleet or increased efficiency. It is possible that the most efficient fixed gear sablefish harvest could involve a greater number of vessels taking sablefish as bycatch in other fisheries. However, given the high degree of overcapitalization in the fishery, it is believed that a reduction in capacity will generally move the fishery toward greater efficiency, addressing National Standard (NS) 5 and FMP Objective 6 on net national benefits.
2. Maintain or direct benefits toward fishing communities	This objective relates to NS 8 on fishing communities and FMP Objective 16 on fishing communities.
3. Prevent excessive concentration of harvest privileges	This objective relates to NS 4 on allocation, NS 8 on fishing communities, and FMP Objective 15 on avoiding adverse impacts to small entities.
4. Mitigate the reallocational effects of recent policies (3-tier system and equal limits)	This objective relates to NS 4 on allocation and FMP Objectives 12 on equitable allocation and 14 on minimizing disruption.
5. Promote equity	This objective relates to NS 4 on allocation and FMP Objective 12 on equitable sharing.
6. Resolve or prevent new allocation issues from arising	This objective relates to NS 4 on allocation and FMP Objectives 12 on equitable sharing and 14 on minimizing disruption.
7. Promote safety	This objective relates to NS 10 and FMP Objective 17 on safety.
8. Improve product quality and value	This objective relates to NS 5 on efficiency and FMP Objective 6 on net national benefits.
9. Take action without creating substantial new disruptive effects.	This objective relates to FMP Objective 14 on minimizing disruption.
10. Create a program that will readily transition to a multi-month IQ program.	This objective relates to capacity reduction recommendations in the strategic plan. Where individual quotas are transferable and divisible, they address NS 6 by providing the fleet with substantial flexibility to respond to changing conditions in the fishery and NS 5 by taking efficiency into account. FMP Objective 6 is also addressed.

Groundfish Strategic Plan From 2000

The following pages contain the groundfish strategic plan from the year 2000.

Pacific Fishery Management Council
Groundfish Fishery
Strategic Plan

"Transition to Sustainability"

Executive Summary

Prepared by
The Ad-Hoc Pacific Groundfish Fishery
Strategic Plan Development Committee

For
The Pacific Fishery Management Council

October 2000

Statement of Purpose and Acknowledgments

The Ad-Hoc Pacific Groundfish Fishery Strategic Plan Development Committee was formed by the Pacific Fishery Management Council and tasked with the development of a Draft Groundfish Strategic Plan for review and comment by the Council, its Advisory Entities, and the Public.

The members of the Ad-Hoc Committee were selected from the Council membership or as a Council member's designee.

This draft document was prepared through a consensus decision-making process and is the work-product of all members of the Committee.

The Groundfish Strategic Plan Document is *not* proposed as a Fishery Management Plan amendment. Rather, the purpose of the Groundfish Strategic Plan is to guide the future management of the Groundfish Fishery, including development of Plan amendments, regulations, and other implementation actions as needed.

Ad-Hoc Groundfish Strategic Plan Committee Members

Robert Alverson, Fishing Vessel Owners Association
Phil Anderson, Washington Department of Fish & Wildlife
Ralph Brown, Commercial Fisherman
Neal Coenen, Oregon Department of Fish & Wildlife
Bob Fletcher, Sportfishing Association of California
Dave Hanson, Committee Chair, Pacific States Marine Fisheries Commission
Bill Robinson, National Marine Fisheries Service
Patty Wolf, California Department of Fish & Game

Council Staff, NOAA Legal Counsel and Facilitator

Don McIsaac/Jim Glock, Pacific Fishery Management Council
Eileen Cooney, NOAA General Counsel's Office
Debra Nudelman, Committee Facilitator, RESOLVE, Inc.

Pacific Fishery Management Council
Groundfish Fishery
Strategic Plan

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The Pacific Fishery Management Council
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Executive Summary

I. The Strategic Plan Overview – "Where Do We Want To Go?"

A. Context and Need for Strategic Planning in the Groundfish Fishery

The Pacific Fishery Management Council (Council) formed the Groundfish Strategic Planning Committee because it needed an advisory group that could work outside of the hectic Council meetings to craft a long-term vision for the future of groundfish fisheries and groundfish management. Several groundfish stocks are severely depleted and need strong protective management to rebuild. Commercial and recreational discards are not monitored, and those discards have unknown effects on the health of groundfish stocks. There is little information about the effects of fishing and non-fishing activities on groundfish habitat. Scientific efforts to assess the status of groundfish stocks, life histories, and habitat needs have been grossly underfunded.

The groundfish resource is cannot support the number of vessels now catching and landing groundfish. There are over 2,000 licensed West Coast commercial fishers, and many thousands of sport fishers. To bring harvest capacity in line with resource productivity, the number of vessels in most fishery sectors will have to be reduced by at least 50%. Coastal ports have significant shoreside infrastructures to support this once-prosperous industry, such as processing plants, boat yards, machine shops, marine supply stores, motels, and restaurants. Fishing fleet overcapitalization has been a major factor in fish stock depletion, and the industry and coastal communities are facing an economic and social crisis.

This strategic plan is intended to provide guidance for groundfish management in 2001 and beyond. It is intended to be a resource for Council efforts to rebuild depleted stocks and maintain healthy stocks. And, it is intended to guide Council efforts to reduce the size of the fishing fleet to a level that is both biologically sustainable for the resource and economically sustainable for the fishing fleet.

The Committee expects that, to be effective, this strategic plan will have to address the difficult issues of: reducing fishing capacity, setting more responsible harvest rates, making allocation decisions, meeting scientific needs, protecting habitat, and improving the Council management processes. This planning work will take place during a time when fishery restrictions will be used to rebuild overfished stocks. These conditions provide the clearest evidence of the need for a longer-term vision and road map for the future of groundfish management.

The Committee designed a process and schedule to get key information, identify specific problems and develop a range of solutions. The Committee has developed a draft strategic plan document for Council and public review that:

$ Recommends new management goals and objectives;
$ Initiates new groundfish plan amendments for the 2001 management cycle;
$ Outlines detailed actions for Council work plans and a schedule of priorities for the next 3-5 years; and
$ Develops specific recommendations for other entities to address that will complement the Council's needed management changes; such recommendations may propose changes in law, calls for budget support, and expectations for improving coordination between industry, government and educational institutions.

B. Vision For The Future Of The Groundfish Fishery

The Strategic Plan's vision for the future of the groundfish fishery assumes that the Plan's recommended actions are fully implemented with passage of sufficient time for the anticipated benefits to have been fully realized. The Plan's drafters recognize that the transition to this future will require major changes in the structure and operation of the fishery, which will certainly have short-term adverse effects on current participants. The plan envisions that fishery management decisions are based on sound scientific data and analysis and an open and fair Council process.

1. The Fishery

We envision a future where Pacific groundfish stocks will be healthy, resilient, and where substantial progress has been made rebuilding overfished stocks. Harvest policies will result in total fishery removals that are consistent with the long-term sustainability of the resource. The fishing industry will be substantially reduced in numbers and harvest capacity will be reduced to a level that is in balance with the economic value of the available resource. Those remaining in the fishery will operate in an environment that is diverse, stable, market-driven, profitable, and adaptive over a range of ocean conditions and stock sizes.

Unlimited or open access to the groundfish fishery will no longer exist because current open access participants will be brought into the limited entry program and the number of participants reduced to those who are most dependent on and committed to the fishery.

Whenever possible, management approaches will create incentives for fishers to operate in ways that are consistent with management goals and objectives.

Allocation disputes will be resolved and all harvest sectors will believe they were treated fairly, including those non-groundfish fisheries where groundfish is an unavoidable incidental catch. Discarded bycatch by all gear groups will be minimal and quantified.

Fishery regulations will be less complex and more easily enforced. Council management may be simplified by removing some species from the FMP through delegation or deferral to state management.

Essential groundfish habitat will be adequately protected and adverse effects from all groundfish fishing gears will be reduced to minimal levels. Marine reserves, or no take zones, will provide a base level of protection as an insurance policy to reduce the risks of uncertain science and long stock rebuilding periods.

The improved operating conditions and profitability for those remaining in the fishery will allow participants to accept responsibility for a portion of the cost of effective science and management, including an at-sea observer program, that is commensurate with the level of benefits associated with exclusive access to the fishery.

Finally, the Council will have full access to all fishery management tools and will use them to provide protection for and reasonable access to groundfish stocks.

2. The Science

The basis for future management of the groundfish fishery relies to a very large degree on the availability of good science. West Coast groundfish science will meet national and international standards, be accepted as credible and will be understood by the all stakeholders. Scientific data collection will be a collaborative process involving partnerships between federal, state, and tribal agencies, the fishing industry, and academia, and may include contributions from private foundations.

Data collection and monitoring programs will provide stock assessments with acceptable levels of uncertainty for use by the Council's scientific, management, and advisory committees. Scientific data collected from the fishery will provide the capability to accurately assess the effects of current and potential fishery management measures on groundfish stocks and fishery participants. Finally, scientific tools will have been developed to provide stock assessments throughout the distribution of the various groundfish stocks geographic ranges incorporating the variability and effects of ocean regime shifts.

3. The Council

Future Council activities will be characterized as open to all stakeholders, inclusive of all views, credible and interactive. Council actions will be documented and easily understood and developed with meaningful involvement by the public, including environmental, commercial and recreational representatives. Council decisions will be documented with readily available explanation and analysis of the underlying biological and socio-economic considerations. Council advisory entities will work together to contribute advice and expertise that results in

recommendations that are accepted by stakeholders. Regulations development will be simplified and streamlined. Regulations will be generally stable over multi-year periods, but there will be flexibility to respond quickly when changes are needed.

C. Consequences of Inaction

There is another vision from that presented above. The Council could continue attempting to manage an overcapitalized fleet in the face of declining resource abundance and the necessity to meet stock rebuilding requirements. This will most certainly result in shorter fishing seasons, smaller trip limits, higher discard rates, and the continuous inability to accurately account for fishery-related mortalities. Many fishers will not be able to meet their basic financial responsibilities and will be forced from the fishery by a feeling of futility or bankruptcy. The Council and participating agencies will be overwhelmed by the need to implement short term fixes to long term problems with little or no chance to focus on the underlying problems of the fishery or to develop a long term management strategy.

To avoid this other vision of the future, the Council will have to act swiftly and soon. The Council has a choice in charting the future of the groundfish fishery. Decisions that the Council makes now will have profound effects for years to come.

II. The Strategic Plan "What Will We Do To Get There?"

A. Groundfish Fishery Management

1. Overall Fishery Management Concerns

Strategic Plan Goal For Management Policies

To adopt understandable, enforceable, and stable regulations that, to the greatest extent possible, meet the FMP's goals and objectives and the requirements of the Magnuson-Stevens Act.

Management Policies Recommendations

These recommendations assume that the objective of maintaining year-round harvesting and processing opportunity remains the Council's highest social and economic priority. In that case, it is imperative that Recommendation 1 for capacity reduction be implemented as rapidly as possible. If substantial harvest capacity reductions are not possible or are delayed, the Council must consider several of the alternative strategies for restructuring the fishery to restrict access by some portion of the fishing fleet for major periods.

In the event that none of the recommended measures or alternatives are viable or effective, the Council may have to shorten the annual fishing season. The Strategic Planning Committee cannot emphasize strongly enough the need for some level of observer coverage to evaluate the effectiveness of different management strategies.

1. Develop an implementation plan to reduce capacity initially by at least 50% in each sector. However, the capacity reduction goal will not be fully realized until capacity has been reduced to a level that is in balance with the economic value of the resource and those remaining in the fishery are able to operate profitably and flexibly. The implementation plan should take into account the need to implement other Plan recommendations (i.e., allocations, nearshore rockfish delegation) prior to or at the same time as capacity reduction. Reducing capacity will relieve the need to adopt management policies that are both inefficient and ineffective at achieving the FMP's goals and objectives. By better matching fleet capacity to resource availability, the regulatory structure will become more stable, resulting in regulations that are more enforceable.

2. Explore the use of higher landing limits or other incentives to encourage fisherman to fish with bycatch friendly fishing gear or to fish in areas where bycatch is less likely.

3. Make the necessary allocation decisions so that fishery participants in each sector can plan on a specific share of future OY's. Allocations may be outright percentages or a framework with criteria that specify how the allocation changes as resource availability changes.

4. Consider delegating or deferring nearshore rockfish and other groundfish species, such as scorpionfish, greenling, and cabezon, to the States.

5. All commercial fisheries should be limited through state and/or federal license or permit programs.

2. Harvest Policies

Strategic Plan Goal for Harvest Policies

To establish an allowable level of catch that prevents overfishing while achieving optimum yield based on best available science.

Harvest Policies Recommendations

1. In consideration of the uncertainties in the estimation of ABCs, set optimum yields (OYs) lower than the ABC, manage the fishery to a fixed OY(s), and close the fisheries when the OY is reached.

2. Harvest levels must be increasingly precautionary when less biological information is available, and particularly if monitoring programs fail to provide reliable estimates of total fishery-related mortality. Consider a hierarchal approach, where increased levels of conservatism would be required based on the specific quantity and quality of biological and fisheries information that is available.

3. For unassessed stocks, set precautionary harvest levels based on simple parameters such as a fixed proportion of the mean catch or survey abundance, or as a function of the lowest rate allowed for an assessed stock.

4. To protect weak stocks harvested in multi-species fisheries, adopt a policy requiring closure of the fishery when the ABC or OY of the weak stock has been taken. In setting the OYs, determine whether benefit/cost considerations might justify overfishing a particular weak stock under the mixed-stock exception in the National Standard Guidelines. Do not knowingly allow harvest rates that drive the stock below the level defined in the FMP as "overfished" or to a condition warranting listing under the ESA.

5. Without an international agreement on setting and sharing the total allowable catch for trans-boundary stocks, the Council should conserve that portion of the stock within the geographic range of its authority.

3. Capacity Reduction

Strategic Plan Goal for Capacity Reduction

To have 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. For the short term, adjust harvest capacity to a level consistent with the allowable harvest levels for the 2000 fishing year, under the assumption that stock rebuilding will require reduced harvests for at least the next two decades. Maintaining a year-round fishery may not be a short-term priority.

Capacity Reduction Recommendations

The highest priority for reducing capacity is Recommendation #1 from the Management Policy section. That recommendation is to develop an implementation plan to reduce capacity initially by at least 50% in each sector. As noted earlier, the capacity reduction goal will not be fully realized until capacity has been reduced to a level that is in balance with the economic value of the resource and those remaining in the fishery are able to operate profitably and flexibly. In designing capacity reduction, the Council should consider fleet structure, profile, and diversity, with a goal of maintaining a mix of small and large vessels.

The capacity reduction plan should take into account the need to implement other strategic plan recommendations (i.e., allocations, nearshore rockfish delegation) prior to or at the same time as capacity reduction. Reducing capacity will relieve the need to adopt management policies that are both inefficient and ineffective at achieving the FMP's goals and objectives. By better matching fleet capacity to resource availability, the regulatory structure will become more stable, resulting in regulations that are more enforceable.

These capacity reduction recommendations include both the short and long-term and transitional elements discussed below, such as license-limitation (for the targeted open access fishery), permit stacking, and IFQs either individually or in combination with a vessel buyback program.

Short to Intermediate Term

1. Separate the current open access fishery into a sector that directly targets groundfish and a sector that lands groundfish as bycatch in non-groundfish fisheries. Require current open access vessels that directly target groundfish to obtain a federal limited entry permit (B permit) based on historical landings and current participation. Minimum landing requirements for a federal permit should reflect significant dependence on the fishery. Consider developing and implementing a voluntary permit stacking program for the B permit. Require a federal permit ("C" permit) to land groundfish taken incidentally in non-groundfish fisheries.

2. Divide the current open access allocation into separate allocations for the "B" and "C" permit holders and manage each sector to stay within its allocation each year.

3. Consider using historical landings only from 1994-1999 and recent participation from either 1998 or 1999 for initially qualifying B permit holders.

4. For the limited entry fixed gear fishery, immediately develop and implement a voluntary permit stacking program with the intent of transitioning to an IFQ program to provide for a multiple month season. The Permit Stacking allowance should be implemented prior to the 2001 regular sablefish season. Stacked permits should **NOT** allow increased access to the daily sablefish trip limit. Simultaneously, develop an IFQ system for fixed-gear sablefish for implementation in 2002. If Congress continues to prohibit IFQ programs, consider making the permit-stacking program mandatory.

5. For the limited entry trawl fleet, immediately develop and implement a voluntary permit-stacking program that links each permit with a cumulative period landing limit with the intent to transition to an IFQ program. The first, or base permit should be entitled to a full period landing limit, while each stacked permit should entitle the vessel to additional landing limits on a discounted basis as one alternative. Another alternative is to have the full period landing limit the same for all permits. If Congress continues to prohibit IFQ programs, consider making the permit-stacking program mandatory.

6. To prevent future overcapacity in the whiting fishery, consider developing and implementing a whiting species endorsement that restricts future participation in the whiting fishery to vessels registered to a permit with a whiting endorsement. Qualification for a whiting endorsement should be based on a permit's whiting landings since 1994 when the current limited entry program began. Consider setting a threshold quantity of whiting above which a whiting endorsement is required for a landing. Individual landings below the threshold would not require an endorsement.

7. Pursue a buyback program to remove latent capacity.

Intermediate to Long Term

8. Develop of a comprehensive IFQ program for the limited entry trawl fishery, or in the alternative, a mandatory permit-stacking program.

9. Consider establishing a rockfish endorsement for the limited entry fixed gear fleet and open access (B permit) fleet. Qualifying criteria would be based on historical landings and recent participation.

10. Consider access limitation for commercial passenger fishing vessels. (This program may be better managed by the states.)

4. Allocation of Groundfish Resources

Strategic Plan Goal for Allocation

To distribute the harvestable surplus among competing interests in a way that resolves allocation issues on a long-term basis.

Allocation Recommendations

General Allocation Principles

1. All fishing sectors and gear types will contribute to achieving conservation goals (no sector will be held harmless). The fair and equitable standard will be applied to all allocation decisions but is not interpreted to mean exactly proportional impacts or benefits.

2. Non-groundfish fisheries that take groundfish incidentally should receive only the minimal groundfish allocations needed to efficiently harvest their target (non-groundfish) species. To determine the amount of allocation required, identify the economic values and benefits associated with the non-groundfish species. Directed fishery harvest of some groundfish may need to be restricted to incidental levels to maintain the non-groundfish fishery. Consider gear modification in the non-groundfish fishery to minimize its incidental harvest.

3. Modify directed rockfish gears, as needed, to improve their ability to target healthy groundfish species and avoid or reduce mortality of weak groundfish species.

4. When information on total removals by gear type becomes available, consider discards in all allocations between sectors and/or gear types. Each sector will then receive adjustments for discard before allocation shares are distributed.

5. Fairly distribute community economic impacts and the benefits and costs of allocation coast-wide. Allocations should attempt to avoid concentration and assure reasonable

access to nearby resources. Consider the diversity of local and regional fisheries, community dependency on marine resources and processing capacity, and infrastructure in allocation decisions.

6. Consider impacts to habitat and recovery of overfished stocks or endangered species (dependent on affected habitats) when making allocation changes.

7. Allocation decisions should consider and attempt to minimize transfer of effort into other fishery sectors, particularly for state managed fisheries (crab and shrimp).

8. Allocation decisions will: (a) consider ability to meet increased administrative or management costs; and (b) be made if reasonably accurate in-season quota monitoring or annual catch accounting has been established or can be assured to be established and be effective.

9. As the tribe(s) expand their participation in groundfish fisheries, allocations of certain groundfish species may have to be specified for tribal use. In such cases, the Council should ask the affected parties to U.S. v. Washington to convene and develop an allocation recommendation.

Area Management as Related to Allocation

10. Structure allocations considering both the north-south geographic *and* nearshore, shelf and slope distributions of species and their accessibility by various sectors and gears.

11. In addressing recreational/commercial rockfish allocation issues, use the following fishery priorities by species group: for nearshore rockfish, states may recommend a recreational preference, with any excess to be made available for commercial use; for shelf rockfish, the Council may set a recreational preference only on a species-by-species basis; and for slope rockfish, commercial allocation.

12. Licenses, endorsements or quotas established through management or capacity reduction measures may be limited to specific areas through exclusive area registrations and consider port landing requirements.

5. Observer Program for Quantifying Bycatch, Total Catch, and Total Fishery-Related Mortality

Strategic Plan Goal for an Observer Program

To quantify the amount and species of fish caught by the various gears in the groundfish fishery and account for total fishery-related removals.

Observer Program Recommendations

1. Immediately implement an at-sea groundfish observer program, with determination of total groundfish catch and mortality as the first priority, consistent with established Council priorities.

2. Consider the following options to fund an observer program:

a) Seek federal/state funding;

b) Continue to support legislative change to provide authority to collect fees from the fishing fleet to support the observer program;

c) If federal/state or industry funding is not available, make individual vessels responsible for providing some level of observer coverage as a condition of participation in the fishery.

3. Even with limited funding, both trawl and non-trawl fleets should have some meaningful, but not necessarily the same, level of observer coverage. Determine which harvesting sector(s) will receive the initial observers.

4. Consider alternative monitoring approaches that augment an observer program, including logbooks and video.
5. When an effective observer program has been established, a full retention strategy may be considered to reduce discard and improve biological information collection.

6. As a secondary priority, an observer program should collect additional data for stock assessments. For example, the North Pacific Council requires its observers to dedicate a small portion of the working day to taking otoliths and length measurements, in order to supplement information on the age and size distribution of particular species.

6. Marine Reserves as a Groundfish Management Tool

Strategic Plan Goal for Marine Reserves

To use marine reserves as a fishery management tool that contributes to groundfish conservation and management goals, has measurable effects, and is integrated with other fishery management approaches.

Marine Reserves Recommendations

1. Adopt marine reserves as a fishery management tool for Pacific groundfish and proceed with implementation, as appropriate.

2. Identify the specific objectives that marine reserves are expected to meet.

3. Develop siting and design criteria, including the size of the reserve, that will meet specified marine reserve objectives. Analyze options for establishing reserves that include nearshore, shelf, and slope habitat.

4. Adopt final siting criteria, including reserve size and location, and proceed with implementation and evaluation as quickly as possible, to ensure compatibility with other management changes.

5. Direct the Scientific and Statistical Committee to recommend new methodologies for continued stock assessments and for establishing harvest levels outside the reserves following the implementation of reserves.

7. Groundfish Habitat

Strategic Plan Goal for Pacific Groundfish Habitat

To protect, maintain, and/or recover those habitats necessary for healthy fish populations and the productivity of those habitats.

Pacific Groundfish Habitat Recommendations

1. Consider regulatory changes (including incentive systems) that result in modification or elimination of fishing gears or fishing practices that are determined to adversely affect EFH areas of concern such as nearshore and shelf rock-reef habitats.

2. Develop and implement gear performance standards for hook and line, pot, set gillnet, and trawl to increase gear selectivity, protect habitat, and/or decrease ghost fishing by lost gear.

3. Promote scientific research on the effects of fishing gear on various habitats.

4. Promote research to modify existing gear and practices to provide practical, economically viable alternatives to fishing gear that adversely affects habitats.

5. Identify habitats necessary for healthy fish populations and identify locations of those habitats.

<u>B. Science, Data Collection, Monitoring, and Analysis</u>

Strategic Plan Goal for Science, Data Collection, Monitoring, and Analysis

To provide comprehensive, objective, reproducible, and credible information in an understandable and timely manner to meet our conservation and management objectives.

Science Recommendations

1. Prioritize stock assessments for suspected "weak stocks" in mixed-stock fisheries.

2. Create cooperative partnerships between state, federal, private foundations, and other private entities to collect and analyze the scientific data needed to manage groundfish.

3. Promote improved mutual understanding, communication and credibility between the fishing industry and scientists through increased communication and collaboration, including at-sea ride-alongs.

4. Develop methods for incorporating fisher observations into stock assessment and monitoring programs, including employing commercial fishing vessels to conduct cooperative resource surveys and to collect other scientific data.

5. Implement the Council's draft West Coast Fisheries Economic Data Plan.

6. Ensure that economists and social scientists are adequately included on Council plan teams and ad hoc committees where appropriate, to ensure that all dimensions of management issues, options, and solutions are well reflected in their input to the Council.

7. Hold an annual or bi-annual meeting of U.S./Canada and/or U.S./Mexico stock assessment scientists to plan upcoming (preferably joint) assessments of transboundary stocks. The U.S./Canada portion of this recommendation could be conducted under the umbrella of the existing U.S./Canada Groundfish Technical Subcommittee.

8. Meet annually with National Marine Fisheries Service's Northwest and Southwest Regions and Science Centers and the Pacific States Marine Fisheries Commission to integrate the Council's data and research needs into NOAA's budget process.

9. Meet with the states and NMFS to develop a joint multi-year research and data collection/analysis plan for west coast groundfish.

10. Direct scientific efforts to measure the changes in groundfish productivity due to ocean environmental changes.

11. Obtain a dedicated research vessel(s) to perform annual surveys and collect other data needed to manage the coastwide groundfish under Council jurisdiction.

C. Council Process and Effective Public Involvement During and Beyond the Transition

Strategic Plan Goals for Council Process

$ *To establish and maintain a management process that is transparent, participatory, understandable, accessible, consistent, effective, credible, and adaptable;*

$ To provide a public forum that can respond in a timely way to the needs of the resource and to the communities and individuals who depend on them; and

$ To establish a long-term view with clear, measurable goals and objectives.

Council Process Recommendations

1. Encourage long term thinking so the Council can suggest creative solutions to Congress and NMFS during the Magnuson-Stevens Act reauthorization process.

2. Establish a performance evaluation committee to periodically and critically review progress made towards Council goals and objectives. The committee should also analyze improvements needed in Council procedures to maintain efficiency.

3. Update goals and objectives in the FMP to incorporate the strategic plan's vision and goals. These updated goals and objectives should: (a) be measurable, (b) have minimal conflicts, and (c) be clearly prioritized wherever possible.

4. Continue to routinely update its mailing lists and ensure that they contain commercial and recreational fishing associations, conservation and environmental groups, commercial licensed fishers for groundfish and other fishery species, local port offices, media contacts, and community-based organizations.

5. More effectively use newsletters, web page displays, public forums, news releases, and public service announcements to improve public participation in Council activities and decisions.
6. Make draft agendas available earlier to the local media from fishing communities, highlighting key issues.

7. Sponsor workshops to explain the Council process, its role and responsibility relative to fishery management, the roles of its committees and advisory entities, and the various opportunities for public involvement. Workshops should be held by the Council and state agencies in local port communities.

III. "How Will We Measure Success?" Implementing and Updating the Strategic Plan

A. Proposed Implementation Process

Implementing the Strategic Plan Recommendations

1. At the September 2000 Council meeting, the Council adopts the Final Groundfish Strategic Plan document (per revisions incorporated after the summer public comment phase).

2. The Council directs the formation of a "Groundfish Strategic Plan Implementation Oversight Committee" which should be composed of Council members, some of which will have been members of the Strategic Plan Development Committee, to ensure continuity and an effective transition to implementation.

3. At its discretion, the Implementation Oversight Committee may establish small implementation development teams to develop specific alternative(s) for implementing elements of the Strategic Plan. Implementation development teams will be comprised of Council subpanel, management team, and committee members from the GMT, GAP, SSC, EC, and members of the public as deemed necessary by the Implementation Oversight Committee.

4. The Implementation Oversight Committee works at direction of the Council and is tasked with making recommendations regarding implementation of the strategic plan.

5. The Implementation Oversight Committee **goals** should include: (a) effective transition to the implementation phase, (b) ensuring the plan is implemented in a timely fashion, and (c) whenever possible, doing so in a fashion that provides for constituent acceptance and buy-in.

6. At the direction of the Council, the Implementation Oversight Committee will develop recommended schedules for carrying out all components of the strategic plan.

7. The Implementation Oversight Committee will develop recommendations for all components of the strategic plan that can be developed further: (a) directly by the Council, (b) via advisory entity assignments, or (c) through formation and use of a implementation development team approach, e.g., capacity reduction implementation development team(s), which would handle all of the complexities of addressing the implementation of capacity reduction. For example, there might be four teams – with industry representatives from trawl, fixed gear, open access with groundfish target, and open access with non-groundfish target. Each of these teams will also have a representative from the Implementation Oversight Committee, with a charge to develop a plan and product by "x" date. The Implementation Oversight Committee considers the work of the implementation development teams and develops the final recommendations for the Council. Clarification, input, and technical support will be available to all teams with "on-call" availability from Council staff, states, NMFS staff and General Counsel, etc.

8. It will be important to consider current conditions in the groundfish fishery, including the effects of recent changes in resource status, fishery management, and the environment, as part of the strategic plan implementation process.

B. Measuring Success

Options for Updating the Groundfish Strategic Plan Document

A good strategic plan is rigid enough to have clearly-stated, expected results but also flexible enough to modify when evaluation indicates change is necessary. The Council wishes to maximize the value of the time, energy, and money invested in its strategic plan by regularly evaluating the plan's effectiveness and initiating changes as deemed necessary to enhance

success. The Council also recognizes that periodic review provides plan continuity for Council members and staff, and promotes public awareness.

Updating The Strategic Plan Recommendations

The Council should schedule a routine review every five years. If a Council member determines that a review should occur more frequently, the member could seek to have the review placed on the Council agenda in the same manner that other actions are placed on the agenda. When the review takes place, the Council should follow the standard Council meeting process and take written and oral public comment, and involve the appropriate advisory entities.

REVISED REFERENCES AND SCHEDULES FOR ITEMS IN AGENDA ITEM J.1.a ATTACHMENT 1 - SECTIONS A AND B

Sections A and B of Agenda Item J.1.a Attachment 1 contained language identical to that provided in the Council's June 2014 briefing materials and had not been updated to reflect actions taken at the June meeting or cross references for the September briefing materials. This document provides those updates in track changes. No revisions were necessary for descriptions in Section C. Candidate Items for Prioritization in September.

A. Items on Which Council Action Has Been Completed Which Still Entail Some Workload

1. Tribal, Trawl, Non-Trawl, and Rec – 2015-2016 Harvest Specifications and Management Measures and Amendment 24

The process to adopt the 2015-2016 harvest specifications and management measures, including non-electronic monitoring EFPs, and Amendment 24 ~~culminates~~culminated at ~~this~~the June Council meeting ~~with final action scheduled under Agenda Item F.7~~. Over the summer and fall, Council, NMFS, and state staffs will be responding to comments on the draft Environmental Impact Statement (EIS), preparing the final EIS, and preparing the regulations necessary to implement Council action. The anticipated rulemaking schedule is outlined in Agenda Item ~~F~~J.1.b, NMFS Report 1.

2. Trawl and Non-Trawl - Seabird Rule - Mandatory Streamers ≥ 55'

At the November 2013 meeting, the Council recommended that streamer lines be required during setting operations on commercial fixed gear vessels 55 feet or greater in length with a safety exception in the event of rough weather, which would be triggered by a National Weather Service forecast of a gale force wind warning. In January 2014, Council staff transmitted regulations necessary to implement the Council action. NMFS advises that rulemaking is in progress and the proposed rule is anticipated this summer (see Agenda Item ~~F~~J.1.b, NMFS Report 1).

3. Trawl and Non-Trawl - Clarify Catch Accounting Rules for Amendment 21

At its June 2012 meeting, as part of the preferred alternative for the 2013-2014 harvest specification and management measures, the Council recommended reinstating catch accounting language in the FMP that was inadvertently deleted when Amendment 21 was implemented. Changes to the FMP language were also recommended to further clarify the decision rules for determining the allocation against which a vessel's catch would count (i.e., whether it would count against the limited entry allocation or the open access allocation). The Council and NMFS staff has made progress on some draft FMP language; however, due to competing workload, language for Council consideration has not yet been fully developed.

4. Trawl and Non-Trawl - Fishery Declaration Enhancements

At its June 2013 meeting, the Council took action to require that vessels activating VMS units make a fishery declaration at the time of activation, even if they are not entering a groundfish fishery at that time. Additionally, the Council recommended that, for clarity purposes, category 24 in the current list of declarations (660.13(d)(5)(iv)) be modified from "other gear" to "other," to encompass declarations to participate in fisheries not specifically named in the declaration list and for research activities.

5. Trawl IFQ, MS, & CP - Cost Recovery Corrections

After cost recovery was implemented for the trawl rationalization program in January 2014, NMFS announced clarifications to the regulations through a public notice (see NMFS public notice, NMFS-SEA-14-12, March 20, 2014). The clarifications were on (1) fish buyer's use of principal from a deposit account in cases of credit card payment to Pay.gov (IFQ & MS), and (2) in the CP sector, only retained groundfish are subject to the cost recovery fee. In the future, NMFS intends to revise the associated regulatory language for these issues and, if further issues arise, may have additional cost recovery corrections or clarifications.

6. Trawl IFQ & MS - Electronic Monitoring Exempted Fishing Permits

At the June 2014 meeting, the Council ~~is also in the middle of considering~~recommended exempted fishing permits (EFPs) to allow some vessels to use electronic monitoring in lieu of at-sea compliance observers. ~~Council action might be completed at this meeting (see Agenda Item F.5 for additional background), however, substantial ongoing effort by NMFS staff would be required~~Substantial effort by NMFS staff is ongoing to have the EFPs in place during the 2015 fishery.

7. Trawl IFQ & MS - Pacific Dawn Lawsuit Appeal to District Court (Whiting Allocation)

On May 13, 2014, an appeal to the Ninth Circuit Court was filed in the Pacific Dawn lawsuit challenging the allocation of whiting IFQ and mothership sector catch history allocations. Responding to this appeal will require the time of NOAA GC attorneys, as well as other NMFS staff, who are also integral to making progress on the development and implementation of groundfish actions.

8. Trawl IFQ, MS, & CP - Whiting Cleanup Rule, Including Maximized Retention Regulations

The proposed whiting cleanup rule would establish criteria for a whiting trip (at least 50% of the landing by weight must be whiting), re-establish regulations needed to cover the disposition of catch in the maximized retention fishery, and clarify the ability of midwater gear to be used to target all groundfish species in the RCAs north of 40°10′ north latitude after the whiting opening. ~~This rule~~Implementation is expected ~~to be finalized by December 2014~~before May 2015 (see Agenda Item ~~F~~J.1.b, NMFS Report~~).~~ 1).

9. Trawl CP - Glacier Fish Co Lawsuit (Cost Recovery)

On January 9, 2014, Glacier Fish Company LLC filed a suit in relation to the cost recovery regulations challenging the categorization of the catcher-processor co-op program as a limited access privilege program, challenging the status of co-op members as limited access privilege holders, claiming that the cost recovery regulations were not properly promulgated, and claiming adequate documentation of the basis of the cost figure has not been provided. Responding to this suit will require the time of NOAA GC attorneys, as well as other NMFS staff, who are also integral to making progress on the development and implementation of groundfish actions.

10. Trawl IFQ and Non-Trawl - Joint Registration and Prohibition of Processing IFQ Sablefish

At its April 2012 meeting, the Council recommended allowing a fixed gear permit and a trawl permit to be registered to the same vessel at the same time. Implementation is expected by ~~the winter of 2014/2015~~April 2016, as part of the upcoming Sablefish Rule (see Agenda Item ~~F~~J.1.b, NMFS Report 1).

11. Trawl IFQ - Move Shorebased Whiting Season Opening Dates

At its November 2012 meeting, the Council recommended moving the shoreside sector primary whiting season opening date to May 15, starting in 2013 to the extent that such a change could be made without requiring a plan amendment. It is expected that the season date change can be made for all areas north of 40°30′ north latitude. The current April 15 opening will remain in place south of that line. Implementation is expected by May 2015 (see Agenda Item ~~F~~J.1.b, NMFS Report 1).

12. Trawl IFQ - Continue Adaptive Management Program Pass-Through

~~Under this agenda item, the Council will likely extend the current AMP pass-through for a number of additional years (see Agenda Item F.3.a, Attachment 1).~~In June 2014, the Council recommended that the adaptive management program quota pound (QP) pass through (which includes halibut individual bycatch quota QP) continue through the completion of the five-year review and implementation of any regulations resulting from that review. A regulatory action, completed by the end of the year, will be required to implement that extension (see Agenda Item ~~F~~J.1.b, NMFS Report 1).

13. Trawl IFQ - Update eTicket for Web-based Submissions

Pacific States Marine Fisheries Commission is improving the trawl IFQ e-Ticket system by moving to a web-based platform. This will require some regulatory changes ~~and may~~which are scheduled to be ~~implemented over the winter of 2014/2015~~effective in April 2016, as part of the upcoming Sablefish Rule (see Agenda Item ~~F~~J.1.b, NMFS Report~~), if the Council recommends e-tickets for the sablefish fishery (see Item 16~~ 1).

14. Trawl IFQ - Rule for Redistribution of Excessive Aggregate NonWhiting QS

Current regulations require forfeiture of QS held in excess of control limits as of November 30, 2015. There is no guidance in the regulations for which QS would be revoked if a QS permit owner does not get their individual and collective QS amounts under the aggregate nonwhiting QS control limit. This issue may not require Council action and may only be a clarification of policy if the situation arises. In the interim, QS permit owners are encouraged to get their own QS permits/accounts under the QS control limits listed at 660.140(d)(4)(i) by November 30, 2015, so that NMFS does not have to take an administrative action. NMFS notified QS permit owners that were over QS control limits of the amounts they were over when NMFS issued initial QS permits. Later in 2014, NMFS will again notify QS permit owners that are over QS control limits. NMFS has several tools available on the QS Permit and Accounts website at: http://www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/quota_share_permits_accounts.html. The website includes the table of IFQ accumulation limits (i.e., QS control limits), and tools for QS permit owners to calculate their non-whiting groundfish aggregate QS to determine if they are over the limit.

15. LEFG - Revise Limited Entry Fixed Gear Permit Control Rule

At ~~this~~their June 2014 meeting, the Council ~~will decide whether or not to recommend a revision~~recommended revisions to the limited entry fixed gear permit control rule ~~(Agenda Item F.6). If the Council recommends such revisions, the recommendation will be in the NMFS approval and implementation phase by the time of the September Council meeting, with the attendant workload for NMFS and Council staff, including regulatory deeming.~~. Implementation ~~would be~~is expected ~~by the winter of 2014/2015~~in April 2016, as part of the upcoming Sablefish Rule (see Agenda Item ~~F~~J.1.b, NMFS Report 1).

16. LEFG and OA - Require E-Tickets for Sablefish Landings

At ~~this~~the June 2014 meeting, the Council ~~will decide whether or not to~~ recommend that electronic fish tickets be required for limited entry fixed gear and open access sablefish landings ~~(Agenda Item F.6). If the Council recommends such regulations, the recommendation will be in the NMFS approval and implementation phase by the time of the September Council meeting, with the attendant workload for NMFS and Council staff, including regulatory deeming.~~. Implementation ~~would be~~is expected ~~by the winter of 2014/2015~~in April 2016, as part of the upcoming Sablefish Rule (see Agenda Item ~~F~~J.1.b, NMFS Report 1).

17. LEFG and OA - Sablefish North of 36 Degrees - Allocation Correction

The May 2014 version of the groundfish FMP accurately represents the Council intent for sablefish catch accounting and allocations. That is, consistent with the Amendment 6 catch accounting rules, sablefish landed north of 36 deg. N. lat. by vessels registered to a LE fixed gear permit, regardless of their intended target (i.e., groundfish or non-groundfish species), will be debited against the LE fixed gear daily trip limit allocation (LE DTL). Sablefish landings by vessels not registered to a LE permit, regardless of their intended target (e.g. groundfish or non-

groundfish species), will be debited against the OA fixed gear daily trip limit allocation (OA DTL). Action is needed to revise the groundfish regulations to be consistent with the FMP.

18. LEFG and OA - Logbooks for Fixed Gear

At its June 2008 meeting, as part of the preferred alternative for the 2009-2010 harvest specification and management measures, the Council recommended that NMFS develop and implement a mandatory Federal logbook for limited entry and open access fixed gear vessels. The Council's Groundfish Management Team, the West Coast Groundfish Observer Program, NMFS, and state staffs worked with Pacific States Marine Fisheries Commission to prepare a draft fixed gear logbook. The logbook has not been finalized and implemented due to concerns raised by NMFS, including lack of funding.

19. OA - Amendment 22 - Open Access License Limitation

In June 2009, the Council recommended a registration program for fishermen intending to land groundfish in the open access fishery, whether targeting those species or taking them incidentally while fishing for non-groundfish species (e.g., salmon, pink shrimp, California halibut) or nearshore species (e.g., cabezon, black rockfish). The Council has taken final action on Amendment 22 yet the registration program has not been implemented. More recently, some OA vessels are required to have an authorization on board under the Marine Mammal Protection Act (i.e., sablefish pot vessels) and NMFS is having difficulty getting addresses for those vessels. An OA registration system would address this issue.

B. Immediate and Long-Term Commitments

20. Trawl, Non-Trawl, and Rec - Inseason Management (Sept 2014 and beyond, excluding March 2015)

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 ACLs. On the Year at a Glance, inseason adjustments are scheduled to be discussed at the Sept-Nov 2014 meetings as well as in 2015 (except March).

21. Trawl, Non-Trawl, and Rec - Adopt Final Stock Assessment Plan and TOR for 2015 (Sept 2014)

~~In~~At the September ~~and November of the even numbered years (e.g., ~~2014~~),~~, the Council ~~develops a~~is scheduled to finalize the stock assessment plan for the upcoming biennium and a Terms of Reference (TOR) for conducting the assessments.

22. Trawl, Non-Trawl, and Rec - Develop a COP for Groundfish Methodology Review Process (Nov 2014 and April 2015)

The Council recommended developing a Council Operating Procedure (COP) for conducting groundfish methodology reviews, similar to COP 15 for salmon. The Council is scheduled to adopt the COP at the ~~September and~~ November 2014 and April 2015 meetings.

23. Trawl, Non-Trawl, Rec – Omnibus Regulation Changes (Sept and Nov 2014, Mar-Sept 2015)

On the Year at a Glance, Omnibus Regulation changes are scheduled to be discussed at the Sept-Nov 2014 meetings as well as in 2015. Any prioritized management measures (e.g., those included under Category C: Candidate Items for Prioritization) could be considered under the Omnibus Regulation Changes agenda item.

24. Tribal, Trawl, Non-Trawl, and Rec - Essential Fish Habitat – Phase 3 of the 5 Year Review (~~Mar~~April 2015)

As the first step in the Phase 3 process, the Council requested that the Northwest and Southwest Fisheries Science Centers investigate the question of Essential Fish Habitat (EFH) effectiveness, accuracy, and completeness and to present their findings in the advance Briefing Book for consideration at the ~~September 2014~~April 2015 Council meeting. At the ~~September 2014~~April 2015 meeting, the Council is tentatively scheduled to initiate a fishery management plan amendment, including alternatives for refining elements of groundfish EFH as warranted by new information, the Science Center evaluation, and proposals received.

25. Trawl, Non-Trawl, and Rec - Amendment 25: Comprehensive Ecosystem-Based Amendment (Sept 2014 and Mar 2015)

In April 2014, The Council approved a range of alternatives for protecting unfished and unmanaged forage fish species and identified the Ecosystem Trophic Role pathway as a preliminary preferred alternative. Under this pathway, protective measures for forage species would be added to each of the Council's four FMPs, perhaps under an omnibus process aggregating the four actions into one process. The Council is scheduled to review the alternatives and proposed amendatory language for the groundfish FMP at the September 2014 Council meeting~~.~~ and to take final action in March 2015.

26. Trawl, Non-Trawl, Rec – 2015 Pacific Halibut Catch Sharing Plan (Sept and Nov 2014) and 2016 CSP (Sept 2015)

Each September and November meeting, the Council considers proposed changes to the Pacific halibut regulations and Catch Sharing Plan (CSP) for Area 2A. Starting in 2014, in response to recent unusually high harvests of Pacific halibut off Southern Oregon and Northern California, the Council established a new management line at the Oregon/California border, creating separate Oregon and California subareas with area-specific CSP allocations and management measures. The Council is scheduled to consider, at the September and November 2014

meetings, whether additional changes to the 2A CSP allocations are necessary and whether additional adjustments to management measures are necessary to comply with allocation provisions of the CSP. The anticipated rulemaking schedule is outlined in Agenda Item ~~F~~J.1.b, NMFS Report 1.

27. Trawl, Non-Trawl, Rec – 2015 Incidental Regulations for Pacific Halibut (Mar and Apr 2015)

Regulations governing incidental harvest of halibut in the salmon troll fishery and primary fixed gear fishery for sablefish north of Point Chehalis require the Council to adopt halibut landing restrictions to allow incidental harvest while assuring quotas are not exceeded. The Council is scheduled to recommend incidental halibut regulations at the March and April 2015 meetings.

28. Trawl, Non-Trawl, Rec - Stock Assessments for 2017-2018 Biennium (June and Sept 2015)

~~At this meeting~~In September 2014, under Agenda Item ~~F.8~~J.2, the Council is scheduled to adopt ~~for public review~~ the list of stocks to be assessed in 2015 for use in 2017 and beyond and a stock assessment review schedule. ~~The first stock assessment is~~Stock assessments are scheduled for Council adoption in June and September 2015.

29. Trawl, Non-Trawl, Rec - Start of the Process to Establish 2017-2018 Specifications and Management Measures (June 2015)

In most cycles, the start of the process to establish the biennial regulations begins in June of the odd numbered years (e.g., June 2015).

30. Trawl IFQ & MS - Electronic Monitoring Regulations (Sept and Nov 2014, June 2015)

The Council has received funding and is in the middle of a process for the consideration of electronic monitoring as a replacement for the monitoring function of at-sea observers. This action is currently scheduled for completion by the September Council meeting though it appears likely that further deliberations will be required for at least some sectors. See Agenda Item ~~F.2~~J.3 for additional background.

31. Non-Trawl – Discard Mortality Rates for Commercial Nearshore Fisheries (TBD)

The GMT is reviewing the current discard mortality rates used in the commercial nearshore bycatch model and by the West Coast Groundfish Observer Program (WCGOP) in the annual groundfish mortality report. There is little documentation for the discard mortality rates (100 percent) for some rockfish in the deeper depth strata (e.g., deeper than 20 fathoms), which is higher than the rate used in the recreational fisheries with similar gears. In the event new discard rates are derived by the GMT, the SSC would need to review and recommend Council adoption.

32. Trawl - Five Year Trawl Rationalization Program Review (Starts in 2016)

The trawl rationalization program will complete its fifth year at the end of 2015. Planning for the review might begin during 2015 but the compilation of data sets for the review will not occur until sometime during 2016 – when the final data becomes available.

33. Trawl - QS/QP Control Rule - Safe Harbor for Risk Pools - post 5-year review

At its September 2011 meeting, the Council recommended providing risk pools a safe harbor from the QS control rules. At its September 2013 meeting, the Council agreed that risk pools appeared to be functioning adequately under current regulations and that implementation of this recommendation could wait until the five year program review.

34. Trawl - Resolve Long-term Whiting Surplus Carryover Provision - post 5-year review

A workshop was held on November 2, 2012 to explore possibilities for fully implementing whiting surplus carryover in 2013 and a report was presented to the Council at its November 2012 meeting. The Council decided that it will review this issue again during the 5 year program review, scheduled for 2016.

PFMC
09/11/14

OLE VMS/Incursion Violation Investigation Summary

VMS/Conservation Area, i.e. RCA Incursions (all fisheries)

– SW 2010:	81	NW 2010: 168	Total: 249	% Trawl/OA & LEP FG
– SW 2011:	98	NW 2011: 151	Total: 249	52%/48%
– SW 2012:	76	NW 2012: 151	Total: 227	22%/78%
– SW 2013:	42	NW 2013: 38	Total: 71	42%/58%
– SW 2014:	6*	NW 2014: 13*	Total: 19*	

Outreach

VMS related Phone Calls (in/out: Declarations, Non Functioning VMS, Inquiries, Compliance Assistance)

Year	#
• 2010	3385
• 2011	3412
• 2012	3805
• 2013	3438
• 2014	1301*

*Through June 30, 2014

Closed through Compliance Assistance 2012-14 (Verbal Warning/Correction Letter)

SW: 27 NW: 41 Total: 68 or approximately 23% of all noted incursions.

Approximately 70% of noted incursions determined to be de minimis/no further action taken.

VMS Incursion / Formal Action Taken March 2010 – December 2013

YEAR # of Incidents Evaluated / % NOVA Issuance

- 2010
  - 0 NOVAs / 0 WW (249/0%)
- 2011 (249/1.6%)
  - 3 NOVAs for Incursions / 1 WW
  - 1 No VMS Unit
- 2012 (227/2%)
  - 5 NOVAs for Incursions / 1WW
  - 1 WW for No VMS Unit
- 2013
  - 6 NOVAs for Incursions / 5 WW (71/8%)
  - 1 WW for No VMS Unit
- 2014
  - 1 Summary Settlement
  - 7 with GCES awaiting formal action

OLE West Coast Division / Investigative Summary
VMS Related Notice of Violation Assessments (NOVA)

- **2010, March - December**

  No NOVA settlements

- **2011**

  $10,120 incursion NOVA / $6120 suspended

- $17,000 No VMS Unit NOVA / $15,800 suspended for 2 years
- $11,894 incursion NOVA / suspended for 2 years
- $6,552 incursion NOVA / $2,052 suspended for 1 year
- $35,338 incursion NOVA
- $55,739 incursion NOVA (5 counts) / $29,959 suspended for 2 years
- $31,049 incursion NOVA / $26,049 suspended for 2 years
- **2012**
- $109,271 incursion NOVA (6 counts)
- $33,545 incursion NOVA
- $17,345 incursion NOVA / dismissed by ALJ
- $20,153 incursion NOVA / $3,500 suspended 1 year
- $12,538 incursion NOVA / $2,800 suspended 1 year
- **2013**
- $12,500 incursion NOVA
- 2 incursion NOVAs totaling $65,982 / $58,982 suspended
- $12,614 incursion NOVA
- $11,500 incursion NOVA / $4,500 suspended
- $63,738 NOVA, (2 counts: CCA incursion/No LEP)

So What Changed?

January 2010, OIG Report issued, followed by stand down of GCEL resulting in no cases being pursued through 2010 as cases and settlement processes are reviewed.

December 2011 “Score Card/Atta Boy” letters sent to all Trawl Rationalization participants. *Note that NOVAs and WWs are again being issued by GCES. Also note significant drop in RCA related incidents involving the trawl fleet in 2012.*

Additionally, OLE Compliance Program is kicking in. With additional VMS technicians, per our compliance program protocols there is immediate follow up being done upon discovery of VMS related incidents.

As a result of these deterrence actions, in 2013 we see a significant reduction in Conservation Area incursions both in trawl and OA. *Again, note number of NOVAs issued and the settlement amounts that are occurring in 2012 through 2013.*

In 2012 (2) Port Orford Oregon state cases relying on VMS information to support prosecution of alleged trip limit violations are slated for trial, as is the ALJ hearing regarding the alleged Risa Lynn Channel Island Conservation Area incursion.

In the spring of 2013, the Port Orford trails end in not guilty verdicts by two separate juries. The juries found the one hour ping rate provided enough reasonable doubt, to find the defendants not guilty.

In August 2013, we receive the ruling by the ALJ in the Risa Lynn case, that a 1 hour ping rate does not demonstrate a vessel has not maintained continuous transit through a closed Conservation Area.

Going Forward

- OLE and state enforcement programs have had to re-assess use of VMS data in jury trials. Is the technology beyond the capacity of a jury to comprehend?
- OLE is using a much more conservative approach in the types of incursions it refers for agent investigation, i.e. bigger buffers. This is not to say that we have redefined what we believe to be an incursion.
- OLE is relying even more on Log Book data to substantiate alleged Conservation Area incursions, ego: Log Books are important, E Log Books are desired.
- EC Concerns:
  - Through 2013 we saw continued improvement in the frequency of Conservation Area Incursions monitored by VMS due to significant and effective monitoring and deterrence strategies being put into play. The strategy worked!
  - As a result of the 2013 case outcomes, will compliance now erode?
  - Time will tell.
  - What is certain, is that per the ALJ ruling which now stands as Federal case law, the one hour ping rate is inadequate to prove failure to maintain continuous transit through RCAs, GCA, CCA, YCA, EFH, and MPAs.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Office of Law Enforcement
7600 Sand Point Way NE, F/ENS
Seattle, WA 98115-0070

August 14, 2014

Sent via Certified Mail: «Certified_Mail»

«First_Name» «Last_Name»
«Company_Name»
«Address_Line_1»
«Address_Line_2»
«City», «State» «ZIP_Code»

Re: *F/V «FV» # «Vessel_ID»*
«OLE Incident #»

Dear Mr. «Last_Name»:

On «Date», your vessel was monitored by the NMFS Vessel Monitoring System (VMS) in the «Insert GCA». Specifically, your vessel was monitored crossing the «insert fathom line» between Federal Register Points «XX» and «XX». At the time of the «Insert Groundfish Conservation Area» incursion monitored by the NMFS VMS system, your vessel was declared as «insert gear type declaration code».

This letter is being sent to provide you timely notification of a potential violation of the Pacific Coast groundfish fishery regulations, so that you can both initiate your own inquiry into the matter and hopefully prevent further violations from occurring.

The enclosed Federal Pacific Coast groundfish regulations at 50 CFR § 660 «Trawl fishery § 660.130(e); Fixed gear fishery § 660.230(d); Open access fishery § 660.330(d)» prohibit the operation of any vessel within an applicable Groundfish Conservation Area (GCA) or Essential Fish Habitat area (EFH) with unauthorized gear onboard, except for the purpose of continuous transiting.

The Federal Pacific Coast groundfish regulations at 50 CFR § 660.11 (also enclosed) define the following terms:

1. "Operate a vessel means any use of a vessel, including, but not limited to, fishing or drifting by means of the prevailing water current or weather conditions."

2. "Continuous transiting or transit through means that a fishing vessel crosses a groundfish conservation area or EFH conservation area on a constant heading, along a continuous straight line course, while making way by means of a source of power at all times, other than drifting by means of the prevailing water current or weather conditions."

Operating a vessel with unauthorized gear onboard within a groundfish conservation area may be considered a violation of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act) and its implementing regulations for the Pacific Coast groundfish fishery. Violations of the Magnuson Act may subject a vessel, its owner, and its operator to substantial penalties up to $140,000 for each violation, together with possible permit sanctions, and seizure and forfeiture of the vessel and its cargo. NOAA's Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions can be found at: http://www.gc.noaa.gov/documents/031611_penalty_policy.pdf.

If you have different information, or disagree with this letter, please contact NOAA Fisheries Office of Law Enforcement at (888) 585-5518, Monday thru Friday from 8:00 AM to 4:30 PM Pacific Time.

Sincerely,

Agenda Item J.1.b
NMFS OLE Report 2
September 2014

VMS Unit Cost and Capabilities Survey Results – August 2014

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

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

Questions and Responses

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

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

Faria (FWI); Faria has two type approved systems:
KTW309 - $3,195.00 – Iridium
KTW304 - $3,295.00 – Iridium & GSM Cellular

Network Innovations (GMPCS):

Antenna replacement: SAILOR 6150 - $1,523.00
See cable options below:

SAILOR GOLD PLUS - $2,500.00
SAILOR 6150 mini-C Non-SOLAS Distress System
Package consisting of: -
SAILOR 3027D
Non Solas Distess Terminal - SAILOR 6194
THRANE 6194 Term. Ctrl. Unit -
Accessories kit - User/installation
Guide, Keyboard with trackball mouse, 3606XP Monitor.

Optional Antenna Cables Sold Separately:
406100-946 10M NMEA2K Mini Device Cable - $56.95
406100-947 15M NMEA2K Mini Device Cable - $87.10
406100-944 30M NMEA2K Mini Cable - $170.85
406100-945 50m NMEA2K Mini Device Cable - $288.10

SkyMate: SkyMate 250 MSRP is $3,100.00

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

Interval	Boatracs	CLS America	Faria (FWI)	Network Innovations	Skymate a/
15 min	$34.95 additional $0.07 per poll	No Reply	$70.45	$172.80	$84.60
20 min	$34.95 additional $0.07 per poll		$59.95	$129.60	$73.99
30 min	$34.95 additional $0.07 per poll		$52.25	$86.40	$54.80
60 min	$34.95		$44.95	$43.20	$36.39
4 hours	$34.95		$34.95	$10.80	$21.99

a/ All communication costs based on a 30 day month.
http://www.skymate.com/user_groups/commercial_fishing.html#servicePlans

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

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

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

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

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

In harbor requires for an IO pin to be activated manually on board (or could get wired to the ignition or similar). The minimum distance will then be used to reactivate the normal reporting interval. So if the minimum distance is set to 200m then the normal reporting will start when the vessel has moved more than 200m. (To our knowledge, the NW Region cannot use the "In Harbor" option)

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

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

Boatracs: No

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

Network Innovations: Yes

Skymate: Yes

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

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

Boatracs: All of the data we send is compressed

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

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

SkyMate: does not support data logging.

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

Boatracs: $5.04

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

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

SkyMate: does not support data logging.

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

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

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

Network Innovations: All Mini C supports Geofences as mentioned.

SkyMate: The SkyMate 250 supports Geo-Fencing

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

Boatracs: N/A

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

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

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

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

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

Boatracs: As many as needed

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

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

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

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

Boatracs: No response.

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

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

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

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

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

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

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

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

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

a. Cellular connection.

Boatracs: No response.

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

Network Innovations: N/A

SkyMate: N/A

b. Wi-Fi

Boatracs: No response.

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

Network Innovations: N/A

SkyMate: N/A

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

a. Cellular connection.

Boatracs: No response.

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

Network Innovations: N/A

SkyMate: N/A

b. Wi-Fi

Boatracs: No response.

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

Network Innovations: N/A

SkyMate: N/A

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)

In Progress:

This list of rulemakings and other actions cross references numbering and items from the Council's Agenda Item J.1.a, Attachment 1 and describes their status. Items shaded grey are not currently being actively worked on by NMFS in 2014 and are discussed in NMFS Report 2.

	Sector	Short Title	NMFS status
A. Items on Which Council Action Has Been Completed Which Still Entail Some Workload			
1.	Tribal, Trawl, Non-Trawl, Rec	2015-2016 Harvest Specifications and Management Measures and Amendment 24	***Spex/Am 24 Rule*** Proposed Rule – fall 2014 Final rule – February 2015 Effective – March 1, 2015
2.	Trawl and Non-Trawl	Seabird Rule - Mandatory Streamers for vessels ≥ 55'	***Seabird Rule*** Proposed Rule – summer 2014 Final rule – 2014 Effective – 2014
3.	Trawl and Non-Trawl	Clarify Catch Accounting Rules for Amendment 21	*see NMFS Report 2*
4.	Trawl and Non-Trawl	Fishery Declaration Enhancements	***Sablefish Rule*** Proposed Rule – summer 2015 Final rule – fall 2015 Effective – April 1, 2016
5.	Trawl IFQ, MS, & CP	Cost Recovery Corrections	*see NMFS Report 2*
6.	Trawl IFQ & MS	Electronic Monitoring Exempted Fishing Permits	Reviewing EFPs for possible implementation Setting up infrastructure Target implementation for fishing year 2015
7.	Trawl IFQ & MS	Pacific Dawn Lawsuit Appeal to District Court (Whiting Allocation)	Oral argument

	Sector	Short Title	NMFS status
8.	Trawl IFQ, MS & CP	Whiting Cleanup Rule, Including Maximized Retention Regulations	***Whiting Cleanup Rule*** Proposed Rule – fall 2014 Final rule – winter 2014/2015 Effective – before May 2015 Includes: whiting IFQ must have 50% whiting by weight, disposition of maximized retention catch, only midwater in RCA N of 40°10'
9.	Trawl CP	Glacier Fish Co Lawsuit (Cost Recovery)	Briefing and oral argument in fall of 2014 Outcome could result in additional workload
10.	Trawl IFQ & Non-Trawl	Joint Registration and Prohibition of Processing IFQ Sablefish	***Sablefish Rule*** Proposed Rule – summer 2015 Final rule – fall 2015 Effective – April 1, 2016
11.	Trawl IFQ	Move Shorebased Whiting Season Opening Dates	***Whiting Season Date Rule*** Proposed Rule – winter 2014/2015 Final rule – spring 2015 Effective – May 2015
12.	Trawl IFQ	Continue Adaptive Management Program Pass-Through	***AMP/Pre-Spex Rule*** Proposed Rule – September 2014 Final rule – December 2014 Effective – January 1, 2015 Includes: AMP pass-thru, interim IFQ issuance Sectors affected: all commercial sectors
13.	Trawl IFQ	Update eTicket for Web-based Submissions	***Sablefish Rule*** Proposed Rule – summer 2015 Final rule – fall 2015 Effective – April 1, 2016
14.	Trawl IFQ	Rule for Redistribution of Excessive Aggregate NonWhiting QS	NMFS policy for future Council input
15.	LEFG	Revise Limited Entry Fixed Gear Permit Control Rule	***Sablefish Rule*** Proposed Rule – summer 2015 Final rule – fall 2015 Effective – April 1, 2016
16.	LEFG and OA	Require E-Tickets for Sablefish Landings	***Sablefish Rule*** Proposed Rule – summer 2015 Final rule – fall 2015 Effective – April 1, 2016
17.	LEFG and OA	Sablefish North of 36 Degrees - Allocation Correction	***Sablefish Rule*** Proposed Rule – summer 2015 Final rule – fall 2015 Effective – April 1, 2016
18.	LEFG and OA	Logbooks for Fixed Gear	*see NMFS Report 2*
19.	OA	Amendment 22 - Open Access License Limitation	*see NMFS Report 2*
B. Immediate and Long-Term Commitments			
26.	Trawl, Non-Trawl, Rec	2015 Pacific Halibut Catch Sharing Plan (Sept and Nov 2014) and 2016 CSP (Sept 2015)	***Halibut Rule*** Proposed Rule – December 2014 Final rule – March 2015 Effective – March 2015

Two additional rules were not included in this table and are near complete.

- **Chafing Gear Rule**
  Timing: Final rule– fall 2014
  Includes: changes to chafing gear requirements
  Sectors affected: limited entry (LE) trawl (IFQ/MS/C/P)

- **Observer/Catch Monitor Rule**
  Timing: Final rule– fall 2014
  Includes: permitting for new observer providers, observer safety, minor revisions
  Sectors affected: LE trawl (IFQ/MS/C/P)

NMFS Groundfish Priorities

Omnibus

NMFS reviewed the list of possible groundfish and Pacific halibut (halibut) management measures from the Council's June and September meetings (Agenda Item J.1.a, Attachment 1, September 2014). This report builds from NMFS Report 1 under Agenda Item J.1.b, which lists NMFS rulemakings in progress over 2014. This document lists the agency's criteria used to determine our priorities. Using these criteria, we provide our initial priorities for action on groundfish and halibut management items, including items with less discretion on timing (e.g., responding to litigation, complying with the Endangered Species Act (ESA) and other laws, and implementing harvest limits) and other more discretionary items. Finally, the last sections cover estimated timelines for priority items and some ideas for packaging items. The document sections are as follows:

I. Criteria for Prioritizing
II. NMFS Prioritized List
III. Timelines
IV. Potential Packaging

As the Council considers groundfish actions under the omnibus agenda, NMFS would like to emphasize that the Council, NMFS, and stakeholders should all be actively engaged up front and throughout the development of actions through the Council process, consistent with the Regional Operating Agreement (ROA), November 2013. Early participation by all parties is important for fully considered actions within the constraints of all applicable laws and to improve collaborative decision-making.

I. Criteria for Prioritizing

NMFS considered several criteria to use in prioritizing the list of groundfish and halibut items. NMFS criteria are similar to and adapted from the September 2013 Council meeting on trawl trailing actions which provided criteria for prioritization (Agenda Item G.9.a, Attachment 1, September 2013). In addition, NMFS referred to the considerations for prioritizing the list of groundfish management measures provided at the June 2014 Council meeting (Agenda Item F.3.a, Attachment 3, June 2014) and again at this meeting under Agenda Item J.1.a, Attachment 2. That document provides the following resources to guide prioritization: the Magnuson-Stevens Act (MSA) National Standards, the Pacific Coast Groundfish Fishery Management Plan (FMP) goals and objectives, the trawl rationalization program goals and objectives from Amendment 20, the sablefish permit stacking goals and objectives from Amendment 14, and the Groundfish Strategic Plan from 2000 which provided a vision for the future of the groundfish fishery and actions to get there.

Based on the above information, NMFS used the following criteria in prioritizing the list of actions:

- Responding to litigation (as it arises, it trumps all other priorities)
- Complying with deadlines and requirements of MSA, ESA, and other applicable law
- Implementation of harvest specifications and maintaining catch within set harvest levels
- Implementation of the original FMP Amendment provisions (e.g. Amendment 14, 20, & 22)
- Maximizing conservation, social and economic benefits consistent with the FMP[1] and MSA

[1] The FMP lists the management goals in priority order as 1) conservation, 2) economics, and 3) utilization. In addition, the FMP describes procedures for establishing and adjusting management measures in Section 6.2, including procedures and criteria for decision-making when there is a resource conservation concern, a social or economic concern, or a habitat concern. These sections of the FMP could provide further guidance on priority-setting.

II. NMFS Prioritized List

This section describes NMFS priority categories and lists items from the Council's compilation of possible groundfish management measures (Agenda Item J.1.a, Attachment 1) that fit those priority categories. NMFS has prioritized these items based on the criteria described in Section I. For items that are not listed under a particular category, NMFS does not consider them a priority under the criteria from Section I. given all of the other priorities. Minor items, such as those not anticipated to require further analysis, that are not listed under a priority category may get folded in to other rulemakings by NMFS, as appropriate (e.g., from Appendix A, #5 (cost recovery corrections) and 54 (posting site licenses)). Appendix A to this report provides NMFS prioritized list in a different format, using the Council's full list of management measures (Agenda Item J.1.a, Attachment 1) and noting NMFS priorities in the far right column. NMFS priority categories are as follows:

- In progress (see NMFS Report 1)
- Priority 1 – must do
- Priority 2 – should do
- Potential priority
- Post trawl 5-year review
- Post EFH revisions

IN PROGRESS

These are items where NMFS is in the process of implementation. NMFS Report 1 provides more information on the progress of these actions, including draft schedules.

	Sector	Short Title
A. Items on Which Council Action Has Been Completed Which Still Entail Some Workload		
1.	Tribal, Trawl, Non-Trawl, Rec	2015-2016 Harvest Specifications and Management Measures and Amendment 24
2.	Trawl and Non-Trawl	Seabird Rule - Mandatory Streamers for vessels ≥ 55'
4.	Trawl and Non-Trawl	Fishery Declaration Enhancements
6.	Trawl IFQ & MS	Electronic Monitoring Exempted Fishing Permits
7.	Trawl IFQ & MS	Pacific Dawn Lawsuit Appeal to District Court (Whiting Allocation)
8.	Trawl IFQ, MS & CP	Whiting Cleanup Rule, Including Maximized Retention Regulations
9.	Trawl CP	Glacier Fish Co Lawsuit (Cost Recovery)
10.	Trawl IFQ & Non-Trawl	Joint Registration and Prohibition of Processing IFQ Sablefish
11.	Trawl IFQ	Move Shorebased Whiting Season Opening Dates
12.	Trawl IFQ	Continue Adaptive Management Program Pass-Through
13.	Trawl IFQ	Update eTicket for Web-based Submissions
14.	Trawl IFQ	Rule for Redistribution of Excessive Aggregate NonWhiting QS
15.	LEFG	Revise Limited Entry Fixed Gear Permit Control Rule
16.	LEFG and OA	Require E-Tickets for Sablefish Landings
17.	LEFG and OA	Sablefish North of 36 Degrees - Allocation Correction
B. Immediate and Long-Term Commitments		
26.	Trawl, Non-Trawl, Rec	2015 Pacific Halibut Catch Sharing Plan (Sept and Nov 2014) and 2016 CSP (Sept 2015)

PRIORITY 1 – must do

These are items that must be done in a timely manner. Reasons for giving these items highest priority are noted in the table. The first 3 bullets from the criteria listed in Section I. all fall in this category: responding to litigation as it arises, complying with federal law, and setting harvest limits. Other ongoing, routine fishery management actions not listed on the Council's table from Agenda Item J.1.a, Attachment 1 would also fall in this category, such as scientific research permits.

	Sector	Short Title	NMFS Priority
B. Immediate and Long-Term Commitments			
20.	Trawl, Non-Trawl, Rec	Inseason Management (Sept 2014 and beyond, excluding March 2015)	**Priority 1** *Maintaining catch within harvest limits*
21.	Trawl, Non-Trawl, Rec	Adopt Final Stock Assessment Plan and TOR for 2015 (Sept 2014)	**Priority 1** *Informs harvest specifications*
24.	Tribal, Trawl, Non-Trawl, Rec	Essential Fish Habitat: Phase 3 of the 5 Year Review (April 2015)	**Priority 1** *Conservation implications*
25.	Trawl, Non-Trawl, Rec	Amendment 25: Comprehensive Ecosystem-Based Amendment (Sept 2014 and Mar 2015)	**Priority 1** *Conservation implications*
27.	Trawl, Non-Trawl, Rec	2015 Incidental Regulations for Pacific Halibut (Mar and Apr 2015)	**Priority 1** *Maintaining catch within harvest limits*
[2]	Trawl, Non-Trawl, Rec	Pacific Whiting Harvest Specifications and Set-Asides (April 2015)	**Priority 1** *Setting harvest specifications*
28.	Trawl, Non-trawl, Rec	Stock Assessments for 2017-2018 Biennium (June and Sept 2015)	**Priority 1** *Informs harvest specifications*
29.	Trawl, Non-Trawl, Rec	Start of the Process to Establish 2017-2018 Specifications and Regulations (June 2015)	**Priority 1** *Setting harvest specifications*
30.	Trawl IFQ & MS	Electronic Monitoring Regulations (Sept and Nov 2014, June 2015)	**Priority 1**
32.	Trawl IFQ, MS, & CP	Five Year Trawl Rationalization Program Review (Starts in 2016)	**Priority 1** *Compliance with MSA*
C. Candidate Items for Prioritization in September			
39.	Trawl and Non-Trawl	Increase VMS Ping Rates	**Priority 1** *Conservation and enforcement implications. Responding to litigation.*
45.	Trawl IFQ, MS & CP	Revise Regulations on At-Sea and Shoreside Flow Scales	**Priority 1** *Conservation and enforcement implications*
56.	LEFG	Cost Recovery for the Permit Stacking Program	**Priority 1** *Compliance with MSA*
64.	Trawl, Non-Trawl, Rec	Management Model Review and Refinement	**Priority 1** *Continue refinements to further improve compliance with NS, including, but not limited to, NS-1, NS-2, and NS-6*

[2] Pacific whiting harvest specifications and set-asides were inadvertently excluded from the list created in June 2014. This item was added to the September 2014 list but left unnumbered in order to maintain the numbering established in June.

PRIORITY 2 – should do

These are items that should be done in a timely manner. Reasons for giving these items near-term priority are noted in the table. Items that would maximize conservation, economics, and utilization (in priority order) consistent with the FMP and MSA would fall in to this category. In addition, items that would implement original provisions from any previously approved amendment should be prioritized. NMFS also reviewed the Groundfish Strategic Plan for the broad groundfish fishery changes it envisioned that might still be appropriate, such as licensing all commercial fisheries including open access.

	Sector	Short Title	NMFS Priority
A. Items on Which Council Action Has Been Completed Which Still Entail Some Workload			
19.	OA	Amendment 22 - Open Access License Limitation	**Priority 2** *Facilitate compliance with Marine Mammal Protection Act, Strategic Plan recommended*
C. Candidate Items for Prioritization in September			
52.	Trawl IFQ	Widow Rockfish QS Reallocation	**Priority 2** *Implements original Am 20 provision (i.e., either reallocate or start trading). Consider outcome of upcoming assessment*

POTENTIAL PRIORITY

These items may become a priority at any point in time for the reasons noted.

	Sector	Short Title	NMFS Priority
C. Candidate Items for Prioritization in September			
35.	Trawl, Non-Trawl, Rec	Rebuilding Revision Rules (signal vs. noise)	**Potential priority** *Proposed rule on NS1 guideline revisions expected late 2014*
36.	Trawl, Non-Trawl, Rec	Further Consideration for Reorganizing Stock Complexes	**Potential priority** *Dependent on results of stock assessments, revised PSA analysis on risk of overfishing, and new sorting requirements*
41.	Trawl and Non-Trawl	Seabird Avoidance Devices for Vessels less than 55 feet	**Potential priority** *Dependent on research results from SeaGrant and discussions with USFWS.*
58.	LEFG and OA	Retain Halibut in the Sablefish Fishery (South of Pt. Chehalis)	**Potential Priority** *Would reduce discards and, depending on how reallocated, improve safety at sea by changes to derby-style directed fishery*
60.	Recreational	Mid-water Sport Fishery (OR and CA)	**Potential Priority** *Economic benefits to local communities and improves utilization of healthy stocks*
67.	Trawl, Non-Trawl	Reconsider Blackgill Allocation	**Potential priority** *Should be considered with stock complex reorganization (#36)*
68.	Trawl, Non-Trawl, Rec	Evaluate Nearshore Management Approaches, Including Deferral	**Potential priority** *Should be considered with stock complex reorganization (#36)*
76.	LE FG	Require All Fishpots be Returned to Shore at the End of Each Trip	**Potential priority** *Dependent on assessment of current regulations*

POST TRAWL 5-YR REVIEW

These are items the Council may want to consider after the 5-year review of the trawl rationalization program. The trawl program 5-year review will begin in 2016 and is intended to determine "progress in meeting the goals of the program and this Act, and any necessary modification of the program to meet those goals." (MSA 303A(c)(1)(G)). The trawl 5-year review will inform what aspects of the trawl rationalization program need to be addressed to meet the goals of the program. Beginning in 2016 and during the 5-year review, NMFS recommends that work on trailing actions (other than harvest specifications, inseason actions and electronic monitoring (EM)) affecting the trawl fishery should be postponed until completion of the 5-year review. After the 5-year review, the Council and NMFS could consider whether these items should be addressed through the Council process for potential implementation. NMFS requests that, under future Council meeting planning, planning for the trawl rationalization program 5-year review begin in mid to late 2015 and that a review team be formed consisting of Council, Region, and Science Center staff, and potentially the Trawl Rationalization Regulatory Evaluation Committee (TRREC) or a subset of the Groundfish Advisory Subpanel (GAP).

	Sector	Short Title	NMFS Priority
B. Immediate and Long-Term Commitments			
33.	Trawl IFQ	QS/QP Control Rule - Safe Harbor for Risk Pools - post 5-year review	**Post trawl 5-yr review**
34.	Trawl IFQ	Resolve Long-term Whiting Surplus Carryover Provision - post 5-year review	**Post trawl 5-yr review**
C. Candidate Items for Prioritization in September			
38.	Trawl and Non-Trawl	New Dressed to Round Conversion Factors for Sablefish	**Post trawl 5-yr review**
40.	Trawl and Non-Trawl (LE)	Eliminate Permit Size Endorsements	**Post trawl 5-yr review**
43.	Trawl IFQ (& MS &CP?)	Fishery Declaration Enhancements (With Gear Stowed and Testing Gear)	**Post trawl 5-yr review**
44.	Trawl IFQ, MS & CP	Year Round Whiting Season and Other Modifications	**Post trawl 5-yr review**
46.	Trawl IFQ	Gear Use - Multiple Gears Onboard and Use	**Post trawl 5-yr review**
47.	Trawl IFQ and LE Pot	Remove Certain Area-Management Restrictions	**Post trawl 5-yr review, Post EFH revisions**
48.	Trawl IFQ	Remove Certain Restrictions on Trawl Gear Configuration	**Post trawl 5-yr review**
49.	Trawl IFQ	Resolve Long-term Non-Whiting Surplus Carryover Provision	**Post trawl 5-yr review**
50.	Trawl IFQ	Carryover when Management Units Change	**Post trawl 5-yr review**
55.	Trawl IFQ	Develop Criteria for Distributing Adaptive Management Program QP	**Post trawl 5-yr review** *AMP based on need in the program and determined through 5-yr review process*
65.	Trawl IFQ & MS	Allow Between Sector Transfer of Rockfish QP from IFQ to MS	**Post trawl 5-yr review**
71.	Trawl	Allow Between Sector Transfer of Unneeded Overfished Species	**Post trawl 5-yr review**

POST EFH REVISIONS

These are items the Council may want to consider after any recommendations for revisions to EFH resulting from Phase 3 of the EFH review for the groundfish fishery. The EFH review began in 2010 and is intended to determine, in part, whether existing measures to protect groundfish EFH are adequate, what new information exists, and what changes are needed. During the final phase of that review, Phase 3, the Council will recommend any necessary revisions to EFH. After the Council makes its recommendations from Phase 3 and using the information gathered and analyzed from the EFH review, the Council and NMFS could consider whether the items in the list below should be addressed through the Council process for potential implementation.

	Sector	Short Title	NMFS Priority
C. Candidate Items for Prioritization in September			
37.	Trawl and Non-Trawl	Groundfish Conservation Areas for Rougheye Rockfish	**Post EFH revisions**
47.	Trawl IFQ and LE Pot	Remove Certain Area-Management Restrictions	**Post trawl 5-yr review, Post EFH revisions**
66.	Trawl, Non-Trawl, Rec	Create 60-Mile Bank RCA Lines	**Post EFH revisions**
75.	Trawl, Non-Trawl	Move the Seaward Non-Trawl RCA Line Closer to Shore for Pot Vessels	**Post EFH revisions**

III. Timelines

This section provides rough timelines for NMFS's Priority 1 and 2 items listed in Section II. These timelines are only estimates for planning purposes and are likely to change. These timelines largely reflect those of NMFS Regional staff working on analyses, rulemakings, and implementation. NMFS Science Center staff may have different priorities, workload, and timelines. In addition, NMFS expects from this point forward that NMFS is engaged up front on these issues as they move through the Council process, consistent with the ROA. These timelines reflect that commitment by all parties.

Using the priorities from the table in Section II, the chart below shows an estimated timeline for NMFS workload over 2015 and 2016. Some items are ongoing annual or biennial commitments, such as halibut fishery regulations, whiting fishery regulations, and groundfish harvest specifications and management measures. Others, such as EFH Phase 3 and the trawl rationalization program 5-year review, are periodic, large workload and time commitments. EFH Phase 3, which will consider any necessary regulatory changes, was scheduled to go through the Council process this fall but has been postponed until 2015. Any corresponding regulations would be implemented for 2016, at the earliest. The MSA-required trawl rationalization program 5-year review will begin in 2016, but planning should start in mid to late 2015. As noted above in Section II. under the description of "Post 5-year Review," trailing actions affecting the trawl fishery should be postponed until after the 5-year review is complete. The review is intended to inform what changes need to be made. Therefore, program changes should not continue while the review is ongoing. The analyses for the review could be used as the starting point and foundation for any trailing actions. The remaining Priority 1 items, including EM and the comprehensive ecosystem-based amendment, must also be addressed over 2015 and 2016.

Given the time and workload commitments from ongoing, routine management requirements and from Priority 1 items, NMFS expects to have limited capacity to take on additional items for completion over 2015 and 2016.

The table below shows NMFS estimated timeline for priority items over 2015 and 2016 as listed in the Table in Section II and does not necessarily include all routine, ongoing actions.

Priority category		Action	2015 Jan-Mar	2015 Apr-Jun	2015 Jul-Sep	2015 Oct-Dec	2016 Jan-Mar	2016 Apr-Jun	2016 Jul-Sep	2016 Oct-Dec
Priority 1	ROUTINE	Halibut incidental regulations (#27)	■	■	■		■	■		
		GF harvest spex								
Priority 1		inseason actions (#20)	■	■	■	■	■	■	■	■
Priority 1		stock assessments (#21, 28)		■	■	■				
Priority 1		2017-2018 spex process (#29)			■	■	■	■	■	■
		management model review/refinement (#64)	■	■	■	■				
Priority 1		Whiting specifications	■	■	■		■	■		
		EM								
In progress		EFPs (#6)	■	■	■	■				
Priority 1		regulations (#30)	■	■	■	■	■	■	■	■
Priority 1		EFH Phase 3/regulations (#24)		■	■	■	■	■	■	■
Priority 1		5-year review - trawl program (#32)			■	■	■	■	■	■
Priority 1		Ecosystem amendment 25/regulations (#25)	■	■	■	■				
In progress		Whiting season date change (#11)	■	■	■					
In progress		Whiting cleanup (#8)	■	■	■					
Priority 1		VMS ping rate (#39)	■	■	■	■				
Priority 1		Revise at-sea scale requirements (#45)	■	■	■	■				
		Sablefish Program								
In progress		regulations from review (#4, 10, 13, 15, 16, 17)	■	■	■	■	■			
Priority 1		cost recovery analysis/implementation (#56)	■	■	■	■	■			
Priority 2		Widow rockfish QS reallocation (#52)	■	■	■	■				
Priority 2		OA license limitation - Am 22 (#19)			■	■	■	■	■	■

IV. Potential Packaging

This section provides ideas and suggestions for moving forward, including potential packaging. NMFS expects to have some limited capacity to take on items in addition to ongoing, routine management and other Priority 1 items. NMFS encourages a strategic, collaborative approach to figuring out how to proceed, using this as an opportunity for creative, efficient packaging of issues. After the Council prioritizes items at its September meeting, NMFS suggests that Council and NMFS staff work together to develop ideas for potential packaging of items and bring those ideas to the November 2014 meeting.

Depending on the Council's recommended priorities, timelines and packaging of items may vary. For example, if the Council decides not to reallocate widow but to move to QS trading, then workload for that item would be largely reduced. In addition, if the Council moves forward with EFH Phase 3 and any resulting revisions, then larger groundfish closed area changes could be considered in conjunction with any EFH changes. NMFS has recommended postponing work on trawl trailing actions in 2016 until after the 5-year review. However, some work could begin in 2016 on items affecting other sectors (e.g., open access (Am 22) or recreational) or all sectors (e.g., closed area changes).

NMFS looks forward to working with the Council and stakeholders on a strategic, efficient, and effective path forward to implement needed changes to the groundfish and halibut fisheries.

APPENDIX A

Council's list of possible management measures (Agenda Item J.1.a, Attachment 1) with NMFS priorities.

The table below lists the Council's possible management measures and, in the far right column, NMFS initial determination of the agency's priorities. Priority categories are described in Section II. of the main document. For items where NMFS has not noted a priority and left the cell blank, these items are not NMFS near-term priorities for action. They are not considered priority items either under the NMFS criteria given in Section I of this document or under the FMP's goals, objectives, and processes for prioritizing Council workload. Minor items that are not anticipated to require further analysis may get folded in to other rulemakings by NMFS, as appropriate.

	Sector	Short Title	NMFS Priority
A. Items on Which Council Action Has Been Completed Which Still Entail Some Workload			
1.	Tribal, Trawl, Non-Trawl, Rec	2015-2016 Harvest Specifications and Management Measures and Amendment 24	**In progress** (*see NMFS Report 1*)
2.	Trawl and Non-Trawl	Seabird Rule - Mandatory Streamers for vessels ≥ 55'	**In progress** (*see NMFS Report 1*)
3.	Trawl and Non-Trawl	Clarify Catch Accounting Rules for Amendment 21	
4.	Trawl and Non-Trawl	Fishery Declaration Enhancements	**In progress** (*see NMFS Report 1*)
5.	Trawl IFQ, MS, & CP	Cost Recovery Corrections	
6.	Trawl IFQ & MS	Electronic Monitoring Exempted Fishing Permits	**In progress** (*see NMFS Report 1*)
7.	Trawl IFQ & MS	Pacific Dawn Lawsuit Appeal to District Court (Whiting Allocation)	**In progress** (*see NMFS Report 1*)
8.	Trawl IFQ, MS & CP	Whiting Cleanup Rule, Including Maximized Retention Regulations	**In progress** (*see NMFS Report 1*)
9.	Trawl CP	Glacier Fish Co Lawsuit (Cost Recovery)	**In progress** (*see NMFS Report 1*)
10.	Trawl IFQ & Non-Trawl	Joint Registration and Prohibition of Processing IFQ Sablefish	**In progress** (*see NMFS Report 1*)
11.	Trawl IFQ	Move Shorebased Whiting Season Opening Dates	**In progress** (*see NMFS Report 1*)
12.	Trawl IFQ	Continue Adaptive Management Program Pass-Through	**In progress** (*see NMFS Report 1*)
13.	Trawl IFQ	Update eTicket for Web-based Submissions	**In progress** (*see NMFS Report 1*)
14.	Trawl IFQ	Rule for Redistribution of Excessive Aggregate NonWhiting QS	**In progress** (*see NMFS Report 1*)
15.	LEFG	Revise Limited Entry Fixed Gear Permit Control Rule	**In progress** (*see NMFS Report 1*)
16.	LEFG and OA	Require E-Tickets for Sablefish Landings	**In progress** (*see NMFS Report 1*)
17.	LEFG and OA	Sablefish North of 36 Degrees - Allocation Correction	**In progress** (*see NMFS Report 1*)
18.	LEFG and OA	Logbooks for Fixed Gear	
19.	OA	Amendment 22 - Open Access License Limitation	**Priority 2** *Facilitate compliance with Marine Mammal Protection Act, Strategic Plan recommended*
B. Immediate and Long-Term Commitments			

	Sector	Short Title	NMFS Priority
Currently on the Year at a Glance Schedule (See Agenda Item C.6.a, Attachment 1)			
20.	Trawl, Non-Trawl, Rec	Inseason Management (Sept 2014 and beyond, excluding March 2015)	**Priority 1** *Maintaining catch within harvest limits*
21.	Trawl, Non-Trawl, Rec	Adopt Final Stock Assessment Plan and TOR for 2015 (Sept 2014)	**Priority 1** *Informs harvest specifications*
22.	Trawl, Non-Trawl, Rec	Develop a COP for Groundfish Methodology Review Process (Nov 2014 and Apr 2015)	
23.	Trawl, Non-Trawl, Rec	Omnibus Regulations Changes (Sept and Nov 2014, Mar-Sept 2015)	
24.	Tribal, Trawl, Non-Trawl, Rec	Essential Fish Habitat: Phase 3 of the 5 Year Review (April 2015)	**Priority 1** *Conservation implications*
25.	Trawl, Non-Trawl, Rec	Amendment 25: Comprehensive Ecosystem-Based Amendment (Sept 2014 and Mar 2015)	**Priority 1** *Conservation implications*
26.	Trawl, Non-Trawl, Rec	2015 Pacific Halibut Catch Sharing Plan (Sept and Nov 2014) and 2016 CSP (Sept 2015)	**In progress** (*see NMFS Report 1*)
27.	Trawl, Non-Trawl, Rec	2015 Incidental Regulations for Pacific Halibut (Mar and Apr 2015)	**Priority 1** *Maintaining catch within harvest limits*
[3]	Trawl, Non-Trawl, Rec	Pacific Whiting Harvest Specifications and Set-Asides (April 2015)	**Priority 1** *Setting harvest specifications*
28.	Trawl, Non-trawl, Rec	Stock Assessments for 2017-2018 Biennium (June and Sept 2015)	**Priority 1** *Informs harvest specifications*
29.	Trawl, Non-Trawl, Rec	Start of the Process to Establish 2017-2018 Specifications and Regulations (June 2015)	**Priority 1** *Setting harvest specifications*
30.	Trawl IFQ & MS	Electronic Monitoring Regulations (Sept and Nov 2014, June 2015)	**Priority 1**
Items on the Horizon			
31.	Non-Trawl	Discard Mortality Rates for Commercial Nearshore Fisheries (TBD)	
32.	Trawl IFQ, MS, & CP	Five Year Trawl Rationalization Program Review (Starts in 2016)	**Priority 1** *Compliance with MSA*
33.	Trawl IFQ	QS/QP Control Rule - Safe Harbor for Risk Pools - post 5-year review	**Post trawl 5-yr review**
34.	Trawl IFQ	Resolve Long-term Whiting Surplus Carryover Provision - post 5-year review	**Post trawl 5-yr review**
C. Candidate Items for Prioritization in September			
35.	Trawl, Non-Trawl, Rec	Rebuilding Revision Rules (signal vs. noise)	**Potential priority** *Proposed rule on NS1 guideline revisions expected late 2014*
36.	Trawl, Non-Trawl, Rec	Further Consideration for Reorganizing Stock Complexes	**Potential priority** *Dependent on results of stock assessments, revised PSA analysis on risk of overfishing, and new sorting requirements*
37.	Trawl and Non-Trawl	Groundfish Conservation Areas for Rougheye Rockfish	**Post EFH revisions**

[3] Pacific whiting harvest specifications and set-asides were inadvertently excluded from the list created in June 2014. This item was added to the September 2014 list left unnumbered in order to maintain the numbering established in June.

	Sector	Short Title	NMFS Priority
38.	Trawl and Non-Trawl	New Dressed to Round Conversion Factors for Sablefish	**Post trawl 5-yr review**
39.	Trawl and Non-Trawl	Increase VMS Ping Rates	**Priority 1** *Conservation and enforcement implications. Responding to litigation.*
40.	Trawl and Non-Trawl (LE)	Eliminate Permit Size Endorsements	**Post trawl 5-yr review**
41.	Trawl and Non-Trawl	Seabird Avoidance Devices for Vessels less than 55 feet	**Potential priority** *Dependent on research results from SeaGrant and further discussions with USFWS.*
42.	Trawl IFQ, MS & CP	Revise Length of Time Required for the Trawl Fleet to Retain Records	
43.	Trawl IFQ (& MS &CP?)	Fishery Declaration Enhancements (With Gear Stowed and Testing Gear)	**Post trawl 5-yr review**
44.	Trawl IFQ, MS & CP	Year Round Whiting Season and Other Modifications	**Post trawl 5-yr review**
45.	Trawl IFQ, MS & CP	Revise Regulations on At-Sea and Shoreside Flow Scales	**Priority 1** *Conservation and enforcement implications*
46.	Trawl IFQ	Gear Use - Multiple Gears Onboard and Use	**Post trawl 5-yr review**
47.	Trawl IFQ and LE Pot	Remove Certain Area-Management Restrictions	**Post trawl 5-yr review, Post EFH revisions**
48.	Trawl IFQ	Remove Certain Restrictions on Trawl Gear Configuration	**Post trawl 5-yr review**
49.	Trawl IFQ	Resolve Long-term Non-Whiting Surplus Carryover Provision	**Post trawl 5-yr review**
50.	Trawl IFQ	Carryover when Management Units Change	**Post trawl 5-yr review**
51.	Trawl IFQ	Allow Trading of Previous Year Quota Pounds in Current Year	
52.	Trawl IFQ	Widow Rockfish QS Reallocation	**Priority 2** *Implements original Am 20 provision (i.e., either reallocate or start trading). Consider outcome of upcoming assessment*
53.	Trawl IFQ	Discard Survival Credit for Lingcod and Sablefish	
54.	Trawl IFQ	Require Posting of First Receiver Site Licenses	
55.	Trawl IFQ	Develop Criteria for Distributing Adaptive Management Program QP	**Post trawl 5-yr review** *AMP based on need in the program and determined through 5-yr review process*
56.	LEFG	Cost Recovery for the Permit Stacking Program	**Priority 1** *Compliance with MSA*
57.	LEFG and OA	Commercial Gear Restriction for Targeting Flatfish in CA	
58.	LEFG and OA	Retain Halibut in the Sablefish Fishery (South of Pt. Chehalis)	**Potential Priority** *Would reduce discards and, depending on how reallocated, improve safety at sea by changes to derby-style directed fishery*
59.	Recreational	50 fm Depth Restriction (WA and OR)	
60.	Recreational	Mid-water Sport Fishery (OR and CA)	**Potential Priority** *Economic benefits to local communities and improves utilization of healthy stocks*
61.	Trawl, Non-Trawl, Rec	Further Consideration for Ecosystem Component Species	

	Sector	Short Title	NMFS Priority
62.	Trawl, Non-Trawl, Rec	Analysis of a Multi-Year Average Catch Policy	
63.	Non-trawl	Mortality Rates for Descending Devices in the Rod-and-Reel Fishery	
64.	Trawl, Non-Trawl, Rec	Management Model Review and Refinement	**Priority 1** *Continue refinements to further improve compliance with NS, including, but not limited to, NS-1, NS-2, and NS-6*
65.	Trawl IFQ & MS	Allow Between Sector Transfer of Rockfish QP from IFQ to MS	**Post trawl 5-yr review**
66.	Trawl, Non-Trawl, Rec	Create 60-Mile Bank RCA Lines	**Post EFH revisions**
67.	Trawl, Non-Trawl	Reconsider Blackgill Allocation	**Potential priority** *Should be considered with stock complex reorganization (#36)*
68.	Trawl, Non-Trawl, Rec	Evaluate Nearshore Management Approaches, Including Deferral	**Potential priority** *Should be considered with stock complex reorganization (#36)*
69.	LE FG	Combine the Fixed Gear LE DTL Fishery and Tier Fishery	
70.	Trawl, Non-Trawl	Provide for Retrieval of Derelict Crab Pots in RCAs	
71.	Trawl	Allow Between Sector Transfer of Unneeded Overfished Species	**Post trawl 5-yr review**
72.	LE FG	Require Permit Price Reporting for LE FG Permit Transfers	
~~73.~~	~~LE FG~~	~~Convert Daily Trip Limits to a Tier Endorsement~~ [4]	
74.	LE FG	Combine Longline and Fishpot into a Single Fixed Gear Limited Entry Gear Endorsements	
75.	Trawl, Non-Trawl	Move the Seaward Non-Trawl RCA Line Closer to Shore for Pot Vessels	**Post EFH revisions**
76.	LE FG	Require All Fishpots be Returned to Shore at the End of Each Trip	**Potential priority** *Dependent on assessment of current regulations*

[4] This item is a duplicate of item #69.

Agenda Item J.1.b
Supplemental NMFS PowerPoint
September 2014

NOAA FISHERIES

GROUNDFISH
Omnibus

September 2014

NOAA FISHERIES

NMFS Report 1

Rulemaking Plan for 2014

2014 – NMFS Report 1

- 15 groundfish/halibut actions published in Federal Register to date in 2014
- 16 items from omnibus list already in progress in 2014
- Plus 2 additional rules not on omnibus list (*chafing gear, observer/catch monitor rules*)
- Seabird proposed rule published, comment period open through 10/9
- Sablefish rulemaking postponed, target date now April 2016
- Whiting clean-up rule postponed, target date now May 2015
- AMP/Pre-spex rule for January 1, 2015

Number of Federal Register notices published
2013 = 21
2012 = 15
2011 = 20
2010 = 26
2009 = 14
2008 = 13
2007 = 12

NOAA FISHERIES

NMFS Report 2

NMFS Priorities

Criteria

Priorities – NMFS Report 2

- Responding to litigation (*as it arises, trumps all other priorities*)
- Complying with deadlines and requirements of MSA, ESA, and other applicable law
- Implementation of harvest specifications and maintaining catch within set harvest levels
- Implementation of the original FMP Amendment provisions (e.g. Amendment 14, 20, & 22)
- Maximizing conservation, social and economic benefits consistent with the FMP and MSA

Priority Categories

Priorities – NMFS Report 2

- In progress (see NMFS Report 1)
- Priority 1 – must do
- Priority 2 – should do
- Potential priority
- Post trawl 5-year review
- Post EFH revisions

NOTE: Items from Council list not listed in a particular category don't fit in criteria used (see blank cells in App. A in NMFS Report 2). Minor items not requiring further analysis may get folded in to other rulemakings (e.g., cost recovery corrections (5), posting site licenses (54)).

Priority 1

Based on:

- Responding to litigation as it arises
- Complying with federal law
- Setting and maintaining catch within harvest limits

B. Immediate and Long-Term Commitments		
20.	Inseason Management	**Priority 1** *Maintaining catch within harvest limits*
21.	Adopt Final Stock Assessment Plan and TOR for 2015	**Priority 1** *Informs harvest specifications*
24.	Essential Fish Habitat: Phase 3 of the 5 Year Review	**Priority 1** *Conservation implications*
25.	Am 25: Comprehensive Ecosystem-Based Amendment	**Priority 1** *Conservation implications*
27.	2015 Incidental Regulations for Pacific Halibut	**Priority 1** *Maintaining catch within harvest limits*
	Pacific Whiting Harvest Specifications and Set-Asides	**Priority 1** *Setting harvest specifications*
28.	Stock Assessments for 2017-2018 Biennium	**Priority 1** *Informs harvest specifications*
29.	Start of the Process to Establish 2017-2018 Specs and Regs	**Priority 1** *Setting harvest specifications*
30.	Electronic Monitoring Regulations	**Priority 1**
32.	Five Year Trawl Rationalization Program Review	**Priority 1** *Compliance with MSA*
C. Candidate Items for Prioritization in September		
39.	Increase VMS Ping Rates	**Priority 1** *Conservation and enforcement implications. Responding to litigation.*
45.	Revise Regulations on At-Sea and Shoreside Flow Scales	**Priority 1** *Conservation and enforcement implications*
56.	Cost Recovery for the Permit Stacking Program	**Priority 1** *Compliance with MSA*
64.	Management Model Review and Refinement	**Priority 1** *Continue refinements to further improve compliance with NS, including, but not limited to, NS-1, NS-2, and NS-6*

Priority 2

Based on:

- Implementing original FMP amendment provisions
- Maximizing conservation, economics, and utilization (in priority order) consistent with FMP and MSA

A. Items on Which Council Action Has Been Completed Which Still Entail Some Workload		
19.	Amendment 22 - Open Access License Limitation	**Priority 2** *Facilitate compliance with Marine Mammal Protection Act, Strategic Plan recommended*
C. Candidate Items for Prioritization in September		
52.	Widow Rockfish QS Reallocation	**Priority 2** *Implements original Am 20 provision (i.e., either reallocate or start trading). Consider outcome of upcoming assessment*

Potential Priority

C. Candidate Items for Prioritization in September		
35.	Rebuilding Revision Rules (signal vs. noise)	**Potential priority** *Proposed rule on NS1 guideline revisions expected late 2014*
36.	Further Consideration for Reorganizing Stock Complexes	**Potential priority** *Dependent on results of stock assessments, revised PSA analysis on risk of overfishing, and new sorting requirements*
41.	Seabird Avoidance Devices for Vessels less than 55 feet	**Potential priority** *Dependent on research results from SeaGrant and discussions with USFWS.*
58.	Retain Halibut in the Sablefish Fishery (S of Pt. Chehalis)	**Potential Priority** *Would reduce discards and, depending on how reallocated, improve safety at sea by changes to derby-style directed fishery*
60.	Mid-water Sport Fishery (OR and CA)	**Potential Priority** *Economic benefits to local communities and improves utilization of healthy stocks*
67.	Reconsider Blackgill Allocation	**Potential priority** *Should be considered with stock complex reorganization (#36)*
68.	Evaluate Nearshore Management Approaches, Including Deferral	**Potential priority** *Should be considered with stock complex reorganization (#36)*
76.	Require All Fishpots be Returned to Shore at the End of Each Trip	**Potential priority** *Dependent on assessment of current regulations*

Post Trawl 5-year Review

- MSA requirement; Review begins in 2016
- Covers Amendments 20 (trawl program) and 21 (allocations)
- Intended to determine progress toward meeting goals of program and MSA
- Review informs what aspects of the program need changed to meet goals
- Once review starts, analysis and implementation more efficient if conduct review then use review to inform trailing actions
- Postpone work on additional trawl trailing actions beginning in 2016 until after trawl 5 year review (except electronic monitoring, harvest specifications, inseason)

Post Trawl 5-year Review

- After results of the review, additional trawl trailing actions considered or goals of trawl program revised
- Could consider more comprehensive, efficiently-packaged trailing actions
- Items in this priority category as shown in table would be informed by and could be more efficiently considered after review
- Suggest planning start in mid to late 2015 and a trawl program 5-year review team be formed consisting of Council, Region, and Science Center staff and potentially TRREC or a subset of GAP

Post Trawl 5-year Review

B. Immediate and Long-Term Commitments		
33.	QS/QP Control Rule - Safe Harbor for Risk Pools - post 5-year review	**Post trawl 5-yr review**
34.	Resolve Long-term Whiting Surplus Carryover Provision - post 5-year review	**Post trawl 5-yr review**
C. Candidate Items for Prioritization in September		
38.	New Dressed to Round Conversion Factors for Sablefish	**Post trawl 5-yr review**
40.	Eliminate Permit Size Endorsements	**Post trawl 5-yr review**
43.	Fishery Declaration Enhancements (With Gear Stowed and Testing Gear)	**Post trawl 5-yr review**
44.	Year Round Whiting Season and Other Modifications	**Post trawl 5-yr review**
46.	Gear Use - Multiple Gears Onboard and Use	**Post trawl 5-yr review**
47.	Remove Certain Area-Management Restrictions	**Post trawl 5-yr review, Post EFH revisions**
48.	Remove Certain Restrictions on Trawl Gear Configuration	**Post trawl 5-yr review**
49.	Resolve Long-term Non-Whiting Surplus Carryover Provision	**Post trawl 5-yr review**
50.	Carryover when Management Units Change	**Post trawl 5-yr review**
55.	Develop Criteria for Distributing Adaptive Management Program QP	**Post trawl 5-yr review** *AMP based on need in the program and determined through 5-yr review process*
65.	Allow Between Sector Transfer of Rockfish QP from IFQ to MS	**Post trawl 5-yr review**
71.	Allow Between Sector Transfer of Unneeded Overfished Species	**Post trawl 5-yr review**

Post EFH Revisions

- EFH review intended to determine whether EFH protections are adequate, what new information exists, and what changes needed
- Phase 3 considers what changes needed, if any
- Items in this priority category as shown in table would be informed by and could be more efficiently considered after EFH revisions and using information from EFH review

Post EFH Revisions

C. Candidate Items for Prioritization in September		
37.	Groundfish Conservation Areas for Rougheye Rockfish	**Post EFH revisions**
47.	Remove Certain Area-Management Restrictions	**Post trawl 5-yr review, Post EFH revisions**
66.	Create 60-Mile Bank RCA Lines	**Post EFH revisions**
75.	Move the Seaward Non-Trawl RCA Line Closer to Shore for Pot Vessels	**Post EFH revisions**

Timelines

Priorities – NMFS Report 2

- NMFS has limited capacity for additional items beyond Priority 1 items
- Encourage strategic, collaborative approach to moving forward

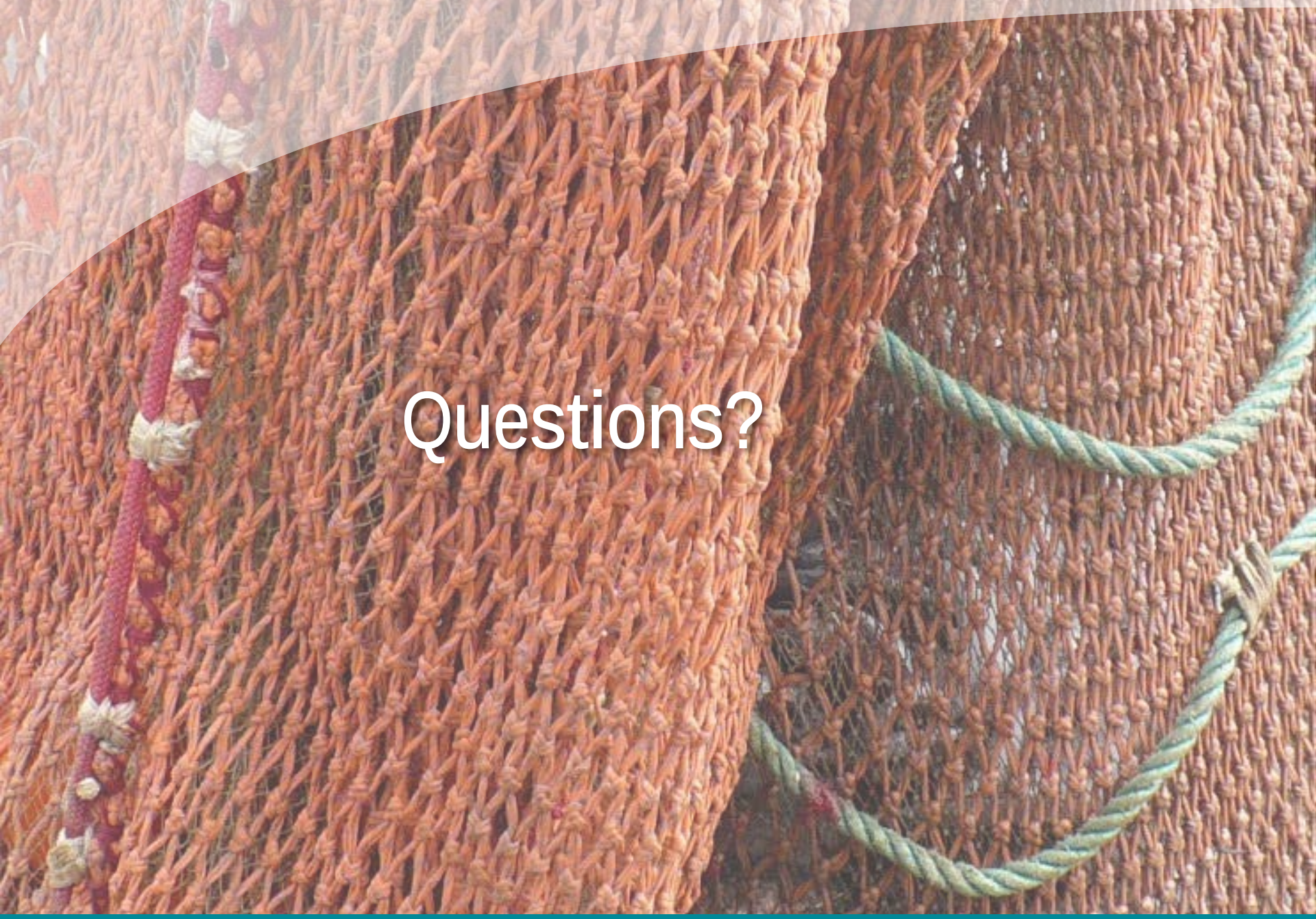
Priority category		Action	2015 Jan-Mar	2015 Apr-Jun	2015 Jul-Sep	2015 Oct-Dec	2016 Jan-Mar	2016 Apr-Jun	2016 Jul-Sep	2016 Oct-Dec
Priority 1	ROUTINE	Halibut incidental regulations (#27)	■	■			■	■		
		GF harvest spex								
Priority 1		inseason actions (#20)	■	■	■	■	■	■	■	■
Priority 1		stock assessments (#21, 28)		■	■	■				
Priority 1		2017-2018 spex process (#29)			■	■	■	■	■	■
		management model review/refinement (#64)	■	■	■	■				
Priority 1		Whiting specifications	■	■			■	■		
		EM								
In progress		EFPs (#6)	■	■	■	■				
Priority 1		regulations (#30)	■	■	■	■	■	■	■	■
Priority 1		EFH Phase 3/regulations (#24)		■	■	■	■	■	■	■
Priority 1		5-year review - trawl program (#32)			■	■	■	■	■	■
Priority 1		Ecosystem amendment 25/regulations (#25)	■	■	■	■				
In progress		Whiting season date change (#11)	■	■						
In progress		Whiting cleanup (#8)	■	■						
Priority 1		VMS ping rate (#39)	■	■	■	■				
Priority 1		Revise at-sea scale requirements (#45)	■	■	■	■				
		Sablefish Program								
In progress		regulations from review (#4, 10, 13, 15, 16, 17)	■	■	■	■	■			
Priority 1		cost recovery analysis/implementation (#56)	■	■	■	■	■			
Priority 2		Widow rockfish QS reallocation (#52)	■	■	■	■				
Priority 2		OA license limitation - Am 22 (#19)			■	■	■	■	■	■

Potential Packaging *Priorities – NMFS Report 2*

- Timing and packaging may vary depending on what Council prioritizes
  1. *Example – if Council decides not to reallocate widow, but instead move to QS trading, then workload for that item would be largely reduced*
  2. *Example – if Council moves forward on EFH Phase 3 and any resulting revisions, then larger closed area changes could be considered in conjunction with EFH changes.*
- Come back in Nov with potential packaging

Recommendations *Priorities – NMFS Report 2*

- Commit to focusing effort on NMFS Priority 1 items over 2015/2016
- Consider closed area changes in conjunction with or after any changes resulting from Essential Fish Habitat Phase 3
- Postpone work on additional trawl trailing actions beginning in 2016 until after trawl 5 year review (except EM, harvest specifications, inseason)
- Consider forming a trawl program 5-year review team consisting of Council, Region, and Science Center staff and potentially TRREC or a subset of GAP
- Under future Council meeting planning, add:
  1. Potential packaging for management changes in Nov 2014
  2. Trawl program 5-year review planning for mid to late 2015


Questions?

OREGON DEPARTMENT OF FISH AND WILDLIFE REPORT ON RECOVERING DERELICT CRAB GEAR DURING GROUNDFISH TRIPS

The Oregon Department of Fish and Wildlife (ODFW) supports retaining, for consideration of further analysis, Item 70 in the Omnibus Package (Agenda Item F.9.a, Supplemental Attachment 1, June 2014). This item was titled "Retrieval of Derelict ~~Trawl~~ [Dungeness Crab] Gear in Rockfish Conservation Areas (RCAs)" by trawl and non-trawl commercial groundfish vessels during normal fishing trips. We note that the text provided for Item 70 in Supplemental Attachment 1 is inaccurate as written (i.e., "Provide for Retrieval of Derelict Trawl Gear in RCAs (GAP – #6)"). The Groundfish Advisory Subpanel (GAP) recommendation was meant for retrieval of Dungeness crab gear (Agenda Item F.3.b, Supplemental GAP Report, June 2014)

Due to uncontrollable circumstances, such as rough weather, strong currents, and floating kelp, fishing gear may be lost. Lost gear (i.e., derelict fishing gear) can pose significant environmental, biological, economic and safety concerns for marine organisms, fishers, and other ocean users. Derelict fishing gear may clutter the ocean bottom, become entangled with marine mammals and other marine organisms, continue capturing and killing various fishes and invertebrates for months or years after being lost (i.e., "ghost fishing"), and may be snagged or accidentally caught by other active fishermen or ocean users. Economic and/or biological impacts include (a) the loss of the gear itself, (b) the loss of commercially important species and other organisms through ghost fishing, and (c) economic losses to fishermen or other mariners that have to spend time and money to deal with derelict gear that has been caught or snagged and repair damage to their vessels or fishing gear. These economic losses may also represent safety issues (Agenda Item F.3.b, Supplemental GAP Report, June 2014). Efforts to remove derelict gear helps reduce gear conflicts and navigation hazards, facilitate good relations with other fisheries and ocean users, reduce chances of marine mammal entanglements, and reduce ghost fishing.

Current Vessel Monitoring System (VMS) regulations prohibit trawl and fixed gear groundfish vessels from stopping inside of their respective RCAs to opportunistically recover derelict crab gear while on a declared groundfish trip. The VMS declaration regulations (e.g., §660.13(d)(1), (d)(2), (d)(3), and (d)(5)(iv)) would need to be altered to facilitate effective removal of derelict crab gear from the RCA. Additional regulations may also require modification for groundfish vessels to retrieve their own derelict crab gear in all waters, including those in the RCA (e.g., §660.112(a)(1), (a)(5), (c)(1); §660.130(e)(4)(i), (e)(4)(ii); §660.230(d)(ii); §660.312(b)(1), (c)(1), (c)(2); §660.330(d)(12)(i), (d)(12)(ii)).

Oregon's state regulations make allowances for commercial vessels to retrieve derelict crab gear throughout the year (Table 1). ODFW has consulted with Washington Department of Fish and Wildlife and California Department of Fish and Wildlife regarding similar regulations in their respective states. It is our understanding that with the exception of Washington's post-season gear retrieval permit program, Washington does not have similar allowances in state regulation, while California allows Dungeness crab permitted vessels to retrieve up to six derelict pots

belonging to another vessel per fishing trip during the season and an unlimited amount from July 16 (close of season) through October 31.

As asserted above, ODFW supports consideration of an allowance to retrieve derelict crab gear (and potentially other gear types) in the RCAs on declared groundfish trips. This would accelerate and expand the removal of derelict gear from the RCA, providing considerable ecological, economic, and safety benefits to the resources and ocean users. Analysis would be most efficient if this issue were packaged with the Council's Omnibus Item 39: Increase VMS Ping Rates (Agenda Item F.9.a, Supplemental Attachment 1, June 2014).

Table 1. Oregon derelict Dungeness crab gear allowances (Oregon Administrative Rule 635-005-0490).

Time period	**Number of derelict pots allowed per trip**
Dungeness crab season opening – day before the 2nd Monday in June	25
2nd Monday in June – August 28th	50
August 29th- October 31st	Unlimited
November 1st – day before Dungeness crab season opening	None

ENFORCEMENT CONSULTANTS REPORT ON OMNIBUS REGULATION CHANGE PRIORITIES

The Enforcement Consultants Committee (EC) has reviewed the documents associated with Agenda Item J.1, Omnibus Regulation Change Priorities, and has the following comments.

We appreciate the thought and depth of information provided in Agenda Item J.1.b, NMFS Reports 1 and 2. We find the criteria for prioritizing to be pruden,t with sound rationale.

The EC has comments specific to the below items:

Item 45 - At-Sea and Shoreside Flow Scales.

A recently-completed investigation into the manipulation of flow scales resulting in considerable underreporting of Pollock by some vessels operating in this Alaska-based fishery has culminated in significant fines levied against the perpetrators, as well as changes to the Alaska Region flow scales regulations, as a means of deterring future underreporting. Many of the mothership and catcher-processor vessels that fish in the Alaska Pollock fishery, and are therefore subject to these changes, also fish in the West Coast Pacific whiting fishery. Just as we found in the chafing gear regulations, recently addressed by this Council, consistent regulations for both Alaska and West Coast vessels benefit the regulated fishing industry, as they are more cost effective and have less potential for causing confusion. Both are important considerations for the West Coast Pacific whiting fishery. As such, the EC believes modifying the West Coast flow scale regulations to be consistent with the Alaska regulations is of great importance, with significant industry benefits, and should be prioritized by this Council as a Priority 1 – must do item.

Item 39 - Increase VMS Ping Rate

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

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

Consequently, this Council has been considering whether to increase the VMS ping rate in the WCGF from once every hour to every 15 minutes, as Office of Law Enforcement (OLE) and the EC have recommended, based on Judge Biro’s ruling. Rather than continuing the debate on the

15 minute ping rate, the EC feels it would be more prudent to refocus on the overall problem with restricted area enforcement.

VMS is used throughout the world by fishery managers and enforcement entities to monitor closed areas. If an area is closed and a VMS unit "pings" documenting a vessel's location in the closed area, the vessel is wrong, citation/notice issued. This has worked effectively in areas such as the North Atlantic and Alaska for two decades or more, using a one-hour, and in some areas, a 30 minute ping rate. Additionally, unlike our situation here on the West Coast, there is Federal case law supporting the use of VMS using one-hour ping rates to enforce closed area requirements.

But closed area management is not the scheme used here on the West Coast for groundfish management. Here, we do not have closed areas, we have restricted areas, which is the appropriate way to describe Groundfish Conservation Areas, Cow Cod Conservation Areas, Essential Fish Habitat areas, National Marine Sanctuaries, and many California Marine Protected Areas. They are not closed, but restricted.

Add to this equation the fact that VMS cannot prove if a vessel is fishing. VMS can document location at a specific point in time, but not what that vessel is doing at that location. Thus, the dilemma facing the EC, General Counsel Enforcement Section, and National Marine Fisheries Service (NMFS) in crafting regulations to effectively enforce the "intent" of the Groundfish Conservation Areas management scheme: to prohibit "fishing" with specified gear types, while allowing vessels to come and go within the restricted areas.

The regulatory requirement for conservation areas on the West Coast is to "maintain continuous transit" while in the conservation areas. For over a decade, OLE successfully used VMS with a one-hour ping rate to monitor and enforce this requirement. But that is not the case as of August 2013.

OLE, US Coast Guard, and their state enforcement partners have a problem. We cannot enforce the continuous transit requirement using VMS with a one-hour ping rate. What is needed to effectively enforce the continuous transit requirement is a data stream that demonstrates that a vessel has stopped, or has reduced speed to such a point, which, absent a plausible explanation, it can be concluded that the vessel has failed to maintain continuous transit.

Is increasing the VMS ping rate the only remedy to the stated problem? The EC's opinion is, certainly not.

As stated previously, what is needed to effectively monitor restricted areas is a data stream that demonstrates that a vessel has stopped, or has reduced speed to such point, which, absent a plausible explanation, it can be concluded that the vessel has failed to maintain continuous transit. The electronic monitoring systems currently being used and evaluated by Pacific States Marine Fisheries Commission, and which will be deployed under various West Coast EFPs beginning in 2015, could certainly provide this type of data stream.

Additionally, there are $700.00 data loggers, developed by Multi-Tech Systems, currently deployed in the Gulf of Mexico, which capture position reports every 10 minutes, with data

packaged and then transmitted through the Verizon Cellular Network. This is all done at a considerably reduced cost, as compared to VMS satellite transmissions. The units have multiple general purpose input/output ports which should be able to connect to hydraulic and other sensors. However, there are currently no specific sensors available from Multi-Tech Systems, nor is sensor technology currently being deployed in the Gulf of Mexico program. The EC continues to explore this and other technologies.

There appear to be worthy technology solutions to continue exploring in order to solve this problem. The EC is asking the Council to place a high priority on this issue and move it forward for development of a range of alternatives.

The range of alternatives would include: the affected fisheries and vessel types, analysis of the various technologies available (i.e. electronic monitoring systems, data loggers, enhanced VMS units), and increased ping rates, as well as how these technologies could be packaged and deployed. Finally, cost analysis and funding options would have to be considered.

Finally, to accurately reflect the totality of this proposed range of alternatives, the EC suggests the Increased VMS Ping Rate item be retitled as, Vessel Continuous Transit Monitoring.

EC Recommendations:

Move Item 39 – Increase VMS Ping Rates and Revise Regulations and Item 45 - At-Sea and Shoreside Flow Scales to Priority 1 - must do, consistent with the schedule for regulation development reflected in the table found on page 7 of the Agenda Item J.1.b, NMFS Report 2, September, 2014.

Retitle the VMS Ping Rate item as, Vessel Continuous Transit Monitoring.

PFMC
09/15/14

GROUNDFISH ADVISORY SUBPANEL REPORT ON
OMNIBUS REGULATION CHANGE PRIORITIES

The Groundfish Advisory Subpanel (GAP) heard a report by Ms. Kelly Ames, Mr. Dayna Mathews, and Ms. Jamie Goen, and offers the following comments on the Omnibus Regulation Changes.

Introduction

The GAP discussed the long list of issues included in the Omnibus Regulation Changes. GAP members noted it is incredibly difficult to choose just a handful of the items in section C from Agenda Item J.1.a, Attachment 1, Groundfish Management Measures for Council Consideration, to propose moving forward.

The GAP also expressed frustration about why some regulations have not moved more quickly through the rulemaking process at National Marine Fisheries Service (NMFS). The most glaring example is the 2015 harvest specifications and management measures regulations. The Council, Council staff, and GAP worked on this for months, attempting to streamline the process, purposely delaying issues along with limiting their requests so as to ensure a January 1 start date – at the request of NMFS – yet we learned just prior to this meeting that the bulk of those regulations would be delayed until March 1. In light of recent rulemaking performance, the GAP wonders how much confidence NMFS has in its projections. NMFS continues to move the goal post on many issues, and chafing gear is a prime example. It has been 22 months since the Council took final action (for the second time) on this issue and we still do not have a final rule in place. This item was considered "low hanging fruit," which brings into question whether any action can be considered a quick and easy fix.

The GAP would like to thank Ms. Jamie Goen for her thoughtful and detailed approach to moving the omnibus forward. While she acknowledged and explained many of the problems with getting regulations into place on a timely basis, she also noted some of the positives that have come out of recent regulatory changes: stocks are rebuilding, some sectors have increased flexibility and many groundfish species have been labeled sustainable.

GAP Priorities

As a preface to this section, the GAP appreciates NMFS' efforts to package and prioritize omnibus items (Agenda Item J.1.b, NMFS Report 2, NMFS Groundfish Priorities). In its report, NMFS identifies a finite number of slots where Council priorities could be added to the workload (notably, four items under "C. Candidate Items," page 3; and the two items under "Priority 2," page 4). From these two categories, the GAP recommends removing items #39, #56, #64, and #19 because they are low priorities and/or unnecessary. We also recommend removing item #45 because this is an internal NMFS task.

The GAP urges the Council to add the following items in place of the six items identified by NMFS (we note that #52, widow quota share reallocation, is on both the NMFS and GAP list of priorities). We recommend the following priorities as items that, once implemented, can contribute immediate

positive economic benefit to participants. We have packaged some in groups that would a) bring the most economic value to the fleet overall; b) should be relatively simple to accomplish if done at the same time; and c) make the most sense. In order of priority, they are:

1. #52, Widow rockfish reallocation (*Note: this is already listed as a "Priority 2" item by NMFS on page 4, but the GAP recommends this be a high priority.)*
2. Comprehensive changes:
    - #47, trawl RCA boundary adjustments (Remove certain management area restrictions)
    - #46 and #48, Comprehensive gear modifications (which includes a year-round midwater non-whiting opportunity)
3. Regulatory overhaul related to trawl rationalization program to adjust and/or eliminate regulatory artifacts no longer applicable to a rationalized fishery:
    - #44, elimination of the prohibition of at-sea processing south of 42 degrees
    - #43, declaration issues
4. #60, Mid-water sport fishery (OR and CA)
5. #66, 60-mile bank boundary lines

Discussion

The GAP worked from Agenda Item J.1.a, Attachment 1, Groundfish Management Measures for Council Consideration and Agenda Item J.1.b, NMFS Report 2, NMFS Groundfish Priorities. Given the limited number of items that could be moved forward, we discussed including one item from each sector (non-whiting trawl, whiting, fixed gear, open access and sport) to ensure fairness to each sector.

However, some GAP members argued that moving items forward that would benefit the trawl individual quota (TIQ) program would also benefit other commercial sectors. Making the TIQ program actually work would maintain a volume of fish coming across the dock on a year-round basis that will support processing infrastructure and other secondary and tertiary supply businesses. This is essentially the same infrastructure that receives deliveries from fixed gear and open access vessels. At the same time, maintaining strong processing and related marine business infrastructure is key to keeping coastal communities thriving.

A number of GAP and audience members pointed out that from a conservation standpoint, the TIQ program is working great, but from an economic standpoint, the program is a failure. There is still much work to do to make it sustainable from an economic perspective. Promises of flexibility and the elimination of archaic regulations, meant to govern a non-rationalized fishery, have not happened and are stuck in a regulatory purgatory. The TIQ fishery is not realizing the full benefits of rationalization. For example, command and control regulations still constrain the ability of the fishery to fish where it wants, how it wants, when it wants. Expenses have increased dramatically but incomes have not. Fishermen reported actually losing money under TIQ while also losing access to fishing grounds – the polar opposite of what was promised.

One member mentioned #74, combining longline and fishpot gear into a single fixed gear limited entry gear endorsement. There was no discussion or consensus about moving forward with this issue.

Trawl Rationalization Program issues: traditional (non-whiting) groundfish

Cumulative attainment of non-whiting groundfish species has been consistently below one-third of what is available. If this trend continues, it threatens the viability of the traditional groundfish fleet, which was anticipated to receive significant benefits from the rationalization program. While the whiting fishery has operated fairly well under the rationalized program, there are additional fixes that need to occur. The trawl fleet as a whole (whiting and non-whiting) face all the burden and costs of being fully rationalized without realizing all the benefits. The fleet still cannot fish where they want, when they want, and how they want, and this has resulted in the poor economic performance of the non-whiting sector. The GAP believes that addressing three main issues in the non-whiting sector as quickly as possible will result in higher revenues to the fleet. These include:

1. #52, Widow rockfish reallocation; and
2. Comprehensive changes:
    a. #47, trawl Rockfish Conservation Area (RCA) boundary adjustments (remove certain management area restrictions); and
    b. #46 and #48, comprehensive gear modifications (which includes a year-round midwater non-whiting opportunity).

Widow rockfish quota share reallocation (#52)

Widow rockfish quota share was allocated to TIQ participants to provide for incidental catch of widow to allow them to access their allocation of target species. This allocation had no relation to the individual participant's catch history of widow rockfish. Many people who formerly fished for widow rockfish received very little in the way of allocation because of the way that the allocations of widow rockfish were made.

Now that widow rockfish is rebuilt, the GAP believes widow rockfish quota share should be reallocated as a target species[1].

The GAP believes this re-allocation would maximize economic revenue from the fishery. Specifically, it should be reallocated to allow for a target fishery for those who targeted it previously. The approach that was used for all other species (catch history and equal sharing) of widow would benefit those who historically paid the conservation price of ceasing to fish. Specifically, it should be reallocated to allow for a target fishery for those

[1] From the Pacific Coast Groundfish Fishery Management Plan, Appendix E, page E-11, at http://www.pcouncil.org/wp-content/uploads/GF_FMP_ApdxE_TRat.pdf:
"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. When a stock becomes overfished, QS may be reallocated to maintain target fisheries to the degree possible. That change may be based on a person's holding of QS for target species associated with the rebuilt species or other approaches deemed appropriate by the Council."

who targeted it previously, while ensuring there are adequate amounts for bycatch needs in the shoreside whiting sector.

Comprehensive RCA boundary adjustments (#47)

When the RCAs were initially implemented there were no other tools available to the Council that would accomplish the objective of minimizing catch of certain rockfish species. Since that time, the trawl rationalization program was developed and implemented, and particular characteristics of the catch share program provide much better tools to address catch of species of concern. The 100 percent monitoring and the personal accountability afforded through the program have reduced catch of species of concern significantly.

Significant work has already been completed on this issue and a broad group of industry and other stakeholder representatives have put together a proposal for RCA boundary changes. These suggested changes will protect discreet areas without closing broad swaths of the ocean to fishing. Access to some of these areas is an immediate way for the fleet to extract more value out of the fishery while still maintaining accountability. The GAP does not believe the RCA issue should be delayed due to the ongoing essential fish habitat (EFH) process. The GAP believes it is important that RCA and EFH issues move forward on separate tracks.

Gear changes (#46 & #48)

Many pre-TIQ regulations were based on the need to minimize rockfish catch under the trip limit management regime. With 100 percent monitoring and individual accountability, there are now more direct means to control rockfish catch. At the same time, many of the pre-TIQ regulations limit efficiency and some even hamper the ability to fish more cleanly (e.g. two-seam net requirement as part of selective flatfish trawl definition shoreward of the RCA).

The Trawl Rationalization Regulatory Evaluation Committee (TRREC) spent considerable time and effort developing recommendations for gear changes that would be more appropriate for a rationalized fishery (see: Agenda Item E.7.b, Supplemental TRREC Report, Nov. 2011). Existing regulations are preventing gear development and experimentation. Prohibitions on use of particular gear in certain areas or times are preventing higher revenues from being achieved. The NMFS catch report shows the midwater target fisheries for yellowtail and widow rockfish are increasing but the fleet is prevented from prosecuting this fishery outside of the whiting season. Allowing a year-round midwater opportunity for yellowtail and widow rockfish will provide immediate economic benefits to the fleet. The attainment rate for yellowtail rockfish was 32 percent in 2012 – leaving more than 4.5 million pounds of yellowtail rockfish in the water. At an average price of $0.55 a pound, this equates to more than $2.5 million in forgone revenue. Clearly there are opportunities to increase the harvest for this stock within the ACL and this will provide immediate benefit to the fleet.

Trawl Rationalization Program issues: whiting fisheries regulatory overhaul

The groundfish regulations are full of antiquated restrictions that are no longer applicable under a rationalized program where harvesters are always monitored and are 100 percent accountable for what they catch. Considerable work has already gone into identifying the regulations that need to be altered or in many cases, eliminated. The whiting industry has identified two regulatory issues that need to be addressed and while they are not a high priority for the non-whiting trawl fleet, they are important to the whiting industry. They are:

Elimination of the prohibition on at-sea processing south of 42 degrees (#44)

This regulatory change will allow the at-sea whiting fleet to fish further south beyond the range of some rockfish species such as Pacific Ocean perch and rougheye. Prosecution of the fully rationalized whiting fishery south of the 42-degree line will not pre-empt or negatively impact California coastal communities or fishery participants. A few times each year, the aggregation of whiting is limited to the southern region and is sometimes slow to head north. This causes scratchy fishing if the fleet is forced to spread out by heading further north. Scratchy fishing increases bycatch of rockfish. Congestion near the 42 degree line can force the fleet into areas of higher bycatch of widow rockfish and canary rockfish. This restriction no longer serves a purpose. Elimination of the prohibition to prosecute the whiting fishery further south will immediately allow the fleet to better avoid rockfish bycatch in a cost effective manner.

Declaration issues (#43)

Currently, when whiting catcher vessels finish harvest of mothership whiting, they are required to travel back to port to declare they are switching to the shoreside whiting fishery. By allowing vessels to make that declaration at sea, they can cost effectively harvest fish on their trip back to port. Often fishing is excellent and bycatch low in the area where they have finished delivering to a mothership processor. Current communication and monitoring technology allow this measure to make sense from an enforcement perspective. Amending this regulation will immediately save the fleet time and money.

Recreational issues

Mid-water sport fishery in OR and CA (#60)

This has been a priority for GAP members for several years now, and the Council has supported it in the past. Much of the background work has been done on this and it should be relatively simple to move forward.

Trawl, non-trawl, recreational issues

60-mile bank boundary lines (#66)

An area known as the 60-mile bank is a cowcod-rich area along the U.S./Mexico border. This area is not marked with RCA lines, leaving it unenforceable by California Department of Fish and Wildlife (CDFW). This creates a huge area deeper than 60 fathoms that is fished without enforcement. The 60-mile bank needs to be clearly defined so both vessels and enforcement are on the same page and cowcod limits are not exceeded. When the Cowcod Conservation Areas were created, the 60-mile bank was overlooked. It is presently being fished for rockfish by commercial vessels due to a loophole allowing their presence. The possibility and reality of substantial bycatch of cowcod in this fishery could lead to closures of both recreational and commercial hook-and-line fisheries south of Point Conception. We urge the Council delineate the 60-fathom curve on the bank, allowing enforcement of the 60- to 150-fathom RCA closure.

Removals from and adjustments to NMFS list of priorities

The GAP gives a low priority to the open access license limitation issue (Amendment 22), #19 (NMFS Priority 2, page 4). The analysis is stale and the fishery largely regulates itself. It's also not clear why Amendment 22 needs to be addressed now; it's been languishing for several years.

The GAP further recommends the Council remove #39, Increase VMS (vessel monitoring system) ping rates, from the NMFS Priority 1 list. The other three items in Section C on the NMFS Priority 1 list also should be removed. They are: #45, revise regulations on at-sea and shoreside flow scales; #56, cost recovery for the permit stacking program; and #64, management model review and refinement.

Regarding the ping rates, the GAP has said several times in the past, most succinctly in our March 2014 GAP statement, increasing the ping rate is unnecessary and retaliatory.

Mr. Dayna Mathews, with NMFS Office of Law Enforcement, reported to the GAP that VMS compliance has improved and the system overall seems to be working just fine. So why the sudden urgency to increase ping rates and add huge economic burdens to the entire groundfish fleet?

The communications cost list in Agenda Item J.1.b, NMFS OLE Report 2, does not make clear the increase for fishermen who use Boatracs. For a fisherman now using Boatracs with one ping an hour, the cost is $34.95 a month. Four pings an hour would equate to $186.15 a month – an increase of more than fivefold. This is an extreme example, but at minimum, the annual cost increases to the fleet overall would be in the hundreds of thousands of dollars. Furthermore, this would disproportionately affect smaller vessels.

NMFS OLE representatives maintain the Decision in the F/V Risa Lynn case, Docket No. SW1002974, was heavily based on the inadequacy of the ping rate and that the Decision mandates new Federal law. However, nowhere in that Decision does it say NMFS should use a 15-minute ping rate.

The NMFS report No. 2 lists this as a Priority 1 issue because it is responding to litigation, but again, the decision does not mandate NMFS change the rate.

The GAP is primarily concerned that 99 percent of the fishermen who comply with laws and regulations will be economically burdened with a system meant to catch the 1 percent who may be offenders – and that is simply not fair. It's especially unfair when we have ample time to explore other technologies that could be implemented for far less cost.

The GAP also suggests that as a compromise, NMFS/NOAA General Counsel consider mandating increased ping rates for only those fishermen who agree to a settlement. For example, NMFS issues a $20,000 fine to an offender but suspends $10,000 of it on the condition that there are no new violations, the fisherman pays the $10,000 and also agrees to an increased ping rate for two years.

This would be a much less controversial way to work with the industry, rather than treating all fishermen as offenders.

PFMC
09/15/14

GROUNDFISH MANAGEMENT TEAM REPORT ON
OMNIBUS REGULATION CHANGE PRIORITIES

The Groundfish Management Team (GMT) reviewed the documents contained in the briefing book under this agenda item and received a briefing from Ms. Jamie Goen from the National Marine Fisheries Service (NMFS) West Coast Region (WCR) and Mr. Jim Seger of Council staff. Under this agenda item, the Council is considering clarifications to upcoming rulemakings. On that subject, the GMT offers additional information regarding the scientific sorting requirements the Council recommended as part of the 2015-2016 harvest specifications and management measures. This report also contains additional information intended to help the Council prioritize management measures. Following the Council's completion of this agenda item, the GMT expects to provide further input on prioritization and possible timelines under Agenda Item I.7. Future Workload Planning.

The GMT appreciates the comprehensive prioritization criteria developed by NMFS WCR staff. The GMT took another approach to considering the management measures that may provide the Council with an additional tool to aid in prioritization. The GMT focused its detailed discussions on the items under Section C in Attachment 1 (Agenda Item J.1.a, Attachment 1, September 2014). We felt that was the best place to focus our time and energy, given that the items in Sections A and B are already in progress or have their own timeline or process already identified.

1. New Information/Questions/Clarifications

1.1 Scientific Sorting Requirement Interpretation

The GMT understands there is some confusion on the interpretation of the Council's action on scientific sorting requirements for species managed in the Slope Rockfish Complex. It would be helpful to get clarification from the Council on whether or not the scientific sorting requirement is intended to sort rougheye/blackspotted rockfish together with shortraker rockfish (one unit) or to sort rougheye/blackspotted separately from shortraker rockfish (two units).

We reviewed the Washington Department of Fish and Wildlife (WDFW) report and appreciate the additional thought put into considering the implications to sampling programs resulting from the new sorting requirements. The GMT also reviewed Council documents written in 2013 regarding potential impacts of increasing the number of market categories to data quality. The GMT is uncertain how separating rougheye/blackspotted rockfish from shortraker rockfish might impact data quality. The utility of separating rougheye rockfish from shortraker rockfish depends, in part, on the ability to discern the two species from one another. The GMT conducted a survey of state port biologists and samplers and some reported that smaller-sized rougheye rockfish and shortraker rockfish were often mistaken for the other (Agenda Item G.8.b, GMT Report3, September, 2013). Council documents that may be relevant to this discussion (e.g., impacts of separating or not separating species when reorganizing stock complexes or requiring a new scientific sorting requirement) can be found in: Agenda Item D.3.b, Supplemental GMT Report, April, 2013; Agenda Item F.8.b, Supplemental GAP Report, June, 2013; Agenda Item F.8.b, ODFW Report, June 2013: Agenda Item G.8.b, GMT Report3, September, 2013; and Agenda Item G.8.b, Supplemental GMT Report 5, September 2013.

2. Scoring Matrix for Prioritization

The GMT recognizes that the process of prioritization is complicated. We attempted to develop an organized way for the GMT to discuss the multiple issues around each management measure and provide meaningful input to the Council. The GMT's approach to looking at prioritization of the management measures in Attachment 1 was to develop a process similar to the Productivity and Susceptibility Analysis (Cope et al, 2011). This would compare each management measure with respect to relative positive policy impacts and overall complexity of implementation. By examining the relationship between these two categories, the Council may be able to identify items that have high policy impacts with fewer implementation considerations, rather than simply considering a ranking of each management measure from high to low.

The GMT views this exercise as a potential framework that could be used to provide initial insight that might help with prioritization, but that could also be further refined and used to evaluate and prioritize management measures in the future.

2.1 Summary of Attributes and Scoring

To aid the Council in prioritization of management measures, the GMT attempted to provide some insight into the potential positive impacts that some of the management measures may have and the relationship to some estimate of relative workload. The GMT used two categories of attributes: the first category of attributes ("Relative Positive Policy Impacts") generally stem from the National Standard Guidelines and the Goals and Objectives of the Groundfish Fishery Management Plan (FMP); and the second category of attributes ("Overall Complexity of Implementation") attempted to characterize the relative level of complexity associated with implementation of the management measure.

2.1.1 Relative Positive Policy Impacts of Management Measure

This category of attributes was developed to focus our discussion around the potential for the management measure to improve conservation, provide fishing opportunities and increased flexibility, increased attainment of annual catch limits (ACLs), and foster rebuilding. These were adapted from some of the considerations listed in Agenda Item J.1.a, Attachment 2. We chose the following metrics because we thought they could be scored with our current understanding of impacts of the management measures and in the time available at this meeting.

- Potential to reduce catch rate of overfished species (catch rate relative to target species)
- Reduction in risk to Marine Mammal Protection Act and/or Endangered Species Act species
- Increase in attainment of non-overfished species ACL
- Geographic scale of impact
- Potential for cost reduction or added value

2.1.2 Overall Complexity of Implementation of Management Measure

The GMT also wanted to consider what was involved with moving forward with each management measure, as we recognize that there are limits on the amount of work that can be accomplished when funneling multiple actions through the various processes required between

inception and implementation. This category of attributes is intended to capture the relative level of time and work that might be required if the measure was moved forward by the Council for consideration.

- Minimum time requirements (in a calendar sense, two-meeting vs. three-meeting/FMP amendment)
- Potential costs of implementation and resources/staff needed
- Current sense of the level of controversy, and the potential for controversy
- Relative level of complexity of the management measure

2.1.3 Unranked Items

The following management measures from Section C of Attachment 1 were not ranked for the reasons stated below:

- Item #55: Develop Criteria for Distributing Adaptive Management Program because of the difficulty in predicting what the program elements might entail.
- Item #64: Management Model Review and Refinement since this is an ongoing refinement of how we account for impacts rather than a management measure.
- Item #68: Evaluate Nearshore Management Approaches, Including Deferral because it could also be broad enough that it is difficult to predict program elements.

2.2 Methods and Caveats

The results of this ranking method should be considered within the context of the caveats described here. The method for ranking presented here is a first look, due to limitations on time and scope for this analysis. Our current ranking only looks at positive impacts of the various attributes but did not look at negative impacts. For example, management measures that might increase flexibility or increase attainment of the non-overfished species ACL have scores reflecting their relative potential positive impacts but were not scored negatively on the potential for things like increased catch rates of overfished species, a potential change in ESA-listed species impacts, etc. While our ranking did not include potential negative impacts, we expect that the full scope of impacts, both positive and negative, would be explicitly addressed in the more holistic analysis of the management measure if it were to move forward.

The matrix approach hinges on rankings that were made by GMT consensus. The GMT attempted to rank each attribute in a consistent manner across the wide range of management measures. We recognize that there is subjectivity associated with the scoring; however, we attempted to be systematic in our assessment of each management measure by comparing it with attributes and standardized the scaling of those attributes.

The GMT notes that a lower ranking on the "Relative Positive Policy Impacts" axis in no way implies that a management measure is not worthwhile. All of the management measures under consideration are on this omnibus list because they have value as a management tool. The GMT also notes that the relative level of potential positive impacts, and the relative associated potential workload that were ranked in this analysis might shift up or down, left or right if other attributes or criteria are added.

2.3 Graphics and Discussion

This exercise was not intended to result in a prioritized list of all of the management measures but was instead focused more on providing a tool that the Council could use to evaluate the potential policy impacts and overall complexity of implementation. For example, if the Council is interested in considering the Mid Water Sport Fishery (Item #60), Figure 1 shows there might be fewer implementation complexities and mid-level policy impacts.

The attributes (criteria) we chose influence where a management measure falls out in our results (Figure 1). For example, the Groundfish Conservation Areas for Rougheye Rockfish (Item #37) were intended to lower the catch of rougheye rockfish and does not necessarily reduce encounters with overfished species or increase the ability to attain the ACL of target species. The low policy impact seen for #37 is a reflection of these criteria.

The GMT acknowledges that the attributes we chose may not be a complete list of criteria that might interest the Council. For example, we did not include a specific attribute that ranked how much economic impact a management measure might have on a fleet, sector, or port. We chose not to do this because we felt that considering ACL attainment of targeted species could serve as a proxy for changes in revenue (i.e., higher ACL attainment would likely result in higher revenue).

Finally, the GMT feels the approach could be expanded in the future if the Council views this as a helpful tool. That is, we could include other attributes, both positive and negative (e.g., positive net revenue to a fleet/sector/port or increased costs to fleet/sector/port), exclude some of the existing attributes, or weight the existing attributes differently (i.e., other than giving them equal weight as in this analysis). The approach might also be adapted to evaluate potential negative impacts.

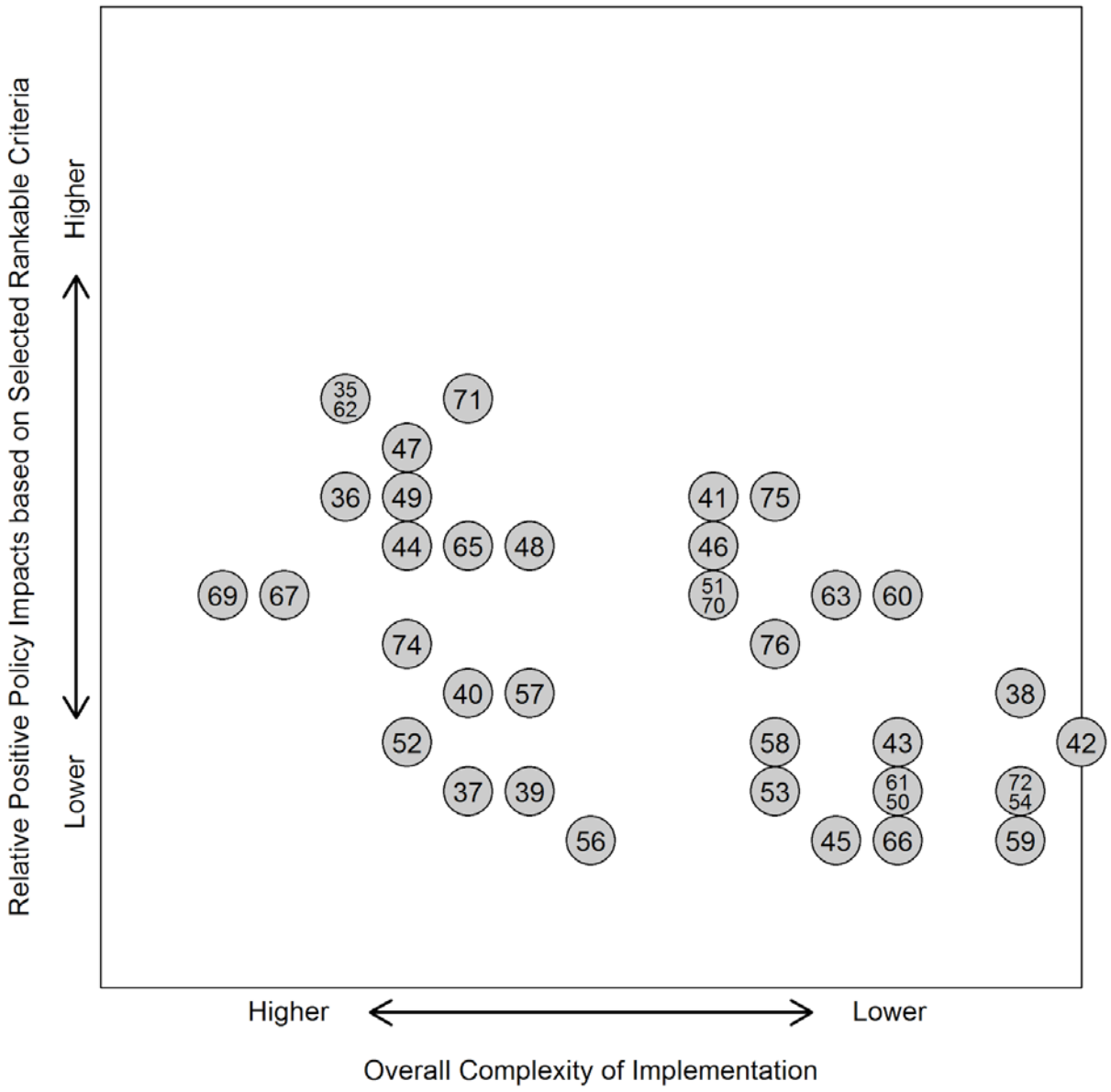


Figure 1. Graphical depiction of average scores in the two dimensions of Relative Positive Policy Impacts of Management Measure and Overall Complexity of Implementation. The numbers in each point correspond to the management measure Item Number in Attachment 1. In both dimensions, the value depicted is based on equally weighted average of selected rankable criteria for a subset of potential objectives. Items closer to the upper-right corner of the figure are potentially less complex and potentially have a higher relative positive policy impact. Items closer to the lower-left corner would generally be more complex and have relatively less positive policy impact within the specific criteria that were considered in this ranking. It is important for the Council to consider that on average, items with greater potential impact are often more complex to implement.

3. Possible Collections of Management Measures

In addition to the above exercise, the GMT attempted to identify some possible collections of similar management measures contained within the list. The examples below are again not comprehensive, each possible collection was discussed independent of others, and some items could potentially fit in more than one collection.

Examples of possible collections:

- Trawl Trailing Actions--33, 34, 42-55, 65
- Fixed Gear (Sablefish) fisheries--56, 58, 69, 72, 74, 76
- Recreational--59, 60
- Enforcement--39, 45, 54, 70, 76
- Administrative--42, 54, 72
- Gear issues--43, 46, 48, 57
- Groundfish Conservation Area/area management issues--37, 47, 66, 75,
- Could be removed--73 (appears to be a duplicate of 69)

4. References

Cope, J.M., DeVore, J., Dick, E. J., Ames, K., Budrick, J., Erickson, D.L., Grebel, J., Hanshew, G., Jones, R., Mattes, L., Niles, C., and Williams, S. 2011. An Approach to Defining Stock Complexes for U.S. West Coast Groundfishes Using Vulnerabilities and Ecological Distributions. *North American Journal of Fisheries Management*, 31(4): 589-604.

PFMC
09/15/14

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910
THE DIRECTOR

AUG 2 1 2014

The Honorable Peter DeFazio
U.S. House of Representatives
Washington, DC 20515

Dear Representative DeFazio:

Thank you for your cosigned letter regarding the West Coast Groundfish Trawl Catch Share Program. As you indicated, the program has provided benefits to the groundfish industry and the fisheries resources. We also acknowledge the significant efforts of the Pacific Fishery Management Council and the industry in making this program successful.

In your letter you ask NOAA's National Marine Fisheries Service (NMFS) to expedite the implementation of trailing amendments within the West Coast Groundfish Fishery Management Plan (FMP). The Council currently identifies six trawl trailing amendments that have yet to be implemented: 1) rules for chafing gear, 2) observer/catch monitoring rule, 3) quota share/quota pounds–safe harbors for risk pools, 4) allowance for fixed gear and trawl joint registration, 5) at-sea processing of fixed gear sablefish, and 6) moving the opening date of the whiting season. Progress has been made on all of these rules, and we expect that all but one (the safe harbor rule) will be complete prior to the May 15, 2015, whiting season start date. The Council decided in 2013 that implementation of the safe harbor for risk pools trailing action could wait until the five-year catch share program review is conducted (anticipated to start in 2016). In addition, NMFS is working on other rulemaking actions that are important to the industry, including harvest regulations for the 2015–2016 groundfish seasons. NMFS continues to devote significant time and resources to these major efforts in support of the groundfish fishery.

Although neither anticipated nor required in Amendment 20 to the Groundfish FMP, NMFS has been devoting regional resources to provide for the reimbursement of daily observer costs to the trawl fleet since the inception of the Catch Share Program in 2011. NMFS notified the Council in 2010 that this reimbursement would proportionally phase out over a three-year period, with the industry expected to pay observer providers for the at sea and shoreside observing costs beginning in 2014. NMFS was able to extend the reimbursement, at a reduced amount, in 2014. At the end of 2014, NMFS will evaluate whether any reimbursement funds remain and, if so, these could be available to industry next year. However, without additional appropriations, it is likely that any potential reimbursement funds in 2015 will provide a much smaller subsidy, likely less than 25 percent of the daily cost of an observer. NMFS will continue to pay for the training, equipping, debriefing, and data analysis associated with the observer program.

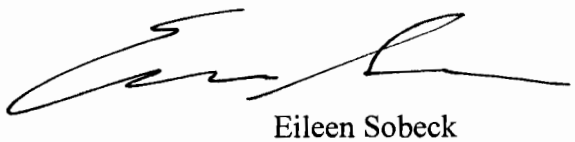
The Council approved the NMFS Cost Recovery Program in September 2011, and NMFS published a final rule implementing it in December 2013. NMFS is committed to running a transparent program and, as part of our commitment, this year we published our first annual

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

report on the program in March (available online at http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/trawl_program/analytical%20docs/cost_recovery_annual_report_01.pdf). This annual report included information on how the fee percentage was calculated, program costs, ex-vessel value by sector, and total cost recovery fees collected by NMFS. The report was provided to the Council at its March 2014 meeting. Considering our commitment to transparency, we are open to comments and suggestions for improving the West Coast Groundfish Trawl cost recovery report in future years.

I appreciate your interest in the West Coast Groundfish Trawl Catch Share Program. If you have any questions, please contact Amanda Hallberg Greenwell, Director of NOAA's Office of Legislative and Intergovernmental Affairs, at (202) 482-4981.

Sincerely,



Eileen Sobeck
Assistant Administrator
for Fisheries

Agenda Item J.1.c
WDFW Report
September 2014

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REPORT ON THE COUNCIL'S RECOMMENDED 2015-2016 SORTING REQUIREMENT FOR SLOPE ROCKFISH

In June, the Council recommended that landings of Rougheye Rockfish/Blackspotted Rockfish, and Shortraker Rockfish be required to be reported individually on fish tickets beginning January 1, 2015 instead of as part of the Slope Rockfish market category. The Slope Rockfish market category is what the Department has used to record landings of the Council's Slope Rockfish North stock complex. The new sorting designation will alter that relationship by leaving Rougheye/Blackspotted and Shortraker in the stock complex but taking them out of the market category. As is seen below in the figures, the market category has included landings of non-slope rockfish species because of compliance issues (i.e. Shelf Rockfish and non-stock complex stocks are sometimes landed and reported as Slope Rockfish).

We have submitted this report to notify the Council, its advisors, and the public that we are considering requiring the sorting of additional Slope Rockfish species by state rule. We expect to have a Preproposal Statement of Inquiry publish in Issue 14-17 of the Washington State Register to give us the option of having a rule in effect by January 1, 2015.[1] This Preproposal Statement announces the possibility of a rule making and requests public comment on the general topic of a rule change. At this time we are unsure if we will pursue a rule making beyond this first step. As explained below, we filed the Preproposal to keep the option open. We encourage comment and involvement from the Council and its advisors and give more detail on future possible steps in the process and opportunity for comment below.

The motivation for this consideration involves the potential impacts of the Council's recommended sorting requirement on the Department's port sampling program and the estimates of landings that program supports. As discussed below, we have some preliminary concerns over how the removal of the three species from the state's Slope Rockfish market category might affect the quality of catch estimates for the other species landed into the market category. A rule making would allow us options to address any issues of concern that we identify.

The mix of species landed in the Slope Rockfish will vary between areas, ports, and states. We are not suggesting a coastwide evaluation and instead are focused only on the circumstances specific to Washington's sampling program.

[1] The Washington State Register can be viewed at this link:
http://apps.leg.wa.gov/documents/laws/wsr/wsrbyissue.htm

Any additional state regulation would apply only to non-tribal vessels and buyers landing or purchasing groundfish in the state's ports. The treaty tribes regulate fish ticket reporting for tribal vessels and buyers. At the same time, landings of Slope Rockfish by treaty tribal vessels are sent to PacFIN and the species-specific estimates of landings are based on the same sampling data and estimation procedures as the non-tribal landings. The Department will work closely with our tribal co-managers in determining how to address the sorting requirement. It would be possible to have different sampling protocols and estimation procedures for tribal and non-tribal landings if circumstances between the tribal and non-tribal fisheries called for such differences.

Reasons for evaluating additional sorting requirements

A sorting designation for Rougheye/Blackspotted was considered during both the 2013-14 and 2015-16 management measures. The intended purpose of a sorting designation is to improve estimates of landings of the species by eliminating statistical sampling error by moving to a total count/census of landings for that species. Yet removing a species has the potential to change the parameters involved with sampling the species that remain in the market category. With the many issues being considered over the past two biennial cycles, we did not have time to examine how the precision of our landings estimates for the other slope rockfish species might be affected by additional sorting requirements.

Species composition port sampling is one of our key tools for tracking landings into the state. The Department uses random sampling of the Slope Rockfish market category (i.e., "species composition sampling") to estimate the landings of each species landed within the category. Landing different species together in a group can reduce the challenge of identifying and sorting very similar looking species and can improve the accuracy of landings estimates by reducing misidentification and misreporting. Samples taken by the Department's port biologists are combined to create quarterly proportions for each species observed, by port and gear type, and applied to all landings into the market category to produce species-specific estimates of landings. Statistical sampling by expert port biologists produces accurate identification, yet estimates produced from sampling involved uncertainty and variability.

While such an evaluation of a sorting designation would be prudent for any species being removed, we have particular concern with Rougheye and Shortraker because they have made up a major portion of landings into the Slope Rockfish market category in Washington. Removing them from the category therefore has the potential to impact our sampling and catch estimates for the species left in the category. Some tables and figures from our initial exploration of our Slope Rockfish sampling data basic are displayed below. We plan to evaluate that potential impact in detail over the next two months.

The impact could be positive if the new sorting requirements result in fewer landings, in terms of the number of species and weight, needing to be sampled. If so and we are able to maintain the general level of sampling effort, then the percentage of the market category that we are able to sample might increase and improve the precision of catch estimates. On the other hand, our port samplers are unable to intercept every landing. If landings into the Slope Rockfish market category become more sporadic, then they may be observed less frequently and result in less precise estimates of landings.

In addition, there is a point at which the appropriateness of a sampling approach becomes questionable. The Council's new sorting requirement might reduce the number of species landed into the market category enough so to make individual reporting more cost effective than a sampling approach. Species composition sampling of the Slope Rockfish market category is only one of the sampling tasks charged to our port samplers. Eliminating sampling of that category could free up time for those and other tasks.

If we do decide to proceed with the rule making, we expect to evaluate the following alternatives:

A. No additional requirements to the federal regulations (i.e. "No Action").
B. Add Redbanded Rockfish to the list of species to be reported individually.
C. Require all species currently landed as Slope Rockfish to be sorted individually.

The logic behind considering Alternative B is that Redbanded Rockfish is the most distinctive of the Slope Rockfish species and should be easy for fishery participants to identify. It is also the second or third most frequent of the species landed into the market category for fixed gear and bottom trawl, respectively. Removing Redbanded from the market category therefore might have little adverse impact on vessels and buyers (because of the relative ease of identifying it) while improving the sampling environment for the remaining species in the market category. Removing Redbanded could also, as discussed above, making landings more variable and harder to sample and lower the precision of landings estimates.

In addition, the mix and number of species landed into the Slope Rockfish market category varies by gear type. If we move forward with a state rule making process, we may evaluate the option of having different sorting rules for the different gear types.

The Timing and Steps in the Potential Rule making Process and Areas for Comment

The Preproposal Statement of Inquiry is, again, just the first step in the state's rule making process and does not commit us to moving forward. If we do choose to move to the next step, we could issue a formal proposed rule as early as October 22. If we do, we would solicit written

comments and also hold a public hearing during the week of November 25. For any rule to be effective by January 1, we would need to issue a final rule no later than December 1.

If we do issue a proposed rule we will include analysis of our sampling data to aid public comment. The comment period would also overlap with the November Council meeting and we would distribute materials for the Briefing Book. We would very much benefit from feedback on the feasibility and logistical burden for vessel and buying operations to sort more species than Rougheye/Blackspotted and Shortraker. Such comments could be submitted during this Preproposal stage or after we issued a proposed rule.

Preliminary Evaluation of the Data

The following tables and figures are based on the actual species composition samples taken by the Department and two scenarios recalculated from that data.

- **Scenario 1**: removes Rougheye, Blackspotted, and Shortraker from the data as if they had been reported outside of the market category.
- **Scenario 2** does the same but also removes Redbanded.

The two scenarios provide an initial look at what might be expected with new sorting requirements. However, assuming the scenarios represent what we would expect to see in the future hinges on an assumption that fishing behavior and catch would not have been affected by different sorting requirements. New sorting designations might alter the mix of species seen in the samples, for example, by making it easier to properly sort the remaining species (i.e. if Rougheye and Shortraker are sorted out of the Slope Rockfish market category then vessels and buyers that have inappropriately included Darkblotched Rockfish and other non-slope rockfish stocks in the market category may do so less often).

Table 1. Monthly average of total pounds sampled and number of landings sampled for the Slope Rockfish market category. The scenarios change the pounds we would have seen landed for both bottom trawl and fixed gear. In contrast, the number of landings with Slope Rockfish would change substantially for fixed gear while remaining largely the same for bottom trawl.

A. Fixed Gear Hook and Line – Pounds Sampled

	2009	**2010**	**2011**	**2012**	**2013**
Actual Samples	807.7	689.5	692.9	684.7	755.4
Scenario 1	111.9	144.4	187.4	153.6	201.8
% diff. from Actual	86.1%	79.1%	73.0%	77.6%	73.3%
Scenario 2	11.2	28.1	17.2	9.5	10.9
% diff. from Actual	98.6%	95.9%	97.5%	98.6%	98.6%

B. Fixed Gear Hook and Line – Number of Landings Sampled

	2009	**2010**	**2011**	**2012**	**2013**
Actual Samples	7.0	6.2	5.1	4.3	5.2
Scenario 1	5.3	4.4	4.3	3.9	4.3
% diff. from Actual	23.9%	28.4%	14.8%	9.5%	16.2%
Scenario 2	2.7	1.9	2.4	2.1	1.2
% diff. from Actual	61.9%	68.9%	52.4%	52.0%	77.4%

C. Bottom Trawl – Pounds Sampled

	2009	**2010**	**2011**	**2012**	**2013**
Actual Samples	396.9	205.8	321.0	407.5	280.9
Scenario 1	68.3	25.5	68.1	146.5	113.9
% diff. from Actual	82.8%	87.6%	78.8%	64.0%	59.5%
Scenario 2	44.1	12.9	48.2	94.6	86.1
% diff. from Actual	88.9%	93.7%	85.0%	76.8%	69.3%

D. Bottom Trawl – Number of Landings Sampled

	2009	**2010**	**2011**	**2012**	**2013**
Actual Samples	2.2	1.0	1.7	1.7	1.3
Scenario 1	2.2	1.0	1.6	1.6	1.3
% diff. from Actual	0.0%	0.0%	5.4%	5.4%	0.0%
Scenario 2	2.2	1.0	1.6	1.6	1.3
% diff. from Actual	0.0%	0.0%	5.4%	5.4%	0.0%

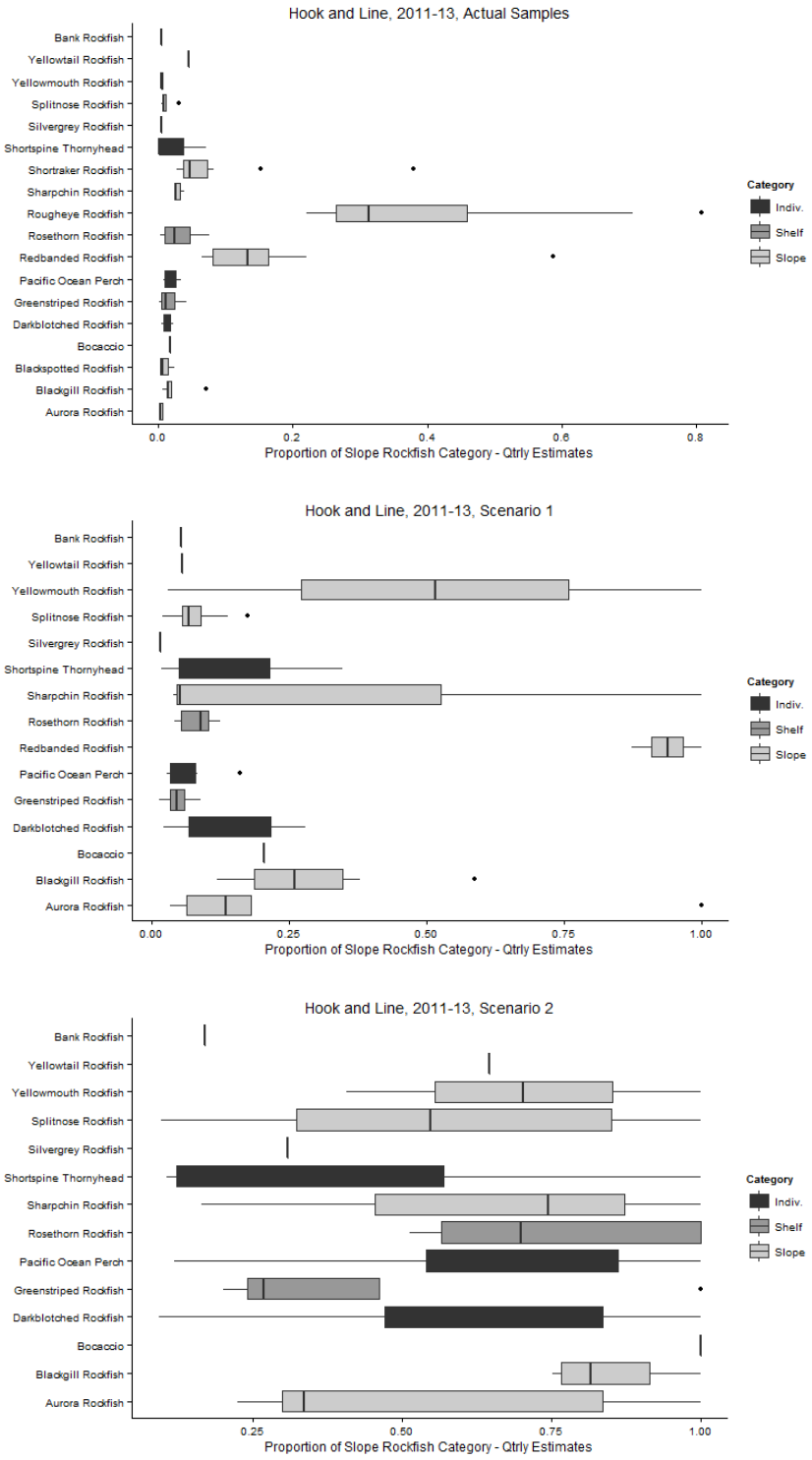


Figure 1. Species composition proportions—all ports combined—for the actual samples taken over 2011-2013 and the two scenarios for fixed gear hook and line. The shading of the boxplots corresponds to the Council's harvest specifications (i.e., Slope = Slope Rockfish stock complex member, Shelf = Shelf Rockfish stock complex member, Indiv. = non-stock complex stock).

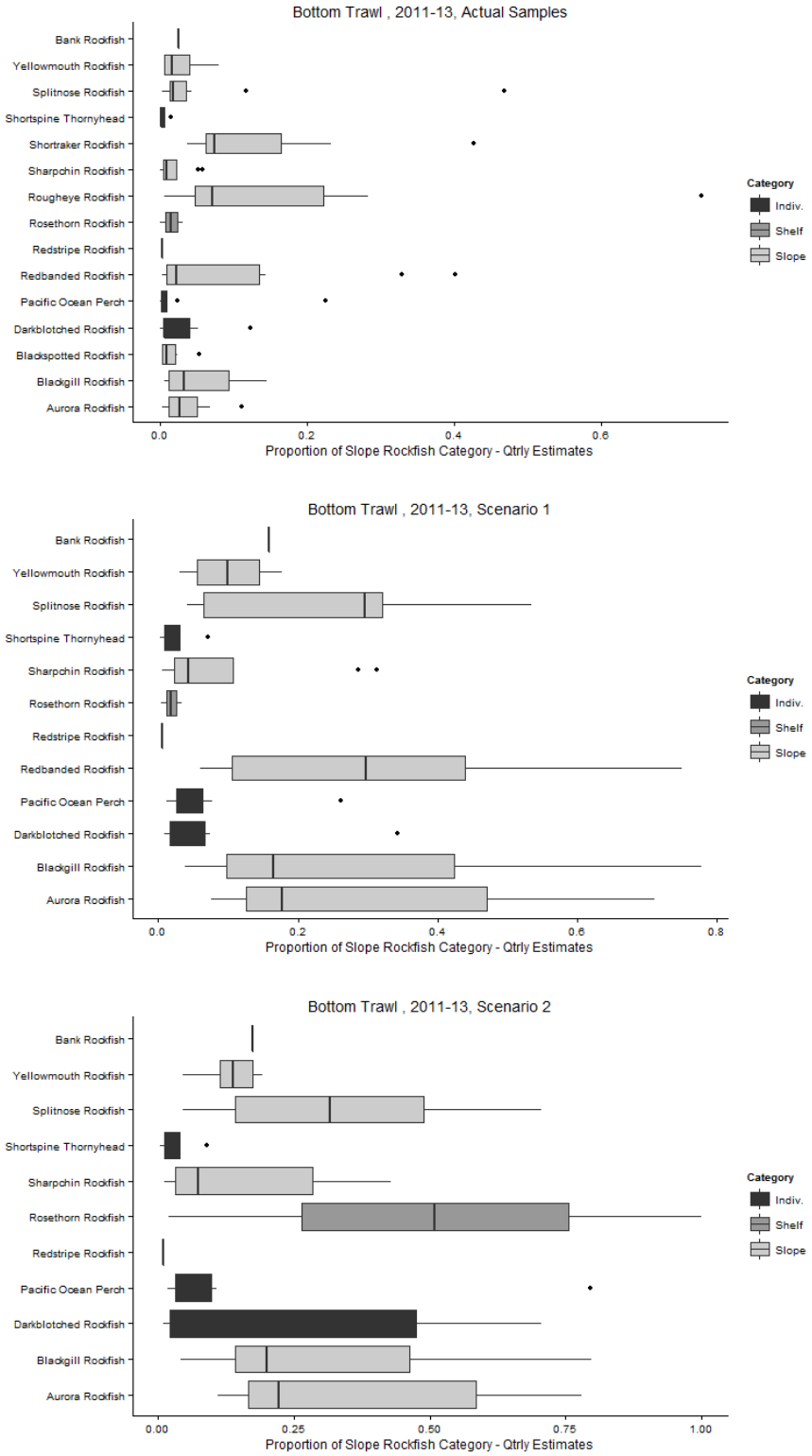


Figure 2. Species composition proportions—all ports combined—for the actual samples taken over 2011-2013 and the two scenarios for bottom trawl gear. The shading of the boxplots corresponds to the Council's harvest specifications (i.e., Slope = Slope Rockfish stock complex member, Shelf = Shelf Rockfish stock complex member, Indiv. = non-stock complex stock).

Agenda Item J.1.d
Public Comment
September 2014

--------- Forwarded message ----------

From: **Josh Churchman** <josh.churchman@gmail.com>
Date: Mon, Aug 11, 2014 at 6:21 AM
Subject: RCA line changes
To: John DeVore <John.DeVore@noaa.gov>

I would like to ask the council to consider making an adjustment to several RCA coordinates at the N/W end of Cordell Banks in central California.

The current non trawl RCA lines are all in 200 fathoms, much deeper than the intended 150 fathom curve .If they were moved in to align with the current boundaries of the EFH surrounding the Cordell Banks it would allow some some small access to abundant chillie pepper rockfish for the limited entry fixed gear boats.

Fixed gear has had quota with no access for ten years while the trawl sector has had increased access and quota'

The area this line change would open is not an area where goldeneye or cannary rockfish live. Observer data from the research trips I have taken over the past five years will confirm this.

Thank you for considering this request

Josh Churchman

OREGON
Dungeness Crab
COMMISSION

August 13, 2014

Pacific Fisheries Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Re: Attached letter from Chris Aiello (f/v J&C)

Dear Mr. McIsaac and Chair Lowman

The Oregon Dungeness crab fleet deploys upwards of 120k crab pots in the ocean annually between the Columbia River and the OR/CA border. Due to a variety of circumstances (i.e. winter storms, shipping traffic, entanglement, legitimate loss and in some cases, abandonment) not all those pots get brought back in to the dock at the end of the season, resulting in a derelict gear (D/G) problem that needs to be addressed.

Over the past five years, the ODCC has worked in partnership with the Oregon Department of Fish and Wildlife (ODFW), and independently on a variety of programs (i.e. volunteer D/G recovery weeks, end-of-season crab pot roundups, crab pot bounties, etc.).

The industry and management have worked together on HB 3262 which was passed this last year and has exempted derelict/abandoned commercial Dungeness crab pots left/found in the ocean after August 28th from Oregon's personal property laws for recovery purposes in an ODFW monitored program. The bill has allowed the industry to work with ODFW to create a post-season derelict gear clean-up program similar to the successful program implemented in WA-state as a result of legislation passed in 2009.

Fishermen will still be able to pick-up D/G in season and return them to the dock without a permit. We think that it only makes sense if a boat comes across D/G they should be able to stop and pick it up no matter where it is. It appears that if they have VMS and are on a declared groundfish trip, that they would not be allowed to do that. There are times when the buoys are down on this gear and it is not visible. The best time to retrieve it is when they first see it.

Please help us fix the problem with the VMS so our fleet can continue to be good stewards of the ocean and clean up our own mess when and where we come upon it.

Respectfully,

Hugh Link
Executive Director / ODCC

F/V J&C
Christian Aiello
PO Box 1123
Port Orford, OR 97465
Ph: 541-290-1043

RECEIVED
AUG 14 2014
PFMC

Dear Council Members:

I pass by derelict crab gear often while I am transiting through the RCA. I am required to leave the derelict crab gear in the water because limited entry vessels, under the VMS rules for the RCA, can't stop in the RCA. What's wrong with this regulation? Regardless of the fishery, we need to create the opportunity for the retrieval of derelict crab gear, any time we see it – anywhere.

I request that you start the process for regulation changes to allow for the retrieval of derelict crab pots in the RCA when the opportunity arises. As a member of the tri-state crab commission, I have brought this up at our meetings for three years. At our May 2014 meeting all the tri-state delegates and state agencies support this change. I was given the task of making this proposal to the PFMC with the full support of the CA, WA, OR members and state agencies.

I've been a commercial fisherman for 35 years and have come to realize that it's not just about catching fish and making money, but using the resource in a way that will benefit myself and future generations. The issue at hand is the retrieval of derelict crab pots in the RCA. This affects those of us who are limited entry fixed-gear, shrimpers, and draggers or any vessel under the VMS regulations. An example is the complication of salmon trollers, they have the ability to pick up derelict gear but can't do it if they have any groundfish bycatch on the boat. Another example, crabbers are able to retrieve pots outside the RCA boundaries without any restrictions; within the RCA we are prohibited from slowing down when the opportunity presents itself to retrieve a derelict crab pot – this is a regulation that impacts VMS boats. Because of the distances involved and the nature of the environment, current, weather and wind, encountering a pot in the RCA at a specific location and time could be the only opportunity to retrieve that derelict gear. It's a moment in time to do the responsible thing—to clean up the ocean from derelict gear and return gear to the owner.

The way things are now, if we declare crabbing with NOAA VMS program, at any time of the year we can go out and search for derelict gear within the RCA. Once the crab season closes, we are trying to develop a retrieval program that will allow the fleet in an organized way to retrieve derelict gear regardless of where it is. In direct response to the willingness of Oregon Fish and Wildlife and OR Dungeness Crab Commission to develop a program to retrieve gear four years ago, Oregon received $800K from NOAA to facilitate development of an organized crab pot retrieval program. The program obviously ranked with a lot of merit and importance from NOAA in an effort to clean up derelict crab pots. The enforcement of the RCA through the VMS program is also under the auspices of NOAA to monitor vessel activity in the RCA. This is a contradiction of the reality between the federal VMS and state program to retrieve gear. On the one hand you want to fund a crab pot gear retrieval program and on the other hand you stop us from retrieving crab gear in the RCA. Through the NOAA gear retrieval grant we do have statistics that we can draw from to see the likelihood of catching any groundfish in derelict gear if that is a concern.

To leave thousands of crab pots in the RCA in lieu of NOAA's fear someone might catch a fish if a boat slows down – when they are actually retrieving derelict crab gear – should be adaptively managed so the single opportunity to retrieve the crab pot or bouquet of pots should be allowed for a boat regardless of the fishery involved in at that time. Since 650-800 boats on the west coast have a VMS reporting system depending on the time of year this is a significant number of vessels that could retrieve derelict crab gear.

A simple solution would be through the VMS declaration reporting system where fishermen could declare in real time using their cell phones the time, date, duration, and location that they are stopping to retrieve derelict crab gear. Lacking cell phone reception or even having a cell phone, upon completion of the trip the fishermen can report via land phone to NOAA the time, date, duration, and location of the retrieval. Whether a fisherman retrieves one to any number of pots, this critical opportunity should be encouraged and adapted for because the opportunity is usually a moment in time to get that particular derelict gear out of the water. Given the potential threat that this derelict gear left in the water poses to the environment, marine life, and gear conflicts between other west coast fisheries it would behoove us to improve the present RCA regulations so commercial fishermen can do the right thing. Derelict gear poses a threat to vessel safety, entangling props, entangling with troll salmon gear, problems with shrimp and groundfish nets; these pots are a significant problem.

It is a shame that NOAA treats all fishermen as if we're out to do something nefarious. 99% of the fleet are stopped from doing the right thing because of the 1% that none of us can trust.

I am asking you to consider a change to the RCA enforcement program that will allow derelict crab gear retrieval in the RCA. We need to look at all the VMS enforcement conflicts that make retrieval of crab gear impossible and find a simple solution for everyone. This is something that has to be fixed. If (the industry accepted standard) 10% of the gear is lost annually, we can generalize that 13,000 pots are derelict just in Oregon and 70% of the crab grounds are in the RCA. That translates to at least 9,100 pots annually left in the RCA. We are missing an opportunity to be good stewards and responsible agencies and fishermen.

Sincerely,
Christian Aiello F/V J&C

Midwater Trawlers Cooperative
Pacific Whiting Conservation Cooperative
United Catcher Boats

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

August 14, 2014

RE: Item J.1 Groundfish Omnibus Regulation Changes

Dear Ms. Lowman,

Midwater Trawlers Cooperative (MTC), Pacific Whiting Conservation Cooperative (PWCC), and United Catcher Boats (UCB) reviewed the items listed in the Omnibus compilation of possible groundfish management measures, which was reviewed and updated by the Council in June 2014. At the September 2014 meeting, the Council is set to identify and prioritize management measure changes. Based on our review of the list of possible priorities, we concluded that (of the items currently on the omnibus list within Category C) the following items are the highest priorities for the whiting industry. We recommend that the Council include these items on the omnibus regulations change list:

1. Item #44: Whiting fishery modifications, specifically, the June 2014 Groundfish Advisory Panel (GAP) recommendation to eliminate the regulation that prohibits at-sea processing of whiting south of the 42 degree N latitude line (i.e., the OR/CA border),
2. Item #65: Adopt an option that allows a permit holder to transfer its "equal share" Buyback species from the shoreside IFQ fishery to the Mothership (MS) sector whiting fishery,
3. Item #43: Enhancement of fishery declaration regulations that would allow catcher vessels to declare a change in sector participation at sea rather than having to first return to port.

MTC, PWCC, and UCB represent most harvesting participants in the Pacific whiting fishery as well as at-sea processing capacity. This fishery represents most of the groundfish harvested on the West Coast. Being able to access good fishing areas, with high abundance of target species and low incidental catch, is critical to the success of the whiting fishery. Our recommendations reflect our desire to use all the tools available to maximize efficiency and sustainability. For example, the prohibition of at-sea processing south of 42 degrees was implemented during the earliest days of the domestic whiting fishery. The current fishery is now co-managed by the agency and the industry in stark contrast to those bygone days. Quota share and cooperative-based management ended the race for fish in the whiting fishery. Rationalization provides our sectors the means to self-manage our harvest of whiting and to avoid incidental species. For example, it enables the fleet to move to new areas when we experience high bycatch rates. However, moving away from areas where bycatch may occur for multiple species is not a simple matter and it is often very expensive. This spring, the entire MS whiting fleet moved 600

miles south to the California/Oregon border to find fishing beyond the range of Pacific Ocean Perch to avoid a self-imposed shut down of the spring mothership fishery. That single move cost the four motherships and 12 catcher boats nearly $500,000 in fuel alone. The Catcher Processor fleet made a similar move to the same area. However, because at-sea processors are prohibited from operating below the 42 degree line, the area became very crowded. The fishery was pinched between bycatch to the north and the 42 degree line because of the at-sea processing restriction. In general, the whiting fishery is very good at avoiding bycatch, but it requires being able to fish where fishing is clean.

To facilitate Council action, we identify three high priority management measures that specifically allow bycatch avoidance in more cost effective ways and that will have immediate, measurable, and positive impacts to the entire whiting fishery. Moreover, these measures are practicable to implement in the near term. We believe this approach to defining priorities is consistent with the goals and objectives of Council's FMP, its Strategic Plan, Amendment 20, and several MSA national standards. All of these guiding documents identify as their highest priority that, within the constraints of avoiding overfishing, regulations should attempt to achieve the greatest net economic benefit to the participants and the nation from the managed species. We believe that elimination of the at-sea processing prohibition south of 42 degrees (CA/OR border), adoption of a regulation that will allow MS sector permit holders the option to transfer "equal share" rockfish bycatch species purchased by them under the Buyback Program from the QS fishery to the MS Cooperative fishery, and the ability to declare shoreside sector fishing when done with MS deliveries all promote cost effective prosecution of a fishery. Council action on these items will help facilitate balancing the conservation and cost efficiency goals identified in its FMP and strategic plan.

<u>Item #44: Elimination of the at-sea processing prohibition south of 42 degrees (CA/OR border):</u> This item was recommended by the GAP under "other modifications" in #44; Year Round Whiting Season and Other Modifications. The Council has already approved a shoreside whiting sector start date of May 15, and we support this uniform start date. Further Council action related to the start date is unwarranted because, *inter alia*, starting the whiting season prior to May 15 is not feasible due to the timing of the whiting stock assessment and the US/Canada Whiting Treaty process. However, the recommendation to eliminate the current prohibition to process at-sea south of the 42 degree N latitude line warrants Council action. The reason we support this regulatory change and believe it is consistent with the goals and objectives of the FMP include: 1) It will allow the whiting fleet to fish further south beyond the range of some rockfish species such as POP and Rougheye, 2) Prosecution of the fully-rationalized whiting fishery south of the 42 degree line will not pre-empt or negatively impact California coastal communities or fishery participants, and 3) While the restriction was put in place partially to protect salmon, current conditions show that this is no longer necessary or appropriate. A few times each year, the aggregation of whiting is limited to the southern region and is sometimes slow to head north. This causes scratchy fishing if the fleet is forced to spread out by heading further north. Scratchy fishing increases bycatch of rockfish. Congestion near the 42 degree line can force the fleet into areas of higher bycatch of widow rockfish and canary rockfish. This restriction no longer serves a purpose. Elimination of the prohibition to prosecute the whiting fishery further south will allow the fleet to better avoid rockfish bycatch in a cost effective manner.

Item #65: Allow Between Sector Transfer of Rockfish QS Allocated Equally to MS Vessel Permits.: Shoreside and Mothership sector permit holders pay 5% of their ex-vessel value every year to repay the federal loan used to purchase shoreside trawl permits. In exchange, all permit holder in SS and MS sectors are allocated the catch history of the shoreside permits that were "bought out" of the trawl fishery. The allocation of the "buyback" fish is complex because it is based on catch history and location of harvest. However, there is a minimum "equal share" amount allocated to whiting permit holders without shoreside sector catch history. It is a small part of the Buyback distribution. As a proxy for this small slice of the Buyback allocation, approximate amounts can be identified by looking at the allocation to MS permits with no shoreside catch history of whiting or groundfish. Currently, that "equal share" of Buyback fish is unavailable to those participating in the MS fishery. Therefore, unless a MS permit holder is dual qualified to fish in the shoreside sector, it is paying 5% of its annual ex-vessel revenues and getting nothing in return. Last year the MS sector paid approximately $600,000 as its annual contribution toward repayment of the Buyback loan to decapitalize the shoreside groundfish fishery. MS participants would like the Council to consider a proposal that would allow individual MS permit holders the option to voluntarily transfer their "equal share" amount of Buyback rockfish species to the MS sector on an annual basis. By allowing this transfer, MS participants who are most constrained by rockfish bycatch, can gain some value from the loan repayment program in cost efficiencies gained by not having to move as often when encountering bycatch at lower levels.

Item #43: Fishery Declaration Enhancements – eliminate requirement to return to port to make declaration. Currently, when CVs finish harvest of MS whiting they are required to travel back to port to declare they are switching to the shoreside whiting fishery. By allowing CVs to make that declaration at sea, they can cost effectively harvest fish on their trip back to port. Often fishing is excellent and bycatch low in the area where they have finished delivering to a MS processor. Current communication and monitoring technology allow this measure to make sense from an enforcement perspective.

Thank you for considering our recommended action items and supporting rationale. We understand that the Council and NMFS have limited capacity to analyze proposed management measures and engage in rulemaking. We have tried to identify management measures that meet the Council's goals and objectives, will not require complex analysis and rulemaking, and will provide measureable, positive impacts to participants in the near future.

Sincerely,

Heather Mann
Midwater Trawlers Cooperative

Brent Paine
United Catcher Boats

Dan Waldeck
Pacific Whiting Conservation Cooperative

From: **Bill James** <HalibutBill@live.com>
Date: Fri, Aug 15, 2014 at 11:40 PM
Subject: J.1 Omnibus Regulation Changes Priorities
To: pfmc.comments@noaa.gov
Cc: Halibutbill@live.com

Madam Chair Lowman, Mr. Vice Chair Pollard : My name is Bill James. I am the fisheries consultant for Port San Luis Commercial Fishermen's

Association. In June 2014 the Council listed a Table of " Initial Compilation of Possible Groundfish Management Measures for Council Consideration" (Agenda Item F.3.a, Attachment 2). In the Table listed under A # 19 OA Amendment 22- Open Access License Limitation. I request this item with some changes be given a high priority listing. The "Inshore Groundfish Permit" Could include only Shelf Rockfish and Lingcod. It should be transferable. It should not include slope species of Rockfish or Black Cod. Qualifying criteria could be recent participation in the groundfish fishery. I hope the Council starts this discussion soon. Sincerely, Bill James

From: **Bill James** <HalibutBill@live.com>
Date: Wed, Sep 3, 2014 at 11:58 PM
Subject: J.1.d Omnibus Regulation Change Priorities
To: pfmc.comments@noaa.gov
Cc: Halibutbill@live.com, bcartercasa@aol.com

Chairwoman Lowman, Vice Chair Pollard Members of the Council :

My name is Bill James. I am the fisheries consultant for Pot San Luis Commercial Fishermen's Association. PSLCFA requests that the Council give # 19 Amendment 22- Open Access License Limitation a high priority rating. PSLCFA requests that the Council start with registration for the open access vessels with the end goal of a permit for Shelf Rockfish species and Lingcod. This would NOT include the Slope Rockfish and Blackcod. This would allow smaller vessels to target groundfish at a lower level than in the limited entry fishery. This would ensure that vessels in state managed fisheries could continue to fish for groundfish.

Sincerely Bill James

Phoenix Processor Limited Partnership

333 First Avenue West, Seattle, WA 98119 tel: (206) 286-8584 fax: (206) 286-8810

September 3, 2014

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

RE: September 2014 Council Meeting
Agenda Item J.1 - Groundfish Management - Omnibus Regulation Change Priorities
Prioritize Elimination of the Prohibition of At-Sea Processing South of 42° N.

Dear Chair Lowman and Members of the Pacific Fishery Management Council:

This letter is respectfully submitted on behalf of Phoenix Processor Limited Partnership (PPLP), which owns two at-sea mothership processors, the MV Excellence and SS Ocean Phoenix (and two associated MS Permits) that operate in the Mothership Cooperative Program in the Pacific whiting fishery. PPLP also owns an MS/CV-endorsed limited entry trawl permit and is a member of the Whiting Mothership Cooperative, and owns a QS Permit in the Shorebased IFQ Program. Many of the partners in PPLP also own and operate catcher vessels active in the MS Coop Program.

Our comments address only Agenda Item J.1., Item #44, the elimination of the prohibition of at-sea processing south of 42° N., which we believe is the highest priority proposed groundfish regulation change. As described below, the prohibition no longer serves the purpose for which it was developed, exacerbates rather than prevents impacts to species of concern, and prevents the efficient operation of the at-sea whiting fishery. For all of these reasons, PPLP believes this rule should be changed.

The prohibition of at-sea processing south of 42° N. is an artifact that serves no purpose in the modern whiting fishery. According to the record, the regulation was originally put in place in 1992 to address conservation concerns that were then possible from fishing early in the year due to a race for fish between the at-sea and shoreside sectors of the whiting fishery. At the time, there were no allocations between the shoreside and at-sea sectors. The management measure was developed after

the first year that the domestic whiting fishery supplanted the foreign joint venture (JV) fishery. The JV fishery had been prohibited from fishing south of 39° N., but the domestic fleet was not so restricted. Due to the race for fish and timing of the Alaskan pollock fisheries, many of the domestic at-sea participants elected to fish south of 39° N. where the whiting was congregated earlier in the year (around April). Since then, several changes have occurred. Sector allocations between the shoreside and at-sea sectors were first set in regulations in 1994, and revised in 1997 to the set percentages by which the fishery is managed today, removing the race for fish between these two sectors. Whiting season start dates have been enacted to prevent directed fishing for whiting early in the year. License limitation under Amendments 6 and 15 to the Pacific Coast Groundfish Fishery Management Plan reduced the number of vessels supplying at-sea processors with harvests. More recently, Amendment 20 further rationalized the fishery, but most of the fundamental changes to the whiting fishery occurred more than a decade ago.

The conservation concerns have similarly changed. Originally, the Environmental Assessment described the purpose of the prohibition as intending to address salmon and rockfish bycatch, however, the species of concern have changed since then. Some commenters have suggested that the prohibition was required by Biological Opinions issued under Endangered Species Act Section 7 consultations, but a review of these documents shows that not to be the case. In fact, the BiOp most closely related to the 1992 rule expressly rejected inclusion of this measure as a condition of the incidental take statement, as while harvesting activities south of 42° N. may cause a negligible increase in catch of Sacramento River Winter Run Chinook, it would do so at the expense of increased take of Snake River listed salmon due to the shifting of effort to the north. Instead, the basis given in the EA stated that the regulation was intended to protect Klamath River salmon stocks, which while stressed in 1992, have subsequently rebounded. For rockfish, the EA listed chilipepper as a species of concern. However, chilipepper has never been listed as an overfished species. By contrast, the whiting fishery is constrained by several rockfish species that have been declared overfished – including widow, darkblotched, and Pacific ocean perch – all of which are more prevalent in waters north of 42° N. The effect of the outdated restriction on at-sea processing is to force mothership whiting fleets to fish in areas that put more pressure on endangered species and overfished stocks ostensibly in order to protect non-endangered and non-overfished stocks.

The artificial restriction on at-sea processing disrupts the at-sea whiting fleet's ability to effectively and efficiently harvest its catch while minimizing the catch of bycatch. As an example, earlier this year in June, the majority of the at-sea whiting mothership sector relocated its harvesting activity to south of the 42° N. line in order to avoid Pacific Ocean Perch. However, due to the prohibition on at-sea processing, the motherships to which they delivered, including the MV Excellence, were prohibited from following. This resulted in increased costs due to higher fuel consumption, loss of efficiency in deliveries and production, and reduced fish quality as the harvesters ran back and forth, sometimes more than 30 miles, between the fishing grounds and the mothership. Efforts made to relocate to areas north of the 42° N. line resulted in higher bycatch conditions. It is senseless to mandate higher costs for cleaner fishing. Fishermen should be allowed to fish in areas with lower bycatch rates without being penalized for doing so.

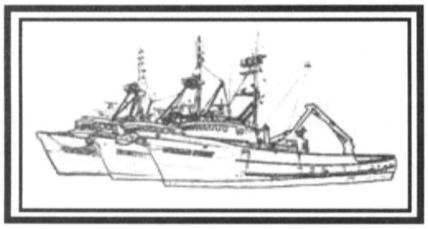
Elimination of the prohibition of at-sea processing south of 42° N. is a fundamental change to the groundfish fishery that is not appropriately addressed in the five year review of the trawl rationalization program. The rule was established nearly 20 years prior to the trawl rationalization program, the five year review is insufficient to address the significant changes to the groundfish fishery that have occurred since the rule's inception. Nonetheless, NMFS has stated in its report (Agenda Item J.1.b, NMFS Report 2) that it considers this issue to be something the Council may consider as part of the five-year review process, for implementation after that review is completed. Absent Council prioritization, it is doubtful that the analysis necessary for this rule change will be done. In the alternative, should NMFS be concerned about adequacy of data available to support this action, an EFP suspending the prohibition would allow such data to be developed to inform a future regulatory change.

Accordingly, PPLP requests that the Council prioritize elimination of the prohibition of at-sea processing south of 42° N.

Respectfully Submitted,

James M. Mize

Safety and Compliance Manager
Premier Pacific Seafoods, Inc.
On behalf of Phoenix Processor Limited Partnership



THE FURY GROUP

Fishermen's Terminal, West Wall Bldg.- 4005 20th Ave. W., Ste 207 -Seattle, WA 98199 (206) 783-3844 Fax (206) 783-3871

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

RE: Item J.1 Groundfish Omnibus Regulation Changes

Dear Ms. Lowman,

I am the office manager for FV Arctic Fury, a Pacific whiting vessel that participates in the at-sea sector delivering to MS Excellence. In reviewing Agenda Item J.1, I would like to call item #44 to your attention for prioritization. Item #44 details several modifications to the Pacific whiting fishery, one of which is the Groundfish Advisory Panel (GAP) recommendation to remove the regulation prohibiting motherships from processing Pacific whiting south of the 42 degree N latitude line. As part of a fleet dedicated to efficiency, bycatch reduction, and sustainable management, this antiquated regulation inhibits our performance.

The management of the whiting fishery is very different today from when this prohibition was put in place over 20 years ago. Sector allocations have slowed the race for fish and concerns that at-sea fleets would target whiting South of 42 degrees early in the year in order to preempt shoreside processors. The conservation concerns identified in 1992 are no longer current, and instead, the whiting fleet is faced with avoiding species of concern North of 42 degrees, such as Pacific Ocean Perch, Darkblotched rockfish, and Rougheye rockfish. The introduction of cooperative-based management in the at-sea whiting sector has led to improved bycatch avoidance procedures and better overall communication within the fleet. In an attempt to avoid Pacific Ocean Perch last June, our vessel, along with the majority of the at-sea sector, moved south of the 42 degree line. However, our mothership markets were prohibited from crossing into California to process in the areas where the fishing was cleaner. This resulted in an increase in fuel consumption as we had to run back and forth, sometimes several hours, between the fishing grounds and the mothership. Fishing in close proximity to the mothership allows us to react quickly to the size and quality of whiting and provides the fleet with bycatch data in a timely manner.

This regulation is outdated and restricts our ability to meet Council objectives. I understand the council is tasked with many pressing regulatory changes. Resolving this issue is not complex or contentious and will have a lasting positive impact on whiting participants.

Sincerely,

Nate Stone
Fury Group Inc.
FV Arctic Fury

Headquarters Offices: 16797 SE 130th Ave., Clackamas, Oregon 97015 USA
Tel: 503-905-4500 Fax: 503-905-4228

Agenda Item J.1.d
Public Comment
September 2014

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

RE: OMNIBUS REGULATION CHANGE PRIORITIES

Dear Chair Lowman,

Please accept these comments on behalf of the Pacific Seafood. Pacific Seafood operates shoreside processing plants in California, Oregon and Washington, as well as a fleet of fishing vessels, and processes a major portion of both whiting and non-whiting groundfish landed on the West Coast. As you know, Pacific participated throughout the development of the trawl IFQ program and we continue to be very engaged in the management process. Like the Pacific Council and NMFS, Pacific Seafood has a vested interest in a successful trawl groundfish program.

Mid-way through the fourth year since implementation of the IFQ program, it has become more than apparent that the non-whiting groundfish portion of the program is performing poorly from an economic sense. Non-whiting revenues are stagnant and cumulative attainment of target species remains at less than one-third of the allowable catch. At the same time costs for participating in the program continue to rise. It is our opinion that the program, as currently structured, is not economically viable over the long-term.

To-date the majority of the management focus has been on trawl trailing amendments to either implement additional program components or to fix and/or eliminate redundant regulations. Very little progress has been achieved on this front and dozens of trailing amendments still require attention. Equally important, but receiving even less attention are the key economic and marketing components that are vital to the long-term success of this program. One example for the harvesting side is the cost of harvesting in comparison with the expected revenue and how the expected profitability changes with different set of constraints. One exercise would be to

begin with the present caps and then add various increments of additional hypothetical quota to see what the profitability outputs are. An example of marketing might concentrate on "supply to market" on an aquaculture species such as tilapia to better understand the dynamics of a species which competes directly with groundfish for retail shelf space.

As the Council and NMFS grapple with prioritizing new management measures for the groundfish fishery, including the trawl trailing amendments, we recommend that the Council considers an examination of the key economic components of the trawl IFQ program during the program's upcoming five-year review. As part of that framework, we recommend that the Council and NMFS plan on evaluating whether the present quota share and quota pound accumulation limits are adequate to achieve Amendment 20's economic goals. In addition, we recommend delaying any requirement to divest quota until after this evaluation can be completed. Requiring divestiture prior to this evaluation is likely premature and may result in unintended consequences that further destabilize the transitioning fishery. Further, forced divestiture before the review would memorialize present quota share and quota pound accumulation limits at levels we believe will prove less than optimal without the benefit of review or analysis.

As significant participants in this fishery, Pacific Seafood continually examines the long-term opportunities and challenges that we, and all participants, face under this program. As part of our own strategic business planning, we have undergone a detailed evaluation of the factors that are contributing to the economic underperformance of the trawl IFQ program. In doing so we did a side-by-side comparison with the British Columbia IVQ[1] fishery[2]. Some of the questions that have surfaced include:

- What can be done to reverse the current erosion of the West Coast groundfish markets? Presently 90 percent of the seafood the US consumer purchases is imported. More and more retail shelf space is dedicated to items like tilapia and less to U.S. items such as the West Coast groundfish. To combat this market erosion requires a unified strategy that targets the end market and successfully meets that market's needs. We believe this means a co-operative approach between fishermen and processors with a "go to market" strategy that consistently delivers to the customer.
- Are the current quota share and quota pound accumulation limits too limiting to fully access target species now? Will they be in the future? In particular, is an aggregate non-whiting non-halibut groundfish species cap a necessity or an impediment to the full development of this program? As we understand the West Coast non-whiting aggregate cap was modeled from "highest catches" attained in the previous bi-monthly fishery; but in the previous management regime many of the largest boats only fished several weeks of those two months. In essence, this is an arbitrary "highest" catch because the vessels were limited by the two-month cumulative limits. Was this an appropriate measure of a vessel's potential harvest capacity? Is that same metric still applicable?
- Are the program regulations flexible enough to allow the West Coast groundfish fishery to achieve market potential while reversing recent market share attrition from foreign seafood imports? The IFQ program combined with MSC certification can be a powerful

[1] Individual vessel quota (IVQ) in BC is equivalent to IFQ in the West Coast (see report glossary for more detail)
[2] See attached report

marketing instrument. Historically and presently the best value for the West Coast groundfish has been fresh but now some retail chains are looking at frozen groundfish as a viable alternative. This will take some years to develop but shows promise. Markets can handle seasonality but not inconsistency. Starvation followed by intense gluts is not well received. We believe that there is enormous opportunity if we can get the fish out of the water and strategically work together to sell the West Coast groundfish on a year-round basis.

- Can we achieve the value out of this fishery that is necessary in order to sustain the escalating costs of participation? In our estimation this is only achievable if we view the harvest, processing and marketing as a symbiotic relationship. It requires all three sectors working together while meeting the economic needs of each sector. But again we must be able to satisfy the market needs. The market is the fuel that drives the engine.
- Do we really know enough now to compel divestiture of quota share before the detailed five-year review? Forced divestiture will institutionalize the present caps without review. Similar to the Adaptive Management Program this should be analyzed before it is finalized. We do not see where the economic lift or social benefit in forced divestiture will come from. When the 2003 buyback occurred it was apparent there would be a wholesale regional shift of groundfish trawl effort and this did occur. Pacific Seafood has its current quota amounts because we chose to purchase vessels in 2004 after the buyback in order to keep our groundfish plants supplied with product and our employees working.

Synopsis of Pacific Seafood's Report and Comparative analysis

From a conservation standpoint, the trawl IFQ program appears to be a great success. It is a fact that harvest of species of concern has been reduced dramatically under the IFQ system. Also true is that attainment of available catch for all but a few non-whiting groundfish species has been abysmal. The current system is not economically sustainable in the long run - a fact that we all must face and solve together. Celebrating only biological gains while ignoring the failure to attain economic objectives will not sustain this program.

In order to evaluate the West Coast IFQ program, we examined the British Columbia (BC) IVQ program. This seemed appropriate as elements and successes of the BC program were brought before industry, advisory bodies, and the Council as the West Coast IFQ program was being considered and constructed. From our analysis, the single biggest element that is different in the BC program is "built in flexibility to maximize economic results". This is achieved by four major program elements:

1. No aggregate non-whiting groundfish species cap,
2. In season management measures that allow vessels to exceed individual species quota pound limits in the event harvest trajectories indicate that the TAC will not be caught,
3. 30 percent rollover provision, and
4. No quota share ownership accumulation limit.

An objective and thorough side by side analysis with the Canadian model should be undertaken to see if some of the limits imposed on our West Coast program may prove too constrictive to allow full economic development. We see this as fully appropriate as the BC program was used as an example to demonstrate the benefits of an IFQ fishery when our program was being devised. In addition, the BC fishery has successfully penetrated targeted markets and gained the loyalty of its customers; in general it is deemed a success.

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

Pacific Seafood Report on the Factors Contributing to Economic Underperformance of the West Coast non-whiting Groundfish Trawl IFQ Program

Synopsis of Report Research and Analysis

The following is a summary of economic research comparing the West Coast individual fishing quota (IFQ) program to the British Columbia (BC) individual vessel quota (IVQ) program. We selected the BC program because it served as a model for the West Coast program, is deemed successful, has flexible management measures, and has successfully penetrated targeted markets. We believe the results indicate that the exceptionally low attainment rates of the West Coast program may be improved by replicating, within the extent allowable under MSA, some elements of the BC model: through (1) eliminating aggregate non-whiting groundfish species quota share (QS) and quota pound (QP) caps; (2) maximizing annual "rollover" of unharvested quota; (3) instituting an in-season quota management framework to allow more flexibility to harvesters by relaxing QP vessel accumulation limits if there are no concerns regarding the ACL overages[3]; and (4) raising QS and QP accumulation limits. Divestiture and each of the above four items should be evaluated in the 2016 review.

Report

A. The Current West Coast IFQ Program is Underperforming

With the exception of bycatch reduction, the current non-whiting IFQ program is failing to meet many of the benchmark objectives including increased economic sustainability, increased harvest output, and enhanced groundfish harvest revenues for the fleet.[4] The non-whiting groundfish fishery has seen extremely low attainment rates in the first three years of the IFQ program: 24 percent in 2011, 29 percent in 2012, and 35 percent in 2013. Eleven percent increase in non-whiting attainment from 2011 to 2013 is largely due to a substantial decrease in cumulative non-whiting trawl sector allocation (a decrease of 24 percent) rather than an increase in harvest (an increase of 9 percent).[5] This lack of performance is true for the IFQ non-whiting groundfish fishery as a sector, and many individual participants including processors. Performance is further adversely impacted by the overhead costs which have continued to increase since the IFQ program implementation. These costs include buyback loan payments, human observer coverage, and the NMFS cost recovery program. This amounts to approximately 10 percent of ex-vessel revenue.

[3] A glossary of important terms and acronyms is provided as Appendix 1 to this report.
[4] PFMC goal of a catch share program is to 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 (Todd Lee's presentation to the PFMC on economic data collection program in June 2013).
[5] 2011 and 2012 data are from Sean E. Matson 2013, Annual Catch Report for the Pacific Coast Groundfish, Shorebased IFQ Program in 2012. Data for 2013 are from NOAA IFQ tracking website, which can be accessed at https://www.webapps.nwfsc.noaa.gov/ifq/.

The West Coast IFQ fishery is approaching a point where remunerative return may degrade to a level that investment and effort in the groundfish fishery itself and the infrastructure supporting the fishery becomes unattractive to harvesters, processers and other prospective investors. This could lead to further market share erosion for our West Coast groundfish products and fewer sustainable jobs related to groundfish harvest and production.

B. Comparison of the U.S. Model to the Canadian Model Indicates that Current QS and QP Limits and Aggregate non-whiting Caps may be Contributing to the West Coast IFQ Program Underperformance

After economic and structural comparisons with the BC IVQ program, which served as a general model for the development of the West Coast IFQ program, we concluded that BC has a much more flexible "open market" based approach than the West Coast IFQ program. We believe the BC program allows market forces to work more efficiently, increases economic revenues and produces a model for sustained profitability. Importantly, the BC program allows more fish to consistently reach targeted markets. We infer there are several primary reasons responsible for this increased efficiency in BC.

First, Canadian harvesters, unlike their U.S. counterparts, are able to create a more comprehensive quota portfolio because they are not constrained by aggregate non-whiting groundfish species QS and QP limits (Appendix 2, Table 5). This allows Canadian harvesters to maximize their quota holdings for each and all individual species. The example in Appendix 3 illustrates a comparative advantage a fisherman in the BC program has over a fisherman in the U.S. program. In our opinion, overly restrictive aggregate non-whiting caps in the U.S. constrain market forces and prevent the fleet from reaching a level of economic efficiency that allows healthy returns to the participants. This negatively impacts the harvesting sector as well as the processing and marketing sectors. All three sectors are symbiotically integrated and cannot be looked at independently when it comes to economic stability and sustainability.

Second, the BC IVQ program has regulatory allowance of up to 30 percent annual rollover of unharvested IFQ QP. The West Coast fishery is constrained by regulation to a maximum of 10 percent rollover. However, those pounds are not always rolled over due to concerns about exceeding the ACLs. The fact that BC allows this large carryover and the West Coast does not, places more emphasis on the effects of the aggregate non-whiting caps and restrictive QS and QP accumulation limits in the West Coast program.

Third, the BC program has a framework for an in-season management review process that allows more flexibility to harvesters by relaxing QP vessel accumulation limits if there are no concerns regarding the TAC overages. The West Coast program has no in-season adjustment mechanism and basically places a virtual lockdown on QS and QP accumulation caps.

Four, BC has no QS ownership and control accumulation limits. The emphasis is placed on the QS spread among permits rather than the ownership of quota. An entity may own as many licenses, QS, and QP as it wishes and can afford as long as an appropriate amount of QPs is transferred to each vessel. While there are legal mandates to place upper limits on accumulation of QS and QP in the U.S., artificially low limits may constrain an entity's ability to operate

multiple vessels in an IFQ fishery. There can be favorable cost savings in multi-vessel operations and it may be more attractive to family enterprises.

In our opinion, the present accumulation limits and aggregate caps impede vessels from specialization. The argument behind the current quota limits is that these limits would not constrain the trawl fleet. It was postulated that quota limits were set high enough so all the vessels in the fleet would be able to maintain or increase their historic catch previous to IFQ without going over the accumulation and aggregate limits (Amendment 20). It is noted that many vessels under the bi-monthly cumulative limit caught their bi-monthly limit within the space of two or three weeks and were tied up in port more time than they fished. It is also true that the vessels were constrained by the bi-monthly limits and that some vessels could have caught much more had the bi-monthly limits been higher.

C. The Council Should Postpone Divestiture Until It Can Review the Economics of the Current IFQ Program and Consider Modifications to Quota Caps and Other Management Measures

We believe the Council should re-analyze the current QS and QP accumulation limits, the aggregate non-whiting species caps, and divestiture as one central component of its upcoming IFQ program review.

The rationale of divestiture itself should be re-analyzed in the greater context of whether the present constraints on QS ownership and control caps are too restrictive and impair the West Coast IFQ program from meeting the predicted economic objectives. The driving force responsible for the accumulation of permits and vessels (largely in 2004) was the 2003 buyback program. Without the purchase of those permits and vessels following extreme fleet consolidation as a result of the buyback, a number of processing facilities may have been forced to shut down or reduce groundfish processing after the buyback program went into effect. Fishing vessels with groundfish permits were purchased in order to assure product flow into processing plants, hold market position, and protect employee jobs.

If divestiture is implemented, it will memorialize the present accumulation limits for each IFQ species and more importantly the aggregate non-whiting caps. In view of our analysis, given the major differences between the QS and QP constraints and the economic performance differential between the West Coast and BC non-whiting catch-share programs, permanently setting the quota caps without the benefit of a review analysis could further impede realization of the program's economic objectives. We believe the West Coast IFQ program needs more flexibility to develop and reach the program's stated goals. Divestiture now will only make the program more inflexible.

D. Achieving Market Potential for the West Coast IFQ Groundfish Products

Pacific Seafood has concluded that if the West Coast IFQ program participants do not compose a market strategy that uses the precepts of the IFQ program to advantage that the economic output of this program will continue to struggle. Traditionally, the best return for the West Coast groundfish products is in fresh sales. Tilapia and other foreign imports have gained a larger

percentage of retail market shelf space at the expense of the West Coast groundfish. Ninety percent of the seafood purchased by the U.S. consumer is imported. Consistent supply is a key demand of retailers. Seasonality is acceptable but lack of delivery performance is not. Retailers are now also looking at innovative frozen seafood products as well. Although this is largely in the rudimentary stages of development, it shows promise for groundfish products for the future.

Pacific Seafood believes that today's market for groundfish items must be handled differently than in the past. This means a strategy that involves both the harvester and processor in a co-operative manner where the primary focus is the end market. A rationalized program should offer a better platform for this occurrence but as yet this has not happened. The IFQ program itself can be part of the sales promotion but only if a "go to market" strategy and business plan utilizes a unified approach. The West Coast groundfish is imbedded in the roots of Pacific's history but we are of the opinion that if some innovative approaches are not developed to market the West Coast groundfish products this program will continue to underperform. To counter, we would like to be part of the solution as we see a potential opportunity yet to be developed.

Conclusion

Pacific Seafood believes the prior Council rationale for the aggregate non-whiting caps and QS and QP accumulation limits did not take many important economic factors into account such as changes in technology, cost structure, groundfish markets, and business operations when compared to the pre-IFQ regime. We propose the West Coast non-whiting groundfish IFQ program be re-evaluated. We conclude that the economic output of the West Coast non-whiting IFQ fishery will continue to stagnate and that the fishery will become less attractive as an investment opportunity if we do not allow a greater amount of flexibility and economic efficiency. Key IFQ program design elements such as accumulation limits are meant to change and evolve over time as the fishery itself evolves over time and adjusts to the challenges the IFQ regulatory architecture poses. We now have the data on the first three years of the IFQ program. We need to focus on re-evaluating the program and making the necessary changes to ensure we have an economically viable and sustainable fishery.

The divestiture requirement should be re-evaluated. We see no positive benefit to forced divestiture. It will be a divisive force at a time when a unified strategy is necessary. It will memorialize quota caps at levels that may be inappropriate to fully realize IFQ economic objectives and benefits. At the least, divestiture implementation should be delayed until after it has been through the full review process.

We are approaching an important juncture in development of the IFQ program. The success of our efforts will determine the future health of our West Coast groundfish non-whiting fishery. At the least, the aggregate species caps, QS and QP accumulation limits, divestiture, and the West Coast groundfish markets, should be carefully evaluated. That analysis, based on data and performance metrics for the years the program has operated, combined with stakeholder input, will provide a foundation to determine what modifications we need to receive the most benefit from this public resource and to preserve our heritage.

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

Appendix 1: Glossary

U.S. IFQ Fishery	
ACL – Annual Catch Limit	An annual catch limit set for a particular fishery, usually expressed in metric tons or pounds.
Aggregate non-whiting QS accumulation limit	The maximum amount of IFQ expressed as a percentage of the ACL for all IFQ species combined except whiting that may be owned or controlled by one economic entity.
Aggregate non-whiting vessel accumulation limit	The maximum quantity of IFQ pounds for all IFQ species combined except whiting that may be fished by vessel or controlled by owner.
Carry-backward	Ability to borrow a portion of next year's expected IFQ allocation to use in this fishing year. The maximum carry-backward allowance in the U.S. IFQ fishery is 10 percent. This allowance counts against the vessel accumulation limit.
Carry-forward	Ability to "bank" any unused IFQ to be used in the next fishing year. The maximum carry-forward allowance in the U.S. IFQ fishery is 10 percent. This allowance counts against the vessel accumulation limit.
Divestiture provision	The amount of QS or IBQ in excess of the QS accumulation limits (initially allocated to the owners of limited entry groundfish trawl permits acquired before November 8, 2008) that will need to be divested by the end of the QS divestiture period.
IFQ – Individual Fishing Quota	IFQ is a fishery management system in the West Coast for the shorebased groundfish trawl fleet (including whiting and non-whiting sectors), introduced in 2011.
Permanent IFQ reallocation	Permanent transfer of quota between the shorebased groundfish trawl vessels expressed as a percentage of the ACL; allowed as of Jan 1, 2014.
Quota Share (QS) accumulation limit	The maximum amount of IFQ expressed as a percentage of the ACL for each IFQ species that may be owned or controlled by one economic entity.
Temporary IFQ reallocation	Temporary transfer of quota between the shorebased groundfish trawl vessels expressed in IFQ pounds and valid for the current fishing year.
Vessel accumulation limit	The maximum quantity of IFQ pounds for each IFQ species that may be fished by vessel or controlled by owner.

BC IVQ Fishery	
Carry-backward	Ability to borrow a portion of next year's expected IVQ allocation to use in this fishing year. The maximum carry-backward allowance in BC IVQ fishery is 30 percent. This allowance does not count against the IVQ holding cap which is an important buffer.
Carry-forward	Ability to "bank" any unused IVQ to be used in the next fishing year. The maximum carry-forward allowance in BC IVQ fishery is 30 percent. This allowance does not count against the IVQ holding cap which is an important buffer.
GFE – Groundfish Equivalents	Ability to convert IVQ of one species into IVQ of another at a pre-specified conversion ratio. Pacific Ocean Perch IVQ is used as a baseline (pacific ocean perch = 1.00) to set GFE for each IVQ species for the purposes of calculating IVQ holdings and holding caps for each license, and quota swapping.
IVQ – Individual Vessel Quota	IVQ is a groundfish fishery management system in BC. It was first introduced in 1997 for limited entry groundfish trawl sector only and expanded in 2006 to include all seven commercial groundfish sectors (groundfish trawl and hook and line fisheries for halibut, sablefish (can also use traps), rockfish outside, rockfish inside, lingcod and dogfish).
IVQ holding cap	The maximum amount of IVQ that can be allocated to each groundfish trawl license. Non-T IVQ is not included in the calculation of IVQ holdings. IVQ holdings and associated holding caps are measured in groundfish equivalents (GFE).
IVQ species cap	The maximum quantity of IVQ pounds for each IVQ species (not area specific) that may be fished by vessel.
Non-T IVQ	All IVQ originating from outside the trawl sector that is reallocated to the trawl sector.
Non-T temporary IVQ species cap	IVQ species caps applied to temporary non-T IVQ reallocations.
Permanent IVQ holdings	The IVQ holdings for each IVQ species and species/area group expressed as a percentage of the TAC held on a groundfish trawl license. Permanent IVQ holdings are determined at the commencement of each fishing year.
Permanent IVQ reallocation	Permanent intra-sector transfer of quota expressed as a percentage of the TAC.
Permanent IVQ species cap	IVQ species caps applied to permanent IVQ reallocations. Permanent caps are set on a coast-wide basis for all IVQ species, except whiting. Whiting caps are set separately for onshore and offshore delivery.
TAC – Total Allowable Catch	A catch limit set for a particular fishery generally for a year or a fishing season, usually expressed in tonnes
Temporary IVQ reallocation	Temporary transfer of quota between vessels and groundfish commercial sectors expressed in IVQ pounds and valid for the current fishing year
Temporary IVQ species cap	IVQ species caps applied to temporary IVQ reallocations. Temporary caps may be subject to adjustment in season.

Appendix 2: Tables and Figures

Most of the species managed under the IFQ program in the U.S. groundfish trawl fishery are the same ones managed under the IVQ program in the BC groundfish trawl fishery. While the species composition is very similar, there are substantial differences in the stock biomass and the trawl sector allowable catch levels for each species in the two fisheries. To account for these differences, we compare the attainment rates (the percentage of quota harvested) by species rather than absolute catch levels in Tables 1 and 2. We find large differences in the level of strandings (the failure to catch allocated quota) between the two fisheries, with the BC IVQ fishery stranding fewer fish.

Table 1. Total catch and attainment by species category during 2012 in the U.S. IFQ and BC IVQ programs. Only the species with assigned quotas and that are directly comparable are included.

	U.S. non-whiting IFQ fishery			BC non-whiting IVQ fishery			
Species (Coastwide)	Catch (lb)	Quota (lb)	Attain.	Catch (lb)	Quota (lb)	Attain.	BC/US Attain.
Arrowtooth flounder	5,448,430	20,861,131	26.12%	15,972,410	40,707,990	39.24%	150.23%
Canary rockfish	15,942	57,761	27.60%	1,627,852	2,183,811	74.54%	270.08%
Dover sole	16,051,104	49,018,682	32.74%	5,294,339	8,613,673	61.46%	187.71%
English sole	323,490	21,037,611	1.54%	1,141,981	2,265,183	50.41%	3278.62%
Lingcod	839,096	3,991,800	21.02%	1,509,409	6,640,961	22.73%	108.13%
Longspine thornyheads	2,013,235	4,219,648	47.71%	216,697	1,142,796	18.96%	39.74%
Pacific cod	873,674	2,502,247	34.92%	2,672,041	6,153,965	43.42%	124.36%
Pacific halibut (IBQ)	71,586	232,856	30.74%	245,371	1,129,550	21.72%	70.66%
Pacific ocean perch	118,142	263,441	44.85%	9,187,572	13,002,388	70.66%	157.56%
Petrale sole	2,331,479	2,324,995	100.28%	1,671,227	1,692,848	98.72%	98.45%
Sablefish	5,409,944	6,572,149	82.32%	390,901	513,334	76.15%	92.51%
Shortspine thornyheads	1,570,542	3,230,764	48.61%	1,454,089	1,981,638	73.38%	150.95%
Widow rockfish	340,210	755,352	45.04%	4,258,767	6,328,477	67.30%	149.41%
Yelloweye rockfish	76	1,323	5.74%	14,062	15,428	91.14%	1586.61%
Yellowtail rockfish	2,194,137	6,850,556	32.03%	9,017,732	9,618,146	93.76%	292.73%
Total	37,601,087	121,920,316	**30.84%**	54,674,452	101,990,188	**53.61%**	173.82%

Sources: Sean E. Matson 2013. Annual Catch Report for the Pacific Coast Groundfish, Shorebased IFQ Program in 2012. National Marine Fisheries Service and NWR, Sustainable Fisheries Division.
Department of Fisheries and Oceans Canada. 2012-2013 Groundfish Trawl Summaries of Catch vs Available Weight. Summarized for 21-Feb-12 through 20-Feb-13.

Table 2. Total catch and attainment by species category during 2011 in the U.S. IFQ and BC IVQ programs. Only the species with assigned quotas and that are directly comparable are included.

	U.S. non-whiting IFQ fishery			BC non-whiting IVQ fishery			
Species (Coastwide)	Catch (lb)	Quota (lb)	Attain.	Catch (lb)	Quota (lb)	Attain.	BC/US Attain.
Arrowtooth flounder	5,576,000	27,406,105	20.35%	18,311,868	41,931,056	43.67%	214.65%
Canary rockfish	8,125	57,100	14.23%	1,508,660	2,211,912	68.21%	479.33%
Dover sole	17,269,411	49,018,682	35.23%	4,174,001	8,817,146	47.34%	134.37%
English sole	302,936	41,166,808	0.74%	1,247,442	2,333,022	53.47%	7266.04%
Lingcod	639,244	4,107,873	15.56%	2,117,206	6,522,429	32.46%	208.60%
Longspine thornyheads	2,119,804	4,334,839	48.90%	82,540	1,151,105	7.17%	14.66%
Pacific cod	556,691	2,502,247	22.25%	3,780,874	5,907,800	64.00%	287.66%
Pacific halibut (IBQ)	70,839	257,524	27.51%	307,612	1,128,051	27.27%	99.13%
Pacific ocean perch	101,433	263,148	38.55%	9,627,469	13,451,210	71.57%	185.68%
Petrale sole	1,789,627	1,920,226	93.20%	1,825,750	1,878,888	97.17%	104.26%
Sablefish	6,297,088	6,784,109	92.82%	366,657	478,577	76.61%	82.54%
Shortspine thornyheads	1,593,171	3,266,369	48.77%	900,114	1,932,247	46.58%	95.51%
Widow rockfish	303,703	755,348	40.21%	5,185,086	6,521,349	79.51%	197.75%
Yelloweye rockfish	128	1,323	9.67%	18,117	15,428	117.43%	1213.73%
Yellowtail rockfish	1,629,184	6,821,455	23.88%	9,787,369	9,751,025	100.37%	420.26%
Total	38,257,384	148,663,156	**25.73%**	59,240,765	104,031,246	**56.95%**	221.28%

Sources: Sean E. Matson 2013. Annual Catch Report for the Pacific Coast Groundfish, Shorebased IFQ Program in 2012. National Marine Fisheries Service and NWR, Sustainable Fisheries Division.
Department of Fisheries and Oceans Canada. 2011-2012 Groundfish Trawl Summaries of Catch vs Available Weight. Summarized for 21-Feb-11 through 20-Feb-12.

In Tables 3 and 4, we focus on the seafood industry as a whole to emphasize the magnitude of the revenue loss from strandings at all stages of production to fishermen, processors, and local communities. Large differences in the attainment rates between the U.S. and BC non-whiting groundfish fisheries translate into revenue losses in the U.S. fishery in order of magnitude of about 50 percent of the total industry revenue in 2012. If the attainment rates in the U.S. non-whiting IFQ fishery were as high as in BC IVQ fishery during 2011 and 2012, the U.S. industry as a whole would have generated additional $24 million in 2011 and $25.2 million in 2012. The U.S. industry revenue figures are based on the weighted average wholesale market prices and the

average recovery factors during the primary processing while the ex-vessel revenue figures are based on ex-vessel prices in 2011 and 2012.[6]

Table 3. Total revenue and revenue losses from strandings by species category during 2012 in the U.S. IFQ program. Only the species with assigned quotas and that are directly comparable are included. Halibut is not included since the catch cannot be retained and sold legally.

	Industry		Ex-vessel	
Species (Coastwide)	Revenue ($)	Rev. Loss ($)	Revenue ($)	Rev. Loss ($)
Arrowtooth flounder	2,304,250	1,157,430	653,812	328,411
Canary rockfish	9,354	15,910	8,609	14,642
Dover sole	16,013,544	14,044,971	6,741,464	5,912,724
English sole	289,291	9,195,448	109,987	3,496,055
Lingcod	1,139,962	92,642	629,322	51,144
Longspine thornyheads	3,207,285	-1,932,596	885,823	-533,766
Pacific cod	878,392	213,947	524,204	127,679
Pacific ocean perch	70,224	40,423	61,434	35,364
Petrale sole	3,480,805	-54,014	3,427,274	-53,183
Sablefish	19,758,847	-1,480,211	12,605,170	-944,302
Shortspine thornyheads	3,771,437	1,921,405	1,303,550	664,109
Widow rockfish	126,395	62,455	159,899	79,010
Yelloweye rockfish	92	1,374	21	305
Yellowtail rockfish	1,000,878	1,928,997	1,140,951	2,198,962
Total	52,050,755	**25,208,179**	28,251,518	**11,377,152**

Note: Revenues and losses generated from both the primary processing and fish meal production are included in the industry revenue and loss calculations. Positive revenue loss values reflect lower attainment rates in the U.S. fishery than in the BC fishery. Canary, pacific ocean perch, widow and yelloweye rockfish are not usually targeted and thus their role as revenue fish is much less important than their role as potential bycatch constraints on other valuable target species.

[6] Product recovery factors vary by species and product form and are considered proprietary business information. Based on confidential information, we believe that the factors used in our calculations can be considered representative of the groundfish processing industry as a whole.

Table 4. Total revenue and revenue losses from strandings by species category during 2011 in the U.S. IFQ program. Only the species with assigned quotas and that are directly comparable are included. Halibut is not included since the catch cannot be retained and sold legally.

	Industry		Ex-vessel	
Species (Coastwide)	Revenue ($)	Rev. Loss ($)	Revenue ($)	Rev. Loss ($)
Arrowtooth flounder	2,300,527	2,637,446	557,406	639,040
Canary rockfish	5,093	19,320	4,630	17,562
Dover sole	16,756,898	5,759,674	7,077,997	2,432,846
English sole	280,264	20,083,811	93,878	6,727,300
Lingcod	878,374	953,871	479,266	520,460
Longspine thornyheads	3,127,955	-2,669,300	890,008	-759,505
Pacific cod	504,409	946,584	317,204	595,270
Pacific ocean perch	62,704	53,727	49,685	42,571
Petrale sole	2,814,033	119,962	2,558,277	109,059
Sablefish	32,458,511	-5,667,400	18,192,257	-3,176,449
Shortspine thornyheads	3,610,399	-162,196	1,226,315	-55,092
Widow rockfish	103,988	101,648	130,547	127,610
Yelloweye rockfish	166	1,843	28	314
Yellowtail rockfish	560,505	1,795,098	879,453	2,816,576
Total	63,463,825	**23,974,089**	32,456,950	**10,037,561**

Note: Revenues and losses generated from both the primary processing and fish meal production are included in the industry revenue and loss calculations. The data have been adjusted to 2012 dollars by applying the Producer Price Index for unprocessed and packaged fish (series number WPU0223) from the Bureau of Labor Statistics at http://data.bls.gov/cgi-bin/srg.

Table 5 summarizes QS and annual vessel accumulation limits in the U.S. IFQ and BC IVQ programs. QS Accumulation limits in the U.S. program are comparable to permanent species caps in the BC program. The main difference between the two is that QS accumulation limits in the U.S. program limit the amount of QS that may be owned or controlled by one entity while the permanent species caps in the BC program limit the amount of QS that can be attached to each limited entry groundfish trawl permit. In BC, the emphasis is placed on the QS spread among permits rather than the ownership of QS. A person (or business entity) can own and operate as many vessels as he wants for example as long as he transfers an appropriate amount of QS to each vessel.

Annual vessel accumulation limits in the U.S. are comparable to temporary species caps or non-T temporary species caps (whichever is greater) in BC. For example, the annual vessel accumulation limit for yellowtail rockfish in the U.S. fishery is 7.5 percent compared to yellowtail temporary species cap in BC of seven percent.

Another major difference between the two programs is aggregate non-whiting non-halibut groundfish species accumulation limits. The U.S. IFQ program has both the aggregate non-whiting limit on QS ownership (2.7 percent) and the aggregate non-whiting limit on the amount of QP that may be fished by any vessel (3.2 percent). These low aggregate limits further reduce individual species QS and vessel accumulation limits. For example, a business entity might not be able to maximize its QS holdings for each IFQ species in its portfolio without going over the aggregate non-whiting cap of 2.7 percent. It also might not be able to transfer the optimal amount of QPs to its vessel without going over the aggregate non-whiting vessel cap of 3.2 percent. The BC IVQ program has no aggregate QS or vessel accumulation limits.

Table 5. QS and vessel accumulation limits in the U.S. IFQ and BC IVQ programs

	U.S. IFQ Program		BC IVQ Program		
Species	QS Accumulation Limit (%)	Annual Vessel Accumulation Limit (%)	Permanent Species Cap (%)	Temporary Species Cap (%)	Non-T Temporary Species Cap (%)
Yellowtail Rockfish	5.0%	7.5%	5.0%	7.0%	0.0%
Widow Rockfish	5.1%	8.5%	5.0%	7.0%	0.0%
Canary Rockfish	4.4%	10.0%	4.0%	6.0%	10.0%
Pacific Ocean Perch	4.0%	6.0%	5.0%	5.0%	0.0%
Shortspine Thornyheads N.	6.0%	9.0%			
Shortspine Thornyheads S.	6.0%	9.0%			
Shortspine Thornyheads (coastwide)			10.0%	10.0%	10.0%
Longspine Thornyheads	6.0%	9.0%	10.0%	10.0%	10.0%
Yelloweye Rockfish	5.7%	11.4%	4.0%	4.0%	0.0%
Pacific Cod	12.0%	20.0%	4.0%	6.0%	0.0%
Dover Sole	2.6%	3.9%	5.0%	5.0%	0.0%
English Sole	5.0%	7.5%	6.0%	8.0%	0.0%
Petrale Sole	3.0%	4.5%	4.0%	6.0%	0.0%
Lingcod N.	2.5%	5.3%			
Lingcod S.	2.5%	13.3%			
Lingcod (coastwide)			5.0%	7.0%	10.0%
Sablefish N.	3.0%	4.5%			
Sablefish S.	10.0%	15.0%			
Sablefish (coastwide)			5.0%	7.0%	10.0%
Pacific Whiting (shoreside)	10.0%	15.0%	15.0%	15.0%	0.0%
Arrowtooth Flounder	10.0%	20.0%	8.0%	15.0%	0.0%
Aggregate non-whiting groundfish species	**2.7%**	**3.2%**	**n/a**	**n/a**	**n/a**

Source: 50 CFR Part 660, Federal Pacific Coast Groundfish Regulations for Commercial and Recreational Fishing 3-200 Nautical Miles off Washington, Oregon, and California. Department of Fisheries and Oceans Canada, Pacific Region Integrated Fishery Management Plan, Groundfish, Feb 21, 2011 to Feb 20, 2013.

We summarize the important differences in regulations between the U.S. IFQ program and BC IVQ program in Table 6. We believe the revenue losses from low attainment rates experienced in the first two years of the U.S. IFQ program are a consequence of these differences in regulations, including out-of-date rules that are unnecessary in an IFQ fishery that requires personal accountability. One observation worth mentioning is that catch-share programs are dynamic and change over time as the program participants respond to changing conditions and information. When the BC IVQ program was first implemented for example, the aggregate IVQ holding cap for certain species (i.e. the total amount of a given species QS attached to limited entry groundfish trawl permits aggregated over the whole trawl fleet and expressed in pounds) was almost double the TAC for those species. This was done in order to allow the groundfish trawl fleet to consolidate. As of 2011, the IVQ holding caps were increased by 50 percent as to allow a further consolidation which was needed due to trawl fleet's economic condition at the time.

Table 6. Differences in regulations between the U.S. IFQ and BC IVQ programs

	U.S. IFQ Program	BC IVQ Program
Restrictions on QS	The U.S. IFQ program has accumulation limits on the amount of QS that may be owned or controlled by one economic entity. QS accumulation limits are set for each IFQ species as well as the aggregate non-whiting non-halibut QS holdings.	The BC IVQ program does not have QS accumulation limits. Instead, there are limits on the amount of QS that can be attached to each limited entry groundfish trawl permit. There are no limits on the amount of permits that may be owned by one entity. QS limits associated with each permit are set for each IVQ species, but not for the aggregate amount of non-whiting non halibut QS that can be attached to a permit.
Restrictions on QP	The U.S. IFQ program has accumulation limits on the amount of QP that may be fished by any vessel or controlled by one economic entity. Vessel accumulation limits are set for each IFQ species as well as the aggregate non-whiting non halibut QPs transferred to a vessel. QP limits are annual limits for all IFQ species. IFQ species currently under a rebuilding plan have daily QP limits in addition to annual QP limits.	The BC IVQ program has annual accumulation limits on the amount of QP that may be fished by any vessel. Vessel accumulation limits are set for each IVQ species. There is no aggregate non-whiting non halibut limit on QP that can be transferred to a vessel. The Department of Fisheries and Oceans has the authority to relax vessel accumulation limits if there are no concerns regarding the TAC overages given a request for relaxation is made.
Carry-forward and carry-back allowances	The maximum carry-forward/carry-back allowance in the U.S. IFQ fishery is 10 percent of the unfished QP. Not all IFQ species are allowed to be carried over each year and it is not always the case the maximum allowance is 10 percent. This is decided on an annual basis. Pacific whiting is almost never allowed to be carried over. Carry-forward/carry-back QP amounts count against the annual vessel limits in the current year.	The maximum carry-forward/carry-back allowance in the BC IVQ fishery is 30 percent of the unfished QP except for a few species with short lifespans or sharply varying year class recruitment. The maximum carry-over allowance for pacific whiting is 15 percent. All IVQ species are allowed to be carried over including pacific whiting. Carry-forward/carry-back QP amounts do not count against the annual vessel limits in the current year.
Inter-sector trading	Inter-sector trading is not allowed in the U.S. IFQ program. Sablefish is a special case since the fixed-gear and open-access sector vessels are allowed to purchase sablefish QP from the shoreside trawl sector if they obtain necessary trawl permits. At the same time, limited entry groundfish trawl vessels are not allowed to purchase sablefish from the fixed-gear sector.	Inter-sector trading is allowed in the BC IVQ program.

Appendix 3: Example

The following example illustrates a comparative advantage a fisherman in BC IVQ program has over a fisherman in the U.S. IFQ program, which arises from differences in regulations between the two programs described in Table 6.We assume the shoreside trawl allocation for each species is the same in both fisheries, the U.S. fisherman has some unfished quota pounds from the previous fishing season that he is allowed to carry over (ten percent for each species except pacific whiting), and that the BC fisherman has some unfished quota pounds from the previous season as well.[7]

In this example, the U.S. fisherman chooses to hold the maximum amount of QS he is allowed to own for the constraining species (widow, canary, pacific ocean perch, and yelloweye rockfish) and the high revenue target species (pacific whiting, sablefish, dover sole, petrale sole, thornyheads, and yellowtail rockfish). He would like to hold the maximum amount of QS allowed for the other species too (pacific cod, english sole, lingcod and arrowtooth flounder), but is constrained by the aggregate non-whiting limit of 2.7 percent. The U.S. fisherman chooses to carry over ten percent of the constraining species as well as dover, petrale and sablefish quota pounds from the previous year, which counts against his annual vessel limits.[8] He also chooses to lease additional quota pounds for the same species and pacific whiting to transfer to his vessel. He would like to be able to transfer to his vessel the maximum amount of quota pounds allowed for each non-whiting IFQ species (7,068,127 pounds in aggregate), but is constrained by the aggregate non-whiting vessel limit of 3,934,134 pounds (3.2 percent of 2014 aggregate non-whiting groundfish pounds for the shoreside IFQ program).

The BC fisherman holds the maximum amount of QS he is allowed to attach to his permit for all species since he is not constrained by the aggregate non-whiting limit. He carries over 30 percent of all species, including pacific whiting, which does not count against his annual vessel limits. He transfers everything to his vessel and chooses to lease additional quota pounds for those species for which he is still below the vessel limit. In total, he transfers the maximum amount of pounds allowed for each species (56,284,599 pounds in aggregate, of which 9,453,289 pounds is non-whiting groundfish) since he is not constrained by the aggregate non-whiting vessel limit.

In summary, the BC fisherman has the option to fish up to 9.5 million pounds of non-whiting groundfish with his vessel while the U.S. fisherman has the option to fish up to 3.9 million pounds of non-whiting groundfish in 2014. Not only the BC fisherman has the option to fish up to 5.5 million pounds more than the U.S. fisherman, but also the BC fisherman can do this at the lower quota pounds transaction cost. In other words, the BC fisherman carries over 12.9 million pounds in total (10.8 million pounds of whiting and 2.2 million pounds of non-whiting groundfish) and leases only 1.6 million pounds of non-whiting groundfish. On the other hand, the U.S. fisherman carries over only 277,125 pounds of non-whiting groundfish and leases 12.6 million pounds in total (12 million pounds of whiting and 625,261 pounds of non-whiting groundfish), which is more costly and time consuming than in the BC fisherman's case.

Although this example is a simplified version of the real world situation where we have two large quota holders/vessel operators, it allows us to better understand complex regulations in both fisheries and highlight the possible causes of the U.S. IFQ fishery economic underperformance when compared to the BC IVQ fishery. As shown in our simple example, less constraining and more flexible QS and QP accumulation limits and rollover allowances lead to increased harvest output, enhanced revenue for the whole industry, possible specialization and lower transaction costs by allowing greater level of consolidation and operating efficiency. This is in

[7] The shoreside trawl allocation is a control variable for the purposes of this exercise to test the relative impact of QS and QP restrictions and the rollover allowances in the two programs. We use 2014 shoreside trawl allocation values in the U.S. IFQ program. Only directly comparable species are included.

[8] This might not be the case in reality since not all IFQ species are allowed to be carried over each year and it is not always the case the maximum rollover allowance is ten percent.

particular true for the U.S. non-whiting groundfish trawl fleet which is heavily constrained by not only individual species caps, but also aggregate non-whiting caps.

Example 1: The U.S. fisherman portfolio at the start of 2014 fishing season

The U.S. fisherman portfolio at the start of 2014 fishing season					
Species	QS owned (%)	QP owned and transferred to the vessel (lb)	10% carry-forward allowance (lb)	QP leased and transferred to the vessel (lb)	Total QP transferred to the vessel (lb)
Yellowtail Rockfish	5.00%	323,953			323,953
Widow Rockfish	5.10%	111,742	18,624	55,871	186,237
Canary Rockfish	4.40%	3,987	906	4,168	9,061
Pacific Ocean Perch	4.00%	9,901	1,485	3,466	14,852
Shortspine Thornyheads N.	6.00%	181,549			181,549
Shortspine Thornyheads S.	6.00%	6,614			6,614
Longspine Thornyheads	6.00%	239,607			239,607
Yelloweye Rockfish	5.70%	126	25	101	251
Pacific Cod	7.16%	177,805			177,805
Dover Sole	2.60%	1,274,486	191,173	446,070	1,911,729
English Sole	1.00%	115,982			115,982
Petrale Sole	3.00%	157,278	23,592	19,172	200,042
Lingcod N.	1.50%	38,200			38,200
Lingcod S.	1.50%	15,685			15,685
Sablefish N.	3.00%	131,484	19,723	46,019	197,226
Sablefish S.	10.00%	143,984	21,598	50,394	215,976
Pacific Whiting (shoreside)	10.00%	24,016,057		12,008,028	36,024,085
Arrowtooth Flounder	1.30%	99,367			99,367
Aggregate non-whiting groundfish species	2.70%				**3,934,134**
Total		27,047,805	277,125	12,633,289	**39,958,219**

Example 1: The BC fisherman portfolio at the start of 2014 fishing season

The BC fisherman portfolio at the start of 2014 fishing season					
Species	QS owned (%)	QP owned and transferred to the vessel (lb)	30% carry-forward allowance (lb)	QP leased and transferred to the vessel (lb)	Total QP transferred to the vessel (lb)
Yellowtail Rockfish	5.0%	323,953	136,060	129,581	589,594
Widow Rockfish	5.0%	109,551	46,011	43,820	199,383
Canary Rockfish	4.0%	3,624	2,718	5,437	11,779
Pacific Ocean Perch	5.0%	12,377	3,713		16,090
Shortspine Thornyheads (coastwide)	10.0%	313,605	94,082		407,687
Longspine Thornyheads	10.0%	399,345	119,804		519,149
Yelloweye Rockfish	4.0%	88	26		115
Pacific Cod	4.0%	99,332	44,700	49,666	193,698
Dover Sole	5.0%	2,450,934	735,280		3,186,214
English Sole	6.0%	695,891	278,357	231,964	1,206,212
Petrale Sole	4.0%	209,704	94,367	104,852	408,922
Lingcod (coastwide)	5.0%	179,616	107,770	179,616	467,002
Sablefish (coastwide)	5.0%	291,131	174,679	291,131	756,942
Pacific Whiting (shoreside)	15.0%	36,024,085	10,807,225		46,831,310
Arrowtooth Flounder	8.0%	611,488	343,962	535,052	1,490,503
Aggregate non-whiting groundfish species					**9,453,289**
Total		41,724,726	12,988,754	1,571,120	**56,284,599**

Arctic Storm Management Group
2727 Alaskan Way
Seattle, WA 98121

Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 NE Ambassador Pl. #101
Portland, OR 97220
September 3, 2014

Item J.1.d

RE: Groundfish Omnibus Regulatory Priority List. #65 Option to Transfer Buyback fish to MS Sector

Dear Chairman Lowman,

Please include Item #65 on your Groundfish Omnibus Priority List which would allow Mothership (MS) permit holders the option of transferring the "equal share" bycatch specie portion of their Buyback allocation to the MS sector. Please consider the following when making your decision:

Problem:
Bycatch allocation of overfished rockfish species is constraining and very costly to MS whiting sector.
Solution:
Allow MS sector participants voluntary access to "equal share" rockfish bycatch species purchased by them under the Buyback program but now unavailable to them because their Buyback shares are restricted to use only in shoreside sector.

The Cost of Bycatch Avoidance. The MS sector continues to be constrained by sector allocations of overfished species. Efforts to avoid the small bycatch amounts of rockfish allocated to the MS sector have forced the MS coop to implement costly bycatch avoidance measures. Specifically, Coop members have closed fishing ground areas that, combined, are larger than Mt Rainier National Park and implemented bycatch trigger rates so low that dozens of movements are required annually no matter how good the fishing is at the time. This spring, bycatch rate triggers required the members of the four MS fleets to move 27 times. A disaster tow of POP bycatch on the fourth day of the season burned through 90% of the seasonal pool allocation of POP with only 24% of the hake allocated to that pool landed. With only .29 mt of POP remaining, all four fleets agreed to move south beyond the range of POP to avoid shut down of the spring fishery. This caused four MS and 12 CVs to pick up and leave tremendous fishing off the coast of Washington (500 tons/day of 600gram fish on at least one MS platform) and move approximately 600 miles south to the California border area. That single move cost the fleet about $420,000 in fuel alone and much more based on two days lost fishing time to travel south to a less productive whiting area outside the range of POP.

Buyback Fish Allocation. In an effort to reduce the size of an overcapitalized Pacific trawl fishery, a Buyback program was organized utilizing a federal loan to remove latent or little used permits. The only permits removed were non-whiting permits. Nonetheless, whiting permits pay back most of the loan with a 5% assessment of its annual catch. Last year the MS sector paid about $600,000 as its annual contribution toward repayment of this loan. In return, whiting vessels are allocated IQ pounds of groundfish species based on the amount and location of their catch history as well as an "equal share" amount allocated to all whiting permit holders even if they have no shoreside catch history. While

shoreside whiting participants can access this allocation to supplement its sector allocation of rockfish bycatch, participants in the MS whiting fishery cannot.

"Equal Share" Buyback Fish. The allocation of Buyback fish is complex because it is based on catch history and location of harvest of three categories of fish as described 50 CFR part 660.140 Shorebased IFQ Program regulations. However, there is a minimum "equal share" amount allocated to whiting permit holders without shoreside sector catch history. It is small part of the Buyback redistribution. NMFS has worked with the Shorebased Bycatch Coop to identify these amounts. It is a somewhat complex calculation but the amounts are very similar to the allocations made to MS whiting permit holders with no shoreside history. Using rockfish allocations made to these MS permit holders as a proxy for this small slice of buyback allocation, approximate amounts can be identified. Currently, that "equal share" Buyback fish is unavailable to those participating in the MS fishery. So, unless a MS CV is dual qualified to fish in the shoreside sector, it is paying for the fish but is unable to utilize it. We would like the Council to consider a proposal that would allow individual MS permit holders the *option* to transfer their "equal share" amount of Buyback rockfish species allocated to the Shoreside IQ program to the MS sector on an annual basis.

Amount of Fish. Using as a proxy MS sector whiting permits with no shoreside whiting or groundfish history, such as GF0351 and GF0438, an initial allocation of "equal share" fish to be used by a MS permit would be as follows:

Canary – 301 pounds
DB – 1732
Widow – 3724
POP – 712

There are 36 MS permits. So using this proxy amount, the total quota lbs of "equal share" fish available for use in both the MS and SS fisheries would be:

Canary -10,836 pounds
DB – 62,352
Widow – 135,064
POP – 25,632

The amount of these species allocated to the shoreside fisheries and left in the water in 2012 compared to the proxy for "equal share" amount to individual MS permits and the aggregate of 36 MS permits is shown below.

Species	Allocation	Unused	Indiv. MS permit "Equal Share"	Aggregate MS "Equal Share"
Canaries	57,761	41,819	301	10,836
DB	548,808	351,191	1,732	62,352
Widow	755,352	415,142	3,742	134,064
POP	263,441	145,299	712	25,632

Current Management. Buyback fish are allocated to 172 whiting and groundfish CV permits, including 36 permits in the MS sector. While the MS participants only have access to the bycatch allocation to its sector, the Shoreside sector endorsed whiting permits can use their initial IFQ rockfish allocations, their Buyback rockfish allocations, and can purchase or lease rockfish species from the non-whiting trawl sector to cover bycatch in the Shoreside whiting fishery. The MS sector does not have access to the Buyback or other IFQ fish and so is more constrained by bycatch.

Our request. Since the Buyback program began ten years ago, about $21 million has been repaid to the federal government. Last year, the MS vessels had approximately $600,000 deducted from settlement checks to help repay the loan. However, none of the Buyback fish could be used to supplement sector bycatch allocations as is done in the Shoreside sector. We ask that the Council consider a measure that would provide individual MS whiting permit holders the *option* to allocate their "equal share" amount of the bycatch species for use in *either* the shoreside or MS fisheries. We ask for its inclusion on the Council's Omnibus Regulatory List for future consideration. *We also ask that you consider automatic transfer of additional "equal share" species if they are later identified by the Council to have bycatch caps in the whiting fishery.*

Sincerely,

Donna Parker
Dir. Government Affairs

How to proceed with IFQ trailing action - trawl priorities

Ralph Brown

The Omnibus regulation package contains a lengthy list of proposed groundfish regulatory changes which makes prioritizing the list difficult. To better frame the importance of one item over another it is suggested to consider the magnitude of the potential economic benefit of a change in comparison to others. To gauge the size of this potential change it is helpful to view the current obtainment of an allocation.

For example, the obtainment of the Pacific whiting allocation is around 98% of the allocation. The obtainment of the fixed gear Sablefish is around 98% of the allocation. On the other hand, the obtainment of most trawl IFQ species is between 15% and 30% of the allocation. Therefore, regulatory changes that pertain to the Pacific whiting or fixed gear sablefish fishery, will provide little additional economic benefit, while changes that pertain to the bottom trawl fishery has great potential for improvement in economic returns.

From this perspective, the trawl industry's top priorities for regulatory changes are Widow rockfish allocation, comprehensive RCA changes, and gear regulation overhaul. These three issues are very much intertwined and need to proceed jointly as a regulatory package. For example, modifications to the RCA's which could result in complete elimination or very specific closed areas would make regulations requiring the use of selective flatfish trawls shoreward of the RCA a meaningless regulation.

The trawl industry pledges to work with the NMFS and Pacific Council staff to expedite and facilitate the development of a proposed regulatory package to achieve these changes.

It is suggested that the first step is to proceed with a review of all the current regulations and to make suggestions to be considered for deletion. The consideration of proposed deletions will include gear regulations or any other trawl regulations that are viewed to no longer have relevance.

The industry will by the end of September provide NMFS and NOAA General Counsel a copy of their proposed deletions. By the end of October NMFS and NOAA General Counsel will respond to the industry suggestions by indicating concurrence that the changes are appropriate for the Council consideration and/or explanations as to why portions of the suggested deletions should not occur. If NMFS and NOAA General Counsel have any suggested deletions that the industry has not included, they will provide those suggestions at the same time.

As a second step, the industry will provide NMFS and NOAA General Counsel with a set of coordinates for proposed alternative to the current trawl RCA's by the end of October for consideration.

Lastly, the industry desires for Widow rockfish allocation to utilize the same time series that was used for all other species of groundfish in the IFQ program. This allocation would set an amount of Widows rockfish aside for distribution as bycatch in the Whiting fishery and then allocate the balance using a combination of catch history and equal sharing.

STOCK ASSESSMENT PLANNING

This agenda item concerns planning for new groundfish stock assessments that are anticipated to be completed in 2015, which will be used to inform the harvest specifications and management measures decisions for groundfish fisheries in 2017 and beyond.

In June, the Council made a preliminary decision to conduct full assessments for black rockfish, bocaccio, canary rockfish, China rockfish, cowcod, darkblotched rockfish, kelp greenling, and widow rockfish. The Council also made a preliminary decision to conduct update assessments for petrale sole and sablefish and indicated sablefish could either be an update or a full assessment. Further, they indicated an arrowtooth flounder assessment could be done either as an update or a data-moderate assessment.

The National Marine Fisheries Service (NMFS) provides their comments and suggestions on the preliminary 2015 stock assessment plan in Agenda Item J.2.b, NMFS Report. Likewise, the Washington Department of Fish and Wildlife offers their perspectives and recommendations on stock assessment planning in Agenda Item J.2.b, WDFW Report.

There are three Terms of Reference (TOR) that guide the stock assessment process: one specifies how the next assessment process should occur and defines the roles and responsibilities of various entities contributing to this process, one guides the development of rebuilding analyses used to develop harvest specifications and rebuilding plans for overfished species, and one guides how new methods are reviewed and recommended for scientific activities that inform analyses used in management decision-making. These TOR have been reviewed by members of the SSC and others, and are included as Agenda Item J.2.a, Attachments 1, 2, and 3, respectively. Staff from the Northwest and Southwest Fisheries Science centers have also proposed some modifications to the stock assessment TOR (Attachment 1), which are proposed in a "track changes" format, to bolster the TOR with respect to new National Standard 2 guidelines. The Council may want to modify these TOR for the upcoming assessment cycle.

The Council will consider the input from NMFS, the advisory bodies, and the public before providing a final decision on 2015-2016 stock assessment priorities by species, type of assessment (full, data-moderate, update, or catch report), and language for the three draft TOR.

Council Action:

1. **Adopt the List of Stocks to be Assessed in 2015;**
2. **Adopt the TOR for the Groundfish and Coastal Pelagic Species Stock Assessment and Review Process for 2015-2016;**
3. **Adopt the SSC Terms of Reference for Groundfish Rebuilding Analysis;**
4. **Adopt the TOR for the Methodology Review Process for Groundfish and Coastal Pelagic Species; and**
5. **Adopt the 2015 Groundfish Stock Assessment Review Schedule.**

Reference Materials:

1. Agenda Item J.2.a, Attachment 1: Draft Terms of Reference for the Groundfish and Coastal Pelagic Species Stock Assessment and Review Process for 2015-2016.
2. Agenda Item J.2.a, Attachment 2: Draft Terms of Reference for the Groundfish Rebuilding Analysis for 2015-2016.
3. Agenda Item J.2.a, Attachment 3: Draft Terms of Reference for the Methodology Review Process for Groundfish and Coastal Pelagic Species.
4. Agenda Item J.2.b, NMFS Report: National Marine Fisheries Service Suggestions for 2015 Groundfish Stock Assessments.
5. Agenda Item J.2.b, WDFW Report: Washington Department of Fish and Wildlife Report on Groundfish Stock Assessment Planning.

Agenda Order:

a. Agenda Item Overview John DeVore
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Adopt a Final List of Stock Assessments (Full, Updates, Data-Moderate, and Catch Reports), Related Terms of Reference Documents, and the Stock Assessment Review Panel Schedule for the 2015-2016 Assessment Cycle

PFMC
08/18/14

Agenda Item J.2.a
Attachment 1
September 2014

TERMS OF REFERENCE

FOR THE

GROUNDFISH AND COASTAL PELAGIC SPECIES STOCK ASSESSMENT ~~AND~~ REVIEW PROCESS FOR ~~2013~~2015-~~2014~~2016

~~NOVEMBER, 2012~~AUGUST, 2014

TABLE OF CONTENTS

1. INTRODUCTION

The purpose of this document is to outline the guidelines and procedures for the Pacific Fishery Management Council's (Council) groundfish and coastal pelagic species (CPS) stock assessment review (STAR) process and to clarify expectations and responsibilities of the various participants. This document applies to assessments of species managed under the Pacific Coast Groundfish Fishery Management Plan and CPS Management Plan ~~for the CPS~~. The STAR process has been designed to provide for peer review as referenced in the 2006 Reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (RMSA), which states that "the Secretary and each Regional Fishery Management Council may establish a peer review process for that Regional Fishery Management Council for scientific information used to advise the Regional Fishery Management Council about the conservation and management of the fishery (see Magnuson-Stevens Act section 302(g)(1)(E))." ~~This~~National Standard 2 (NS2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (published July 19, 2013) provides guidance and standards to be followed when establishing a peer review process pursuant to MSA section 302(g)(1)(E) including guidance on the timing, scope of work, peer reviewer selection and process transparency. The STAR process follows these standards and is fully compliant with NS2.

Parties involved in the process are Council members, Council staff, members of Council Advisory Bodies, including the Scientific and Statistical Committee (SSC), the Groundfish and CPS Management Teams (GMT and CPSMT), the Groundfish and CPS Advisory Subpanels (GAP and CPSAS), the National Marine Fisheries Service (NMFS), state agencies, and interested persons. The review by the ~~stock assessment review panel (~~STAR panel~~)~~ is a key element in an overall procedure designed to ~~The STARis peer review process is designed to~~ investigate the technical merits of stock assessments and other relevant scientific information ~~used by the Council's Scientific and Statistical Committee (SSC)~~. ~~The process outlined here is not a substitute for the SSC, but should work in conjunction with the SSC. This document is included in the Council's Statement of Organization, Practices and Procedures as documentation of the review process that underpins scientific advice from the SSC.~~

The review of stock assessments requires a routine, dedicated effort that simultaneously meets the needs of NMFS, the Council, and others. Program reviews, in-depth external reviews, and peer-reviewed scientific publications are used by federal and state agencies to provide quality assurance for the basic scientific methods employed to produce stock assessments. The extended time frame required for such reviews is not suited to the routine examination of assessments that are, generally, the primary basis for harvest recommendations. ~~The SSC has developed a separate terms of reference for reviewing new methods that might be used in stock assessments, including methods and tools to incorporate ecosystem processes.~~

~~The STAR process is a key element in an overall procedure designed to review the technical merits of stock assessments and other relevant scientific information. This process allows the Council to make timely use of new fishery and survey data, analyze and understand these data as thoroughly as possible, provide opportunity for public comment, assure that the results are as accurate and error-free as possible, and identify the best available science for management decisions. Parties involved in implementing the STAR process are Council members, Council staff, members of Council Advisory Bodies, including the SSC, the Groundfish and CPS Management Teams (GMT and CPSMT), the Groundfish Advisory SubPanel (GAP) and CPS Advisory Subpanel (CPSAS), the National Marine Fisheries Service (NMFS), state agencies, and~~

~~interested persons.~~

This current version of the ~~STAR~~ terms of reference (TOR) reflects recommendations from previous participants in the STAR process, including STAR panel members, the SSC ~~members~~, stock assessment teams (STATs), Council staff, and Council advisory groups. Nevertheless, no set of guidelines can be expected to deal with every contingency, and all participants should anticipate the need to be flexible and address new issues as they arise. This document is included in the Council's Statement of Organization, Practices and Procedures as documentation of the review process that underpins scientific advice from the SSC. The SSC has developed a separate ~~terms of reference~~TOR for reviewing new methods that might be used in stock assessments, including methods and tools to incorporate ecosystem processes.

Stock assessments are conducted to assess the abundance and trends of fish stocks, and provide the fundamental basis for management decisions regarding appropriate harvest levels. ~~Assessments~~ In most cases, assessments use statistical population models to integrate and simultaneously analyze survey, fishery, and biological data. Environmental and ecosystem data may also be integrated in stock assessments. Hilborn and Walters (1992)[1] define stock assessments as "the use of various statistical and mathematical calculations to make quantitative predictions about the reactions of fish populations to alternative management choices." In this document, the term "stock assessment" includes activities, analyses and reports, beginning with data collection and continuing through to scientific recommendations presented to the Council and its advisors. To best serve their purpose, stock assessments should attempt to identify and quantify major uncertainties, balance realism and parsimony, and make best use of the available data.

There are ~~four~~ several distinct types of ~~assessments~~assessment products, which are subject to different review procedures. A **"~~full~~ full assessment"** is a new assessment or an assessment that may be substantially different from the previously conducted assessment. A full assessment involves a re-examination of the underlying assumptions, data, and model parameters previously used to assess the stock. Full assessments are reviewed via the full STAR process, which includes STAR panel review. Resource limitations ~~There is a limit on~~constrain the number of ~~full~~ full assessments that can be conducted and reviewed during an assessment cycle. Some assessment models have relatively few modeling or data issues and provide relatively stable results as new data are added, such that it is not necessary to develop a completely new assessment every time the species is assessed. In these cases, an "**update assessment"** may be preferable. An "update assessment" is defined as an assessment that maintains the model structure of the previous full assessment and is generally restricted to the addition of new data to previously evaluated time series that have become available since the last assessment and minor alterations described further in this document. In some cases, an update assessment uses only recent fisheries catch information and generates **catch-only projections** for the stock. Update assessments and catch-only projections are reviewed by the relevant subcommittee of the SSC (Groundfish or CPS) rather than by a STAR panel. A **"data-moderate assessment"** is a third type of assessment that incorporates historical catch data and one or more indices of abundance (or biomass) (e.g., trawl survey or fishery catch per unit effort (CPUE) indices). Data-moderate assessments are limited in that they do not ~~full~~ use ~~of~~ available compositional data (i.e., length or age data) ~~are~~ is ~~restricted from the assessment~~ to make such assessments less complicated and

[1] Hilborn, R., and C. J. Walters. 1992. Quantitative fisheries stock assessment: Choice, dynamics and uncertainty. Chapman and Hall.

enable more expeditious review. In 2013, data-moderate assessments were reviewed through the STAR panel review since these assessment methodologies were used for the first time in the Council process. However, in the long ~~run~~ term, it may be that data-moderate assessments will be reviewed by the ~~appropriate~~relevant SSC ~~Groundfish~~ Subcommittee. ~~Conceptually, data-moderate assessments are designed for groundfish stocks to be reviewed by the SSC Groundfish Subcommittee. However, in 2013, data-moderate assessments will be reviewed by a full STAR panel since these assessment methodologies will be used for the first time in the Council process.~~ A **"data-poor assessment",** which is the fourth assessment type, ~~that~~ relies on catch data and basic life history information about the species to determine the Overfishing Limit (OFL) for the stock. A data-poor assessment differs from a data-moderate assessment in that it does not include any abundance indices. A **"catch report"** is a ~~fourth~~ fifth type of assessment product that tabulates fishery removals over recent years to ensure that they are below the Annual Catch Limits (ACLs). A ~~C~~catch report would be applied ~~applies~~ when ~~only limited~~little ~~-~~ new information is available about the stock to inform the assessment. Data-poor assessments and c~~C~~atch reports are reviewed by the relevant S~~s~~ubcommittee of the SSC (Groundfish or CPS).

~~Stock assessments~~ Managed species are assigned to one of the three categories, based on the amount of information available for the species. Assignments are made ~~based on~~by the SSC ~~recommendation~~. Category 1 includes the most robust assessments that have the smallest amount of uncertainty associated with assessment results. Category 2 is for data-moderate assessments, and Category 3 is for data-poor assessments with the largest amount of uncertainty associated with assessment results. Detailed definitions ~~of~~ for each of the three categories ~~is~~ are provided in Appendix E.

In 2011, t~~T~~he RMSA ~~recently~~ changed the terminology and process for determining harvest levels. The previous Allowable/Acceptable Biological Catch (ABC) ~~has been~~ was replaced by the Overfishing Limit (OFL). However, the largest allowable harvest level is still the ABC (now "Acceptable Biological Catch"), which is buffered from the OFL based on the risk of overfishing adopted by the Council (which must be less than 50%). The P* (overfishing probability) approach uses a probability of overfishing (which the Council has set to be less than or equal to 45% or 0.45) and a measure of uncertainty in the assessment of current stock ~~status~~ size (σ, the standard error of the biomass estimate in log space) to determine the appropriate buffer with which to reduce the harvest level from the OFL to the ABC (Ralston et al. 2011[2]) to account for scientific uncertainty. The default degree of uncertainty (σ) varies with species category; it is the smallest for category 1, data rich stocks (Appendix E) and largest for category 3, data poor stocks (Appendix E). The Annual Catch Limit (ACL) is equivalent to what the Council previously called the Optimum Yield (OY). For groundfish species, the upper limit for the ACL is calculated using the 40-10 harvest control rule (and 25-5 rule for flatfish species) while for CPS, each species has a specific control rule to calculate the Harvest Guideline (HG), which is the upper limit for the ACL for CPS. The Annual Catch Target (ACT) is the targeted catch level, representing a possible further reduction from the ACL to account for management/implementation uncertainty. The OFL must be given in the stock assessment (along with, in some cases, σ). The ABC is determined from the OFL given σ and P*. For CPS, the assessment reports the application of the HG control rule. The OFL, ABC, ACL, any ACTs, and (for CPS) the HGs are reported in the Council's Stock Assessment and Fishery Evaluation (SAFE) report or the relevant National Environmental Policy Act (NEPA) analysis of alternative

[2] Ralston, S., Punt, A.E., Hamel, O.S., DeVore, J. and R.J. Conser. 2011. An approach to quantifying scientific uncertainty in stock assessment. *Fishery Bulletin* 109: 217-231.

harvest specifications.

2. STOCK ASSESSMENT PRIORITIZATION

Stock assessments for Pacific sardine are conducted annually, with ~~benchmark~~full assessments occurring every third year, and update assessments during interim years. ~~and Pacific mackerel are conducted annually, with full assessments occurring every third year, and update assessments during interim years.~~ In June 2013, the Council established a Pacific mackerel management and assessment schedule such that ~~benchmark~~full stock assessments will be conducted every four years, starting in 2015, and catch-only projection estimates (i.e., catch-only updates) will be conducted every four years, starting in 2017. The Council also directed that annual harvest measures for Pacific sardine and Pacific mackerel be implemented on a biennial basis beginning with the 2015-2016 fishing year. Assessments for groundfish species are conducted every other year as part of the biennial harvest specification cycle. A relatively small number of the more than 90 species in the Council's Groundfish Fishery Management Plan are selected each cycle for ~~full~~ full, ~~or~~ update ~~assessments~~or data-moderate assessments. To implement the RMSA requirements to establish ~~ABCs and OFLs~~ OFLs and ABCs for all species in fishery management plans, ~~simple assessment~~catch-only~~-~~ methods ~~such as~~ (e.g., Depletion-Corrected Average Catch (DCAC)[3], ~~and~~ Depletion-Based Stock Reduction Analysis (DB-SRA)[4] and Simple Stock Synthesis (SSS)[5]) have ~~now~~ been applied to data for the majority of groundfish species. It remains ~~is~~ the goal of the Council to substantially increase the number of groundfish stocks with ~~full assessment~~full assessments.

In April 2006, the SSC recommended, and the Council adopted, a new approach to prioritize groundfish species for full and update stock assessments as well as catch reports based on: 1) economic or social importance of the species, 2) vulnerability and resilience of the species, 3) time elapsed since the last assessment (NMFS advises assessments to be updated at least every five years), 4) ~~amount of~~ data ~~available~~availability~~le for the assessment~~, 5) potential risk to the stock from the current or foreseeable management regime, and 6) qualitative trends from surveys (when available). It was also recommended that overfished groundfish stocks that are under rebuilding plans be evaluated each assessment cycle to ensure adequate progress towards achieving stock recovery.

The proposed groundfish stocks for full, update, ~~and~~ data-moderate assessments, and catch reports should be discussed and finalized by the Council ~~at least a year in advance of a new assessment cycle~~ to allow sufficient time to assemble relevant data and arrange STAR panels. The ~~2013~~20153~~3~~ stock assessment plan for groundfish and CPS stocks is provided in Appendix A.

3. ~~STAR~~ STOCK ASSESSMENT REVIEW PROCESS GOALS AND OBJECTIVES

The goals and objectives of the groundfish and CPS STAR process are to:

1) ensure that stock assessments represent the best ~~available~~ scientific information

[3] MacCall, A. D. 2009. Depletion-corrected average catch: a simple formula for estimating sustainable yields in data-poor situations. *ICES Journal of Marine Science* 66: 2267-2271.
[4] Dick, E. J. and A. D. MacCall. 2011. Depletion-Based Stock Reduction Analysis: A catch-based method for determining sustainable yields for data-poor stocks. *Fisheries Research* 110: 331-341.
[5] Cope, J.M. 2013. Implementing a statistical catch-at-age model (Stock Synthesis) as a tool for deriving overfishing limits in data-limited situations. *Fisheries Research* 142: 3-14.

availablescientific information and facilitate the use of this information by the Council to adopt OFLs, ABCs, ACLs, (HGs), and ACTs;
2) meet the mandates of the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) and other legal requirements;
3) follow a detailed calendar and fulfill explicit responsibilities for all participants to produce required reports and outcomes;
4) provide an independent external review of stock assessments;
5) increase understanding and acceptance of stock assessments and peer reviews by all members of the Council family;
6) identify research needed to improve assessments, reviews, and fishery management in the future; and
7) use assessment and review resources effectively and efficiently.

4. ROLES AND RESPONSIBILITIES OF STAR STOCK ASSESSMENT REVIEW PROCESS PARTICIPANTSPARTICIPANTSPARTICIPANTS

4.1. Shared Responsibilities

All parties have a stake in assuring adequate technical review of stock assessments. NMFS, as the designee of the Secretary of Commerce, must determine that the best scientific advice has been used when it approves fishery management recommendations made by the Council. The Council uses advice from the SSC to determine that the information on which it bases its recommendations represents the best available science. Scientists and fishery managers providing technical documents to the Council for use in management need to assure that their work is technically correct.

The Council, NMFS and the Secretary of Commerce share primary responsibility to create and foster a successful STAR process. The Council oversees the process and involves its standing advisory bodies, especially the SSC. For groundfish, NMFS provides a stock assessment coordinator (SAC) to facilitate and assist in overseeing the process, while for CPS a designated SWFSC staff member performs this role. Together NMFS and the Council consult with all interested parties to plan and prepare TOR, and develop a calendar of events with a list of deliverables for final approval by the Council. NMFS and the Council share fiscal and logistical responsibilities and both should ensure that there are no conflicts of interest in the process[6].

The STAR panel meetings panels process is are sponsored by the Council, because the Federal

[6] The proposed final NS2 guidelines state: "Peer reviewers who are federal employees must comply with all applicable federal ethics requirements. Peer reviewers who are not federal employees amust comply with the following provisions. Peer reviewers must not have any real or perceived conflicts of interest with the scientific information, subject matter, or work product under review, or any aspect of the statement of work for the peer review. For purposes of this section, a "[A] conflict of interest is any financial or other interest which conflicts with the service of the individual on a review panel because it: (A) Could significantly impair the reviewer's objectivity; or (B) Could create an unfair competitive advantage for a person or organization; (C) Except for those situations in which a conflict of interest is unavoidable, and the conflict is promptly and publicly disclosed, no individual can be appointed to a review panel if that individual has a conflict of interest that is relevant to the functions to be performed. Conflicts of interest include, but are not limited to, the personal financial interests and investments, employer affiliations, and consulting arrangements, grants, or contracts of the individual and of others with whom the individual has substantial common financial interests, if these interests are relevant to the functions to be performed.". Potential reviewers must be screened for conflicts of interest in accordance with the procedures set forth in the NOAA Policy on Conflicts of Interest for Peer Review subject to OMB's Peer Review Bulletin."

Advisory Committee Act (FACA) limits the ability of NMFS to establish advisory committees. FACA specifies a procedure for convening advisory committees that provide consensus recommendations to the federal government. The intent of FACA ~~was~~ is three-fold: to limit the number of advisory committees; to ensure that advisory committees fairly represent affected parties; and to ensure that advisory committee meetings, discussions, and reports are carried out and prepared in full public view. Under FACA, advisory committees must be chartered by the Department of Commerce through a rather cumbersome process. However, the Sustainable Fisheries Act exempts the Council from FACA per se, but requires public notice and open meetings similar to those under FACA.

4.2. STAR Panel Responsibilities

The role of the STAR panel is to conduct a detailed technical evaluation of a full stock assessment to advance the best available scientific information to the Council. The specific responsibilities of the STAR panel are to:

1) review draft stock assessment documents, data inputs, and analytical models, along with other pertinent information (e.g., previous assessments and STAR panel reports, when available);
2) discuss the technical merits and deficiencies of the input data and analytical methods during the open review panel meeting, work with the STATs to correct deficiencies, and, when possible, suggest new tools or analyses to improve future assessments; and
3) develop STAR panel reports for all reviewed species to document meeting discussion and recommendations.

The STAR panel chair has, in addition, the responsibility to: 1) develop a STAR panel meeting agenda; 2) ensure that STAR panel participants follow the TOR; 3) guide the STAR panel and the STAT to mutually agreeable solutions; and 4) coordinate review of revised stock assessment documents before they are forwarded to the SSC.

Groundfish and CPS STAR panels include a chair appointed from the relevant SSC subcommittee (Groundfish or CPS), and three other experienced stock assessment analysts knowledgeable of the specific modeling approaches being reviewed. Of these three other members, at least one should be appointed from the Center for Independent Experts (CIE) and at least one should be familiar with west coast stock assessment practices. Selection of STAR panelists should be based on expertise, independence, ~~aim for~~and a balance between outside expertise and in-depth knowledge of west coast fisheries, the data sets available for those fisheries, and the modeling approaches applied to west coast groundfish and CPS. ~~, and. In addition, STAR panelists must should be free of conflicts of interest.~~ Expertise in ecosystem models or processes, and knowledge of the role of groundfish and CPS in the ecosystem is also desirable, particularly if the assessment includes ecosystem models or environmental processes. ~~Reviewers should not have financial or personal conflicts of interest, either current to the meeting, within the previous year (at minimum), or anticipated.~~ For groundfish, an attempt should be made to identify one reviewer who can consistently attend all STAR panel meetings in an assessment cycle. The pool of qualified technical reviewers is limited; therefore, staffing of STAR panels is subject to constraints that can make it difficult to meet the conditions above.

Selected ~~R~~reviewers should not have financial or personal conflicts of interest with the scientific information, subject matter, or work product under review, either current to the meeting, within

the previous year (at minimum), or anticipated. STAR panel ~~reviewers~~ members who are federal employees should comply with all applicable federal ethics requirements. Reviewers who are not federal employees will be screened for conflicts of interest either through existing financial disclosure processes used by the SSC and CIE, or under the NOAA Policy on Conflicts of Interest for Peer Review Subjects.

Reviewers should not have contributed or participated in the development of the work product or scientific information under review, and reviewer responsibilities should rotate across the available pool of qualified reviewers, when possible.

STAR panel meetings ~~should~~ also include representatives of the relevant management team (MT) and advisory panel (AP), with responsibilities as laid out in these TOR, and a Council staff member to ~~help~~ advise the STAR panel and assist in recording meeting discussions and results. The STAR panel, STATs, the MT and AP representatives, and the public are all legitimate meeting participants who should be accommodated in discussions. It is the STAR panel chair's responsibility to coordinate discussion and public comment so that the assessment review is completed on time.

~~A STAR panel normally meets for one week.~~The STAR ~~process~~ is by design a transparent process. STAR panel meetings are open to the public and are announced on the Council's website, through Council meeting notices, and in the Federal Register at least ~~14~~23 days prior to the STAR panel meeting. The Council (or the SWFCS for CPS) posts b~~B~~ackground materials ~~are posted on the Council's~~on ~~it~~san ftp site prior to the ~~panel~~ meeting and makes hard copies ~~can be made~~ available upon request. A STAR panel normally meets for four to five days.~~one week.~~ The number of assessments reviewed per panel should not exceed two, except in extraordinary circumstances if the SSC and NMFS agree that it is advisable, feasible, and/or necessary. When separate assessments are conducted at the sub-stock level by different STATs (i.e., black rockfish), each assessment is considered an independent ~~full assessment~~full assessment for review purposes. Contested assessments, in which alternative assessments are brought forward by competing STATs using different modeling approaches, would typically require additional time (and/or panel members) to review adequately, and should be scheduled accordingly. While contested assessments are likely to be rare, they can be accommodated within the STAR process. The STAR panel should thoroughly evaluate each analytical approach, comment on the relative merits of each, and, when conflicting results are obtained, identify the reasons for the differences. ~~The STAR panel is also charged with selecting a preferred base model.~~The STAR panel should work with the STATs to come to agreement on a base model that will be reviewed by the SSC to determine ~~the~~ its merits for supporting management advice.

STAR Panel Requests for Additional Analyses

STAR panel meetings are not workshops. In the course of a meeting, the panel may ask the STAT for a reasonable number of sensitivity runs, request additional details on the proposed base model presented, or ask for further analyses of alternative runs. It is not unusual for the review to result in a change to the initial base model (given that both the STAR panel and the STAT agree). However, the STAR panel is not authorized to conduct an alternative assessment representing its own views that are distinct from those of the STAT, nor can it impose an alternative assessment on the STAT. Similarly, the panel should not impose their preferred methodologies when this is a matter of professional opinion. Rather, if the panel finds an assessment to be inadequate, it should document its opinion and suggest potential remedial

measures for the STAT to take to rectify perceived shortcomings of the assessment. For groundfish species, the SSC reviews the STAR panel report and recommends whether an assessment should be further reviewed at the end of the ~~year~~ assessment cycle (i.e., mop up review panel) ~~a secondary~~ the so-called "mop-up" panel meeting, a ~~meeting of~~ by the SSC's Groundfish subcommittee during a meeting that occurs after all of the STAR panels, primarily to review rebuilding analyses for overfished stocks. If a recommendation on whether to send the assessment to the mop-up panel meeting is needed before the full SSC is able to review the STAR panel report, the SSC Chair, Vice Chair, and Groundfish Subcommittee Chair will make a preliminary decision. This recommendation is subject to confirmation by the full SSC at its next scheduled meeting. For CPS, if an assessment is found not to be acceptable for use in management, a ~~full assessment~~full assessment would be conducted the following year.

The STAR panels are expected to be judicious in their requests of the STATs. ~~Large~~ Requests for large changes in data ~~(such as wholesale removal of large data sets)~~ or ~~in~~ analytical methods used may often require significant amount of time to complete (e.g., GLMM analysis) and may result in ~~such great~~ changes to the assessment that ~~they~~ cannot be adequately ~~reviewed~~ evaluated during the course of the STAR panel meeting. Therefore, caution should be exercised in making such changes~~, . and I~~in many cases such changes should be relegated to future research recommendations and/or methodology review. If a groundfish STAR panel agrees that significant changes are necessary, and the assessment is not otherwise acceptable, a recommendation for further ~~review~~ examination of the ~~at~~assessment at the mop-up ~~panel~~ meeting is warranted. Similarly, if the STAR panel agrees that the assessment results strongly indicate that current F_{MSY} value or management target and threshold are inappropriate, it should identify this in its report and recommend further analysis to support a change to more appropriate values.

STAR panel requests to the STAT for additional model runs or data analyses must be clear, explicit, and in writing. ~~They should reflect the consensus opinion of the entire panel and not the minority view of a single individual or individuals. The STAR panel~~These requests and recommendations should be listed within the STAR panel's report, along with rationale and the STAT response to each request.

To the extent possible, analyses requested by the STAR panel should be completed by the STAT during the STAR panel meeting. It is the obligation of the STAR panel chair, in consultation with other panel members, to prioritize requests for additional analyses. In situations where a STAT arrives with a well-constructed, thoroughly investigated assessment, it may be that the panel finishes its review earlier than scheduled (i.e., early dismissal of a STAT). If follow-up work by the STAT is required after the review meeting (such as MCMC integration of an alternative model created during the STAR panel meeting), this should be completed before the briefing book deadline for the Council meeting at which the assessment is scheduled for review. It is the STAR panel chair's responsibility to track STAT progress. In particular, the chair is responsible for communicating with the STAT to determine if the revised stock assessment document is complete. Any post-STAR drafts of the stock assessment must be reviewed by the STAR panel chair. The assessment document can only be given to Council staff for distribution after it has been endorsed by the STAR panel chair, and when it is accompanied by a complete and approved STAR panel report. Likewise, the final draft that is published in the Council's SAFE document must also be approved by the STAR panel chair prior to being accepted by Council staff.

For some stocks selected for full assessments, the available data may prove to be insufficient to

support a category 1 assessment. (Appendix E). In such cases, the STAT should consider whether simpler approaches appropriate for a category 2 assessment can be applied. Simpler approaches usually make stronger assumptions and estimate fewer parameters, but are less demanding of data. It is the responsibility of the STAR panel, in consultation with the STAT, to consider the strength of inferences that can be drawn from analyses presented, and identify major uncertainties. If useful results have been produced, the STAR panel should review the appropriateness and reliability of the methods used to draw conclusions about stock status and/or exploitation rates, and either recommend or reject the analysis on the basis of its ability to provide useful information into the management process. If the STAR panel agrees that important results have been generated, it should forward its findings and conclusions to the SSC and the Council for consideration in setting of OFLs, ABCs, and ACLs (for groundfish) and HGs (for CPS). A key section of the assessment is that on research needed to improve the assessment. Highlighting research priorities should increase the likelihood that future stocks assessments can be raised to category 1.

Uncertainty and Decision Tables in Groundfish Stock Assessments

The STAR panel review focuses on technical aspects of the stock assessment. It is recognized that no model or data set is perfect or issue-free. Therefore, outputs of a broad range of model runs should be evaluated to better define the scope of the accepted model results. The panel should strive for a risk-neutral perspective in its deliberations, and discuss the degree to which the accepted base model describes and quantifies the major sources of uncertainty in the assessment. Confidence intervals for model outputs, as well as other measures of uncertainty that could affect management decisions, should be provided in completed stock assessments and the reports prepared by STAR panels. The STAR panel may also provide qualitative comments on the probability of results from various model runs, especially if the panel does not consider the probability distributions calculated by the STAT capture all major sources of uncertainty. However, as a scientific peer review body, the STAR panel should avoid matters of policy. Assessment results from model runs that are technically flawed or questionable on other grounds should be identified by the panel and excluded from the alternatives upon which management advice is to be developed.

Once alternative models, which capture the overall degree of uncertainty in the assessment, are formulated, a 2-way decision table (alternative models versus management actions) should be developed to illustrate the repercussions of uncertainty to management decisions. The ratio of probabilities of alternative models should be 25:50:25, with the base model being twice as likely as each of the low and high stock size alternatives. There are a number of ways in which the probabilities can be assigned to each model. Probabilities can be assigned to each model through finding the major axis of uncertainty parameter values that correspond to the 12.5% and 87.5% quantiles of the lognormal distribution of the estimated stock size (i.e., taking the natural log of the estimate of stock size from the base model and then adding and subtracting 1.15 times the standard error of the base model estimate in log space), and running the alternative models with those parameters. The 12.5% and 87.5% quantiles of the parameter determining the major axis of uncertainty may also provide reasonable alternative models. Expert judgment may also be used as long as it is fully explained, justified and documented.

Bracketing of the base model for which the geometric mean of the final biomass levels ~~stock size~~ from the high and low stock size alternative models ~~final biomass levels~~ approximates the base model biomass level (indicating that it is evenly distributed in log space) would be an ideal

option. In this case, stock size in log space should be used because the distribution of possible stock sizes is necessarily bounded at the low end, while the right tail can extend much further from the point estimate, and thus the probability density is more log-normal than normal. If the bracketing models are far from this option (e.g., if the base model is closer to the upper bracketing model in absolute terms than to the lower bracketing model), the three levels should be reconsidered and either one or more of them adjusted. In certain cases, if there is a great deal of confidence in the bracketing models, the base model could be reconsidered, or a justification for the severely non-lognormal structure of alternatives be given, and/or justification for an adjustment to the 25:50:25 probabilities be provided. Similarly, if more than one dimension is used to characterize uncertainty, resulting in, for example, a 3-by-3 decision table, careful consideration and justification of how the complete table brackets the uncertainty should be undertaken.~~During the review meeting, the STAR panel and the STAT should strive to reach a consensus on a single base model. Once a base model is agreed upon, it is essential that uncertainty around the base model be captured and communicated to managers. One way to accomplish this objective is to bracket the base model with what is agreed to be the major axis of uncertainty (e.g., spawner-recruit steepness, the virgin level of recruitment, the natural mortality rate, survey catchability, etc.; and, less often, recent year-class strength, weights on conflicting CPUE series, etc.). Alternative models should show contrast in their management implications, which, in practical terms, means that that they should result in different estimates of current stock size and status, and the OFL. Markov chain Monte Carlo (MCMC) integration, where possible, is an acceptable method for reporting uncertainty about the base model. However, point estimates from the Maximum Likelihood Estimation (MLE) method should be used for status determinations even when MCMC outputs are available.~~

~~Once alternative models, which capture the overall degree of uncertainty in the assessment, are formulated, a 2-way decision table (alternative models versus management actions) should be developed to illustrate the repercussions of uncertainty to managers. The ratio of probabilities of alternative models should be 25:50:25, with the base model being twice as likely as the low and high stock size alternatives. Potential methods for assigning probabilities to alternative models include using the statistical variance of the model estimates of stock size, posterior Monte Carlo simulation, or expert judgment, but other approaches are acceptable as long as they are fully documented. An ideal bracketing of the base model is one for which the geometric mean of the high and low stock size alternative model final biomass levels approximates the base model biomass level. This is because the distribution of possible stock sizes is necessarily bounded at the low end, while the right tail can extend much further from the point estimate, and thus the probability density should look more log-normal than normal. If the bracketing models are far from this ideal (e.g., if the base model is closer to the upper bracketing model in absolute terms than to the lower bracketing model), the three levels should be reconsidered and either one or more of them adjusted (such that, in certain cases, if there is a great deal of confidence in the bracketing models, the base model could be reconsidered), or a justification for the severely non-lognormal structure of alternatives be given. Similarly, if more than one dimension is used to characterize uncertainty, resulting in, for example, a 3-by-3 decision table, careful consideration of how the complete table brackets the uncertainty should be undertaken~~.

Areas of Disagreement

STATs and STAR panels are required to make an honest attempt to resolve any areas of disagreement during the meeting. Occasionally, fundamental differences of opinions may remain between the STAR panel and STAT that cannot be resolved during the STAR panel

meeting. In such cases, the STAR panel must document the areas of disagreement in its report. While identifying areas of disagreement, the following questions should be discussed at the meeting:

1) Are there any differences in opinion about the use or exclusion of data?
2) Are there any differences in opinion about the choice of the base model?
3) Are there any differences in opinion about the characterization of uncertainty?

The STAT may choose to submit a supplemental report supporting its view, but in that case, an opportunity must be given to the STAR panel to prepare a rebuttal. These documents would then be appended to the STAR panel report as part of the record of the review meeting. In some cases STAR panel members may have fundamental disagreements among themselves that cannot be resolved during the review meeting. In such cases, STAR panel members may prepare a minority report that would also become part of the record of the review meeting. The SSC would then review all information pertaining to STAR panel and STAR panel/STAT disputes, and issue its recommendation.

STAR Panel Report

The STAR panel report should be developed and approved by the full panel shortly after the STAR panel meeting. The STAR panel chair appoints members of the panel to act as rapporteurs and draft the report (or specific sections thereof) according to the STAR panel chair guidance on format and level of detail. The STAR panel chair is responsible for preparing the final draft of the panel report, obtaining panel approval, providing a copy for STAT review and comment, and submitting it to the Council in a timely fashion (i.e., by briefing book deadline).

The STAR panel report should include:

- Summary of the STAR Panel meeting:
  - Names and affiliations of STAR panel members, STAT and STAR panel advisors;
  - Brief overview of the meeting (where the meeting took place, what species was assessed, what was the STAR panel recommendation, etc.);
  - Brief summary of the assessment model and the data used;
  - List of analyses requested by the STAR panel, the rationale for each request, and a brief summary of the STAT response to the request;
- Description of the base model and, for groundfish species, the alternative models used to bracket uncertainty;
- Comments on the technical merits and/or deficiencies in the assessment and recommendations for remedies;
- Areas of disagreement regarding STAR panel recommendations:
  - Between the STAR panel and STAT(s).
  - Among STAR panel members (including concerns raised by MT and AP representatives);
- Unresolved problems and major uncertainties, e.g., any special issues that complicate the assessment and/or interpretation of results;
- Management, data, or fishery issues raised by the MT or AP representatives during the STAR panel; and

- Prioritized recommendations for future research and data collection, including methodology and ecosystem considerations for the subsequent assessment.

For groundfish species, the STAR panel also makes a recommendation on whether the next assessment of the ~~same~~ species should be full or update, and explain reasons for its recommendation.

The STAR panel report should be made available for review by the STAT with adequate time prior to the briefing book deadline (i.e., a week in most circumstances, but at minimum a full 24 hours, in cases when the time between the STAR panel and the deadline is particularly compressed) so that the STAT can comment on issues of fact or differences in interpretation. If differences of opinion come up during review of the STAR panel report, the STAR panel and STAT should attempt to resolve them. Otherwise, the areas of disagreement must be documented in the STAR panel report.

The chair will also solicit comment on the draft report from the STAT and the MT and AP representatives. The purpose of this is limited to ensuring that the report is technically accurate and reflects the discussion that occurred at meeting, and should not be viewed as an opportunity to reopen debate on issues. ~~–~~The STAR panel chair is the final arbiter on wording changes suggested by STAT and the MT and AP representatives as the report is the panel's report of the meeting. Any detailed commentary by MT and AP representatives should be drafted separately, reviewed by the full advisory body, and included in the briefing book.

The STAR panel chair is responsible for providing the Council staff with the final version of the STAR panel report. The STAR panel chair is also expected to attend the SSC meeting and, if requested, MT meetings and the relevant portions of the Council meetings, where stock assessments and harvest projections are discussed, explain the reviews, and provide technical information and advice. The final STAR panel reports ~~is~~are posted on the Council's website. ~~at http://www.pcouncil.org/groundfish/stock-assessments/ and http://www.pcouncil.org/coastal-pelagic-species/stock-assessment-and-fishery-evaluation-safe-documents/~~

4.3. Stock Assessment Team Responsibilities

The STAT is responsible for conducting a complete and technically sound stock assessment that conforms to accepted standards of quality, and in accordance with these TOR. ~~It is highly recommended by the SSC for the STAT to consult early in the process with the MT and fisheries managers about spatial management issues associated with the stock being assessed. This is a particular concern for nearshore stocks, with each state having differing ent regulatory histories. The SSC further recommends that biological and scientific considerations must take precedence in developing stock assessments.~~

The STAT is responsible for preparing three versions of the stock assessment document:

1) a "draft" for discussion during the STAR panel meeting;
2) a "revised draft" for presentation to the SSC, the Council, and relevant MT and AP; and
3) a "final version" to be published in the Council's SAFE document or posted on the Council's web site.

The draft assessment document should follow the outline in Appendix B with an executive summary as in the template in Appendix C. In the draft document, the STAT should identify a candidate base model, fully-developed and well-documented, for the STAR panel to review. ~~For CPS, the STAT should submit a draft assessment document to the STAR panel chair and Council staff two weeks prior to the STAR panel meeting. For groundfish, a~~A draft assessment document should be submitted by the STAT to the STAR panel chair, Council staff, and the NMFS Stock Assessment Coordinator (SAC, for groundfish) three full weeks prior to the STAR panel meeting, to determine whether the document is sufficiently complete to undergo review. If the draft assessment is judged complete, the draft assessment and supporting materials would be distributed to the STAR panel and relevant MT and AP representatives two weeks prior to the STAR panel meeting. If the assessment document does not meet minimum criteria of the TOR, the review would be postponed to a subsequent assessment cycle or to the review at the mop-up ~~panel~~ meeting~~or … what for CPS?~~. There is no CPS mop up panels – assessments which do not meet the minimum criteria are deferred to the next year. The mop-up panel generally is not able to review more than two assessments. Therefore, the review options are limited for assessments not completed on time. The STAT is also responsible for bringing model files and data (in digital format) to the STAR panel meeting so that they can be analyzed on site.

In most cases, the STAT should produce a revised draft of the assessment document within three weeks of the end of the STAR panel meeting. The revised draft must include a point-by-point response of the STAT to each of the STAR panel's recommendations. The revised draft must be finalized before the briefing book deadline for the Council meeting at which the assessment is scheduled for review. Post-STAR drafts must be reviewed and approved by the STAR panel chair prior to being submitted to Council staff. This review is limited to editorial issues, verifying that all required elements are included, and confirming that the document reflects the discussion and decisions made during the STAR panel.

The final version of the assessment document is produced after the assessment has been reviewed by the SSC. Other than changes recommended by the SSC, only editorial and other minor alterations should be made to the revised draft for the final version. Electronic versions of the final assessment document, model files, and key output files should be submitted by the STATs to Council staff (for CPS) and to Council staff and the SAC (for groundfish) for inclusion in a stock assessment archive. Any tabular data that are inserted into the final documents in an object format should also be submitted in alternative forms (e.g., spreadsheets), which allow selection of individual data elements.

A STAT for which no base model was endorsed by a STAR panel should, in most cases, provide the pre-STAR draft assessment (or corrected/ updated version thereof, as agreed upon with the STAR panel) to the Council by the briefing book deadline. If the STAR panel, nonetheless, recommends using outputs of certain sensitivity runs to bracket uncertainty in the assessment, the results of those runs should be appended to the draft assessment and provided to the Council and its advisory bodies.

STATs are strongly encouraged to develop assessments in a collaborative environment by forming working groups, holding pre-assessment workshops, and consulting with other stock assessment and ecosystem assessment scientists. STATs ~~meetings with Integrated Ecosystem Assessment (IEA) teams~~ are ~~strongly~~ encouraged to evaluate alternative models and analyses that incorporate ecosystem considerations and cross-FMP interactions that may affect stock dynamics. When new data sources or methods, which could be used in many assessments or are

likely contentious, are planned for inclusion in the assessment, they should ideally be reviewed by a methodology panel. STATs should identify whether such new data sources or methods will be proposed for inclusion in assessments as early as feasible so that it is possible to hold a methodology review panel if one is needed. Irrespective of whether a methodology review panel takes place, the STAR panel should be provided with model runs with and without the new data sources so that it can evaluate the sensitivity of model outputs to these data sources.

STATs should coordinate early in the process with state representatives and other data stewards to ensure timely availability of data. STATs are also encouraged to organize independent meetings with industry and interested parties to discuss data and issues. The STAT should initiate contact with the AP representative early in the assessment process, keep the AP informed of the data being used and respond to any concerns that are raised. The STAT should also contact the MT representative early in the process for information about changes in fishing regulations and spatial management issues associated that may influence model structure and the way data are used in the assessment. The latter is particularly important for nearshore stocks, for which each state has different regulatory histories. The STAT should be well represented at the STAR panel meeting to ensure timely completion of the STAR panel requests. Barring exceptional circumstances, STAT members who are not attending the STAR panel meeting~~,~~ should be available remotely to assist with responses when needed. Each STAT conducting a full assessment should appoint a representative to attend the Council meeting where the assessment is scheduled to be reviewed and give presentations of the assessment to the SSC and other Council advisory bodies. In addition, the STAT should be prepared to respond to MT requests for model projections for the MT's to develop ACL alternatives.

For stocks that are estimated to be below overfished thresholds (or those previously declared overfished and not yet rebuilt), the STAT must complete a rebuilding analysis according to the SSC's TOR for Rebuilding Analyses and prepare a document that summarizes the analysis results. ~~For groundfish, it is recommended that this rebuilding analysis be conducted using the software developed by Dr. André Punt (University of Washington).~~ Groundfish rebuilding analyses are reviewed at the mop-up panel.

Finally, STATs are responsible to conduct model runs requested by the MTs for use in the harvest specification process. STATs are also responsible to update assessment model projections upon the Council's request for use in ecosystem, socioeconomic, or other related analyses.

~~Suggest inclusion of language highlighting expectations for STATs to update projections for assessments previously conducted but not formally updated/assessed during the current assessment cycle as well as expectations to follow up with GMT requests during mgmt. specification process.~~

4.4. National Marine Fisheries Service Responsibilities

The NMFS Northwest Fisheries Science Center (NWFSC) and the Southwest Fisheries Science Center (SWFSC) assist in organizing stock assessment reviews of groundfish and CPS, respectively. For groundfish, ~~the~~ NMFS provides a stock assessment coordinator (SAC) to facilitate and assist in overseeing the STAR process. For CPS, the SWFSC provides a staff member to facilitate and assist in the STAR process.

~~The~~ NMFS (through the SAC for groundfish and a designated SWFSC staff member for CPS) works with the STATs and other STAR process participants to develop a proposed list of stocks to be assessed for the consideration by the Council. NMFS also develops a draft STAR panel

schedule for the Council review. NMFS identifies STAR panel members based on criteria for reviewer qualifications, and, for groundfish, makes every effort to designate one independent reviewer who can attend all STAR panel meetings to provide consistency among reviews. The costs associated with these reviewers are borne by ~~the~~ NMFS. ~~The~~ NMFS also helps organize STAR panel meetings and develops meeting schedules.

~~The~~ NMFS (along with the Council staff and the STAR panel chair) coordinates with the STATs to facilitate delivery of required materials by scheduled deadlines and in compliance with the TOR. ~~The~~ NMFS also assists Council staff ~~and the STAR panel chair~~ in a pre-review of assessment documents~~,~~ to assure they are ~~received on time and~~ complete, and in a post-STAR review of the revised assessment document for consistency with the TOR.

4.5. Council Staff Responsibilities

The role of Council staff is to coordinate, monitor, and document the STAR process to ensure compliance with these TOR.

Council staff coordinates with the STAR panel chair and ~~the~~ NMFS (the SAC in the case of groundfish; a designated SWFSC staff member for CPS) in a pre-review of assessment documents, to assure they are complete ~~and received on time~~. If an assessment document is not in compliance with the TOR, Council staff returns the assessment document to the STAT with a list of deficiencies, a notice that the deadline has expired, or both. Council staff also coordinates with the STAR panel chair, STAT, and ~~the~~ NMFS in a post-STAR review of the revised assessment document for consistency with the TOR. When inconsistencies are identified, the STAT is requested to make appropriate revisions in time for briefing book deadlines.

Council staff attends and monitors all STAR panel meetings to ensure continuity and adherence to the TOR and the independent review requirements of Council Operating Procedure 4. If inconsistencies with the TOR occur during STAR panel meetings, Council staff coordinates with the STAR panel chair to develop solutions to correct the inconsistencies. Council staff also attends and monitors the SSC review of stock assessments to ensure compliance with the TOR.

Council staff is responsible for timely issuance of meeting notices and distribution of stock assessments and other appropriate documents to relevant groups. Council staff also collects and maintains electronic copies of assessment documents, STAR panel, SSC, MT and AP reports, as well as letters from the public and any other relevant documents. These documents are typically published in the Council's SAFE document or posted on the Council's web site.

4.6. Management Team Responsibilities

The MT is responsible for identifying and evaluating potential management actions based on the best available scientific information. Particularly, the MT uses stock assessment results and other information to make ACL and ACT recommendations to the Council.

A MT representative, usually appointed by the MT chair, is responsible to attend the STAR panel meeting and serve as advisor to the STAT and STAR panel on changes in fishing regulations that may influence data used in the assessment and the nature of the fishery in the future. The MT representative does not serve as a member of the STAR panel.

Successful separation of science (e.g., STAT and STAR panels) from management (e.g., MT)

depends on assessment reviews being completed by the time the MT meets to discuss preliminary ACL and ACT recommendations. The MT should not seek revision or additional review of the stock assessments after they have been endorsed by the STAR panel. The MT chair should communicate any unresolved issues to the SSC for consideration. The MT, however, can request additional model projections from the STAT, to fully evaluate potential management actions.

4.7. Advisory Panel Responsibilities

An AP representative, usually appointed by the AP chair, is responsible to attend the STAR panel meeting and serve as advisor to the STAT and STAR panel. The AP representative should review the data sources being used in the assessment prior to development of the stock assessment model and ~~e~~ensure that industry concerns regarding the adequacy of data used by the STAT are communicated and addressed early in the assessment process. The AP representative does not serve as a member of the STAR panel, but, as a legitimate meeting participant, may provide appropriate information and advice to the STAT and STAR panel during the meeting.

The AP representative (along with STAT and STAR panel chair, if requested) is expected to attend the MT meeting at which preliminary ACL and ACT recommendations are developed. The AP representative is also expected to attend subsequent MT and Council meetings where the relevant harvest recommendations are discussed.

4.8. Scientific and Statistical Committee Responsibilities

The Council's SSC plays multiple roles within the STAR process and provides the Council and its advisory bodies with technical advice related to the stock assessments and the STAR process. The SSC assigns a member of its relevant subcommittee (Groundfish or CPS) to act as the STAR panel chair. The STAR panel chair attends the assigned STAR panel meeting and fulfills responsibilities described in the section "STAR Panel Responsibilities".

The STAR panel chair presents the STAR panel report at the SSC and Council meetings at which stock assessments are reviewed. If requested, the STAR panel chair also attends the MT meeting, at which preliminary ACL and ACT recommendations are developed, to discuss the STAR panel report and assist with interpreting the assessment results.

The full SSC conducts a final review of the stock assessment. This review should not repeat the detailed technical review conducted by the STAR panel. The SSC also reviews the STAR panel recommendations and serves as arbitrator to resolve disagreements between the STAT and the STAR panel if such disagreements occurred during the review meeting. The SSC is responsible for reviewing and endorsing any additional analytical work requested from the STAT by the MT after the stock assessment has been reviewed by the STAR panel. To insure independence in the SSC review, the SSC members who served on the STAT or STAR panel for the stock assessment being reviewed are required to recuse themselves; their involvement in the review being limited to providing factual information and answering questions.

The SSC is responsible for making OFL recommendations to the Council. The SSC is also responsible for assigning ~~groundfish~~ species managed by the Council to a specific category ~~(or tier)~~ based on definitions of species categories in Appendix E. It is also the SSC's responsibility to determine when it is appropriate to make changes to proxies or the use of estimated values of F_{MSY} and B_{MSY}.

5. DATA-POOR ASSESSMENTS FOR GROUNDFISH SPECIES

Data-poor assessment methods to assess groundfish species were adopted by the Council in 2011 to inform harvest specifications for category 3 stocks (Appendix E). These adopted methods include: 1) Depletion Corrected Average Catch (DCAC), ~~and~~ 2) Depletion Based Stock Reduction Analysis (DB-SRA), and 3) Simple Stock Synthesis (SSS).

DCAC provides estimates of sustainable yield on long lived species based on catches and associated number of years, as well as the relative reduction in biomass during that period, the natural mortality rate (M), and the assumed ratio of MSY fishing rate (F_{MSY}) to M. (MacCall 2009). DB-SRA combines DCAC and stock reduction analysis to produce probability distributions of management reference points concerning yield and biomass. (Dick and MacCall 2011). DB-SRA is based on estimates of historical annual catches, natural mortality rate (M) and age at maturity. A production function is specified based on the relative location of maximum productivity and the ~~relationship~~ratio of F_{MSY} to M. Unfished biomass, the only unknown parameter, is then ~~estimated~~calculated based on a designated relative depletion level near the end of the time series. Uncertainties in natural mortality, stock dynamics, optimal harvest rates, and recent stock status are incorporated using Monte Carlo exploration. SSS utilizes a similar approach as DB-SRA using the Stock Synthesis modeling platform (Cope 2013).

~~5.~~6. DATA-MODERATE ASSESSMENTS FOR GROUNDFISH SPECIES

Data-moderate assessments for groundfish species are a refinement over the adopted data-poor methods~~ (i.e., Depletion-Corrected Average Catch (DCAC) and Depletion-Based Stock Reduction Analysis (DB-SRA)) that use catch data to inform harvest specifications for category 3 stocks.~~ Data-moderate assessments are used for category 2 stocks; the defining distinction between category 2 and category 3 stocks is that abundance trend information is incorporated in a category 2 assessment enabling an estimate of stock status (Appendix E).

Two data-moderate assessment methods have been endorsed ~~for~~ since the 2013-14 assessment cycle: 1) extended DB-SRA (XDB-SRA) and 2) extended Simple Stock Synthesis (X~~ex~~SSS). In both cases, abundance trend information (e.g., survey or fishery CPUE indices) is included in the assessment.

X~~Ex~~SSS assumes that recruitment is related deterministically to the stock-recruitment relationship and allows index data to be used ~~for maximum likelihood status and parameter estimation~~within a Bayesian framework. The Markov chain Monte Carlo (MCMC) or Sample Importance Resample (SIR) algorithm (perhaps implemented using Adaptive Importance Sampling) ~~can be~~is used to quantify uncertainty for X~~ex~~SSS-based assessments. XDB-SRA ~~can b~~ise implemented within a Bayesian framework, with the priors for the parameters updated based on index data. The additional parameters in XDB-SRA compared with DB-SRA include the catchability coefficient (q), and the extent of observation variance additional to that inferred from sampling error (a). The priors for these parameters are a weakly informative log-normal and a uniform distribution, respectively.

~~While data-moderate assessments are less complicated than full assessments, and can potentially be reviewed more expeditiously than full assessments, a full STAR panel is was scheduled in 2013 to review data-moderate assessments for the first time (see Appendix A).~~ Comparison of

alternative methods (XDB-SRA and X~~ex~~SSS) is encouraged, but it is acceptable to present an assessment using a single modeling approach. The STAR panel can make requests of the STATs for additional runs, but should not impose an alternative method if STATs consider this is not appropriate for the stock concerned. In the event that more than one model is presented, the panel should recommend adoption of a preferred model, if one can be identified, for use in management.

Data-moderate stock assessment reports should follow the template in Appendix D.

~~6.~~7. UPDATE ASSESSMENTS

For ~~CPS~~sardine, update assessments typically occur during two years out of every three. For mackerel, update catch-only assessments occur every four years, alternating with full assessments. ~~or four.~~ For groundfish, the initial recommendation whether the next assessment should be full or update is made by the STAR panel during the STAR panel meeting. The final recommendation is made by the SSC.

An update assessment is generally restricted to the addition of new data that have become available since the last full assessment. It must carry forward the fundamental structure of the last full assessment reviewed and endorsed by a STAR panel, the SSC, and the Council. Assessment structure here refers to the population dynamics model, data sources used as inputs to the model, the statistical platform used to fit model to the data, and how the management quantities used to set harvest specifications are calculated. Particularly, when an update assessment is developed, with the exceptions noted below, no substantial changes should be made to:

1) the particular sources of data used. It is not uncommon that data sources are updated to correct data entry errors or include additional historical data. It is acceptable to use the most up-to-date data from the sources used in the original assessment.
2) the software used in programming the assessment. It is acceptable to use a newer version of Stock Synthesis (or other assessment software used). A comparison should be provided to illustrate the newer software version produces adequately similar results when using with the same model files as in the original assessment.
3) the assumptions and structure of the population dynamics model underlying the stock assessment.
4) the statistical framework for fitting the model to the data and determining goodness of fit.
5) the analytical treatment of model outputs in determining management reference points.

Major changes to the assessment should be postponed until the next full assessment. Alterations to the assessment can be considered as long as the update assessment clearly documents and justifies the need for such changes and provides a step-by-step transition (via sensitivity analysis) from the last full assessment to an update assessment under review.

Alterations are allowed when there are clear and straightforward improvements in the input data and/or how it is processed and analyzed for use in the model. It is acceptable to use the newer versions of software to process input data (e.g., software for GLMM analysis of survey catch data), with comparison provided between results generated from the same dataset using old and new software versions. It is also allowed to follow a model selection process used in the original assessment for model inputs (e.g., GLMM) rather than using the model selected in the original assessment. It is acceptable to use the updated parameter priors as long as comparison of model results is provided while using old and new priors.

Examples of other allowable alterations include: 1) the weighting of the various data components (including the use of methods for tuning the variances of the data components); when data weightings in the assessment were chosen based on a repeatable process, it is allowed to repeat this same process rather than to use identical weighting as in the original assessment; 2) changes in the time periods for the selectivity blocks[VG1]; 3) correcting data entry errors; and 4) bug fixes in software programming. This list is not meant to be exhaustive, and other alterations can be considered if warranted. Ideally, improved data or methods used to process and analyze data would be reviewed by the SSC prior to being used in assessments.

8. CATCH-ONLY PROJECTIONS

In some circumstances, a STAT may be asked to produce an update assessment using only recent fisheries catch information and generate ~~a~~ catch-only projections for the stock~~, which is an update assessment only updating the catch information~~. ~~A~~Such update assessments ~~catch-only projection does~~do not include the most recent ~~trend information~~survey abundance index estimates~~, hence there is~~ and have no new data ~~informing~~to inform the stock-recruitment relationship in the ~~assessment~~ model. The~~se~~ catch-only projections become ~~increasingly~~more uncertain as the length of the projection period increases. This is ~~a bit more concerning~~particularly an issue for short-lived CPS ~~species~~ species~~like CPS~~, for ~~where~~which recruitment is highly variable, and ~~resulting in low~~ predictive power of catch-only projections is particularly low. ~~for the coming years.~~ Additional requests can also be made to the STAT if ~~there is a reason to believe the buffer~~the amount of ~~for scientific~~ uncertainty associated with assessment results (e.g., due to highly variable recruitment) should be ~~considered~~evaluated further ~~(e.g. recruitment)~~. Catch-only projections ~~will~~are ~~initially be~~ reviewed by the ~~appropriate~~relevant SSC subcommittee~~, via email or conference call, before~~and ~~the full SSC review~~.

~~the particular sources of data used however the use of newer versions of GLMM or other software related to model inputs can be used if comparison is done using old GLMM to confirm that newer version produces adequately similar results with the same data as original assessment ;~~
~~the software used in programming the assessment unless it is a newer version of SS (or other assessment software) as long as a comparison is done using old model files to confirm that newer software produces adequately similar results with the same data as original assessment. This can significantly improve efficiency of the update process;~~
~~the assumptions and structure of the population dynamics model underlying the stock assessment and in t;cases where data weightings in the assessment were chosen based on a repeatable process, consider allowing flexibility to repeat this same process rather than require identical weighting. [Or be explicit that this isn't allowed];~~
~~the statistical framework for fitting the model to the data and determining goodness of fit;~~
~~and in cases where there was a repeatable model selection process followed (and documented) for model inputs like the GLMM, consider allowing flexibility to repeat the same model selection process rather than require that the same model be used. [Or be explicit that this isn't allowed].~~
~~the analytical treatment of model outputs in determining management reference points.~~

~~Major changes to the assessment should be postponed until the next full assessment. Minor alternations to the input data and the assessment can be considered as long as the update assessment clearly documents and justifies the need for such changes. A step-by-step transition (via sensitivity analysis) from the last full assessment to an update assessment under review should be provided. Minor alterations can be considered under only two circumstances: first, when the addition of new data reveals an unanticipated sensitivity of model, and second, when there are clear and straightforward improvements in the input data and how it is processed and analyzed for use in the model. Examples of minor alterations include: 1) changes in how compositional data are pooled across sampling strata; 2) the weighting of the various data components (including the use of methods for tuning the variances of the data components); 3) changes in the time periods for the selectivity blocks; 4) correcting data entry errors; and 5) bug fixes in software programming. This list is not meant to be exhaustive, and other alterations can be considered if warranted. Ideally, improved data or methods used to process and analyze data would be reviewed by the SSC prior to being used in assessments.~~

Review of Update Assessments

Update assessments are reviewed by members of the relevant SSC subcommittee (Groundfish or CPS), during a single meeting. Review typically requires one or two days with an option of early dismissal of a STAT. The STAT is responsible for producing the update assessment document and submitting it to Council staff in a timely manner, before the relevant SSC subcommittee reviews the assessment. The document should follow the outline in Appendix B. The STAT, however, can reference the last full assessment (or other relevant documentation) for description of methods, data sources, stock structure, etc., given that they have not been changed. Any new information to the assessment must be presented in sufficient detail for the subcommittee to determine whether the update meets the Council's requirement to use the best available scientific information.

The document must include a retrospective analysis illustrating the model performance with and without the most recent data (new to the update assessment) and discuss whether the new data and update assessment results are sufficiently consistent with those from the last full assessment. The assessment document should include a detailed step-by-step transition from the last full assessment to the update under review. The updated decision table, if there is one, should be of the same format as in the last full assessment; it should highlight differences among alternative models defined using the same axes of uncertainty as those in the last full assessment.

In addition to the update assessment document, Council staff will also provide the subcommittee with a copy of the last full stock assessment reviewed via the STAR process and the associated STAR panel report. The chair of the subcommittee designates a lead reviewer from the subcommittee members for each update assessment to document the meeting discussion, produce a review report, and ensure that each review is conducted according to the TOR. MT and ~~the~~ AP representatives also participate in the review.

The review of update assessments is not expected to require additional model runs or extensive analytical requests during the meeting, although changes in assessment outputs may necessitate some model exploration. The review focuses on two main questions:

1) Does the assessment meet the criteria of a stock assessment update?
2) Can the results of the update assessment form the basis of Council decision making?

If the answer to either of these questions is negative, a full stock assessment for the species would typically be recommended for the next assessment cycle (for groundfish) or the next year (for CPS). For groundfish, if the subcommittee agrees that the update assessment results require additional, but limited exploration before being endorsed for management use, further review at the mop- up meeting~~, at the end of the assessment cycle,~~ could be recommended. In cases like this, the subcommittee needs to develop a list of requests for the STAT to address before the mop-up meeting.

Shortly after the meeting, the subcommittee issues a review report that includes: 1) comments on the technical merits and/or deficiencies of the update assessment; 2) explanation of areas of disagreement between the subcommittee and STAT (if any); and 3) recommendations on the adequacy of the update assessment for use in management. The report may also include subcommittee recommendations for modifications that should be made when the next full assessment is conducted.

The report is reviewed by the full SSC at the ~~next~~ appropriate Council meeting. If the subcommittee review concludes that it is not possible to use the update assessment, the SSC is responsible for evaluating all model runs examined during the review meeting and providing recommendations on an appropriate fishing level to the Council.

~~7.~~9. CATCH REPORTS

In certain cases (e.g., cowcod in 2011) only limited new data are available to inform the assessment. In such cases, it is appropriate for the STAT to provide a catch report, which documents recent removals and compares them to the ACLs established for the stock. ~~For a catch report~~For a catch report, if the estimated removals of a species are near the value projected by the previous assessment/rebuilding analysis, the STAT does not need to conduct model runs since~~, if the estimated removals of a species are near the value projected by the previous assessment/rebuilding analysis,~~ no new insight would be obtained by rerunning the assessment model.

Catch reports are reviewed by the relevant SSC subcommittee (Groundfish or CPS) during a single meeting (that during which update assessments are reviewed). The STAT is responsible for producing the catch report and submitting it to Council staff in a timely manner, before the relevant subcommittee reviews it. The report should be brief, but provide enough details on how total removals were estimated. It should provide only essential information about the stock and refer to the last assessment (or other relevant documentation) for full description of methods, data sources, model structure, etc. used to estimate the status of the stock and generate projections.

In common with a review of an assessment update, Council staff will provide the subcommittee with the catch report, along with a copy of the last full stock assessment reviewed via the STAR process, and the associated STAR panel report. The chair of the subcommittee will designate a lead reviewer from the subcommittee members for each catch report to document the meeting discussion, produce a review report, and ensure that each review is conducted according to the TOR. The report is reviewed by the full SSC at the next Council meeting. The MT and AP representatives also participate in the review.

APPENDIX A: ~~2013~~20153~~3~~ GROUNDFISH AND CPS STOCK ASSESSMENT REVIEW CALENDAR

Review Meeting	Initial Review Deadline	Document Distribution Dates	STAR Panel Dates	Location	Species
~~Data-Moderate Panel~~TBD	~~April 8~~	~~April 15~~	~~April 22-26~~	~~Santa Cruz, CA~~	~~Brown rockfish, China rockfish, copper rockfish, English sole, rex sole, sharpchin rockfish, stripetail rockfish, vermilion rockfish, and yellowtail rockfish~~
~~GF Panel 1~~	~~April 22~~	~~April 29~~	~~May 13-17~~	~~Seattle, WA~~	~~Petrale sole and darkblotched rockfish~~
~~GF Update and catch reports~~	~~May 22~~	~~May 29~~	~~June 18~~	~~Garden Grove, CA~~	~~Bocaccio rockfish update; canary rockfish, Pacific ocean perch, and yelloweye rockfish catch reports~~
~~GF Panel 2~~	~~June 17~~	~~June 24~~	~~July 8-12~~	~~Seattle, WA~~	~~Rougheye rockfish and aurora rockfish~~
~~GF Panel 3~~	~~July 1~~	~~July 8~~	~~July 22-25~~	~~Seattle, WA~~	~~Shortspine thornyheads and longspine thornyheads~~
~~GF Panel 4~~	~~July 15~~	~~July 22~~	~~August 5-9~~	~~Santa Cruz, CA~~	~~Cowcod and Pacific sanddabs~~
~~GF Mop-Up Panel~~	~~Sept. 2~~	~~Sept. 9~~	~~Sept. 23-27~~	~~Seattle, WA~~	~~Rebuilding analyses and continuing issues~~

APPENDIX B: OUTLINE FOR STOCK ASSESSMENT DOCUMENTS

This is a general outline of elements that should be included in stock assessment reports for groundfish and CPS managed by the Pacific Fishery Management Council. Not every item listed in the outline is relevant (or available) for every assessment. Therefore, this outline should be considered a flexible guideline on how to organize and communicate stock assessment results. Items with asterisks (*****) are optional for draft assessment documents prepared for STAR panel meetings but should be included in the final document.

A. Title page and list of preparers – the names and affiliations of the stock assessment team ~~(STAT)~~ either alphabetically or as first and secondary authors.

B. Executive Summary (should follow the template in Appendix B).

C. Introduction
   1. Scientific name, distribution, the basis for the choice of stock structure, including regional differences in life history or other biological characteristics that should form the basis of management units.
   2. A map showing the scope of the assessment and depicting boundaries for fisheries or data collection strata.
   3. Important features of life history that affect management (e.g., migration, sexual dimorphism, bathymetric demography).
   4. Ecosystem considerations (e.g., ecosystem role and trophic relationships of the species, habitat requirements/preferences, relevant data on ecosystem processes that may affect stock or parameters used in the stock assessment, and/or cross-FMP interactions with other fisheries). This section should note if environmental correlations or food web interactions were incorporated into the assessment model. The length and depth of this section would depend on availability of data and reports from the IEA, expertise of the STAT, and whether ecosystem factors are informational to contribute quantitative information to the assessment.
   5. Important features of current fishery and relevant history of fishery.
   6. Summary of management history (e.g., changes in mesh sizes, trip limits, or other management actions that may have significantly altered selection, catch rates, or discards).
   7. Management performance, including a table or tables comparing Overfishing Limit (OFL), Annual Catch Limit (ACL), Harvest Guideline (HG) [CPS only], landings, and catch (i.e., landings plus discard) for each area and year
   8. Description of fisheries for this species off Canada, Alaska and/or Mexico, including references to any recent assessments of those stocks.

~~D.~~

D. Data

Description of all data and sources, which are used in the assessment; if not all data sources are used, provide the rationale for excluding particular data sources; report on consulting with AP and MT representatives regarding the use of various data sources.

1. Fishery-dependent data: Commercial fisheries landings by state, year and gear (PacFIN is the standard source for recent domestic commercial landings), historical catch estimates, discards, recreational fisheries catches, foreign removals; sample size

information for length and age composition data by state, year and gear, including both the number of trips and fish sampled. Include complete tables and figures and date of data extraction.

2. Fishery-independent data: Description of surveys used in the assessment, description of methods to estimate abundance indices, sample size information for length and age composition data by survey and year, including both the number of tows and fish sampled. Include complete tables and figures and date of data extraction.
3. Sources used to estimate biological parameters (e.g., natural mortality, growth, maturity schedules, etc.)
4. Environmental or ecosystem data used. If environmental or ecosystem data are incorporated, report of consultations with technical teams that evaluated ecosystem data or methodologies used in the assessment.

E. Model

1. History of modeling approaches used for this stock
2. Response to STAR panel recommendations from the most recent previous assessment.
3. Description of new modeling approaches and changes made from the last assessment, with rationale.
4. General model specifications:
   Assessment program and its version used for the assessment (i.e., date executable program file was compiled), description of model structure, definitions of fleets and areas. Description of how the first year that is included in the model was selected and how the population state at the time is defined (e.g., B_0, stable age structure, etc.).
5. Model parameters: estimated and fixed parameters, constraints on parameters, selectivity assumptions, natural mortality, treatment of age reading bias and/or imprecision, and other fixed parameters, description of stock-recruitment constraints or components, critical assumptions and consequences of assumption failures.

F. Base model(s) selection and evaluation

1. Evidence of search for balance between model realism and parsimony. Key model assumptions and structural choices (e.g., asymptotic vs. domed selectivities, constant vs. time-varying selectivities). Summary of alternate model configurations that were examined but rejected.
2. Evaluation of model parameters. Likelihood profile for the base model over key parameters (e.g., natural morality, stock-recruit steepness, survey catchability). Are parameter estimates (e.g., survey catchability) consistent with estimates for related stocks?
3. Residual analysis for the base-run configuration e.g., residual plots, time series plots of observed and predicted values, etc.
4. Convergence status and convergence criteria for the base-run model (or proposed base-run). Randomization run results or other evidence of search for global best estimates.

G. Point-by-point response to the STAR panel recommendations**.* Not required in draft assessment undergoing review**.

H. Base-model(s) results

1. Table listing all explicit parameters in the stock assessment model used for base model,

their purpose (e.g., recruitment parameter, selectivity parameter) and whether or not the parameter was actually estimated in the stock assessment model.

2. Population numbers at age × year × sex (if sex-specific M, growth, or selectivity) (May be provided as a text or spreadsheet file).*** Not required in draft assessment undergoing review.**
3. Time-series of total, 1+ (if age 1s are in the model), summary, and spawning biomass (and/or spawning output), depletion relative to B0, recruitment and fishing mortality or exploitation rate estimates (table and figures).
4. Selectivity estimates (if not included elsewhere).
5. Stock-recruitment relationship.
6. OFL, ABC and ACL (and/or ABC and OY or HG) for recent years.
7. Clear description of units for all outputs.
8. Description of how discard is included in yield estimates.
9. Description of environmental or ecosystem data if included in the assessment.

I. Evaluation of uncertainty in model results.

1. Sensitivity to assumptions about model structure, i.e., model specification uncertainty.
2. Sensitivity to data set choice and weighting schemes (e.g., emphasis factors), which may also include a consideration of recent patterns in recruitment.
3. Parameter uncertainty (variance estimation conditioned on a given model, estimation framework, data set choice, and weighting scheme), including likelihood profiles for important assessment parameters (e.g., natural mortality). This also includes expressing uncertainty in derived outputs of the model and estimating CVs using appropriate methods (e.g., bootstrap, asymptotic methods, Bayesian approaches, such as MCMC). Include the CV of spawning biomass in the first year for which an OFL has not been specified (typically end year +1 or +2).
4. Retrospective analysis, where the model is fitted to a series of shortened input data sets, with the most recent years of input data being dropped.
5. Historical analysis (plot of actual estimates from current and previous assessments).
6. If a range of model runs is used to characterize uncertainty it is important to provide some qualitative or quantitative information about relative probability of each. If no statements about relative probability can be made, then it is important to state that all scenarios (or all scenarios between the bounds depicted by the runs) are equally likely
7. If possible, ranges depicting uncertainty should include at least three runs: (a) one judged most probable; (b) at least one that depicts the range of uncertainty in the direction of lower current biomass levels; and (c) one that depicts the range of uncertainty in the direction of higher current biomass levels. The entire range of uncertainty should be carried through stock projections and decision table analyses.

~~Assessment~~

~~1. Data~~

~~Landings by year and fishery (PacFIN is the standard source for all commercial landings), historical catch estimates, discards (generally specified as a percentage of total catch in weight and in units of mt), catch-at-age, weight-at-age, abundance indices (typically survey and CPUE data), data used to estimate biological parameters (e.g., growth rates, maturity schedules, and natural mortality) with coefficients of variation (CVs) or variances if available. Include complete tables and figures and date of extraction.~~

~~Sample size information for length and age composition data by area, year, gear, market category, etc., including both the number of trips and fish sampled.~~

~~All data sources that include the species being assessed, which are used in the assessment, and~~

provide the rationale for data sources that are excluded.
Clear description of environmental or ecosystem data if included in the assessment.
2. History of modeling approaches used for this stock – changes between current and previous assessment models
a. Response to STAR panel recommendations from the most recent previous assessment.
b. Report of consultations with AP and MT representatives regarding the use of various data sources in the stock assessment.
c. If environmental or ecosystem data are incorporated, report of consultations with technical teams that evaluated ecosystem data or methodologies used in the assessment.
3. Model description
Complete description of any new modeling approaches.
Definitions of fleets and areas.
Assessment program with last revision date (i.e., date executable program file was compiled).
List and description of all likelihood components in the model.
Constraints on parameters, selectivity assumptions, natural mortality, treatment of age reading bias and/or imprecision, and other fixed parameters.
Description of stock-recruitment constraints or components.
Description of how the first year that is included in the model was selected and how the population state at the time is defined (e.g., B_0, stable age structure, etc.).
Critical assumptions and consequences of assumption failures.
4. Model selection and evaluation
a. Evidence of search for balance between model realism and parsimony.
b. Comparison of key model assumptions, include comparisons based on nested models (e.g., asymptotic vs. domed selectivities, constant vs. time-varying selectivities).
c. Summary of alternate model configurations that were tried but rejected.
d. Likelihood profile for the base-run (or proposed base-run model for a draft assessment undergoing review) configuration over one or more key parameters (e.g., M, h, Q) to show consistency among input data sources.
e. Residual analysis for the base-run configuration (or proposed base-run model in a draft assessment undergoing review) e.g., residual plots, time series plots of observed and predicted values, or other approaches. Note that model diagnostics *are* required in draft assessments undergoing review.
f. Convergence status and convergence criteria for the base-run model (or proposed base-run).
g. Randomization run results or other evidence of search for global best estimates.
h. Evaluation of model parameters. Do they make sense? Are they credible?
i. Are model results consistent with assessments of the same species in Canada and Alaska? Are parameter estimates (e.g., survey catchability) consistent with estimates for related stocks?
5. Point-by-point response to the STAR panel recommendations**.* Not required in draft assessment undergoing review**.
6. Base-model(s) results
Table listing all explicit parameters in the stock assessment model used for base model, their purpose (e.g., recruitment parameter, selectivity parameter) and whether or not the parameter was actually estimated in the stock assessment model.
Population numbers at age × year × sex (if sex-specific *M*, growth, or selectivity) (May be provided as a text or spreadsheet file).*** Not required in draft assessment undergoing review**.
Time-series of total, 1+ (if age-1s are in the model), summary, and spawning biomass (and/or

~~spawning output), depletion relative to B_0, recruitment and fishing mortality or exploitation rate estimates (table and figures).~~
~~Selectivity estimates (if not included elsewhere).~~
~~Stock-recruitment relationship.~~
~~OFL, ABC and ACL (and/or ABC and OY or HG) for recent years.~~
~~Clear description of units for all outputs.~~
~~Clear description of how discard is included in yield estimates.~~
~~Clear description of environmental or ecosystem data if included in the assessment.~~
~~7. Uncertainty and sensitivity analyses. The best approach for describing uncertainty and the range of probable biomass estimates in groundfish assessments may depend on the situation. Important factors to consider include:~~
~~Parameter uncertainty (variance estimation conditioned on a given model, estimation framework, data set choice, and weighting scheme), including likelihood profiles for important assessment parameters (e.g., natural mortality). This also includes expressing uncertainty in derived outputs of the model and estimating CVs using appropriate methods (e.g., bootstrap, asymptotic methods, Bayesian approaches, such as MCMC). Include the CV of spawning biomass in the first year for which an OFL has not been specified (typically end year +1 or +2).~~
~~Sensitivity to data set choice and weighting schemes (e.g., emphasis factors), which may also include a consideration of recent patterns in recruitment.~~
~~Sensitivity to assumptions about model structure, i.e., model specification uncertainty.~~
~~Retrospective analysis, where the model is fitted to a series of shortened input data sets, with the most recent years of input data being dropped.~~
~~Historical analysis (plot of actual estimates from current and previous assessments).~~
~~Subjective appraisal of the magnitude and sources of uncertainty.~~
~~If a range of model runs is used to characterize uncertainty it is important to provide some qualitative or quantitative information about relative probability of each. If no statements about relative probability can be made, then it is important to state that all scenarios (or all scenarios between the bounds depicted by the runs) are equally likely~~
~~E. If possible, ranges depicting uncertainty should include at least three runs: (a) one judged most probable; (b) at least one that depicts the range of uncertainty in the direction of lower current biomass levels; and (c) one that depicts the range of uncertainty in the direction of higher current biomass levels. The entire range of uncertainty should be carried through stock projections and decision table analyses.~~

J. Harvest control rules (CPS only)

The OFL, ABC and HG harvest control rules for actively managed species apply to the U.S. (California, Oregon, and Washington) harvest recommended for the next fishing year and are defined as follows:

- OFL = BIOMASS * F_{MSY} * U.S. DISTRIBUTION
- ABC = BIOMASS * BUFFER * F_{MSY} * U.S. DISTRIBUTION
- ACL LESS THAN OR EQUAL TO ABC
- HG = (BIOMASS-CUTOFF)* FRACTION * U.S. DISTRIBUTION
- ACT EQUAL TO HG OR ACL, WHICHEVER VALUE IS LESS

where F_{MSY} is the fishing mortality rate that maximizes catch biomass in the long-term.

Implementation for Pacific Sardine

1. BIOMASS is the estimated stock biomass (ages 1+) at the start of the next year from the current assessment,

2. CUTOFF (150,000 mt) is the lowest level of estimated biomass at which harvest is allowed,
3. FRACTION is an environment-based percentage of biomass above the CUTOFF that can be harvested by the fisheries. Given that the productivity of the sardine stock has been shown to increase during relatively warm-water ocean conditions, the following formula has been used to determine an appropriate (sustainable) FRACTION value:

   FRACTION = $0.248649805(T_2) - 8.190043975(T) + 67.4558326$,

   where T is the running average sea-surface temperature at Scripps Pier, La Jolla, California during the three preceding years. Under the harvest control rule, FRACTION is constrained and ranges between 5% and 15% depending on the value of T.
4. U.S. DISTRIBUTION is the percentage of BIOMASS in U.S. waters (87%).

NOTE: at its April 2014 meeting, the Council adopted a new FRACTION formula and SST index for immediate use in calculating the sardine OFL, and for future use in calculating the HG, after the Council takes final action. The new FRACTION formula is Emsy = $-18.46452 + 3.25209T - 0.19723T^2 + 0.0041863T^3$, with the Temperature term (T) derived from the CalCOFI SST index.

Implementation for Pacific Mackerel

1. BIOMASS is the estimated stock biomass (ages 1+) at the start of the next year from the current assessment,
2. CUTOFF (18,200 mt) is the lowest level of estimated biomass at which harvest is allowed,
3. FRACTION (30%) is the fraction of biomass above CUTOFF that can be taken by fisheries, and
4. U.S. DISTRIBUTION (70%) is the average fraction of total BIOMASS in U.S. waters.

The CUTOFF and FRACTION values applied in the Council's harvest policy for mackerel are based on simulations published by MacCall et al. in 1985.

~~F~~K. Reference points (groundfish only)

1. Unfished spawning stock biomass, summary age biomass, and recruitment, along with unfished spawning stock output.
2. Reference points based on $B_{40\%}$ for rockfish and roundfish and on $B_{25\%}$ for flatfish (spawning biomass and/or output, SPR, exploitation rate, equilibrium yield).
3. Reference points based on default SPR proxy (spawning biomass and/or output, SPR, exploitation rate, equilibrium yield).
4. Reference points based on MSY (if estimated) (spawning biomass and/or output, SPR, exploitation rate, equilibrium yield).
5. Equilibrium yield curve showing various B_{MSY} proxies.

~~G~~L. Harvest projections and decision tables (groundfish only) *** Not required in draft assessment undergoing review**.

1. Harvest projections and decision tables (i.e., a matrix of alternative models (states of nature) versus management actions) should cover the plausible range of uncertainty about current stock biomass and a set of candidate fishing mortality targets used for the stock. See section "*Uncertainty and Decision Tables in Groundfish Stock*

Assessment" (this document, pp.12-13) on how to define alternative states of nature. Management decisions in most cases represent the sequence of catches including estimate of OFL based on F_{MSY} (or its proxy) and those obtained by applying the Council 40-10 harvest policy to each state of nature; however other alternatives may be suggested by the GMT as being more relevant to Council decision making. OFL calculations should be based on the assumption that future catches equal ABCs and not OFLs.

2. Information presented should include biomass, stock depletion, and yield projections of OFL, ABC and ACL for ten years into the future, beginning with the first year for which management action could be based upon the assessment.

~~H.~~

M. Regional management considerations.

- Discussion of whether there is biological evidence for a regional management approach. If a regional management approach is desirable for the stock, but there are insufficient data for it, what are the research and data needs to address this issue?
- For stocks where current practice is to allocate harvests by management area, a recommended method of allocating harvests based on the distribution of biomass should be provided. The MT advisor should be consulted on the appropriate management areas for each stock.

~~Regional management considerations.~~

~~For stocks where current practice is to allocate harvests by management area, a recommended method of allocating harvests based on the distribution of biomass should be provided. The MT advisor should be consulted on the appropriate management areas for each stock.~~

~~Discuss whether a regional management approach makes sense for the species from a biological perspective.~~

~~If there are insufficient data to analyze a regional management approach, what are the research and data needs to answer this question?~~

~~I~~N. Research needs (prioritized).

~~J~~O. Acknowledgments: include STAR panel members and affiliations as well as names and affiliations of persons who contributed data, advice or information but were not part of the assessment team. *** Not required in draft assessment undergoing review.**

~~K~~P. Literature cited.

~~L~~Q. An appendix with the complete parameter and data in the native code of the stock assessment program. (For a draft assessment undergoing review, these listings can be provided as text files or in spreadsheet format.)

APPENDIX C: TEMPLATE FOR AN EXECUTIVE SUMMARY

Items with asterisks (*****) are optional for draft assessment documents prepared for STAR panel meetings but should be included in the final document.

Stock	Species/area, including an evaluation of any potential biological basis for regional management.
Catches	Trends and current levels - include table for last ten years and graph with long term data.
Data and assessment	Date of last assessment, type of assessment model, data available, new information, and information lacking.
Stock biomass	Trends and current levels relative to virgin or historic levels, description of uncertainty-include table for last 10 years and graph with long term estimates.
Recruitment	Trends and current levels relative to virgin or historic levels-include table for last 10 years and graph with long term estimates
Exploitation status	Exploitation rates (i.e., total catch divided by exploitable biomass, or the annual SPR harvest rate) - include a table with the last 10 years of data and a graph showing the trend in fishing mortality relative to the target (y-axis) plotted against the trend in biomass relative to the target (x-axis).
Ecosystem considerations	A summary of reviewed environmental and ecosystem factors that appear to be correlated with stock dynamics, e.g., variability in the physical environment that directly or indirectly affects the vital rates (growth, survival, productivity/recruitment) of fish stocks, and/or trophic interactions that affect predators and prey. Note what, if any, ecosystem factors are used in the assessment and how.
Reference points (groundfish)/ Harvest control rules (CPS)	Groundfish: Management targets and definition of overfishing, including the harvest rate that brings the stock to equilibrium at $B_{40\%}$ (the B_{MSY} proxy) and the equilibrium stock size that results from fishing at the default harvest rate (the F_{MSY} proxy). Include a summary table that compares estimated reference points for SSB, SPR, Exploitation Rate and Yield based on SSB proxy for MSY, SPR proxy for MSY, and estimated MSY values. CPS: Results of applying the control rule to compute the harvest guideline, including specification of each of the quantities on which the harvest guideline is based (BIOMASS, CUTOFF, FRACTION, U.S. DISTRIBUTION)
Management performance	Catches in comparison to OFL, ABC, [HG], and OY/ACL values for the most recent 10 years (when available), overfishing levels, actual catch and discard. Include OFL (encountered), OFL (retained) and OFL (dead) if different due to discard and discard mortality.
Unresolved problems and major uncertainties	Any special issues that complicate scientific assessment, questions about the best model scenario, etc.
Decision table (groundfish only)*	Projected yields (OFL, ABC and ACL), spawning biomass, and stock depletion levels for each year. OFL calculations should be based on the assumption that future catches equal ABCs and not OFLs.
Research and data needs	Identify information gaps that seriously impede the stock assessment.
Rebuilding Projections*	Reference to the principal results from rebuilding analysis if the stock is overfished. For groundfish, see Rebuilding Analysis terms of reference for detailed information on rebuilding analysis requirements.

APPENDIX D: TEMPLATE FOR A DATA-MODERATE ASSESSMENT

1. Title page and list of preparers – the names and affiliations of the stock assessment team (STAT).
2. Introduction: Scientific name, distribution, basic biology (growth, longevity, ecology), the basis for the choice of stock unit(s)(no more than 1-2 paragraphs).
3. Development of indices (used and rejected). Novel approaches should be fully documented.
4. Survey of other data available for assessment: sample sizes by year and source of lengths, and ages (read and unread)--in case there is interest in conducting a full assessment in the future.
5. Selection of method (X~~ex~~SSS or XDB-SRA; authors "encouraged" to do both).
6. Assessment model
    a. Specification of priors / production function (defaults OK)
    b. Initial runs using catch-only methods (DB-SRA or SSS (or both))
    c. Diagnostics
        i. Evaluation of convergence
        ii. Residual plots
        iii. Posterior predictive intervals (if Bayesian)
        iv. Time-trajectories of biomass, depletion, etc.
        v. Sensitivity analyses using alternative catch streams, alternative priors for depletion, etc.
7. Estimates of OFL (median of the distribution), and
8. Estimates of stock status.

APPENDIX E: DEFINITIONS OF SPECIES CATEGORIES FOR GROUNDFISH AND CPS ASSESSMENTS

Category 3: Data poor. OFL is derived from historical catch.	**a**	No reliable catch history. No basis for establishing OFL.
	b	Reliable catches estimates only for recent years. OFL is average catch during a period when stock is considered to be stable and close to BMSY equilibrium on the basis of expert judgment.
	c	Reliable aggregate catches during period of fishery development and approximate values for natural mortality. Default analytical approach DCAC.
	d	Reliable annual historical catches and approximate values for natural mortality and age at 50% maturity. Default analytical approach DB-SRA.
Category 2: Data moderate. OFL is derived from model output (or natural mortality).	**a**	M*survey biomass assessment (as in Rogers 1996).
	b	Historical catches, fishery-dependent trend information only. An aggregate population model is fit to the available information.
	c	Historical catches, survey trend information, or at least one absolute abundance estimate. An aggregate population model is fit to the available information.
	d	Full age-structured assessment, but results are substantially more uncertain than assessments used in the calculation of the P* buffer. The SSC will provide a rationale for each stock placed in this category. Reasons could include that assessment results are very sensitive to model and data assumptions, or that the assessment has not been updated for many years.
	e	Assessments of a complex of species cannot be designated as a category 1 assessment unless there is good evidence that the component species have very similar life-history characteristics and similar rates of biological productivity.
Category 1: Data rich. OFL is based on F_{MSY} or F_{MSY} proxy from model output. ABC based on P* buffer.	**a**	Reliable compositional (age and/or size) data sufficient to resolve year-class strength and growth characteristics. Only fishery-dependent trend information available. Age/size structured assessment model.
	b	As in 1a, but trend information also available from surveys. Age/size structured assessment model.
	c	Age/size structured assessment model with reliable estimation of the stock-recruit relationship.

TERMS OF REFERENCE

FOR THE

GROUNDFISH REBUILDING ANALYSIS FOR ~~2013~~2015-~~2014~~2016

DRAFT

~~SEPTEMBER~~~~MAY~~AUGUST, ~~2012~~2014

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1. INTRODUCTION

Amendment 11 to the Groundfish Fishery Management Plan (FMP) established a default overfished threshold equal to 25% of the unexploited female spawning output[1] (B_0), or 50% of B_{MSY}, if known. By definition, groundfish stocks falling below that level were designated to be in an overfished state ($B_{25\%} = 0.25 \times B_0$[2]). To reduce the likelihood that stocks would decline to that point, the policy specified a precautionary threshold equivalent to 40% of B_0. The policy required that the ACL, when expressed as a fraction of the allowable biological catch, be progressively reduced at stock sizes less than $B_{40\%}$. Because of this linkage, $B_{40\%}$ has sometimes been interpreted to be a proxy measure of B_{MSY}, i.e., the female spawning output that results when a stock is fished at F_{MSY}. In fact, theoretical results support the view that a robust biomass-based harvesting strategy for most rockfish (*Sebastes* spp.) would be to maintain stock size at about 40% of the unfished level (Clark 1991, 2002). In the absence of a credible estimate of B_{MSY}, which can be very difficult to estimate (MacCall and Ralston 2002), $B_{40\%}$ is a suitable proxy to use as a rebuilding target for most groundfish.

The ~~recently revised M~~Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires that U.S. fishery management councils avoid overfishing by setting annual catch limits (ACLs). Stock assessments ~~now will~~ provide overfishing level (OFL) estimates, and an acceptable biological catch (ABC) ~~will be~~is derived from the OFL by reducing the OFL to account for scientific uncertainty. The ACL cannot exceed the ABC.

Following the 2008 assessment season, the Pacific Fishery Management Council ("Council") revised the reference points for flatfish, as separate from other groundfish species. The ~~new~~ reference points include an MSY proxy fishing rate of $F_{30\%}$, a target spawning output of $B_{25\%}$ and an overfished threshold of $B_{12.5\%}$. Similarly, the 40:10 policy has been replaced by a 25:5 policy for flatfish.

Under the MSA, rebuilding plans are required for stocks that have been designated to be in an overfished state. Amendment 12 of the Groundfish FMP provided a framework within which rebuilding plans for overfished groundfish resources could be established. Amendment 12 was

[1] The absolute abundance of the mature portion of a stock is loosely referred to here in a variety of ways, including: population size, stock biomass, stock size, spawning stock size, spawning biomass, spawning output; i.e., the language used in this document is sometimes imprecise. However, the best fundamental measure of population abundance to use when establishing a relationship with recruitment is spawning output, defined as the total annual output of eggs (or larvae in the case of live-bearing species), accounting for maternal effects (if these are known). Although spawning biomass is often used as a surrogate measure of spawning output, for a variety of reasons a non-linear relationship often exists between these two quantities (Rothschild and Fogarty 1989; Marshall *et al*. 1998). Spawning output should, therefore, be used to measure the size of the mature stock when possible.

[2] Estimates of stock status are typically obtained by fitting statistical models of stock dynamics to survey and fishery data. In recent years, the bulk of stock status determinations have been based on Stock Synthesis 3, an age- and size-structured population dynamics model (Methot 2005, 2007). Stock assessment models can be fitted using Maximum Likelihood or Bayesian methods. For both types of estimation methods, a stock is considered to be in an overfished state if the best point estimate of stock size is less than 25% (rockfish and roundfish) and 12.5% (flatfish) of unfished stock size. This corresponds to the maximum likelihood estimate for estimation methods based on Maximum Likelihood methods, to the maximum of the posterior distribution (MPD) for estimation methods in which penalties are added to the likelihood function, and to the mode of the posterior distribution for Bayesian analyses. The median of the Bayesian posterior is not used for determination of overfished status.

challenged in Federal District Court and found not to comply with the requirements of the MSA because rebuilding plans did not take the form of an FMP, FMP amendment, or regulation. In response to this finding, the Council developed Amendment 16-1 to the Groundfish FMP which covered three issues, one of which was the form and content of rebuilding plans.

The Council approach to rebuilding depleted groundfish species, as described in rebuilding plans, was re-evaluated and adjusted under Amendment 16-4 in 2006 so they would be consistent with the opinion rendered by the Ninth Circuit Court of Appeals in *Natural Resources Defense Council, Inc. and Oceana, Inc.* v. *National Marine Fisheries Service, et al.,* 421 F.3d 872 (9th Cir. 2005), and with National Standard 1 of the MSA. The court affirmed the MSA mandate that rebuilding periods "be as short as possible, taking into account the status and biology of any overfished stocks of fish, the needs of fishing communities, recommendations by international organizations in which the United States participates, and the interaction of the overfished stock of fish within the marine ecosystem" (Section 304(e)). The court opinion also recognized that some harvest of overfished species could be accommodated under rebuilding plans to avoid severe economic impacts to West Coast fishing communities dependent on groundfish fishing. Under Amendment 16-4 rebuilding plans, more emphasis was placed on shorter rebuilding times and the trade-off between rebuilding periods and associated socioeconomic effects.

Rebuilding Plans include several components, one of which is a rebuilding analysis. Simply put, a rebuilding analysis involves projecting the status of the overfished resource into the future under a variety of alternative harvest strategies to determine the probability of recovery to B_{MSY} (or its proxy) within a pre-specified time-frame.

2. OVERVIEW OF THE CALCULATIONS INVOLVED IN A REBUILDING ANALYSIS

This document presents guidelines for conducting a basic groundfish rebuilding analysis that meets the minimum requirements that have been established by the Council's Scientific and Statistical Committee (SSC), those of Amendment 16-1 of the Groundfish FMP, and those arising from the 9th Circuit Court decision. It also outlines the appropriate documentation that a rebuilding analysis needs to include. These basic calculations and reporting requirements are essential elements in all rebuilding analyses to provide a standard set of base-case computations, which can then be used to compare and standardize rebuilding analyses among stocks. The steps when conducting a rebuilding analysis are:

1. Estimation of B_0 (and hence B_{MSY} or its proxy).
2. Selection of a method to generate future recruitment.
3. Specification of the mean generation time.
4. Calculation of the minimum and maximum times to recovery.
5. Identification and analysis of alternative harvest strategies and rebuilding times.

The specifications in this document have been implemented in a computer package developed by Dr André Punt (University of Washington). This package can be used to perform rebuilding analyses for routine situations. However, the SSC encourages analysts to explore alternative assumptions, calculations and projections that may more accurately capture uncertainties in stock

rebuilding than the default standards identified in this document, and which may better represent stock-specific concerns. In the event of a discrepancy between the generic calculations presented here and a stock-specific result developed by an individual analyst, the SSC groundfish subcommittee will review the issue and recommend which results to use.

The SSC also encourages explicit consideration of uncertainty in projections of stock rebuilding (see Section 8 below).

2.1. Estimation of B_0

B_0 is defined as mean unexploited female spawning output. The default approach for estimating B_0 for rebuilding analyses is to base it on some form of spawner-recruit model because most of the recent assessments of west coast groundfish have been based on stock assessments that integrate the estimation of the spawner-recruit model with the estimation of other population dynamic parameters. These stock assessments therefore link the recruitments for the early years of the assessment period with the average recruitment corresponding to B_0.

Stock assessment models that integrate the estimation of the spawner-recruit model also provide estimates of B_{MSY}. However, at this time, the SSC recommends that these estimates not be used as the target for rebuilding because they may not be robust. Rather, the rebuilding target should be taken to be the agreed proxy for B_{MSY} (e.g. $0.4B_0$ for most groundfish stocks) in all cases.

The recruitment process depends on the environment in addition to female spawning output. For example, the decadal-scale regime shift that occurred in 1977 (Trenberth and Hurrell 1994) is known to have strongly affected ecosystem productivity and function in both the California Current and the northeast Pacific Ocean (Roemmich and McGowan 1995; MacCall 1996; Francis *et al*. 1998; Hare *et al*. 1999). With the warming that ensued, West Coast rockfish recruitment appears to have been adversely affected (Ainley *et al*. 1993; Ralston and Howard 1995). In principle, B_0 and the approach used to generate future recruitment (see below) could take account of regime-shift effects on productivity. However, this would need to be justified (and the assumptions used for projection purposes would need to be consistent with those on which the assessment was based).

2.2. Selection of a Method to Generate Future Recruitment

One can project the population forward once the method for generating future recruitment has been specified, given the current state of the population from the most recent stock assessment (terminal year estimates of numbers at age and their variances) and the rebuilding target. The current default approach for generating future recruitment is to use the results of a fitted spawner-recruit model (e.g., the Beverton-Holt or Ricker curves), in particular because SS3-based assessments all assume a structural spawner-recruit model, either estimating or pre-specifying the steepness of the curve[3]. Moreover, this approach is consistent with that recommended above for setting B_0. This approach can, however, be criticized because stock

[3] The "steepness" of a spawner-recruit curve is related to the slope at the origin and is a measure of a stock's productive capacity. It is expressed as the proportion of virgin recruitment that is produced by the stock when reduced to $B_{20\%}$~~, and ranges between 0.2 and 1.0~~.

productivity is constrained to behave in a pre-specified manner according to the particular spawner-recruit model chosen, and there are different models to choose from, including the Beverton-Holt and Ricker formulations. These two models can produce very different reference points, but are seldom distinguishable statistically. Moreover, there are statistical issues when a spawner-recruit model is estimated after the assessment is conducted, including: (1) time-series bias (Walters 1985), (2) the "errors in variables problem" (Walters and Ludwig 1981), and (3) non-homogeneous variance and small sample bias (MacCall and Ralston 2002). Thus, analyses based on a spawner-recruit model should include a discussion of the rationale for the selection of the spawner-recruit model used, and refer to the estimation problems highlighted above and whether they are likely to be relevant and substantial for the case under consideration. A rationale for the choice of spawner-recruit model should also be provided. In situations where steepness is based on a spawner-recruit meta-analysis (e.g., Dorn 2002), the reliability of the resulting relationship should be discussed.

2.3. Specification of the Mean Generation Time

The mean generation time should be calculated as the mean age of the net maturity function. A complication that can occur in the calculation of mean generation time, as well as B_0 (see above), is when growth and/or reproduction have changed over time. In such instances, the parameters governing these biological processes should typically be fixed at their most recent, contemporary, values, as this best reflects the intent of "prevailing environmental conditions" as stated in the NMFS Guidelines for National Standard 1. Exceptions may occur if there are good reasons for an alternative specification (e.g., using growth and maturity schedules that are characteristic of a stock that is close to B_{MSY}).

2.4. Calculation of the Minimum and Maximum Times to Recovery

The minimum time to recovery (denoted T_{MIN}) is defined as the median time (i.e. 50% probability) for a stock to recover to the target stock size, starting from the time when a rebuilding plan was actually implemented (usually the year after the stock was declared overfished) to when the target level is first achieved, assuming no fishing occurs.

Although no longer used directly in Council decision-making for overfished stocks, rebuilding analyses should report the maximum time to recovery (denoted T_{MAX}). T_{MAX} is ten years if T_{MIN} is less than 10 years. If T_{MIN} is greater than or equal to 10 years, T_{MAX} is equal to T_{MIN} plus one mean generation. Likewise, rebuilding analyses should report an estimate of the median number of years needed to rebuild to the target stock size if all future fishing mortality is eliminated from the first year for which the Council is making a decision about[4] ($T_{F=0}$). This will typically differ from T_{MIN}.

Finally, when a stock rebuilding plan has been implemented for some time and recruitments have been estimated from an assessment, it may be that explicit, year-specific estimates of recruitment are available for the earliest years of the rebuilding time period. In such instances, rebuilding forecasts should be conducted setting the recruitments from the start of the rebuilding plan to the current year based on the estimates from the most recent assessment, rather than through re-

[4] This year will generally not be the current year, but rather the year following the current two-year cycle.

sampling methods (see above) because this reflects the best available information regarding the recruitment during the rebuilding period.

2.5. Alternative Harvest Strategies during Rebuilding

The Council is required to rebuild overfished stocks in a time period that is as short as possible, but can extend this period to take into account the needs of fishing communities. The simplest rebuilding harvest strategy to simulate and implement is a constant harvest rate or "fixed F" policy. Such strategies should also mean that encounter rates with overfished species remain relatively constant over time, which is unlikely to be the case for constant catch strategies. All rebuilding analyses should, therefore, minimally consider fixed F (or SPR) strategies. However, many other strategies are possible, including constant catch and phase-in strategies, in which catch reductions are phased-in. In these latter cases, analysts should always assess whether fishing mortality rates exceed F_{MSY} (or its proxy), as this would constitute overfishing.

Analysts should consider a broad range of policy alternatives to give the Council sufficient scope on which to base a decision. The following represent the set of harvest strategies which have been identified by the GMT – all rebuilding analyses should minimally include these strategies:

1) eliminate all harvest beginning in the next management cycle (i.e., estimate $T_{F=0}$),
2) apply the harvest rate that would generate the ACL specified for the current year (i.e., the latest year specified in regulations),
3) apply the spawning potential ratio[5] or relevant harvest control rule in the current rebuilding plan,
4) apply the harvest rate that is estimated to lead to a 50% probability of recovery by the current T_{TARGET},
5) apply the harvest rate that is estimated to lead to a 50% probability of recovery by the T_{MAX} from the current cycle,
6) apply the harvest rate that is estimated to lead to a 50% probability of recovery by the T_{MAX} from the previous cycle,
7) apply the default (e.g. 40-10 or 25-5) harvest policy, and
8) apply the ABC harvest rate (i.e., F_{MSY} less the uncertainty buffer).

For all of these strategies, except for numbers 1 and 8, the median catch streams from each run should be used as the harvest strategy in a follow-up run to evaluate the result of following the actual catch advice from the harvest policies above. In other words each of strategies 2-7 should be run twice; once with a given sequence of harvest rates and then using the median catches obtained from the first run. If the catch for a given year under one of the harvest strategies exceeds the ABC for that year, the catch should be set to the ABC (this is done automatically in the rebuilding software).

These polices should be implemented within the projection calculations in the year for which the Council is making a decision. For example, for assessments conducted in 2013 (using data up to

[5] The Spawning Potential Ratio (SPR) is a measure of the expected spawning output-per-recruit, given a particular fishing mortality rate and the stock's biological characteristics, i.e., there is a direct mapping of SPR to *F* (and *vice versa*). SPR can therefore be converted into a specific fishing mortality rate in order to calculate ACLs.

2012), the harvest decisions pertain to OFLs, ABCs and ACLs for 2015 and 2016. In this case, the catches for 2013 and 2014 should be set to the ACLs established by the Council for those years.
Many other harvest policies could be implemented by the Council. Consequently, analysts should be prepared to respond to requests by the Council for stock-specific projections on an individual case-by-case basis.

3. EVALUATING PROGRESS TOWARDS REBUILDING

There are no agreed criteria for assessing the adequacy of the progress towards rebuilding for species that are designated to be in an overfished state and are under a Rebuilding Plan. The SSC currently reviews each stock on a case-by-case basis, considering the following two questions: (1) have cumulative catches during the period of rebuilding exceeded the cumulative ACL that was available, and (2) what is the difference between the year in which recovery is predicted to occur under the current SPR (T_{REBUILD}) and the currently-adopted T_{TARGET}? If the difference between T_{REBUILD} and T_{TARGEST} is minor, progress towards rebuilding is considered to be adequate. In contrast, if the difference between T_{REBUILD} and T_{TARGET} is major, it will be necessary to define a new T_{TARGET}. As an initial step in this direction, a new maximum time to rebuild T_{MAX}^{N} will be computed based on the specifications outlined in Section 5. Analysts will be asked to assess whether the currently-adopted SPR will readily rebuild the stock before T_{MAX}^{N}.

Adequacy of progress will be evaluated when the SSC groundfish subcommittee reviews the draft rebuilding plans. Analysts should provide the information needed to address the two questions listed above. If the SSC agrees that progress is not sufficient, the draft rebuilding analysis documents will need to be updated to include T_{MAX}^{N} and the probability that the currently adopted harvest rate (SPR) will rebuild the stock before T_{MAX}^{N}.

4. DECISION ANALYSES / CONSIDERING UNCERTAINTY

The calculation of T_{MIN} and the evaluation of alternative harvest strategies involve projecting the population ahead taking account of uncertainty about future recruitment. There are several reasons for considering model and parameter uncertainty when conducting a rebuilding analysis. For example, if several assessment model scenarios were considered equally plausible by the assessment authors or, alternatively, one model was preferred by the assessment authors and another was preferred by the STAR Panel. Accounting for implementation uncertainty (i.e. the realized catch differing from the set ACL) is needed for cases in which the catch of the overfished stock is likely to differ appreciably from the set ACLs.

The uncertainty associated with parameters, such as the rate of natural mortality and the current age-structure of the population, can also be taken into account. This can be achieved in a variety of ways. For example, if the uncertainty relates to the parameters within one structural model, this uncertainty can be reflected by basing projections on a number of samples from a distribution which reflects this uncertainty (such as a Bayesian posterior distribution or bootstrap samples). Alternatively, if there are multiple models (e.g. different structural assumptions regarding data weights, use of data sources, etc.) projections can be conducted for each model

and the results appropriately weighted when producing the final combined results if the uncertainty pertains to alternative structural models. In the case of assessments for which a decision table has been produced, the weights assigned to each model on which the decision table is based would be those assigned by the STAR Panel (and endorsed/modified by the SSC).
Implementation uncertainty can take many forms. Two common ways to model implementation uncertainty are (a) the realized catch is distributed about the ACL (i.e. the catch equals the ACL on average), and (b) the realized catch is distributed about the ACL, but the expected catch is less [or greater] than the ACL. The latter case is appropriate if past data suggest that ACLs will be undercaught given management arrangements.

5. DOCUMENTATION

The analysts are responsible for conducting a complete and technically sound rebuilding analysis that conforms to accepted standards of quality, and in accordance with these TOR. It is important for analysts to document their work so that any rebuilding analysis can be repeated by an independent investigator at some point in the future. Therefore, all stock assessments and rebuilding analyses should include tables containing the specific data elements that are needed to adequately document the analysis. Clear specification of the exact assessment scenario(s) used as the basis for the rebuilding analysis is essential. Linkages with the most recent stock assessment document should be clearly delineated (e.g., through references to tables or figures). This is important because assessments often include multiple scenarios that usually have important implications with respect to stock rebuilding. The rebuilding analysis document should follow the outline below.

1) Title page and list of preparers – the names and affiliations of the analysts either alphabetically or as first and secondary authors.
2) Summary – condensed overview and results of the rebuilding analyses.
3) Introduction – scientific name; years when species declared overfished; summary of assessment efforts (when first assessed, brief overview of subsequent assessments and rebuilding analyses).
4) Overview of the most recent stock assessment – main assumptions, estimated stock status, sources of uncertainty, alternative states of nature used in the decision table, median and 95% intervals for: (a) summary / exploitable biomass, (b) spawning output (in absolute terms and relative to the target level), (c) recruitment, (d) catch, (e) landings (if different from catch), (f) OFL, (g) ABC, and (h) SPR for the actual harvest strategy selected by the Council.
5) Management performance under rebuilding – brief overview and a table comparing Overfishing Limit (OFL), Annual Catch Limit (ACL), and catch (i.e., landings plus discard) for each year of the rebuilding period.
6) Rebuilding calculations
    - Specifications for the software used for the analysis (including the version number); date on which the analysis was conducted; the program's input files (should be included as an Appendix).
    - The rationale for the approach used to estimate B_0 and to generate future recruitment.
    - The biological information on which the projections are based (e.g. natural mortality rate by age and sex, individual weight by age and sex, maturity by age, fecundity by

age, selectivity-at-age by sex (and fleet), population numbers (by age and sex) for the year the rebuilding plan commenced, population numbers (by age and sex) for the present year).

- Description of how fishing mortality is allocated (and selectivity applied) to each fleet for rebuilding analyses based on multiple fleets.
- Description of how uncertainty in input parameters from the stock assessment in the rebuilding analysis is accounted for.
- List and description of alternate rebuilding strategies analyzed.

7) Results
   - Summary of rebuilding reference points. For each alternative model, a table (see Table 1 for an example based on canary rockfish) should be produced which lists: (a) the year in which the rebuilding plan commenced, (b) the present year, (c) the first year that the evaluated harvest policy calculates the ACL, (d) T_{MIN}, (e) mean generation time, (f) T_{MAX}, (g) $T_{F=0,}$ (h) the estimate of B_0 and the target recovery level, (i) the current SPR, (j) the current T_{TARGET} and (k) the estimate of current stock size.
   - Results of harvest policy projections (see, for examples, Tables 2-5; Figures 1-3). The following information should be provided for each harvest policy evaluated: (a) the first year in which recovery to the target level occurs with at least 0.5 probability, (b) the SPR for the first year of the projection period, (c) the probability of recovery by the current T_{TARGET}, (d) the probability of recovery by the current T_{MAX}, (e) probability of the stock dropping below the female spawning biomass in the present year and the year the stock was declared overfished, (f) tables of median time-trajectories (from the present year to T_{MAX}) of: (i) spawning output relative to the target level, (ii) probability of being at or above the target level, (iii) OFL, and (iv) ABC. Median time-trajectories of SPR should be provided for the projection based on the 40:10 rule (as applied to the ABC) and any phase-in harvest policies that have been specified.
8) Acknowledgements
9) Literature cited

The software and data files on which the rebuilding analyses are based should be archived with the stock assessment coordinator. Much of the biological information will be stored in the input file for the projection software and does not need to be repeated unless there is good reason to do so. For cases in which the projections take account of uncertainty about the values for the biological parameters (e.g., using the results from bootstrapping or samples from a Bayesian posterior distribution), some measure of the central tendency of the values (e.g., the mode or median) should be provided and the individual parameter values should be archived with the stock assessment coordinator. Rebuilding analyses may be based on selectivity-at-age vectors constructed by combining estimates over fleets. If this is the case, the rebuilding analysis needs to document how the composite selectivity-at-age vector was constructed.

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Table 1. Summary of rebuilding reference points for canary rockfish (based on Stewart (2007)).

Parameter	Values
Year declared overfished	2000
Current year	2007
First ACL year	2009
T_{MIN}	2019
Mean generation time	22
T_{MAX}	2041
$T_{F=0}$ (beginning in 2009)	2019
B_0	32,561
Rebuilding target ($B_{40\%}$)	13,024
Current SPR	0.887
Current T_{TARGET}	2063
SB_{2007}	10,544

Table 2. Results of rebuilding alternatives for canary rockfish (based on Stewart (2007)). (This table should include the OFL, ABC and ACL).

	Run #			
	1	2	3	4
50% prob. recovery by:	2019	2021	2035	2041
SPR_{TARGET}	100%	88.7%	62.0%	59.2%
2009 ACL (mt)	0.0	155.2	636.9	700.0
2009 ABC (mt)	936.9	936.9	936.9	936.9
2010 ACL (mt)	0.0	155.0	623.1	683.1
2010 ABC (mt)	941.4	935.4	916.7	914.2
Probability of recovery				
2071 (T_{MAX})	97.1%	84.6%	73.5%	70.0%
2048 (T_{MIN})	76.4%	75.0%	64.8%	56.9%
2053 ($T_{F=0}$ from 2007)	79.4%	75.3%	67.9%	61.3%
2063 (T_{TARGET})	91.4%	78.8%	72.0%	66.8%

Table 3. Probability of recovery for four rebuilding alternatives for canary rockfish (based on Stewart (2007)). Note that after 25 years the table is compressed.

	Run #			
	1	2	3	4
2007	0.250	0.250	0.250	0.250
2008	0.250	0.250	0.250	0.250
2009	0.250	0.250	0.250	0.250
2010	0.250	0.250	0.250	0.250
2011	0.250	0.250	0.250	0.250
2012	0.250	0.250	0.250	0.250
2013	0.250	0.250	0.250	0.250
2014	0.250	0.250	0.250	0.250
2015	0.250	0.250	0.250	0.250
2016	0.251	0.250	0.250	0.250
2017	0.284	0.257	0.250	0.250
2018	0.407	0.288	0.250	0.250
2019	0.550	0.366	0.250	0.250
2020	0.660	0.473	0.256	0.251
2021	0.702	0.561	0.260	0.256
2022	0.732	0.633	0.267	0.261
2023	0.742	0.681	0.279	0.267
2024	0.746	0.707	0.290	0.275
2025	0.749	0.725	0.309	0.281
2026	0.749	0.735	0.321	0.293
2027	0.749	0.742	0.341	0.300
2028	0.750	0.746	0.358	0.313
2029	0.750	0.746	0.376	0.324
2030	0.750	0.747	0.402	0.336
2031	0.750	0.749	0.424	0.348
2041	0.750	0.750	0.586	0.500
2051	0.781	0.751	0.671	0.601
2061	0.895	0.776	0.714	0.660
2071	0.971	0.846	0.735	0.700

Table 4. Median spawning biomass (mt) for four rebuilding alternatives for canary rockfish (based on Stewart (2007)). Note that after 25 years the table is compressed.

	Run #			
	1	2	3	4
2007	10,544	10,544	10,544	10,544
2008	10,841	10,841	10,841	10,841
2009	11,073	11,073	11,073	11,073
2010	11,258	11,197	11,010	10,985
2011	11,383	11,260	10,880	10,831
2012	11,463	11,274	10,701	10,627
2013	11,524	11,268	10,501	10,403
2014	11,607	11,280	10,318	10,197
2015	11,751	11,351	10,186	10,041
2016	11,987	11,508	10,133	9,964
2017	12,328	11,765	10,163	9,969
2018	12,738	12,089	10,251	10,029
2019	13,181	12,432	10,357	10,113
2020	13,685	12,838	10,520	10,247
2021	14,236	13,293	10,721	10,419
2022	14,773	13,731	10,909	10,583
2023	15,350	14,210	11,130	10,775
2024	15,941	14,674	11,345	10,966
2025	16,500	15,133	11,515	11,105
2026	17,015	15,536	11,679	11,251
2027	17,517	15,959	11,852	11,391
2028	18,045	16,348	11,999	11,515
2029	18,600	16,811	12,211	11,699
2030	19,093	17,183	12,329	11,799
2031	19,528	17,519	12,432	11,877
2041	23,511	20,635	13,491	12,751
2051	26,282	22,743	14,238	13,357
2061	27,862	24,058	14,655	13,689
2071	28,903	24,832	15,097	14,073

Table 5. Median catches (mt) for four rebuilding alternatives for canary rockfish (based on Stewart (2007)). Note that after 25 years the table is compressed.

	Run #			
	1	2	3	4
2007	0.0	44.0	44.0	44.0
2008	0.0	44.0	44.0	44.0
2009	0.0	155.2	636.9	700.0
2010	0.0	155.0	623.1	683.1
2011	0.0	157.5	621.9	680.2
2012	0.0	163.7	635.4	693.4
2013	0.0	171.5	654.9	713.1
2014	0.0	179.7	675.9	734.4
2015	0.0	186.9	691.6	750.1
2016	0.0	193.4	705.3	763.1
2017	0.0	198.7	713.8	770.8
2018	0.0	205.1	724.3	780.5
2019	0.0	210.6	733.9	789.5
2020	0.0	216.8	744.3	798.9
2021	0.0	222.0	753.8	807.8
2022	0.0	228.3	765.2	818.8
2023	0.0	234.0	769.3	821.3
2024	0.0	239.0	778.8	830.7
2025	0.0	245.3	786.9	837.4
2026	0.0	250.0	795.2	845.3
2027	0.0	257.0	807.6	856.9
2028	0.0	261.7	814.0	862.9
2029	0.0	267.3	821.5	868.6
2030	0.0	272.3	830.5	877.2
2031	0.0	276.5	836.3	882.5
2041	0.0	318.0	897.1	938.2
2051	0.0	346.9	937.3	972.9
2061	0.0	365.2	967.1	1,002.9
2071	0.0	377.7	985.9	1,019.3

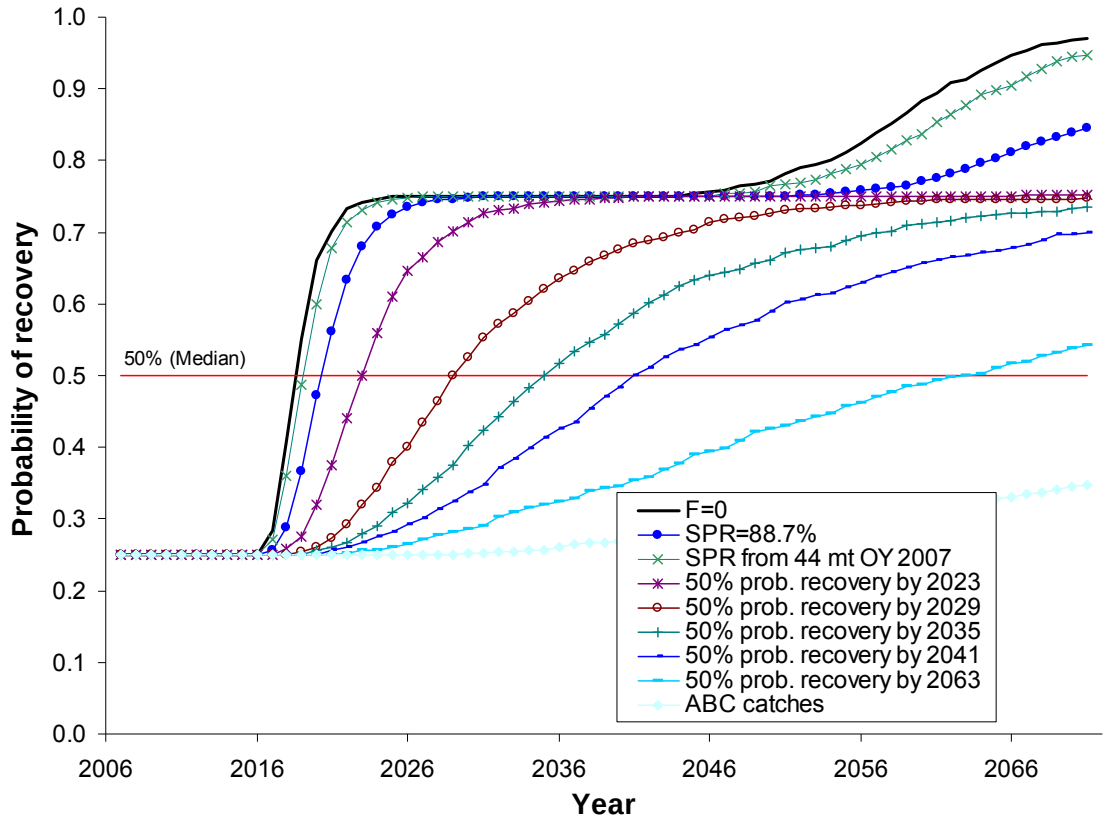

Figure 1. Probability of recovery for nine rebuilding alternatives for canary rockfish.

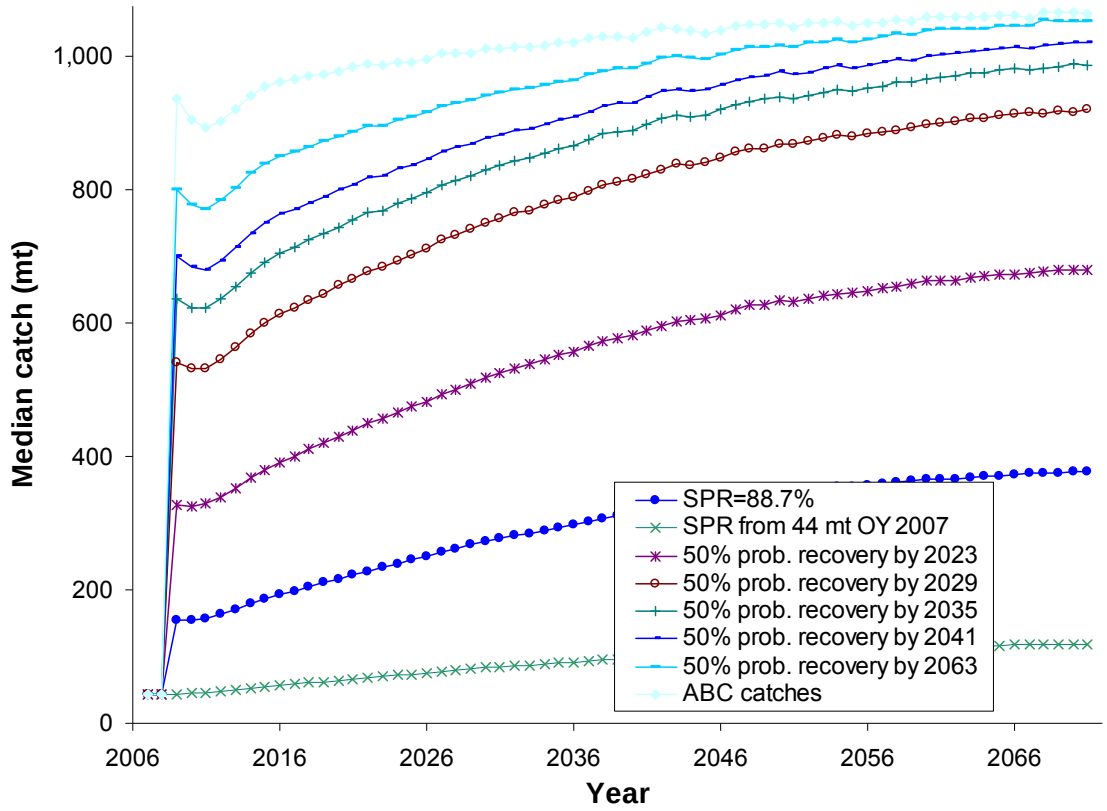

Figure 2. Projected median catch (mt) for nine rebuilding alternatives for canary rockfish.

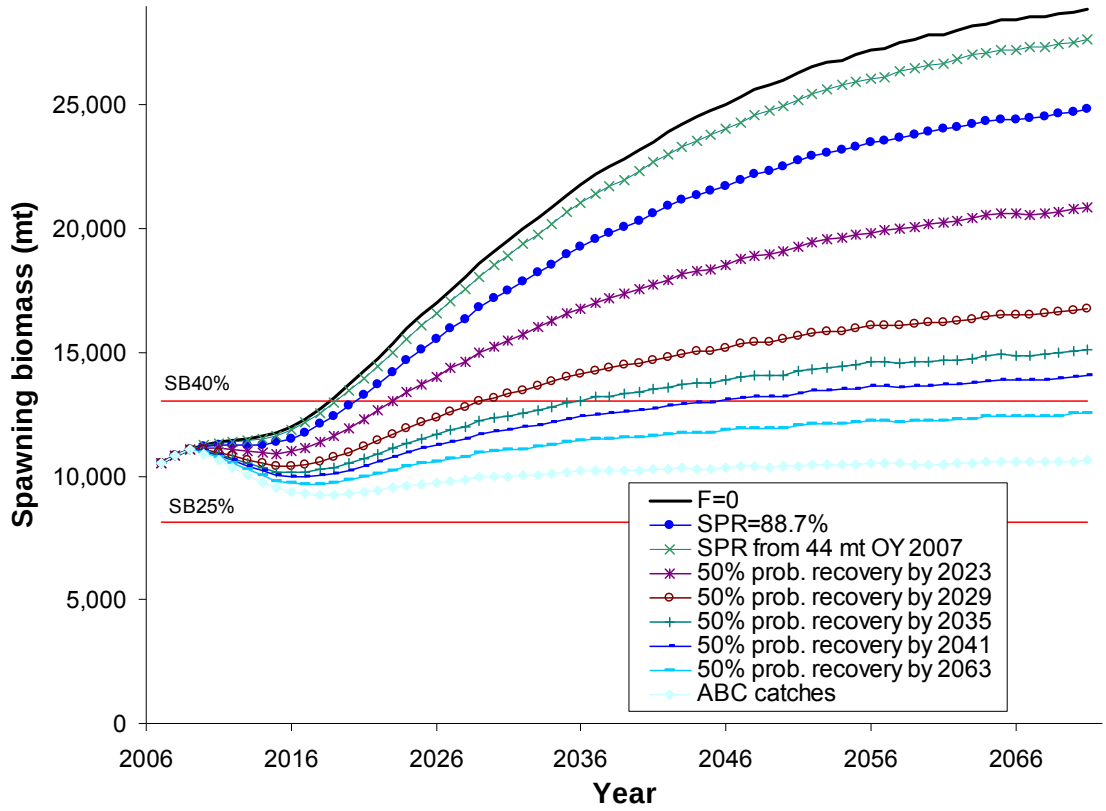

Figure 3. Projected median spawning biomass (mt) for nine rebuilding alternatives for canary rockfish.

TERMS OF REFERENCE

FOR THE

METHODOLOGY REVIEW PROCESS FOR GROUNDFISH AND COASTAL PELAGIC SPECIES

DRAFT

~~JANUARY 20~~AUGUST, ~~2012~~2014

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Introduction

This document lays out general procedures for methodology and data reviews related to the assessment and management of coastal pelagic species (CPS) and groundfish by the Pacific Fishery Management Council (Council). It clarifies the responsibilities of the proponents of new methods or data sets ~~proposed~~ being considered for use in CPS or groundfish stock assessment and the responsibilities of participants in the review process. Each review is likely to have additional requirements that will be defined in a set of Specific Terms of Reference (TOR), which should conform to the general terms defined in this document. Although these General Terms of Reference focus on methodology and data reviews for CPS and groundfish stock assessments, they may be applied to methods in other areas, including economic analyses and ecosystem-based fishery management. In the text below the term "methodology review" should be understood to mean "methodology and data review".

The methodology review process provides for peer review as referenced in the 2006 Reauthorization of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA), which states that "the Secretary and each Regional Fishery Management Council may establish a peer review process for that Regional Fishery Management Council for scientific information used to advise the Regional Fishery Management Council about the conservation and management of the fishery" (see MSRA section 302(g)(1)(E)). National Standard 2 (NS2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (published July 19, 2013) provides guidance and standards to be followed when establishing a peer review process pursuant to MSA section 302(g)(1)(E) including guidance on the timing, scope of work, peer reviewer selection and process transparency. The methodology review process follows these standards and is fully compliant with NS2. The peer review process is not a substitute for the Council's Scientific and Statistical Committee (SSC), and should work in conjunction with the SSC. This document will be included in the Council's Statement of Organization, Practices and Procedures as documentation of part of the review process that underpins the SSC's scientific advice.

Parties involved in implementing the peer review process described here are the Council; Council staff; members of Council Advisory Bodies, including the SSC; the relevant Management Team and Advisory Panel (CPSMT and CPSAS for CPS, and GMT and GAP for groundfish); the National Marine Fisheries Service (NMFS); state agencies; and interested persons (including external reviewers).

Unlike Stock Assessment Review (STAR) Panels, methodology review panels do not occur on a regular timetable but are instead established by the Council to provide peer and in-depth review of major changes to the methodology on which stock assessments are based. Consequently, the outcomes from a methodology review are recommendations regarding whether a particular methodology should be applied in future stock assessments, and on recommended (or required) improvements and modifications. Existing methodologies could be reviewed, particularly if they are key to stock assessments and have not been reviewed for many years or if incremental changes in how the methodology is applied have occurred.

Methodology reviews may be appropriate when a major new data source is introduced or when a major change in the stock assessment modeling is contemplated. In both cases, a methodology review is needed when the change(s) from how assessments have been conducted in the past are deemed to be more than what a STAR Panel can reasonably be expected to handle. The introduction of a new survey will generally require a methodology

review, as will a change to a new stock assessment modeling platform. However, changes to the structure of a previously reviewed assessment model (e.g., changes in selectivity year-blocking) fall within the scope of a standard STAR Panel review.

No explicit guidelines for what topics can be covered in a methodology review are provided here, but typical examples would be evaluation of: (a) proposed major new data types which if included in an assessment could change its outcomes markedly (e.g., the aerial survey for Pacific sardine), (b) proposed changes to the design of existing surveys, (c) existing data inputs to assessments which have not been reviewed in depth by a Council-sponsored peer-review panel for many years (e.g., the egg production method for Pacific sardine), (d) data or model results that contribute to ecosystem-based management of CPS and groundfish stocks, and (e) proposed major changes to stock assessment methods that fall outside the scope of a normal STAR Panel review (for example, a change to the stock assessment modelling platform).

Changes to harvest control rules could also be considered by a methodological review. Care must be taken to separate the scientific analysis supporting the change (e.g., the structure and technical aspects of simulation studies used to compare a revised control rule against the *status quo*) and the management objectives used to measure performance (e.g., minimize year-to-year catch variance, maximize long-term average catch, etc.). The former are amenable to methodological review (provided adequate background analyses have been completed), but the latter are management decisions – not well suited to a methodological review.

These TOR reflect how previous methodology reviews have been undertaken. Nevertheless, no set of guidelines can be expected to deal with every contingency, and all participants should anticipate the need to be flexible and address new issues as they arise.

Methodology Review Goals and Objectives

The general goals and objectives for the methodology review process are to:

1. Ensure that research surveys, data collection, data analyses and other scientific techniques in support of CPS and groundfish stock assessments are the best available scientific information and facilitate the use of information by the Council.
2. Provide recommendations regarding whether, and if so, how a particular methodology can be applied in future stock assessments.
3. Meet the MSRA and other legal requirements.
4. Follow a detailed calendar and fulfil explicit responsibilities for all participants to produce required outcomes and reports.
5. Provide an independent external review of survey and analytical methods used to develop data to inform CPS and groundfish stock assessments.
6. Increase understanding and acceptance of CPS and groundfish research methodologies and review by all members of the Council family.
7. Ensure that methodologies not directly related to stock assessments, such as economic analyses or ecosystem-based fishery management approaches, undergo adequate peer review, as appropriate.
8. Identify research needed to improve assessments, reviews, surveys, analyses, and fishery management in the future.

Responsibilities of Methodology Review Participants

Shared Responsibilities

All parties have a stake in ensuring adequate technical review of stock assessments and the information on which they are based. The National Marine Fisheries Service (NMFS), as the designee of the Secretary of Commerce, must determine that the best scientific advice has been used when it approves fishery management recommendations made by the Council. The Council uses statements from the SSC to determine whether the information on which it will base its recommendation represents the "best available" science. Fishery managers and scientists providing technical documents to the Council for use in management need to ensure their work is technically correct.

The Council, NMFS, and the Secretary of Commerce share primary responsibility to create and foster a successful peer review process. The Council will oversee the process and involve its standing advisory committees, especially the SSC. The SSC will designate a member to coordinate, oversee, and facilitate each methodology review. Together, NMFS and the Council will consult with all interested parties to plan, prepare terms of reference, and develop a calendar of events for each methodology review and a list of deliverables for final approval by the Council. NMFS and the Council will share fiscal and logistical responsibilities and both should ensure that there are no conflicts of interest in the process[1].

The peer-review process is sponsored by the Council, because the Federal Advisory Committee Act (FACA) limits the ability of NMFS to establish advisory committees. FACA specifies a procedure for convening advisory committees that provide consensus recommendations to the federal government. The intent of FACA was to limit the number of advisory committees; ensure that advisory committees fairly represent affected parties; and ensure that advisory committee meetings, discussions, and reports are carried out and prepared in full public view. Under FACA, advisory committees must be chartered by the

[1] ~~The proposed NS2 guidelines state: "Peer reviewers who are federal employees must comply with all applicable federal ethics requirements. Peer reviewers who are not federal employees must comply with the following provisions. Peer reviewers must not have any real or perceived conflicts of interest with the scientific information, subject matter, or work product under review, or any aspect of the statement of work for the peer review. For purposes of this section, a conflict of interest is any financial or other interest which conflicts with the service of the individual on a review Panel because it: (A) Could significantly impair the reviewer's objectivity; or (B) Could create an unfair competitive advantage for a person or organization. (C) Except for those situations in which a conflict of interest is unavoidable, and the conflict is promptly and publicly disclosed, no individual can be appointed to a review Panel if that individual has a conflict of interest that is relevant to the functions to be performed. Conflicts of interest include, but are not limited to, the personal financial interests and investments, employer affiliations, and consulting arrangements, grants, or contracts of the individual and of others with whom the individual has substantial common financial interests, if these interests are relevant to the functions to be performed. Potential reviewers must be screened for conflicts of interest in accordance with the procedures set forth in the NOAA Policy on Conflicts of Interest for Peer Review subject to OMB's Peer Review Bulletin."~~ The final NS2 guidelines state: a "[A] conflict of interest is any financial or other interest which conflicts with the service of the individual on a review panel because it: (A) Could significantly impair the reviewer's objectivity; or (B) Could create an unfair competitive advantage for a person or organization; (C) Except for those situations in which a conflict of interest is unavoidable, and the conflict is promptly and publicly disclosed, no individual can be appointed to a review panel if that individual has a conflict of interest that is relevant to the functions to be performed. Conflicts of interest include, but are not limited to, the personal financial interests and investments, employer affiliations, and consulting arrangements, grants, or contracts of the individual and of others with whom the individual has substantial common financial interests, if these interests are relevant to the functions to be performed".

Department of Commerce through a rather cumbersome process. However, the Sustainable Fisheries Act exempts the Council from FACA per se, but requires public notice and open meetings similar to those under FACA.

Management Team Responsibilities

The Management Team (MT) is responsible for identifying and evaluating potential management actions based on the best available scientific information. In particular, the MT makes Annual Catch Limit (ACL) and Annual Catch Target (ACT) recommendations to the Council.

A representative of the relevant MT may be appointed by the MT chair and, if appointed, will serve as a liaison to the methodology review panel meeting and will participate in discussions. The MT representative will not serve as a member of the Panel. The MT representative should be prepared to advise the Panel on fishing regulations or practices that may influence data used in assessments and the nature of the fishery in the future (this will be more relevant for some of the topics which are considered by methodology reviews than others).

Advisory Panel Responsibilities

It is the responsibility of the AP representative to ensure that AP concerns regarding the issue being reviewed are conveyed to the Panel. The chair of the AP may appoint a representative to participate in a methodology review. If appointed, the AP representative will serve as an advisor to the review meeting. The AP representative will participate in review discussions as an advisor to the Panel, in the same capacity as the MT advisor. The AP representative may provide appropriate data and advice to the review meeting and will report to the AP on the meeting.

Scientific and Statistical Committee Responsibilities

The SSC will assign at least one member to each methodology review. ~~This~~ One of the SSC members will chair the review meeting, and present the report of the meeting to the SSC and the Council. The SSC will review any additional analytical work arising from the review meeting, will serve as arbitrator to resolve disagreements that arose during the review meeting, and will make recommendations to the Council (e.g., whether the reviewed methodology provides the "best available science", and hence could be used for stock assessment and developing conservation and management measures).

Council Staff Responsibilities

Council staff will be assigned to coordinate, monitor and document the review process. Council staff will be responsible for timely issuance of meeting notices and distribution of appropriate documents. Council staff will coordinate with the panel chair and NMFS to assure that all documents are received on time, and are complete. Council staff will coordinate materials and presentations for Council meetings relevant to Council decision making. Council staff will also collect and maintain file copies of reports from each methodology review, the documents considered during the review, SSC, Management Team, and Advisory Panel comments and reports, letters from the public, and any other relevant information.

A primary role for Council staff assigned to each methodology review will be to monitor review meetings and SSC activities to ensure compliance with these TOR. Council staff will

identify inconsistencies with the TOR that occur during review meetings and work with the panel chair to develop solutions and to correct them. Council staff will work with the panel chair to finalize the panel report and provide it to the Council.

National Marine Fisheries Service Responsibilities

NMFS will assign a coordinator to work with the Council, other agencies, groups, or interested persons that carry out assessment work to assist in organizing methodology reviews. The NMFS coordinator will identify independent ~~panellists~~panelists following criteria for reviewer qualifications. The costs associated with these reviewers will be borne by NMFS. The NMFS coordinator will work with methodology proponents to facilitate delivery of materials by scheduled deadlines and in compliance with other requirements of these terms of reference, to the extent possible and with the assistance of the assigned Council staff officer and the panel chair.

General -Review Panel Responsibilities

The objective of a methodology review panel is to complete a detailed evaluation of a topic selected by the Council which could have a major impact on stock assessments or the provision of scientific advice and to make a recommendation regarding whether the methodology represents the best available scientific information for the Council. The general responsibilities of the Panel are to:

1. review documents pertinent to the topic under consideration;
2. evaluate the technical merits and deficiencies of the proposed method(s) during the panel meeting and work with the proponents to correct deficiencies;
3. provide recommendations for alternative methods or modifications to proposed methods, or both, as appropriate during the panel meeting;
4. provide recommendations on application of the methods to the stock assessment and/or management process;
5. document meeting discussions; and
6. provide complete panel reports.

The panel chair has, in addition, the responsibility to:

7. review revised documents and panel reports before they are forwarded to the SSC.

Review panels may have additional responsibilities that are defined in the Specific Terms of Reference for the review.

Panel Composition

Methodology review panels normally include a chair, at least one "external" member (i.e., who is outside the Council family and not involved in management or assessment of West Coast fisheries, often designated by the Center for Independent Experts [CIE]), and at least two additional members. Selection of the external and independent ~~panellists~~panelists should be based on expertise, independence, and a ~~aim for~~ balance between outside expertise of the topic being reviewed and in-depth knowledge of West Coast fisheries, data sets available for those fisheries, and relevant modelling approaches. ~~Panellists~~Panelists should be knowledgeable about the specific approaches being reviewed. In addition, selected reviewers should not have financial or personal conflicts of interest with the scientific information, subject matter, or work product under review, either current to the meeting, within the previous year (at minimum), or anticipated. Reviewers who are federal employees should comply with all applicable federal ethics

requirements. Reviewers who are not federal employees will be screened for conflicts of interest either through existing financial disclosure processes used by the SSC and CIE, or under the NOAA Policy on Conflicts of Interest for Peer Review Subjects.

Reviewers should not have contributed or participated in the development of the work product or scientific information under review and reviewer responsibilities should rotate across the available pool of qualified reviewers, when possible.

~~Reviewers should not have financial or personal conflicts of interest, either current to the meeting, within the previous year (at minimum), or anticipated. Panellists should be knowledgeable about the specific approaches being reviewed.~~ In addition to panel members, methodology review meetings will include Council staff to help advise the Panel and assist in recording meeting discussions and results, and may include MT and AP representatives with responsibilities as laid out above. The length of a methodology review meeting will be selected by the SSC and could range one to five days.

The panel chair is responsible for: 1) developing an agenda, 2) ensuring that the Panel follows the TOR, 3) guiding the participants in the review (proponents and Panel) to mutually agreeable solutions, 4) coordinating review of documents, and 5) providing Council staff with a camera ready and suitable electronic version of the panel report. The Panel, those proposing the methodology, the MT and AP representatives, and the public are legitimate meeting participants that should be accommodated during discussions. It is the panel chair's responsibility to manage discussions and public comment so that work can be completed.

Conduct of a Review

The methods review is by design a transparent process, and panel meetings are open to the public and are announced on the Council's website, through Council meeting notices and in the Federal Register at least ~~14~~23 days prior to the panel meeting. The Council posts background materials on its ftp site prior to the meeting and makes hard copies available upon request. The Panel's review solely concerns technical aspects of the method. It is therefore important that the Panel strive for a risk neutral perspective in its reports and deliberations. Methods or results that have a flawed technical basis, or are questionable on other grounds, should be identified by the Panel and a recommendation made that they should excluded from consideration in developing management advice. The Panel should comment on the degree to which the uncertainty associated with the method being reviewed is quantified (e.g., through confidence or prediction intervals) because uncertainty is taken into account during the management process.

Recommendations and requests to the proponents for additional information, and ~~additional~~ new or revised analyses must be clear, explicit, and in writing. Panel recommendations and requests to the proponents should reflect the consensus opinion of the entire Panel and not the minority view of a single individual or individuals on the Panel. A written summary of discussion on significant technical points and lists of all panel requests and recommendations and requests to the proponents are required in the panel report, which should be completed (at least in draft form) prior to the end of the review meeting. It is the chair and Panel's responsibility to carry out any follow-up review of work that is required.

The Panel's primary duty is to conduct a peer review of the proposed methodology. Methodology panel meetings are not workshops, although the involvement of the Panel in shaping the methodology is greater during methodology reviews than during STAR Panels. This is particularly the case when the outside reviewers have considerably more experience with a given methodology than the proponents and the reviewers from within the Council family. In the course of this review, the Panel may ask for a reasonable number of additional analyses, as well as for additional details of the proposed methodology. It would not be unusual for this evaluation to result in a change to the initial methodology, provided both the Panel and the proponents agree. Panels are expected to be judicious in their requests of the proponents, recognizing that some issues uncovered during a review are best flagged as research priorities (and use of the methodology possibly deferred until those issues are resolved). The Panel should not impose as a requirement their preferred methodologies when such is a matter of professional opinion. Rather, if the Panel finds that a method is inadequate, it should document and report that opinion.

Panels and proponents are required to make an honest attempt to resolve any areas of disagreement during the review meeting. Occasionally, fundamental differences of opinion remain between the Panel and the proponents that cannot be resolved by discussion. In such cases, the Panel must document the areas of disagreement in its report. In exceptional circumstances, the proponents may choose to submit a supplemental report supporting its view, but in the event that such a step is taken, an opportunity must be given to the Panel to prepare a rebuttal. These documents will then be appended to panel report as part of the record of the review meeting. Panel members may have fundamental disagreements that cannot be resolved during the meeting. In such cases, panel members may prepare a minority report that will become part of the record of the review meeting. The SSC will then review all information pertaining to Panel or Panel/proponent disputes, and issue a recommendation.

Additional analyses required by the Panel should be completed by the proponents during the review meeting. It is the obligation of the panel chair, in consultation with other panel members, to prioritize requests for additional analyses. It is the Panel's responsibility to track progress ~~I~~if follow-up work by the proponents is required after the review meeting~~, then it is the Panel's responsibility to track progress~~. In particular, the chair is responsible for communicating with proponents (by phone, e-mail, or any other convenient means) to determine if the revised analyses and documents are complete and ready to be presented to the SSC.

Review Panel Report

The panel chair is responsible for preparing the final draft of the panel report, obtaining the Panel's approval, and providing the report to the Council for inclusion in the Briefing Book. The chair will appoint members of the Panel (the "external" members and other members) to act as rapporteurs who will draft the report according to guidance by the panel chair on format and level of detail. The aim of the report is to provide information to the SSC on whether it should recommend the methodology for use in Council assessments and, if necessary, what additional work must be completed before the methodology can be used. The report is not meant as a detailed summary of the methodology, nor is it meant to be the minutes of the meeting. The report may include Appendices which summarize work presented to the Panel in response to requests. The chair will solicit comment on the draft report from the proponents and the MT and AP advisors. The purpose of this review is limited to ensuring that the report is technically accurate, and reflects the discussion that

occurred at the meeting, and should not be viewed as an opportunity to reopen debate on issues. The chair will be the final arbiter on wording changes suggested by proponents and the MT and AP advisors—i.e., the report is the Panel's report of the meeting. Any detailed commentary by MT and AP advisors should be drafted separately, reviewed by the full advisory body, and included in the Briefing Book.

Suggested Template for Methodology Review Panel Report

- Summary of the Methodology Review Panel meeting, containing:
  - names and affiliations of panel members;
  - topic(s) being reviewed; and
  - list of analyses requested by the Panel, the rationale for each request, and a brief summary the responses to each request.
- Comments on the technical merits and/or deficiencies of the methodology and recommendations for remedies. Comments should address each of the following issues:
  - What are the data requirements of the methodology?
  - What are the situations/stocks for which the methodology is applicable?
  - What are the assumptions of the methodology?
  - Is the methodology correct from a technical perspective?
  - How robust are results to departures from the assumptions of the methodology?
  - Does the methodology provide estimates of uncertainty? How comprehensive are those estimates?
  - Will the new methodology or data set result in improved stock assessments or management advice?
- Areas of disagreement regarding panel recommendations:
  - among panel members (including concerns raised by the MT and AP representatives); and
  - between the panel and proponents.
- Unresolved problems and major uncertainties, e.g., any issues that could preclude use of the methodology.
- Management, data or fishery issues raised by the public and MT and AP representatives during the panel review.
- Prioritized recommendations for future research and data collection.

General Responsibilities of Proponents ~~of~~ for New Methodology or Data Sets

New methods or data sets will be used in producing CPS or groundfish stock assessments (or in providing management advice) if there is a reasonable expectation that doing so will result in an improved assessment relative to a status quo assessment that did not use the new method or data set.

Proposing a New Methodology for Review

The proponents of new methods or data sets for use in CPS or groundfish stock assessments will submit a 1-2 page proposal for consideration by the SSC and the Council. The proposal should be submitted by the briefing book deadline of the appropriate Council meeting, and should address the following:

- Title
- Name of proposers (including the researchers who will participate at the methodology review and will be expected to conduct analyses during that review).

- How the proposed methodology will improve assessment and management for the stock(s) in question.
- Outline of methods (field and analytical).

Proponents of methods to be reviewed should be prepared to present their proposal to the SSC, the relevant MT, and the full Council. Proponents should also include a description of the funding, logistics, or other factors that would indicate the likelihood of success of the proposed methodology

If appropriate, t~~T~~he proposed methodology should be field tested, and preferably there will be available data for one or more years. Untested or experimental methods are typically not appropriate for this type of review.

Methodology reviews are intended for methods or data sets that apply to a range of stocks. A STAR Panel would be more appropriate for reviewing methods or data sets that apply to only one or to a small number of related stocks.

Responsibilities of Methodology Proponents

If the Council recommends review of the methodology, the proponents will appoint a representative to coordinate work with the Panel and attend the panel meeting. A representative of the proponents should attend the SSC meeting at which the outcomes from the panel review are discussed.

The proponents are responsible for preparing two versions of the methodology review document:

1) a "draft", including an executive summary, for discussion during the review meeting; and
2) a "final" version for presentation to the SSC, the Council, and the relevant Management Team and Advisory Panel.

The proponents will distribute "draft" documents fully describing the methodology to the Panel, Council staff, and the MT and AP representatives at least two weeks prior to the review meeting. The proponents are responsible for bringing analysis methods and relevant data (in digital format) to the review meeting so that data can be analyzed on site and sensitivity analyses conducted. In most cases, the proponents should produce a revised document outlining the methodology (and preliminary results / responses to the panel recommendations) three weeks after the end of the panel meeting (including any internal agency review).

The proponents and the Panel may disagree on technical issues, but “final” documents must include a point-by-point response by the proponents to each of the panel recommendations.

The draft and final reports on the methodology should include information that addresses the following:

- Data requirements of a new methodology or documentation of how information in a new data set was collected.
- The situations/stocks for which the methodology or data are applicable.
- The assumptions of the methodology and whether those assumptions are likely to be satisfied by data sets to which the method would be applied.

- An evaluation of robustness of the methodology to departures from the underlying assumptions.
- An application of a new methodology to real or simulated data, including an evaluation of the bias and accuracy of the results.
- An evaluation of how the new method(s) or data set(s) would improve stock assessments or the provision of management advice.

The final methods review panel reports are posted on the Council's website at www.pcouncil.org?? .

NATIONAL MARINE FISHERIES SERVICE SUGGESTIONS FOR 2015 GROUNDFISH STOCK ASSESSMENTS

At its June 2014 meeting, the Council adopted for public review a list of 10 species for full or update assessments. This action identified the following species for full assessments: bocaccio, cowcod, kelp greenling, and black, canary, darkblotched and widow rockfishes. Petrale sole and sablefish were identified as updates. The Council also signaled that there might be further consideration of data-moderate assessments in September.

Assessment staff at the Northwest and Southwest Fishery Science centers have discussed various aspects of assessments for these species over the summer, including the workload requirements of each. Cowcod was just assessed in 2013 and has traditionally been a very data-challenged assessment. Extension of the NWFSC's Hook and Line Survey into the Cowcod Conservation Area, as well as research comparing the 'catchability' of that survey and other visual methods (using submersibles or ROVs) is planned over the next year. However, results from both of those efforts would not be available in time for a 2015 assessment. Consequently, we suggest deferring the next cowcod assessment until at least 2017.

Of the species identified for full assessments, black and China rockfishes and kelp greenling are nearshore species that lack fishery-independent indices of abundance and have presented assessment challenges in the past. Furthermore, because each coastal state has a different suite of available biological and catch/effort data, we expect that separate state-level models are a likely outcome of efforts to assess these species throughout their PFMC range. These assessments will involve the development of new/revised indices for recreational CPUE (up to 5 for each species), nearshore commercial CPUE in Oregon, and exploration of new ways to integrate black rockfish tagging data directly into assessment models for Oregon and Washington. The scope and quantity of these activities will require larger STATs than are normally used for full assessments. Although coastwide integration of assessment efforts for these species is important, each state area really needs to have its own leader, in order to coordinate with state agency representatives and understand the unique data issues as completely as possible.

The importance of conducting a new assessment for kelp greenling was elevated this spring, when the SSC discovered that the catch history used in the last assessment (2005, for Oregon only) was very different than the reconstructed catch history, which was completed more recently. Because of the staffing demands of conducting assessments for all three of these species on a coastwide basis, we suggest that the Council consider limiting kelp greenling to a full assessment for Oregon only, at this time, in order to provide management with a high-quality replacement for the 2005 assessment results.

We support all of the other items in the Council's preliminary list. Bocaccio, darkblotched, and petrale sole may all be rebuilt, and the first two should be conducted with the freedom to change model structure. A full widow assessment is important because of the industry's interest in reestablishing a target fishery, and the concerns which were expressed following the last

assessment, regarding model changes that occurred during the mop-up. Sablefish is tremendously important to many fishery sectors, and this update will help verify that the population is not continuing the decline observed throughout the late-2000s. Canary is also important, as it acts as a constraint on many fisheries. It has not had a full assessment since 2007, and NWFSC staff have been working to update inputs to the assessment over the past 9 months.

Although not included in the Council motion, we suggest including chilipepper rockfish as an update. Dr. Field has been routinely updating the inputs to the last full assessment (2007), and this is not expected to add significantly to the assessment or review workload.

Because of the considerable amount of work that will be associated with nearshore species in 2015, along with four other full assessments and 3-4 updates (including Pacific hake), we recommend not scheduling an additional data-moderate review panel in 2015. Research on various aspects of data-limited assessment methods is ongoing, and we suggest reviewing results of this work and the Terms of Reference for data-moderate assessments in 2016. In June, the Council expressed interest in the potential for revisiting the status and allowable harvest for arrowtooth flounder. We feel that a data-moderate assessment for arrowtooth in 2015 could be accommodated, given the workload associated with the assessments discussed above. Updating the prior assessment would present greater challenges, and the Stock Synthesis model has undergone major changes since 2007 and no age data currently exists beyond the last year included that assessment (2005). We would be happy to discuss options for arrowtooth with the SSC, prior to Council consideration of this agenda item.

A proposed review schedule for 2015 assessments is provided in Table 1. This draft schedule is based on a kelp greenling assessment being limited to Oregon waters. If a coastwide assessment is necessary, along with all other assessments identified above, an additional panel will likely be needed, as well as some additional assessment resources.

Table 1. Proposed Groundfish Stock Assessment Review Schedule for 2015.

	Dates	Location	Species	
STAR Panel 1	April 27 - May 1	Seattle, WA	Canary rockfish	Darkblotched rockfish
STAR Panel 2	July 6-10	Newport, OR	Black rockfish	
June SSC	June 10-12	Spokane, WA	Canary and darkblotched rockfishes & updates	
STAR Panel 3	July 13-17	Seattle, WA	China rockfish	Kelp greenling (OR)
STAR Panel 4	July 27-31	Santa Cruz, CA	Bocaccio	Widow rockfish
September SSC	Sept 9-11	Sacramento, CA	Bocaccio, kelp greenling, and black, china, and widow rockfishes	

Agenda Item J.2.b
Supplemental CPSAS Report
September 2014

COASTAL PELAGIC SPECIES ADVISORY SUBPANEL REPORT ON STOCK ASSESSMENT PLANNING

The Coastal Pelagic Species Advisory Subpanel (CPSAS) reviewed changes proposed for the Groundfish/CPS Stock Assessment Terms of Reference (ToR) (Agenda Item J.2.a, Attachment 1), as a follow-up to initial consideration and discussion at the June 2014 Council meeting (June Agenda Item F.8.a. Attachment 5) on this issue.

At that time the CPSAS expressed concern over the framework proposed for full assessments, updates and catch-only projections. Panel members noted the need for more flexibility to address the dynamics of CPS stocks, for example how to account for new recruitment in update assessments and catch-only projections. The need for more flexibility to account for recent recruitment was also identified in the stock assessment peer review discussion at the Southwest Fishery Science Center.

These issues were incorporated to a degree in the proposed ToR, but the CPSAS believes certain elements need further clarification, and therefore we support the changes recommended by the Coastal Pelagic Species Management Team (CPSMT) in its supplemental report (Agenda Item J.2.b, Supplemental CPSMT Report).

To highlight key points from the CPSMT report (specific CPSMT recommendations are underlined):

- Regarding catch-only projections, the language of ToR is unclear regarding the types of 'catch' data that can be included in these projections. The CPSMT presumes 'catch' refers to tonnage only and not the size or age composition data associated with that tonnage. <u>The ToR should be amended to be specific in this regard.</u> Further, the CPSAS recommends that the size and age composition data be included whenever possible.

- Catch-only projections and management advice for CPS can be strongly influenced by assumptions regarding current and future recruitment levels. This point was highlighted during the June 2014 catch-only projection analysis for Pacific mackerel, when the uncertainty resulted in a significant decline in the harvest guideline. <u>The CPSMT hopes that this topic will be thoroughly addressed during the 2015 STAR for Pacific mackerel</u>. The CPSAS agrees, given that management specifications for the subsequent four years will be based on such projections.

- The CPSMT notes that, under the current draft ToR, the mop-up process only applies to groundfish and not CPS stock assessments. The ToR states that in the event a CPS stock assessment is not deemed adequate for management, the assessment would be deferred for another full STAR panel the following year. The CPSMT is unclear as to what type of model estimate would be used for management advice during the interim year – and whether the previously adopted model would be appended with all new available data (i.e. 'update') or would it be used for a catch-only projection. The CPSAS believes this needs clarification and again, the CPSAS recommends that the size and age composition data be included whenever possible.

- Finally, since Pacific sardine are not managed with biennial harvest specifications the sentence on page 8, Section 2, Paragraph 1 should be amended as follow: *"The Council also directed that annual harvest measures for ~~Pacific sardine and~~ Pacific mackerel be implemented on a biennial basis beginning with the 2015-2016."*

In conclusion, we appreciate efforts to acknowledge the need for more flexibility during non-assessment years. This is critically important to develop more informed management measures for dynamic CPS stocks.

COASTAL PELAGIC SPECIES MANAGEMENT TEAM REPORT ON STOCK ASSESSMENT PLANNING

The Coastal Pelagic Species Management Team (CPSMT) reviewed changes proposed for the Groundfish/CPS Stock Assessment Terms of Reference (ToR) (Agenda Item J.2.a, Attachment 1) and offers the following comments to improve clarity of the ToR.

Regarding catch-only projections, the language of ToR is unclear regarding the types of 'catch' data that can be included in these projections. The CPSMT presumes 'catch' refers to tonnage only and not the size or age composition data associated with that tonnage. The draft ToR should be amended to be specific in this regard.

Catch-only projections and management advice for CPS can be strongly influenced by assumptions regarding current and future recruitment levels, particularly given the early age at recruitment to the fishery and the use of HCRs based on the age 1+ biomass. This point was highlighted during the June 2014 catch-only projection analysis for Pacific mackerel, where a number of alternative recruitment scenarios were explored. The CPSMT notes that appropriate methods for treating current/future recruitments for catch-only projections have not yet been identified by the Scientific and Statistical Committee. While the treatment of recruitments in catch-only projections does not necessarily need to be prescribed in this ToR, the CPSMT hopes that this topic will be thoroughly addressed during the 2015 Stock Assessment Review (STAR) for Pacific mackerel, given that management specifications for the subsequent four years will be based on such projections.

The CPSMT notes that, under the current draft ToR, the mop-up process only applies to groundfish and not CPS stock assessments. The ToR states that in the event a CPS stock assessment is not deemed adequate for management, the assessment would be deferred for another full STAR panel the following year. The CPSMT is unclear as to what type of model estimate would be used for management advice during the interim year. We presume this would be based on the previously-adopted model, but whether this model is to be appended with all new available data (i.e. 'update') or would it be used for a catch-only projection in unknown.

As noted in its June 2014 report, the CPSMT concurs with CPS Stock Assessment Team members that a proposed change to the deadline for stock assessment draft reports to three weeks ahead of the STAR panel review meeting is unnecessary for CPS stock assessments. Timing of availability of assessment data continues to present a challenge to the sardine STAT despite the change in management cycle. Given the onerous reporting requirements for a full stock assessment report (outlined in Appendices B and C of the ToR), the STAT should be afforded more, not less, time to conduct a thorough analysis and document it in the report.

Finally, since Pacific sardine are not managed with biennial harvest specifications the sentence on page 8, Section 2, Paragraph 1 should be amended as follow: "*The Council also directed that annual harvest measures for ~~Pacific sardine and~~ Pacific mackerel be implemented on a biennial basis beginning with the 2015-2016.*"

PFMC
09/12/14

GROUNDFISH ADVISORY SUBPANEL REPORT ON STOCK ASSESSMENT PLANNING FOR 2015

The Groundfish Advisory Subpanel (GAP) discussed stock assessment planning for 2015 with Dr. Jim Hastie and Mr. John DeVore and wishes to recommend the following for Council consideration.

Full Assessments

The GAP agrees with the Scientific and Statistical Committee's (SSC) recommendations and supports doing full assessments for the following stocks in 2015:

Black rockfish
Bocaccio
Canary rockfish
Darkblotched rockfish
Widow rockfish
China rockfish

Black rockfish is a very important stock for the nearshore sectors and the 2007 assessment is now considered out of date.

The 2013 bocaccio assessment projected the stock would be rebuilt at the start of 2015. The SSC recommends a full assessment be conducted in 2015 to better inform that prediction.

Canary rockfish is a very important stock coastwide for all groundfish sectors and the last full assessment was conducted in 2007. The Northwest Fisheries Science Center also invested a considerable amount of time and effort this winter organizing the data that would inform a new assessment.

The 2013 darkblotched assessment projected the stock would be rebuilt at the start of 2015. The SSC recommends a full assessment be conducted in 2015 to inform that prediction.

The 2011 widow rockfish assessment was highly uncertain and there were many issues that could not be resolved in the 2011 assessment review process (widow was further reviewed at the September 2011 mop-up panel). The GAP supports increasing midwater trawl fishing opportunities for widow and yellowtail rockfish and a new, fully vetted assessment will reduce risks and likely increase available yields for future fishing opportunities.

The GAP recommends conducting a full assessment of China rockfish in 2015. There were many issues in the data-moderate assessment for the population north of 40º10' N lat. and the GAP recommends a full assessment that would allow the incorporation of composition data and a more thorough vetting of data and modeling issues than could be done in a very busy 2013 data-moderate assessment review panel.

The GAP is also recommending doing a full assessment for kelp greenling in Oregon. This is an important species for the nearshore fishing sectors. Further, the 2005 assessment of the Oregon population of kelp greenling is now considered flawed given the Marine Recreational Fisheries Statistical Survey catch data informing the assessment and other data issues discussed during the 2005 assessment review process.

Cowcod

In our June stock assessment statement the GAP had recommended conducting a new full assessment for cowcod. There was uncertainty in the recent 2013 assessment and new data, including a new ROV survey in the Cowcod Conservation Areas (CCAs) as well as the Harms hook-and-line survey effort in the CCAs, may better inform a new cowcod assessment. It is our understanding that the ROV survey data would not yet be available for use in a new cowcod assessment. Any new data from the Harms hook and line survey would also not be available to inform that new assessment so the GAP now believes we should wait until the next stock assessment cycle in 2017 to pursue a new cowcod stock assessment.

Data-Moderate Assessments

The GAP suggests that a data-moderate stock assessment for arrowtooth flounder be considered. If that cannot be accomplished then perhaps a catch-only projection from the last assessment be considered to better inform management of that species.

Arrowtooth flounder was last assessed in 2007 and that assessment is now considered out of date. The biomass projections from that assessment, which were largely influenced by the strong 1999 year class, predicted a steep decline despite evidence in trawl catches that stock abundance is rapidly increasing. Projected overfishing limits (OFLs) from the 2007 assessment are now getting so low that annual quotas for arrowtooth are changing trawl fishery distribution to avoid arrowtooth effectively turning this abundant stock into a constraining species. Should the science centers not have the capacity to conduct a data-moderate assessment due to other workload issues, the GAP recommends a catch-only projection of the 2007 assessment be conducted to inform OFLs in 2017 and beyond. This would address the current projections which have assumed OFL removals since 2007. Updating OFL projections in the 2007 assessment by inputting the actual catches of arrowtooth since 2007 should provide more reasonable OFL projections.

Update Assessments

The GAP recommends conducting update assessments for the following species:

Petrale sole
Sablefish
Chilipepper rockfish

The 2013 petrale sole assessment projected the stock would be rebuilt by the start of 2014. The SSC recommends a 2015 assessment to confirm that result. Further, full assessments have been conducted in the last three consecutive assessment cycles for petrale sole and the SSC recommends an update assessment to confirm its rebuilt status.

Sablefish is the most valuable stock to the west coast groundfish fishery on a per pound basis. The 2011 assessment was a very thorough one that predicted the 2008 and 2010 year classes recruiting into the fishery were above average. The SSC recommends the next assessment of sablefish should be an update and the GAP recommends one be conducted to better estimate these incoming year classes.

The GAP recommends an update assessment of chilipepper rockfish be done since the 2007 assessment is now considered out of date. Further, the Southwest Fisheries Science Center expressed an interest in doing an update assessment of chilipepper and the GAP agrees.

Catch Reports

The GAP recommends catch reports be developed for Pacific ocean perch (POP), yelloweye rockfish, and cowcod since these stocks are not recommended for assessment in 2015. Catch reports are needed to evaluate the performance of the fishery to stay within the ACLs prescribed in rebuilding plans for these stocks.

Summary of GAP Recommendations:

Full assessments:

1) **Black rockfish**
2) **Bocaccio**
3) **Canary rockfish**
4) **China rockfish**
5) **Darkblotched Rockfish**
6) **Kelp greenling (Oregon only)**
7) **Widow rockfish**

Data moderate assessments:

1) **Arrowtooth flounder**

Update assessments:

1) **Petrale sole**
2) **Sablefish**
3) **Chilipepper rockfish**

Catch reports:

1) **POP**
2) **Yelloweye rockfish**
3) **Cowcod**

PFMC
09/14/14

GROUNDFISH MANAGEMENT TEAM REPORT ON STOCK ASSESSMENT PLANNING

The Groundfish Management Team (GMT) reviewed the materials contained in the briefing book under this agenda item and received a briefing from Dr. Jim Hastie of the National Marine Fisheries Service (NMFS) Northwest Fisheries Science Center (NWFSC) and Mr. John DeVore, Council staff, and provide the following thoughts.

Terms of References

The GMT reviewed the three draft Terms of Reference (ToR) documents that will be used to guide the stock assessment process for 2015. These documents include the ToR for groundfish and coastal pelagic species (CPS) stock assessments (Agenda Item J.2.a., Attachment 1), the ToR for rebuilding analysis (Agenda Item J.2.a., Attachment 2), and the ToR for methodology reviews (Agenda Item J.2.a., Attachment 3). The GMT did not have any suggestions for Attachment 2 or 3, as the edits appeared to be minor in content.

The GMT has a recommendation for Attachment 1 Draft ToR for Groundfish and CPS Stock Assessment Review Process for 2015-2016. On page 7 in the Introduction, the draft language suggests that data-moderate assessments may be reviewed by the relevant Scientific and Statistical Committee (SSC) Subcommittee, rather than go through the full stock assessment review (STAR) process. Past data-moderate assessments have raised issues that may best be dealt with in the STAR Panel process (e.g., geographic stratifications). Therefore, the GMT recommends that data-moderate assessments undergo a STAR process review.

List of Species to be Assessed in 2015

The GMT discussed the Council's initial list of stocks to be assessed in 2015. At the June 2014 Council meeting, the Council recommended black rockfish (coastwide), bocaccio rockfish, canary rockfish, China rockfish (coastwide), cowcod, darkblotched rockfish, kelp greenling (coastwide, potentially only Oregon), and widow rockfish as full assessments, with petrale sole and sablefish as assessment updates.

The GMT also discussed the NMFS report (Agenda Item J.2.b., NMFS Report) with Dr. Hastie and Mr. DeVore and suggests the following: defer a cowcod assessment until 2017, change the kelp greenling from a coastwide assessment to an Oregon-only full assessment, add an update for chilipepper, and consider the addition of arrowtooth flounder as a data-moderate assessment. Reasons for these suggestions are detailed below.

Cowcod
The GMT agrees that efficiencies may be gained, along with improvements in assessment outcomes, by delaying the cowcod assessment until 2017 when further refinements in remotely operated vehicle (ROV) and hook-and-line survey methodologies are scheduled to occur, and a more complete data set may be available.

Kelp Greenling (OR)
The GMT agrees with the NMFS rationale in proposing a full assessment for kelp greenling in Oregon only. The available data for kelp greenling (and other nearshore stocks) differs between states, and currently the State of Oregon has the most complete data set for this species. However, Dr. Hastie indicated that if there is available time during the STAR panel, then data-poor methods could be explored for Washington and California in order to derive contribution overfishing limit (OFL) estimates for each state. The GMT did not reach consensus on the proposal to expand the analysis for Washington and California.

Arrowtooth Flounder
The GMT understands the concerns from the NWFSC that sufficient time may not be available to conduct an update for arrowtooth flounder, given the backlog of age and length composition data that would need to be processed in time for an update. The GMT supports a data-moderate assessment for arrowtooth flounder, provided that it could be folded into the STAR Panel schedule.

Update assessments

Chilipepper
The GMT was made aware that Dr. John Field from the Southwest Fisheries Science Center (SWFSC) has been updating chilipepper age and length compositions, and that the addition of a chilipepper update would be a relatively light task. The GMT also notes that the current chilipepper assessment is currently considered outdated, because the most recent assessment was conducted in 2007. Given industry interest in increasing chilipepper attainment by fixed gear and trawl sectors, increased effort in non-trawl midwater IFQ effort, and the availability of Dr. Field to conduct the update, the GMT thinks the addition of a chilipepper update presents an opportunity that should be taken advantage of.

Petrale Sole and Sablefish
The GMT supports the NWFSC and Council-recommended updates for sablefish and petrale sole. An updated assessment for petrale sole would be needed to confirm its rebuilt stock status, and given the importance of this stock for non-whiting trawl fisheries; this is an important task. The sablefish update would be useful as well, given the importance of this stock to West Coast groundfish fisheries.

Catch Report

Since Pacific ocean perch, yelloweye rockfish, and potentially cowcod, may not be prioritized for full, updated assessments, catch reports of these species should be completed.

Nearshore Species Workshop

The GMT discussed with Dr. Hastie the utility of an advance nearshore species workshop for black rockfish, China rockfish, and kelp greenling in advance of their subsequent STAR panels. The GMT notes that, given some of the area stratification concerns that were raised in the data moderate assessments for nearshore species in 2013, and lessons learned from that process, such frontloading is crucial to insure a productive STAR Panel process for these

nearshore stocks. The GMT also recommends that a representative from each state participate, if such a workshop is to occur. In addition, during off-year science activities (e.g., odd years), the GMT recommends consideration of a follow-up workshop for nearshore species assessments in order to improve and develop best practices for nearshore stocks in the future.

Recommendations:

1. **The GMT recommends data-moderate assessments follow the stock assessment review (STAR) process, and that the ToR be updated to reflect this recommendation.**
2. **Consider revising 2015 stock assessments to: delay a full cowcod assessment until 2017; add prioritization for a chilipepper rockfish update; and conduct a kelp greenling assessment only in Oregon waters.**
3. **If a data-moderate assessment for arrowtooth flounder is conducted, that it only be conducted if it can be folded into a STAR panel.**
4. **Catch reports be conducted for Pacific ocean perch, yelloweye rockfish, and cowcod.**
5. **A nearshore assessment workshop is conducted for black rockfish, China rockfish, and kelp greenling as early in 2015 as possible.**

PFMC
09/15/14

2015 Stock Assessment Planning (J2): NMFS Recommendations

Dr. Jim Hastie, Dr. Michelle McClure
Northwest Fisheries Science Center

2015 Stock Assessment Planning

- The NMFS Report on Agenda Item J.2.b contains revised suggestions for assessments, based on:
  - The Council's June motion
  - Further discussions between the NW & SW Centers
- Our J.2.b Report also includes a draft assessment-review calendar
  - We are suggesting some changes, as part of this presentation
- The process may also be helped by the addition of a data/ modeling meeting early next spring, focusing on:
  - Rec CPUE estimation, spatial coverage of individual models

Candidates for 2015 Stock Assessments

June 2014 Council Motion for 2015 stock assessments

Full assessments:

1) Black rockfish
2) Bocaccio
3) Canary rockfish
4) Darkblotched rockfish
5) Widow rockfish
6) China rockfish
7) Cowcod
8) Kelp greenling (OR)

Update assessments:

1) Petrale sole
2) Sablefish

Possible Update or Data-moderate for Arrowtooth

Further consideration of additional Data-moderates

NMFS Suggestions, Sept. 2014

STAR Panel assessments:

1) Black rockfish
2) Bocaccio
3) Canary rockfish
4) Darkblotched rockfish
5) Widow rockfish
6) China rockfish
7) Kelp greenling (OR + min. of data-poor elsewhere)*

1 & 6: min. of 1 assessor to work with each state

Update assessments:

1) Petrale sole
2) Sablefish
3) Chilipepper

"Catch-only projections" using 2007 model or Data-moderate for Arrowtooth

- No additional Data-moderates
- **Data reports** for POP, Yelloweye, and Cowcod

Supporting Information

Species	Suggestions for 2015 Assessments				Most Recent Assessment and Current Status					PSA	Fleet rank (2008-2012):					2012 catch as a % of		Survey info
											Comm. $		Rec. mt					
	Full	Up D	D-M	Dat Rpt	Cur Tier	Last year	Type	Last Dep. N | S	Rbld?		All	H & L	All	CA	OR-WA	ABC *	OFL *	
arrowtooth fl.			x		2	2007	F	79%		1.21	8	48	52		26	21%	17%	
bank rf					2	2000	F			2.02	30	42	47	44		4%	3%	
black rf x2+	X				1	2007	F	53% | 71%		1.94	6	3	1	1	1	53%	51%	
blue rf					2	2007	F	30%		2.01	33	17	4	9	5	33%	29%	
bocaccio	X				1	2013	U	31%	Y	1.93	42	26	7	5	13	20%	19%	
CA scorpionfish					1	2005	F	80%		1.41	36	20	5	4		65%	62%	
canary rf	X				1	2011	U	23%	Y	2.01	46	67	17	19	12	8%	7%	
chilipepper		x			1	2007	F	71%		1.35	14	27	30	29	39	17%	16%	
China rf x2+	X				2	2013	D-M	37% | 66%		2.23	25	12	16	15	10	124%	104%	
cowcod				X	2	2013	F	34%	Y	2.13	73	56	45	42		11%	9%	
darkblotched rf	X				1	2013	F	36%	Y	1.92	22	24				22%	21%	
gopher rf					1	2005	F	97%		1.76	12	7	10	7		42%	39%	
kelp greenling (OR)	X				1	2005	F	49%		1.56	18	10	15	17	6	79%	59%	
lingcod x2					1	2009	Full	62% | 74%		1.55	7	5	2	2	2	28%	26%	
olive rf					3					1.87	47	31	13	13	31	21%	17%	
POP				X	1	2011	U	19%	Y	1.69	31	43				6%	6%	
petrale sole		X			1	2013	F	22%	Y	1.94	3	44	40	40	19	91%	87%	
quillback rf x2					3					2.22	35	18	20	28	7	169%	141%	
sablefish		X			1	2011	F	33%		1.64	1	1	42	48	15	66%	63%	
widow rf	X				1	2011	F	51%		2.05	28	41	33	32	17	6%	6%	
yelloweye rf				X	2	2011	F	21%	Y	2.00	61	45	27	33	11	25%	24%	

2015 Draft Stock Assessment Review Calendar

(as included in NMFS Report J.2.b)

	Dates	Location	Species	
STAR Panel 1	April 27 - May 1	Seattle, WA	Canary rockfish	Darkblotched rockfish
June SSC	June 10-12	Spokane, WA	Canary and darkblotched rockfishes & updates	
STAR Panel 2	July 6-10	Newport, OR	Black rockfish	
STAR Panel 3	July 13-17	Seattle, WA	China rockfish	Kelp greenling (OR)
STAR Panel 4	July 27-31	Santa Cruz, CA	Bocaccio	Widow rockfish
September SSC	Sept 9-11	Sacramento, CA	Bocaccio, kelp greenling, and black, china, and widow rockfishes	

Revised 2015 Draft Assessment Review Calendar

	Dates	Location	Species	
STAR Panel 1	April 27 - May 1	Seattle, WA	Canary rockfish	Darkblotched rockfish
June SSC	June 10-12	Spokane, WA	Canary and darkblotched rockfishes & updates	
STAR Panel 2	July 6-10	Santa Cruz, CA	Bocaccio	China rockfish
STAR Panel 3	July 20-24	Seattle, WA or Newport, OR	Black rockfish	
STAR Panel 4	July 27-31	Seattle, WA or Newport, OR	Widow rockfish	Kelp greenling (OR+)
Sept. SSC	Sept 9-11	Sacramento, CA	Bocaccio, kelp greenling, and black, china, and widow rockfishes	

Research Projects in the California RCA

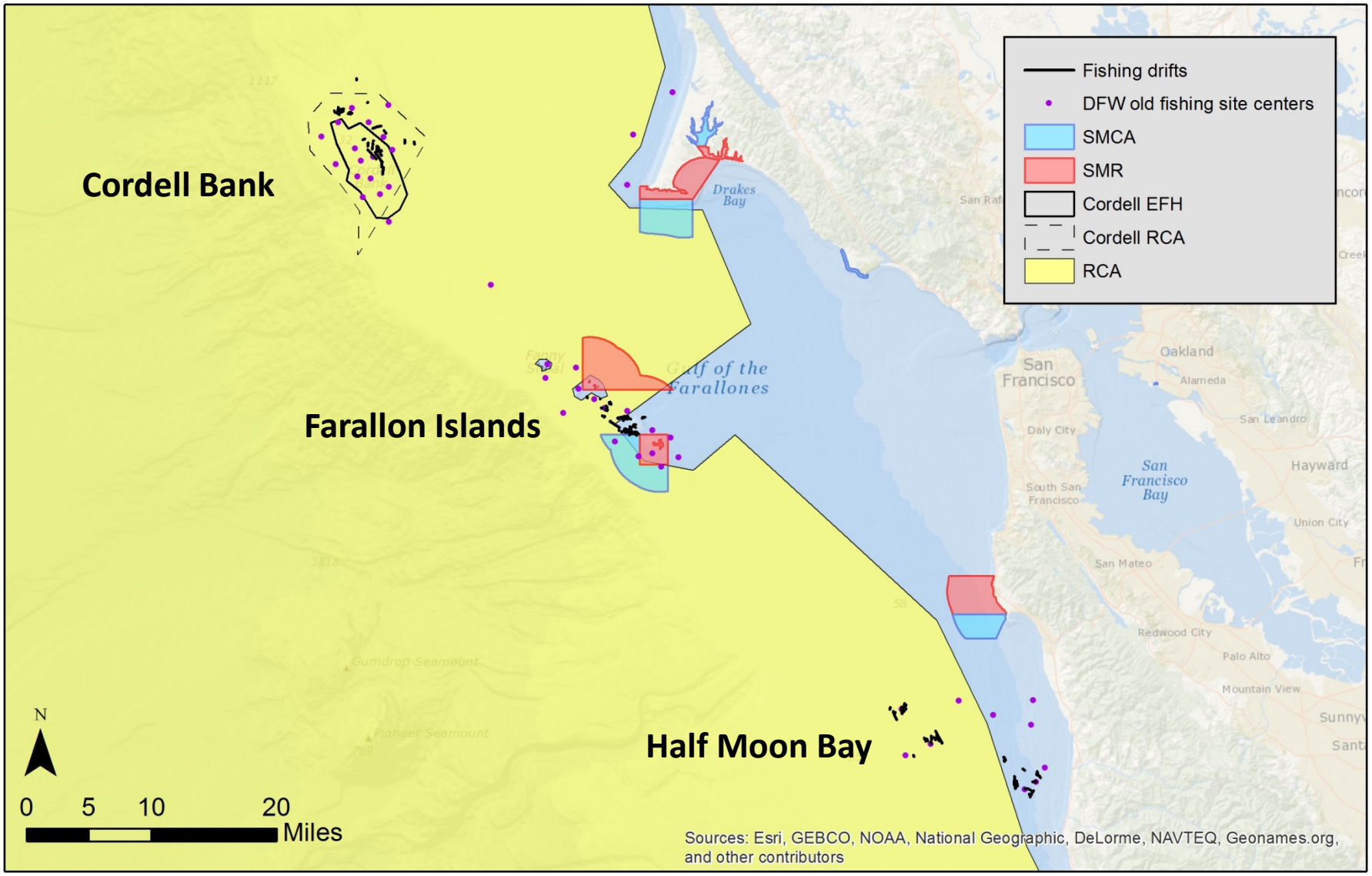
Project 1: An assessment of the response of rockfish populations to Rockfish Conservation Area closures in Central California
Principal Investigators: Rick Starr, Moss Landing Marine Laboratories, John Field and Susan Sogard, National Marine Fisheries Service; Dan Howard and Dale Roberts, Cordell Bank National Marine Sanctuary; Tom Mattusch, Owner F/V Hulicat; Roger Thomas, Golden Gate Fishermen's Association and owner F/V Salty Lady; Deb Wilson-Vandenberg, California Department of Fish and Wildlife
Funding source: Collaborative Fisheries Research West

Project 2: Partnering fecundity studies with CPFV monitoring to improve rockfish stock assessments
Principal Investigators: John Field and Susan Sogard, National Marine Fisheries Service
Funding source: NOAA Cooperative Fisheries program

Research Projects in the California RCA

- Primary goals: Survey Rockfish Conservation Areas (areas closed to recreational and fixed gear fisheries) to investigate how fish populations have responded to 10 years of closures
- Datasets: CDFW observer survey of party boats from 1987-1998, current survey (2012-2014) of selected locations inside and outside of RCAs (will ultimately use recent CDFW observer data as well)
- Primary method: Hook and line fishing by volunteer anglers using identical methods, same sites as used in CDFG survey
- Fish are identified, measured, and released at depth with descending devices
- Exception – Subsamples of chilipepper, yellowtail, blue, and blackgill rockfish retained for fecundity studies
- Fecundity studies examine maternal effects, environmental effects, interannual variability, and provide reproductive data for stock assessments of Federally managed species

Recreational RCA Project 2012-2013



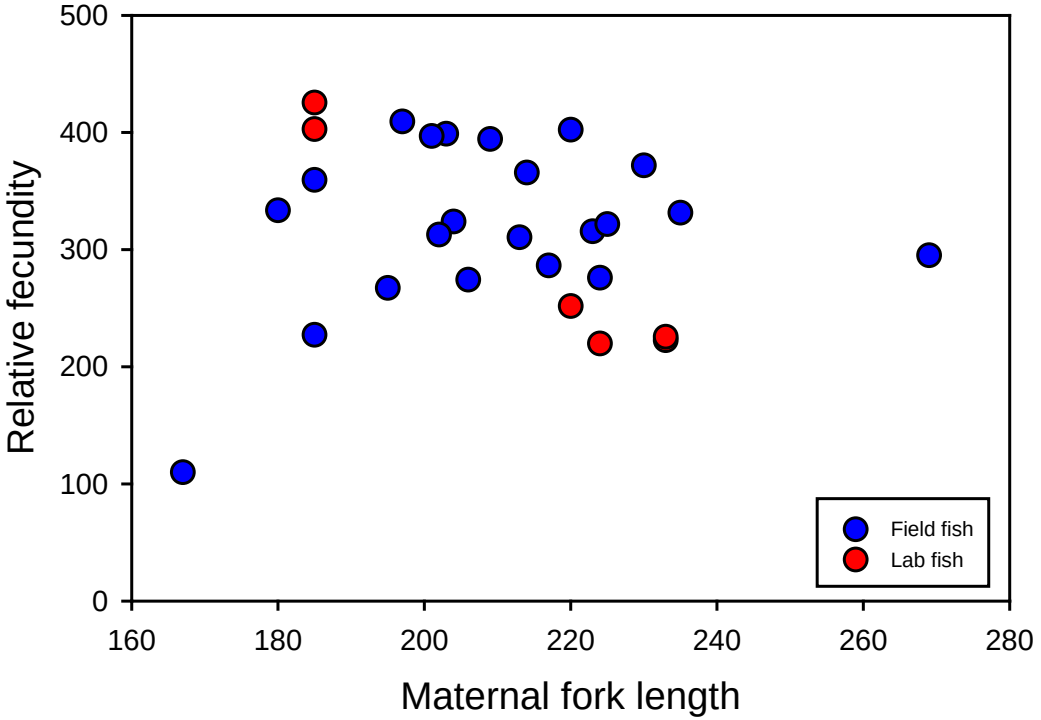
To be clear, this project is NOT fishing in state SMR's

Methods: Returning fish to depth using Seaqualizer descenders

Does recompression work?

- Numerous studies demonstrating survival in numerous species
- Our lab - Rosy rockfish held in tanks after recompression have gone through natural reproduction cycle

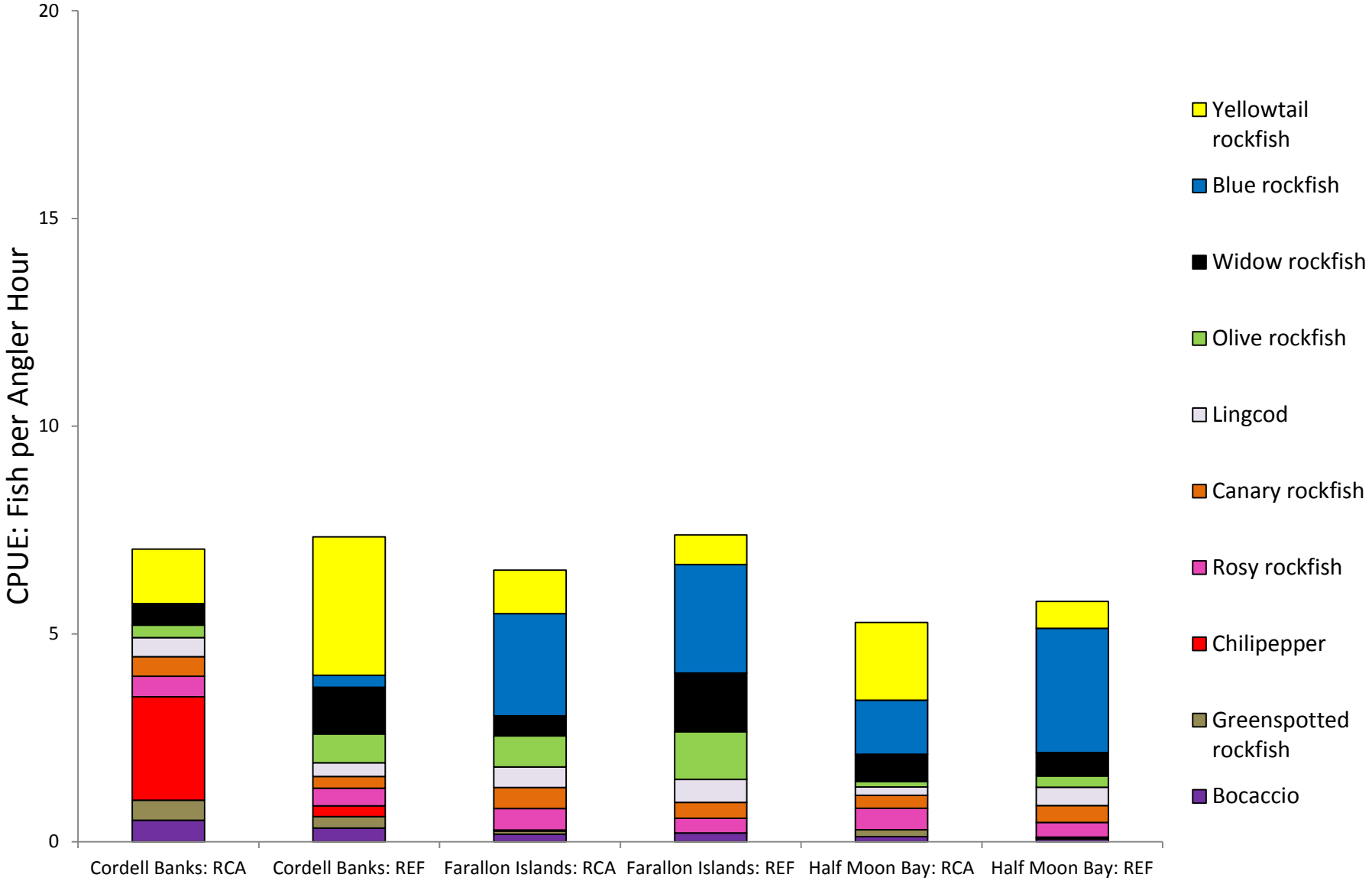
Red symbols are relative fecundities for rosy rockfish females that were recompressed and held in the lab for several months; fecundity was comparable to field fish



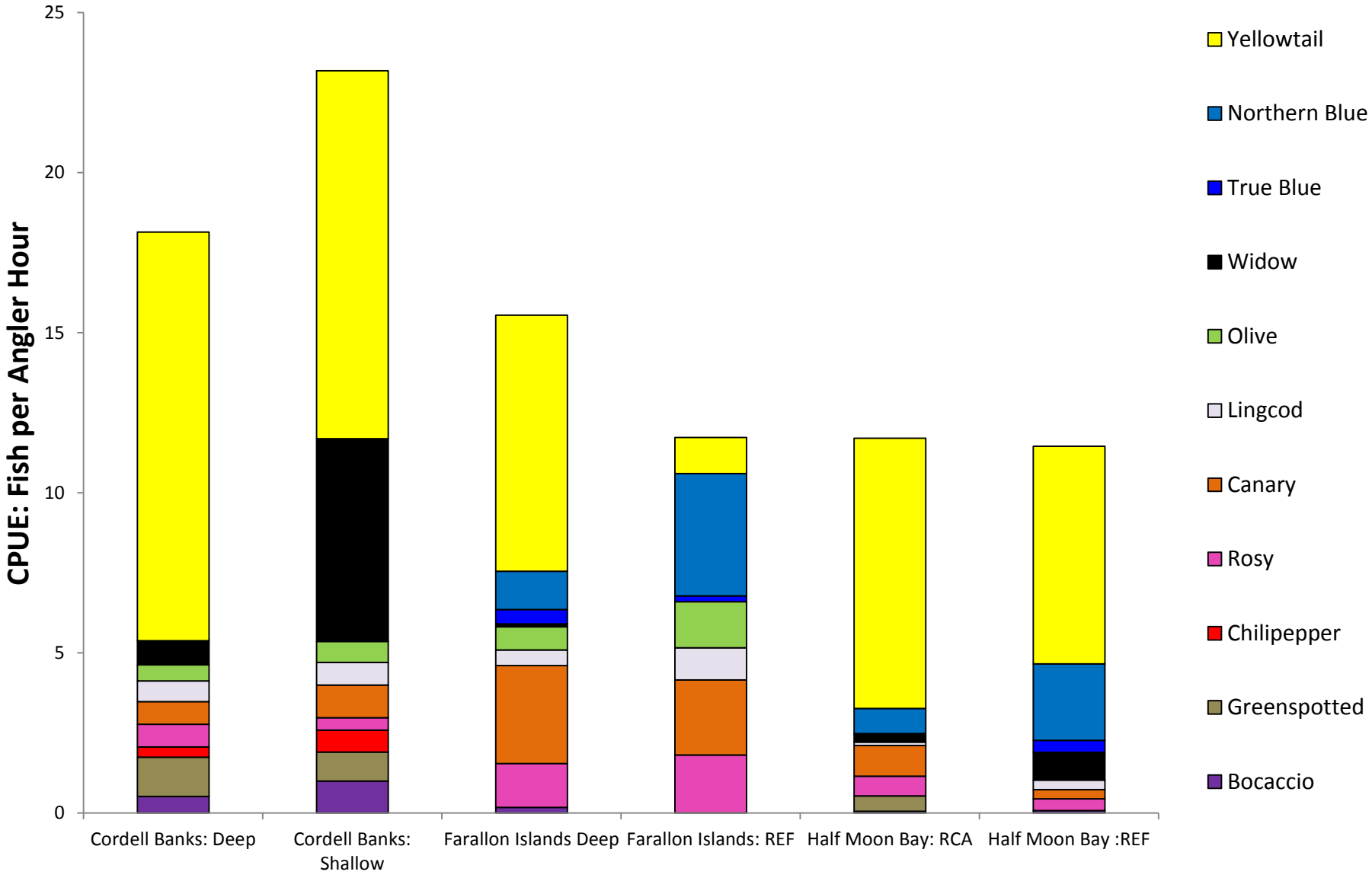
Hook and line results 2012-2014

Area	Season	No. Surveys		Angler Hours		Fishes Caught		No. Species	
		RCA	REF	RCA	REF	RCA	REF	RCA	REF
Cordell	Fall 2012	3		32.2		611		14	
Bank	Winter 2013	1		8.1		221		12	
	Fall 2013	3		45.7		1050		18	
	Winter 2014	1		20.9		395		13	
	Total	**8**		**106.9**		**2277**		**19**	
Farallon	Fall 2012	3	3	1.6	38.6	9	572	3	16
Islands	Winter 2013	1	1	7.9	8.6	101	64	9	9
	Fall 2013	4	4	35.2	30.7	500	303	20	18
	Winter 2014	1	1	8.5	7.2	128	46	10	12
	Total	**9**	**9**	**53.2**	**85.1**	**738**	**985**	**20**	**21**
Half	Fall 2012	3	3	22.0	23.8	443	364	17	10
Moon Bay	Winter 2013	1	1	7.1	5.8	23	35	6	5
	Fall 2013	4	4	36.4	38.6	583	729	18	17
	Winter 2014	1	1	11.3	9	190	88	14	12
	Total	**9**	**9**	**76.8**	**77.2**	**1239**	**1216**	**20**	**17**
Grand	**Total**	**26**	**18**	**236.9**	**162.3**	**4254**	**2201**	**28**	**21**

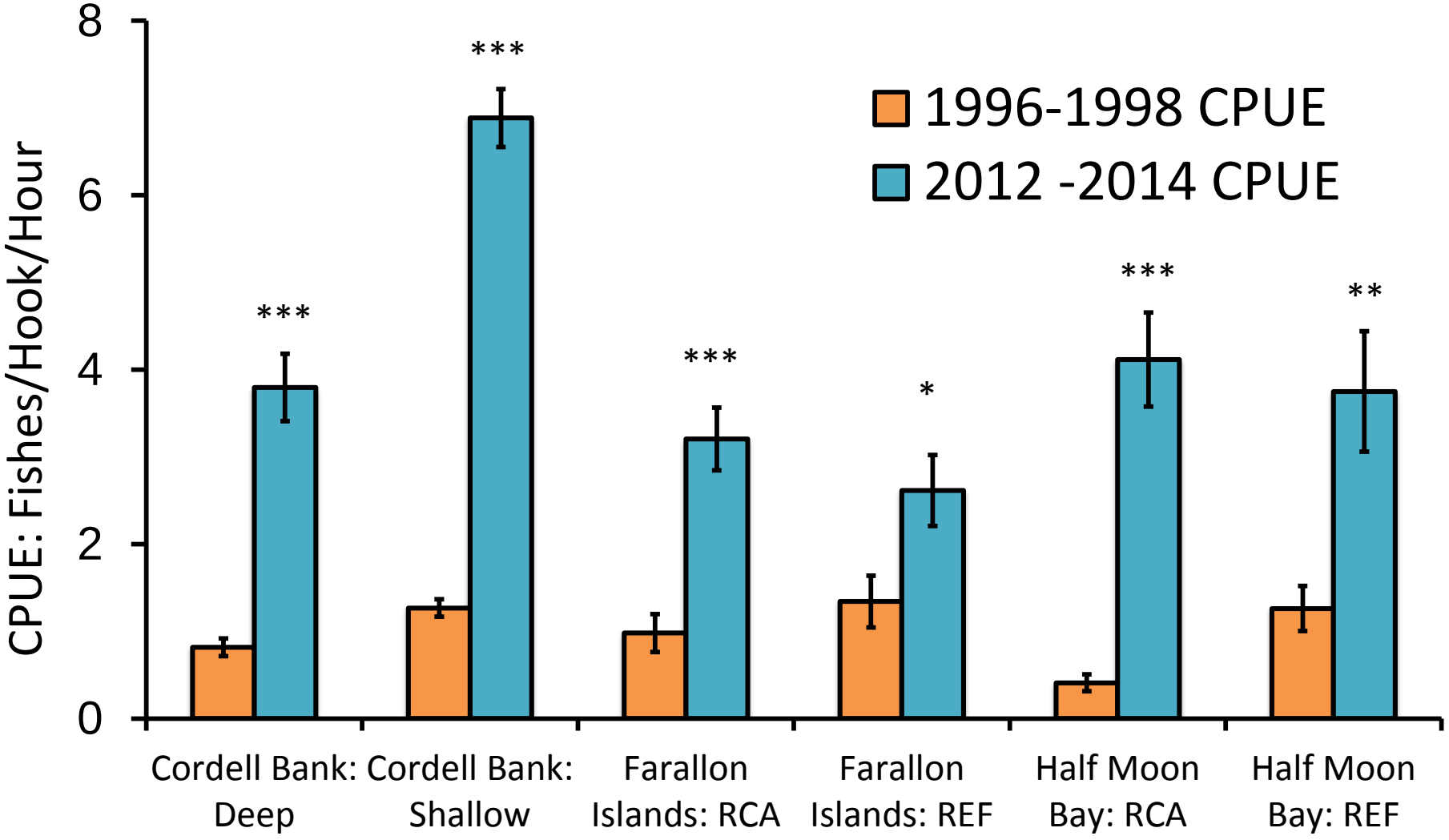
Average CPUE: CDFW data (10 Species)



Average CPUE by site: RCA Project (11 species)



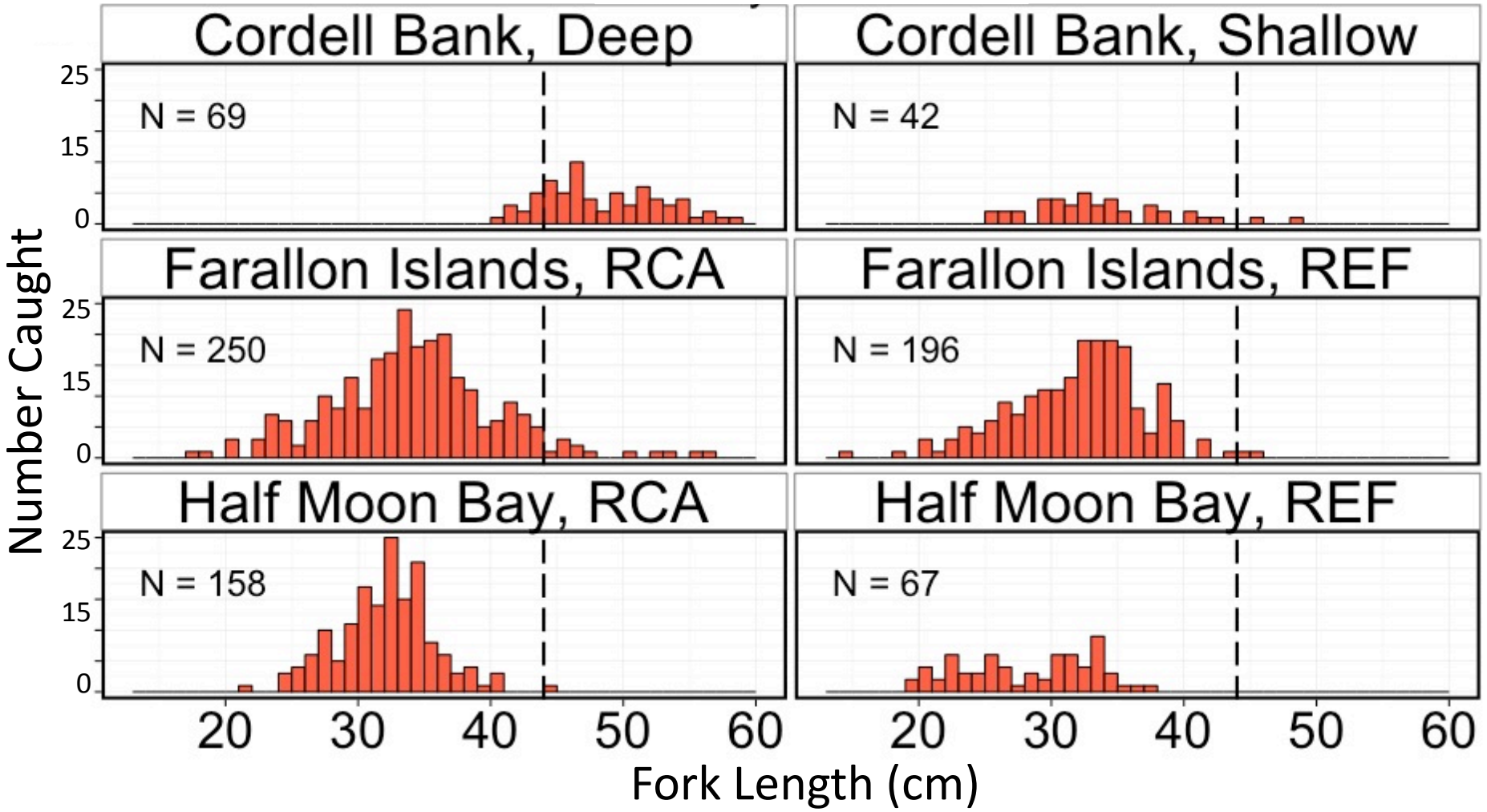
Catch per Unit Effort (CPUE): All Species: 1996-'98 vs 2012-'14



Canary Rockfish

Length Frequency Distribution by Site for fish caught 2012-2014

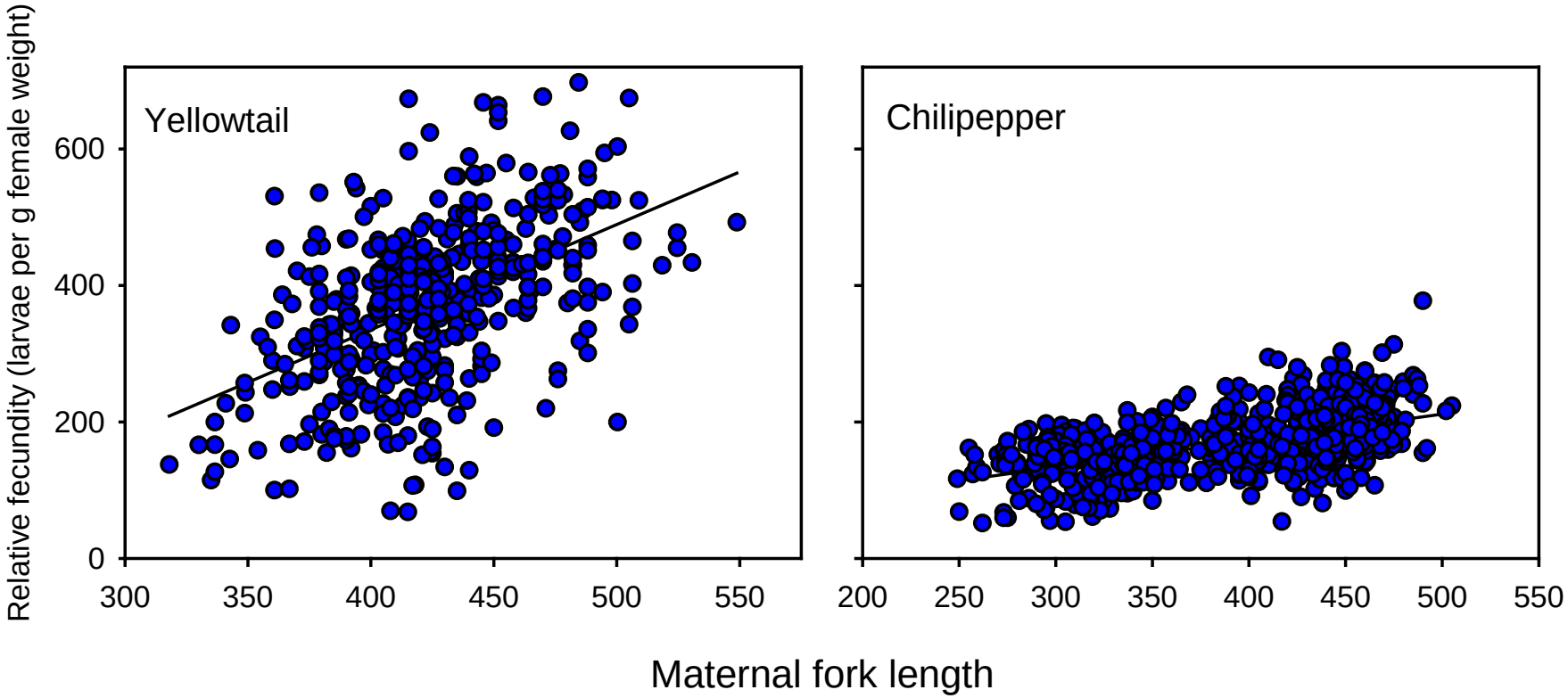
Lifespan: 84 yr
Max Size: 76 cm (29.6 in)



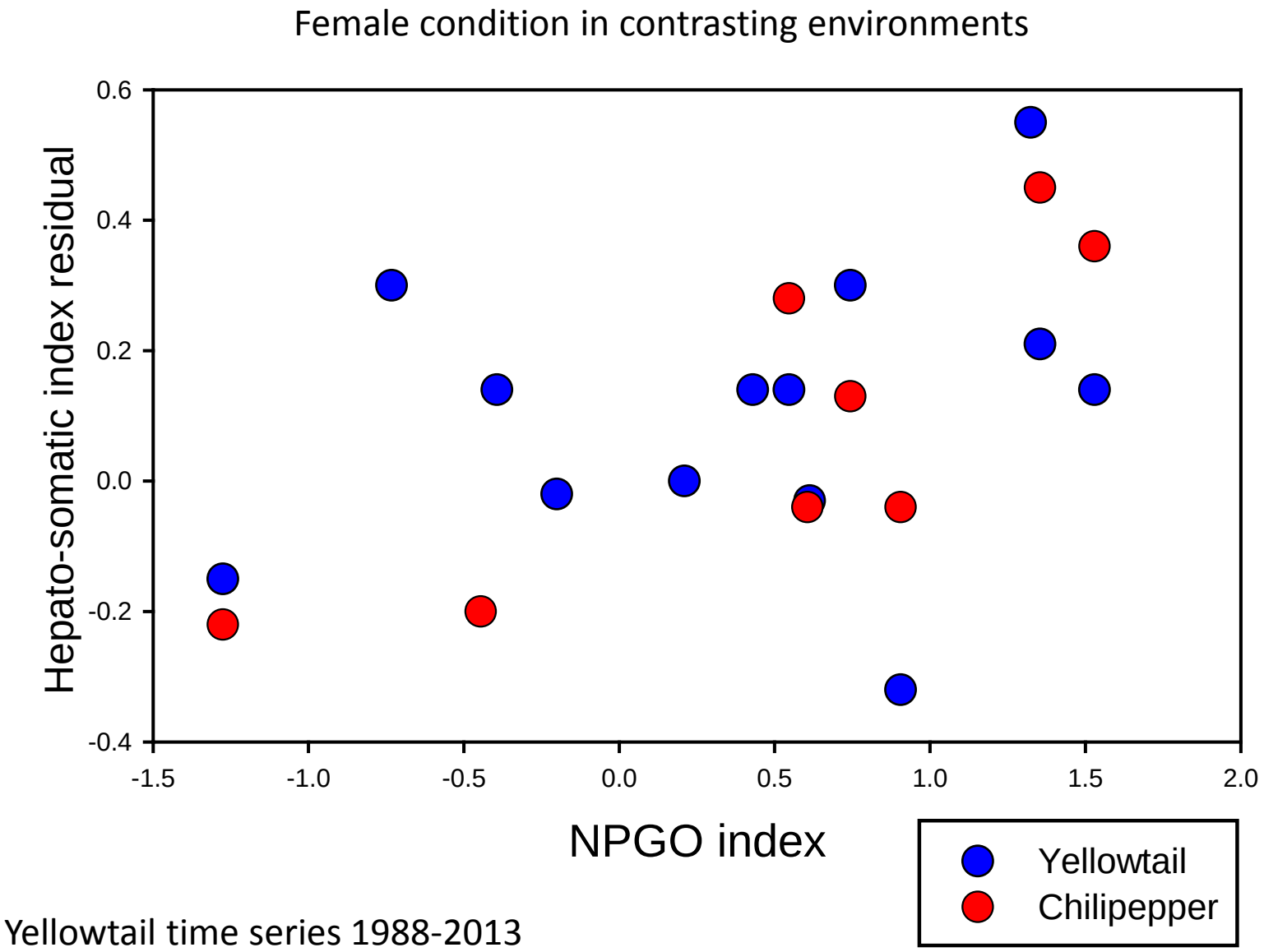
Female length at 50% maturity is shown in hashed vertical line (Wyllie Echeverria, 1987)

Fecundity studies

Maternal effect on fecundity – increase in fecundity AFTER accounting for female size



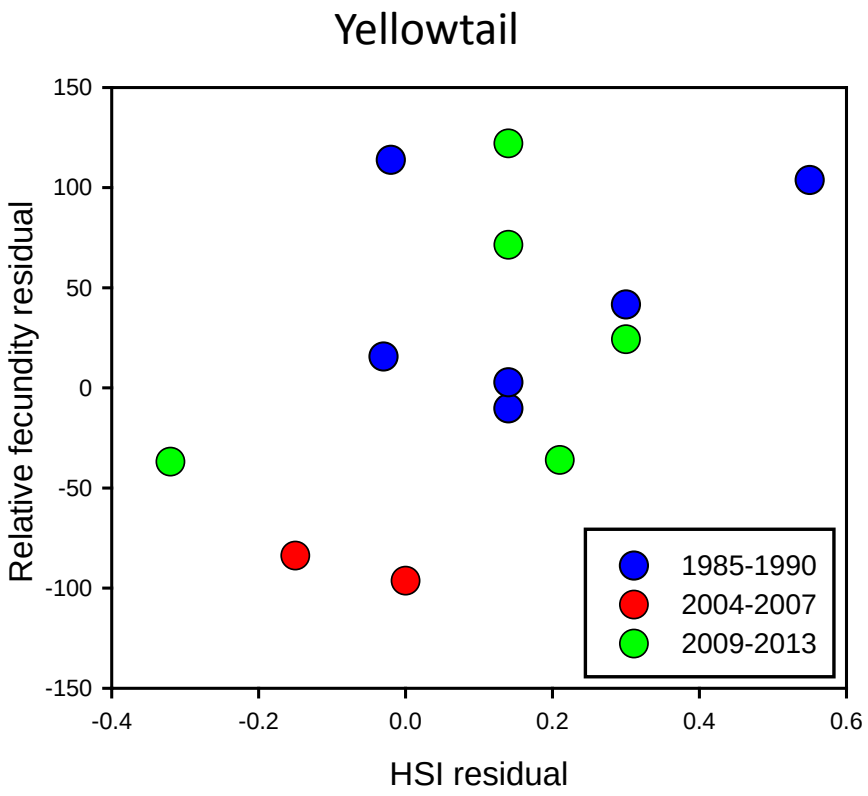
Relevance: Correctly accounting for size-dependent fecundity and other maternal effects is essential for appropriately specifying stock assessment models (currently ~60% of PFMC rockfish assessments include such information, from less than 40% in 2007).

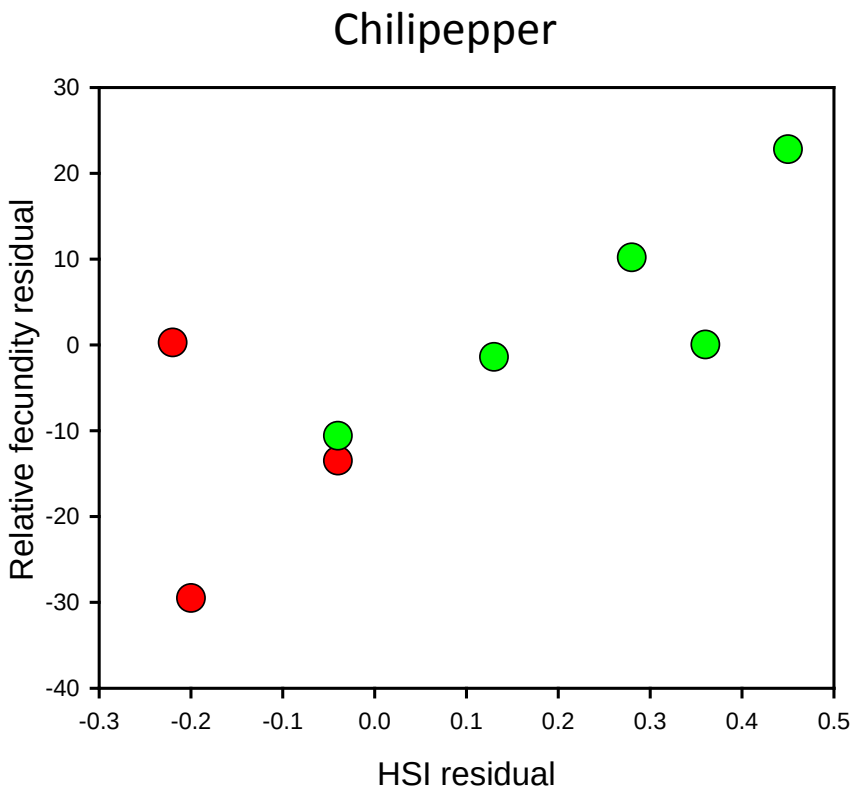


Yellowtail time series 1988-2013

Chilipepper time series 2004-2013

Fecundity studies – fecundity is related to female condition

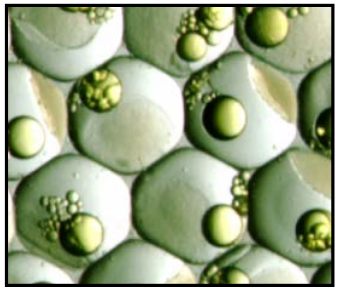


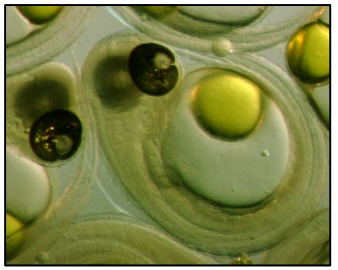


Rockfish typically produce one brood per year, but some species (chilipepper, bocaccio, others) in some areas can produce a second (and possibly third) brood

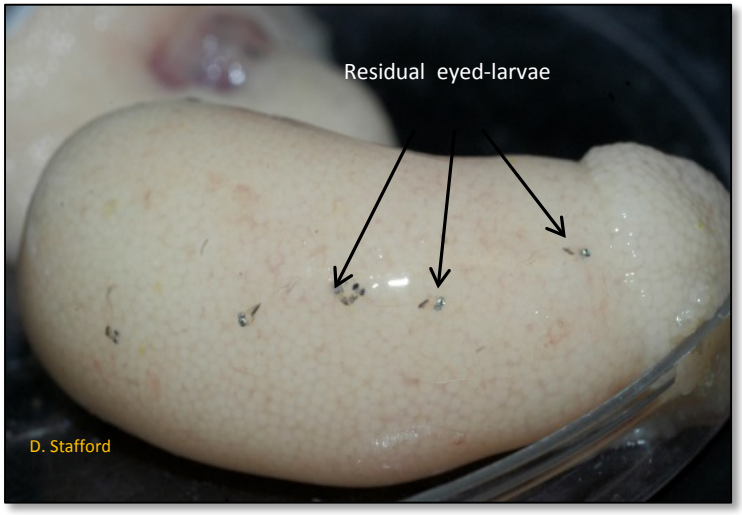
Presence of residual larvae indicates current brood is secondary

Second broods in chilipepper are almost as fecund as the first brood



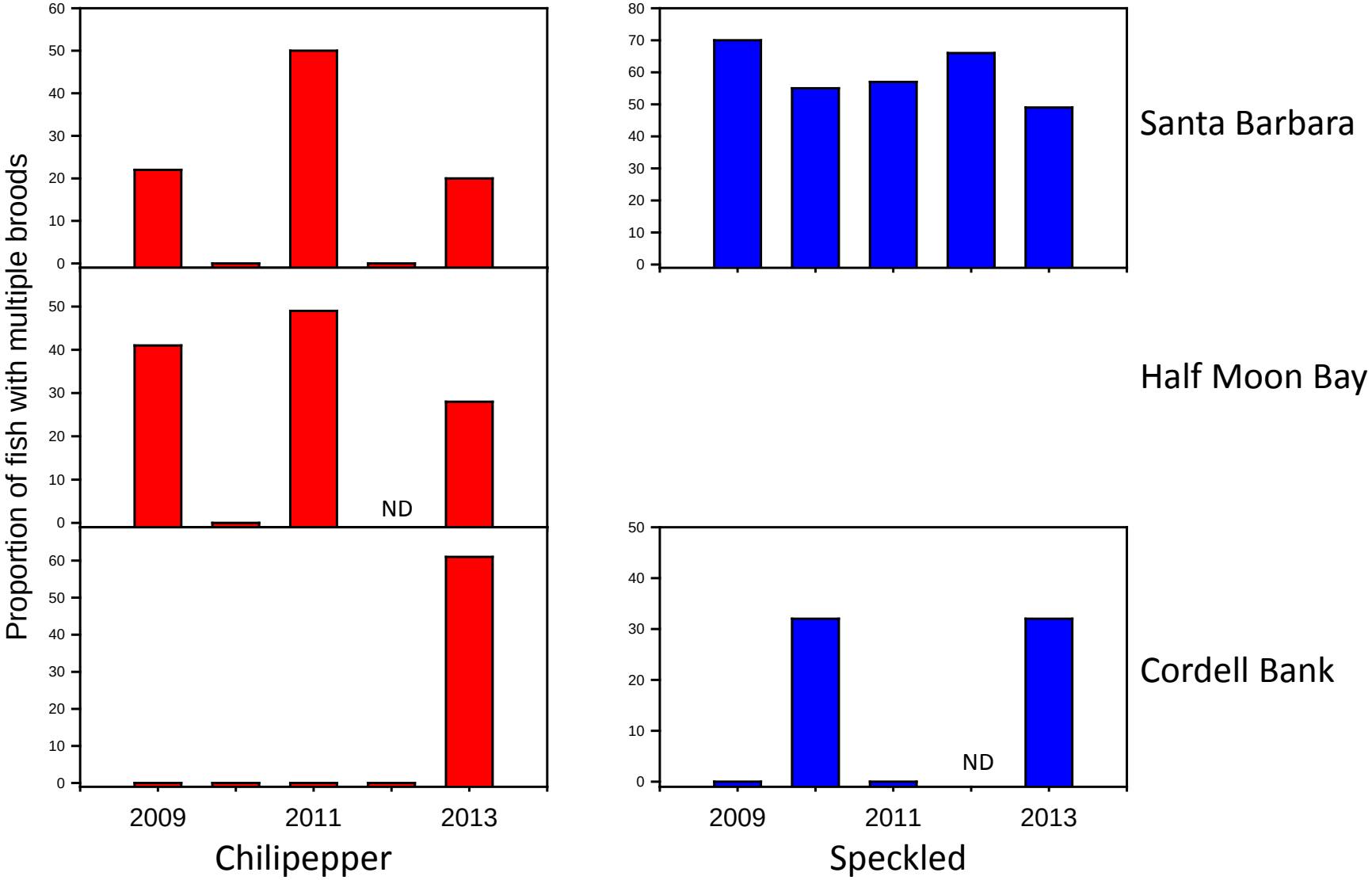


Speckled rockfish ovary



Chilipepper residual larvae

Interannual variability in occurrence of multiple broods



Preliminary results

- CPUE is now significantly higher in all locations (both inside and outside RCAs) compared to historical CDFW observer survey
- Yellowtail rockfish catch rates have increased disproportionately at all locations
- Canary rockfish catch rates have increased, particularly at Farallon Island sites (however, majority are immature)
- Present size distributions suggest larger fish inside RCAs for some species, but most species have ontogenetic shifts in distribution, so interpretation of these data is tricky
- Fecundity results confirm maternal effects, which vary in strength for different species, and also vary in response to environmental conditions
- Multiple broods allow some species to double or triple annual fecundity, but processes and spatial patterns of multiple brooding are very poorly understood

Next Steps

- Field data collection for the catch rate portion of the study will be completed in September of 2014
- Data will be integrated into existing databases of historical CPUE and recent CPUE data, including recently recovered (keypunched) drift-specific catch rate data from the original 1986-1998 and ongoing CDFW observer study (this study inspired that data recovery effort)
- Time series of catch rates from these datasets will be compared, as will catch rates by gear type (historical gear included up to 5 hooks per line, current regulations limit to 2 hooks)
- Data will be available for CPUE index development to support stock assessments, and the gear comparisons from this study will also aid the interpretation of existing and historical data (e.g., continuity of time series)
- A more robust statistical comparison of catch rates from this study inside and outside of the RCAs will also be developed.
- Reproductive ecology studies have benefited tremendously from this effort, are ongoing, and will continue to better inform stock assessments that support management

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON STOCK ASSESSMENT PLANNING

The Scientific and Statistical Committee (SSC) reviewed three Terms of Reference (ToR) documents that will be used to guide the stock assessment process for 2015. These documents include the ToR for groundfish and coastal pelagic species (CPS) stock assessment (Agenda Item J.2.a, Attachment 1), the ToR for rebuilding analysis (Agenda Item J.2.a, Attachment 2), and the ToR for methodology reviews (Agenda Item J.2.a, Attachment 3). The documents have been updated to be consistent with the revised National Standard Two Guidelines issued by the National Marine Fisheries Service (NMFS) in 2013. Except for the following recommended changes, the SSC considers these documents ready to be used in the 2015 assessment cycle.

In the Terms of Reference for the Groundfish and CPS Stock Assessment Review Process for 2015-2016:

- p. 8. "*The Council also directed that annual harvest measures for Pacific sardine and Pacific mackerel be implemented on a biennial basis beginning with the 2015-2016 fishing year*." Delete "*Pacific sardine and*" because annual harvest measures are not implemented on a biennial basis for sardine.
- p. 12. Replace "*If a recommendation on whether to send the assessment to the mop-up panel meeting is needed before the full SSC is able to review the STAR panel report, the SSC Chair, Vice Chair, and Groundfish Subcommittee Chair will make a preliminary decision.*" with "*Soon after completion of all STAR panels, a meeting of the SSC groundfish subcommittee will be held to recommend which assessments, if any, will be sent to the mop-up panel and to prioritize further analyses.*" This change is intended to manage workload for the mop-up panel, and to handle situations when there are more assessments recommended for mop-up than can be reviewed at the meeting.
- p. 24. Replace "*Catch-only projections are reviewed by the relevant SSC subcommittee, via email or conference call, and the full SSC.*" with "*Catch-only projections are initially reviewed by the relevant SSC subcommittee with public notice, and subsequently reviewed by the full SSC.*" This change is intended to ensure that advance notice is provided to all interested parties of the SSC subcommittee review of catch-only projections. Sometimes the results of catch-only projections are unexpected, particularly if default assumptions are not used.

The SSC also discussed the Council's initial list of stocks to be assessed in 2015. Dr. Owen Hamel from the Northwest Fishery Science Center was present for the discussion to provide a NMFS perspective.

The Council's initial list included cowcod as a full assessment. The 2012 remotely-operated vehicle ROV survey for cowcod is potentially a critical data point that could verify the amount of rebuilding that has occurred since the last ROV survey in 2002. If new methods were used in the ROV survey, the SSC recommends these methods be reviewed before the results are used in the stock assessment.

Since ROV surveys only cover a proportion of cowcod habitat, biomass from the survey area is expanded to the population level for use in the assessment model. The expansion method should

also be reviewed. A review of the ROV survey is unlikely to be completed in time for a cowcod assessment in 2015, suggesting that this assessment should be delayed until the next assessment cycle.

The SSC supports update assessments for petrale sole and sablefish, given that these assessments have been carefully and thoroughly reviewed in previous Stock Assessment Review panels. The SSC would be able to review an update assessment of chillipepper rockfish if an assessment were to be conducted.

Arrowtooth flounder was last assessed in 2007. This stock could be assessed in the next cycle by either a data-moderate assessment or a catch-only projection. There are a number of issues that need to be addressed for data-moderate assessments. If the decision is made to go forward with a data-moderate assessment for arrowtooth flounder, the SSC recommends that the Extended Simple Stock Synthesis method be used, and that input trend information be limited to bottom trawl surveys. This approach would avoid some of the issues associated with data-moderate assessments, and would make it feasible for the assessment to be reviewed by the SSC groundfish subcommittee during the June meeting. Both a data-moderate assessment and a catch-only projection should be done for arrowtooth flounder to provide a useful contrast. If additional data-moderate assessments are added to the list, a fifth STAR panel should be added to the proposed schedule for data-moderate assessments.

Making an informed decision about whether it is possible to conduct an assessment in an area requires going through the initial steps of stock assessment. These steps include soliciting and assembling data sets, gathering information about fishing practices and management history, and evaluating potential stock assessment boundaries based on biology, data availability, data quality, and management history. The SSC considers it unwise to a priori restrict the assessment of kelp greenling to the state of Oregon, and recommends that a similar process be used for kelp greenling, China rockfish, and black rockfish, and any other nearshore species considered for assessment.

The SSC recognizes that there are a number of alternative points of view related to stock assessment boundaries for nearshore species. Since these issues are important for a number of species that will be assessed in 2015, it will be important to discuss these issues and develop agreed-upon approaches prior to the assessment cycle. The SSC groundfish subcommittee is willing to take the lead in planning a meeting to address these issues, and will discuss a possible process during the November Council meeting.

One lesson that perhaps can be garnered from the last assessment cycle is the importance of communication between stock assessment scientists and those closer to sources of fishery information, such as state data stewards and managers. Data stewards have the responsibility to inform stock assessment scientists about the limitations and appropriate use of data for stock assessment. Stock assessment scientists should communicate initial decisions on stock structure, fishery modeling, and priors used in the assessment. For nearshore species where state agencies are the primary source of assessment information, this communication could be fostered by including state agency biologists on stock assessment teams. Holding pre-assessment workshops well in advance of the STAR panels is another excellent approach for ensuring that this critical two-way communication occurs.

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REPORT ON GROUNDFISH STOCK ASSESSMENT PLANNING

The Washington Department of Fish and Wildlife (WDFW) would like to offer the following comments on the groundfish stocks selected to be assessed in 2015. For clarification, in general, we do not have concerns about the data moderate assessment methods, but do have a concern about how data are used to fill gaps in assessments, particularly for nearshore stocks. We describe our concerns below and how we would recommend they be addressed.

Our primary concern stems from not having sufficient data from waters off the Washington coast, collected either through fishery-independent or –dependent means, to populate an assessment model. While this general concern applies to all assessments, specific to nearshore stocks, this concern arises when stock assessments borrow data from adjacent areas to populate the model and the borrowed data are affected by management measures that do not apply off Washington. Because of the disparity in management measures across state boundaries, we believe that the results are likely not an accurate reflection of the status of the stock in Washington waters. This sentiment appears to be shared by the Council's Scientific and Statistical Committee (SSC) as they stated, "The spatial structure of assessments should be based on biological considerations but avoid inferring stock status for areas for which there are no index data, particularly for nearshore species." (Agenda Item D.5.b, March 2014)

Black rockfish is one nearshore stock where we have had sufficient data for a state-specific assessment in Washington (i.e., the data borrowing situation described above would not apply). In June, the Council voted to keep the question of assessment areas for black rockfish open. However, for the reasons given below, we remain strongly supportive of using the existing assessment boundaries for the Washington stock and certainly for retaining the use of state boundaries for management.

For the 2015 cycle, the Council is again considering assessing nearshore stocks off Washington. While we agree that biological stock structure is a matter for the Stock Assessment Team (STAT) to consider and the SSC to decide, stock structure in the nearshore stocks is uncertain. WDFW does not believe that genetic (i.e., "evolutionary") stock structure must be proven to justify area-based estimates; we think evidence of ecological independence is sufficient. Studies have demonstrated that large genetic differences can be prevented with the exchange of only a relatively few individuals (i.e., more than ten) (Miller *et al.*, 2005), and given that rockfish do not reach maturity until five to ten years of age, a demographically relevant migrant exchange may take decades to occur (Lotterhos *et al.*, 2014). That being said, if there are significant conservation risks associated with a specific area-based approach, we want to be aware of those and recognize that addressing those risks may require using geographic boundaries that deviate from state boundaries for management.

For black rockfish, evidence suggests that adult movement is limited. That is, we see evidence of a high degree of ecological independence among spawning populations through the WDFW tagging studies, which we initiated in 1981 and that continue today. Since 2004, when Oregon and Washington have had comparable tagging protocols in place, 0.3% of our tag recoveries have been from waters adjacent to Oregon.

Our conclusion is that black rockfish spawners off Washington are most likely to be spawning with other mature fish off Washington. Therefore, as a matter of policy, WDFW recommends that the Council manage to where the spawners are even if there is exchange of larvae between areas (i.e, because we do not know where the seeds are coming from, we believe it makes sense to assume they are coming in proportion to where the spawners are); again, this is supported by over three decades of tagging results.

Black rockfish is our key recreational bottomfish stock (accounting for almost 97% of total nearshore catch in the last decade), which is why WDFW has invested significant staff and funding resources into the tagging studies (tagging over 133,000 fish) and its management for over 30 years. As such, we want full attention paid to the assessment. We are concerned that combining multiple area assessments and giving it to one STAT would result in the Washington area receiving less focus than it would if assessed by a separate STAT. Given our extensive experience in working with our tagging data, it is important that WDFW be on the STAT.

Nearshore fisheries are currently managed by the individual states, and unless there is a conservation concern relative to our management actions, this practice should continue for black rockfish and other nearshore stocks. The SSC has said that for nearshore stocks, we do not want to use trend information from one area where management history has been different, and apply it to another area. The fishery-independent data we have for black rockfish is focused on measuring trends off of Washington, and the fishery-dependent data we collect also reflects the Washington fishery. WDFW believes that the black rockfish assessment—whether conducted coastwide or on two or three separate areas—needs to be modeled in a manner that allows for state-specific management to continue.

Finally, based on the recent data-poor assessment, the kelp greenling stock off Washington appears to be at low risk. Therefore, WDFW recommends not reassessing kelp greenling off Washington in 2015 and focusing the Council's limited assessment resources on higher priority stocks.

References

Miller, J. A., M. A. Banks, D. Gomez-Uchida, and A. L. Shanks. "A Comparison of Population Structure in Black Rockfish () as Determined with Otolith Microchemistry and Microsatellite DNA." *Canadian Journal of Fisheries and Aquatic Sciences* 62.10 (2005): 2189-198.

Lotterhos, Katie E., Stefan J. Dick, and Dana R. Haggarty. "Evaluation of Rockfish Conservation Area Networks in the United States and Canada Relative to the Dispersal Distance for Black Rockfish ()." *Evolutionary Applications* 7.2 (2014): 238-59.

ELECTRONIC MONITORING REGULATORY PROCESS FINAL PREFERRED ALTERNATIVES AND NEXT STEPS

The Council adopted a range of alternatives and options for an electronic monitoring (EM) program in November 2013, and at the April and June 2014 Council meetings the Council provided guidance on further refinement of the alternatives and options. Council Staff incorporated these changes into a draft analytical document including National Environmental Policy Act (NEPA) alternatives, "Draft Analysis of an Electronic Monitoring Program for the Pacific Coast Limited Entry Trawl Groundfish Fishery Catch Shares Program" (Agenda Item J.3.a, Attachment 1). This document will serve as the Council's analysis and decision document for Magnuson-Stevens Act purposes, and provides a purpose and need statement, background on the development of the EM program, descriptions of alternatives and options, and analysis of impacts and costs. Please note that Attachment 1 is truncated for printing and only includes the Executive Summary and tables of alternatives and options for specific fishery sectors. The full document can be downloaded from the Council's website. The National Marine Fisheries Service (NMFS) provided the Council with an updated version of the "Net Revenue Analysis for Electronic Monitoring on the West Coast" (Agenda Item J.3.b NMFS Report) and is only available on the Council's website. The Council received this initial document at the June 2014 meeting; the updated version narrows the focus of the analysis and responds to some comments at the June meeting.

Under this agenda item, the Council is scheduled to take final action on alternatives for electronic monitoring regulations in groundfish fishery sectors where possible. The Council may make final decisions on an individual fishery sector or for all sectors simultaneously. Leading into the September Council meeting, there has been discussion that decision-making necessities for the whiting sector may be more advanced for final action that the other sectors. An important step at this Council meeting is for the Council to make decisions and provide direction for the next steps for any sector for which final action is not achieved. As the Council works its way through the spectrum of highest level policy decisions down to lower level regulatory detail, there is a level where the Council should consider deferring to NMFS judgment on implementation for program elements such as EM Application and Approval Process, EM Equipment Type-Approval, and others.

A description of the midwater trawl whiting fishery sector alternatives and options for catcher vessels in the shoreside and mothership whiting fisheries can be found in Table 2-9 of Attachment 1; analyses of impacts and costs are in the Executive Summary and Chapter 4. Table 2-9 provides a listing of the decisions needed to get to finality on a regulatory program for the whiting fishery sector. The NMFS tested EM in the shoreside whiting sector through exempted fishing permits (EFPs) for the years 2004-2010, (June 2014 Council Agenda Item F.2.c). PSMFC also conducted EM field studies in 2012 and 2013 to test the viability of EM as a source of data to document individual accountability of catch and bycatch in the trawl catch shares program (June 2014 Council Agenda Item F.2.b). In 2012, six whiting catcher vessels out of Newport and Astoria, Oregon participated in the PSMFC studies and four participated in 2013. The studies by NMFS and PSMFC concluded that EM may be an appropriate tool to monitor

catcher vessels in the midwater trawl whiting fishery sector for compliance with the catch shares program.

A description of the fixed gear sector alternatives and options can be found in Table 2-10 of Attachment 1, and analyses of impacts and costs are in the Executive Summary and Chapter 4. The fixed gear sector was the subject of PSMFC EM field studies in 2012 and 2013. Five vessels participated each year; two vessels fished both pot and longline gear while the remainder fished solely pot gear. Three general patterns emerged in the results of the fixed gear studies. The first is that video reviewers had higher species identification success in 2013 than they did in 2012. The second is that in 2013, the relationship between weight estimates made by the observer aboard the vessel versus the video reviewer showed more variability than the relationship between counts of fish because observers weight fish. Finally, discarded catch had lower speciation and weight estimation success than the retained catch and fish could generally be identified to the species group level (flatfish or rockfish) successfully but this is not sufficient for catch share accounting purposes. Therefore, fish handling protocols for crew members would need to be developed to increase accuracy of speciation and weight estimations made by video reviewers. No EM EFPs have been conducted by NMFS for this fishery; however, EM EFPs have been recommended to start in 2015 as the first in-season attempt gather specific fixed gear EM information.

A description of the bottom trawl and the non-whiting midwater trawl sector alternatives and options can be found in Table 2-11 of Attachment 1, with analysis of impacts and costs to be found Executive Summary and Chapter 4. The PSMFC EM field studies included some EM work for the bottom trawl sector. In 2013 only six bottom trawl vessels (Morro Bay, CA, Coos Bay, OR and Newport, OR) participated in the study (none in 2012) so there is a limited amounted of information to examine the viability of EM for these fishery sectors. The bottom trawl and non-whiting midwater trawl fisheries are high volume mixed species fisheries, catch is sorted onboard, and there can be large amounts of selective discarding at sea. This means that larger changes in handling discards are required to accurately speciate and quantify allowable discards. No EM EFPs have been conducted by NMFS for the bottom trawl or the non-whiting midwater trawl fishery; however, EM EFPs have been recommended to start in 2015 to gather specific EM information for both fisheries.

The Groundfish Electronic Monitoring Policy Advisory Committee will meet at the September 2014 Council meeting to discuss Attachment 1 and provide recommendations for implementation of an EM program. It is also expected that other Council advisory bodies and the public will advise the Council on final action, as well as to next steps in the process for further consideration of EM for groundfish sectors that do not advance to a state of final Council action at the September Council meeting.

Council Action:

1. **Consider Taking Final Action on Alternatives and Options for Electronic Monitoring Regulations in the Groundfish Whiting Fishery Sector.**
2. **Consider Taking Final Action on Alternatives and Options for Electronic Monitoring Regulations in the Applicable Groundfish Fixed Gear Sector.**
3. **Consider Taking Final Action on Alternatives and Options for Electronic Monitoring Regulations in the Groundfish Bottom Trawl and Non-whiting Midwater Trawl Sector.**

4. Provide Direction on Next Steps for Groundfish Sectors where Final Action is Not Taken.

Reference Materials:

1. Agenda Item J.3.a, Attachment 1: Analysis of an Electronic Monitoring Program for the Pacific Coast Limited Entry Trawl Groundfish Fishery Catch Shares Program **(*Full Version Electronic Only*).**
2. Agenda Item J.3.b NMFS Report: Net Revenue Analysis for Electronic Monitoring on the West Coast **(*Electronic Only*)**

Agenda Order:

a. Agenda Item Overview — Brett Wiedoff
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action**: Take Final Action on Alternatives for Electronic Monitoring Regulations in Groundfish Fishery Sectors Where Possible and Provide Direction on Next Steps for Other Sectors and Issues

PFMC
08/21/14

Draft Analysis of an Electronic Monitoring Program for the Pacific Coast Limited Entry Trawl Groundfish Fishery Catch Shares Program

Abstract: Fishery participants with a Pacific Coast groundfish limited entry trawl permit that have a quota share (QS) permit and operate using individual fishing quota (IFQ) under the catch share program (shorebased IFQ program) are subject to obtaining 100 percent human observer coverage of their harvesting activities. Some participants have experienced difficulties in securing observers in a timely or consistent manner. In addition, program participants will be responsible for the full cost of observer coverage in the near future. Therefore, electronic monitoring (EM) (i.e., video monitoring) is being explored as a flexible and economical substitute for human observers.

This draft analytical document including National Environmental Policy Act (NEPA) alternatives analyzes the effects of establishing an EM program for catcher vessels using bottom trawl, midwater trawl, and fixed gear (i.e., longline and pots) in the shorebased IFQ program. The proposed EM program would be established to monitor vessels for compliance with individual fishing quotas (IFQ), individual bycatch quotas (IBQ), or groundfish allocations assigned to QS permit holders. The program would be voluntary and includes eligibility requirements to use EM, individual vessel monitoring plans, equipment and installation requirements for a video monitoring system, video data processing protocols, compliance measures, and other components. Under the proposed action, the regulatory requirement of 100 percent human observer coverage on all IFQ fishing trips would be maintained. The proposed EM program is not intended to meet the needs for biological data or monitoring of other scientific information; however, human observers would continue to collect this information at an appropriate level to support scientific needs. Therefore, on EM trips, the vessel could be randomly chosen by NMFS to carry an observer for the purpose of collecting scientific information. However, if a vessel qualifies and chooses to fish using an EM system on an IFQ trip, the vessel would be exempted from the requirement for a human observer on the trip for compliance monitoring, but would still be subject to random observer placement for scientific data collection.

The alternatives considered are intended to maintain the full accountability of IFQs, IBQs, and groundfish allocations managed under the shorebased IFQ program. This document analyzes the effects that an EM program would have on the socioeconomic, biological, and physical environments. No additional allocations of fish resources would be required, and fishing operations (area fished, effort, or gear used) are not expected to change under the proposed action. Impacts to the biological and physical environment are expected to be similar to those realized under the current shorebased IFQ program.

Document Guide and Executive Summary

Guide to the EM Analytical Document

Detailed Description of Each Component of the EM Alternatives and Options…Section 2.2, page 44

This section describes the alternatives and options that are available to the Council to create an EM program. It provides detailed description of the components that apply to all fisheries.

Summary Table of Alternatives ..... Table 2-7, page 73

The table summarizes all components of an EM program and the alternatives and options for all fisheries.

Analytical Scenarios Used for Analysis.....Section 2.4, page 86

Analytical scenarios were developed to facilitate a more efficient analysis for the purposes of fulfilling NEPA requirements. These analytical scenarios bracket the alternatives available for each fishery and are provided in Table 2-8.

Council Decision Tables for Each Fishery.....Section 2.5, page 90

These tables provide the decision templates for each fishery sector that the Council may wish to use in taking final action. These tables provide the Council with the full range of choices that are specific to each fishery to assist the Council in creating an EM program for each fishery sector.

Analysis of the Analytical Scenarios ..... Chapter 4, page 102

These scenarios were developed to help the reader understand the impact of choosing a certain management goal, an alternative, and options that generally support the management goal. The scenarios are meant to illustrate the range of choices available for management and the effect those choices have on the physical, biological and social environment.

Analysis of Individual Elements of the EM Program.....Appendix A

Some individual elements of the EM Program are given detailed analysis in Appendix A.

Executive Summary

Purpose and Needs

The following is the purpose and needs for the EM program.

> There is a need to adequately monitor the IFQ program for compliance in an economical and flexible manner while meeting the goals and objectives of national policies and standards, the Pacific Coast Groundfish FMP, the trawl rationalization program, and all applicable laws and acts including the Magnuson-Stevens Act (MSA) and Endangered Species Act (ESA). NMFS and the Council identified that EM may be a viable option to monitor IFQ fisheries for compliance- by serving a number of purposes as listed in the box below.

Objectives

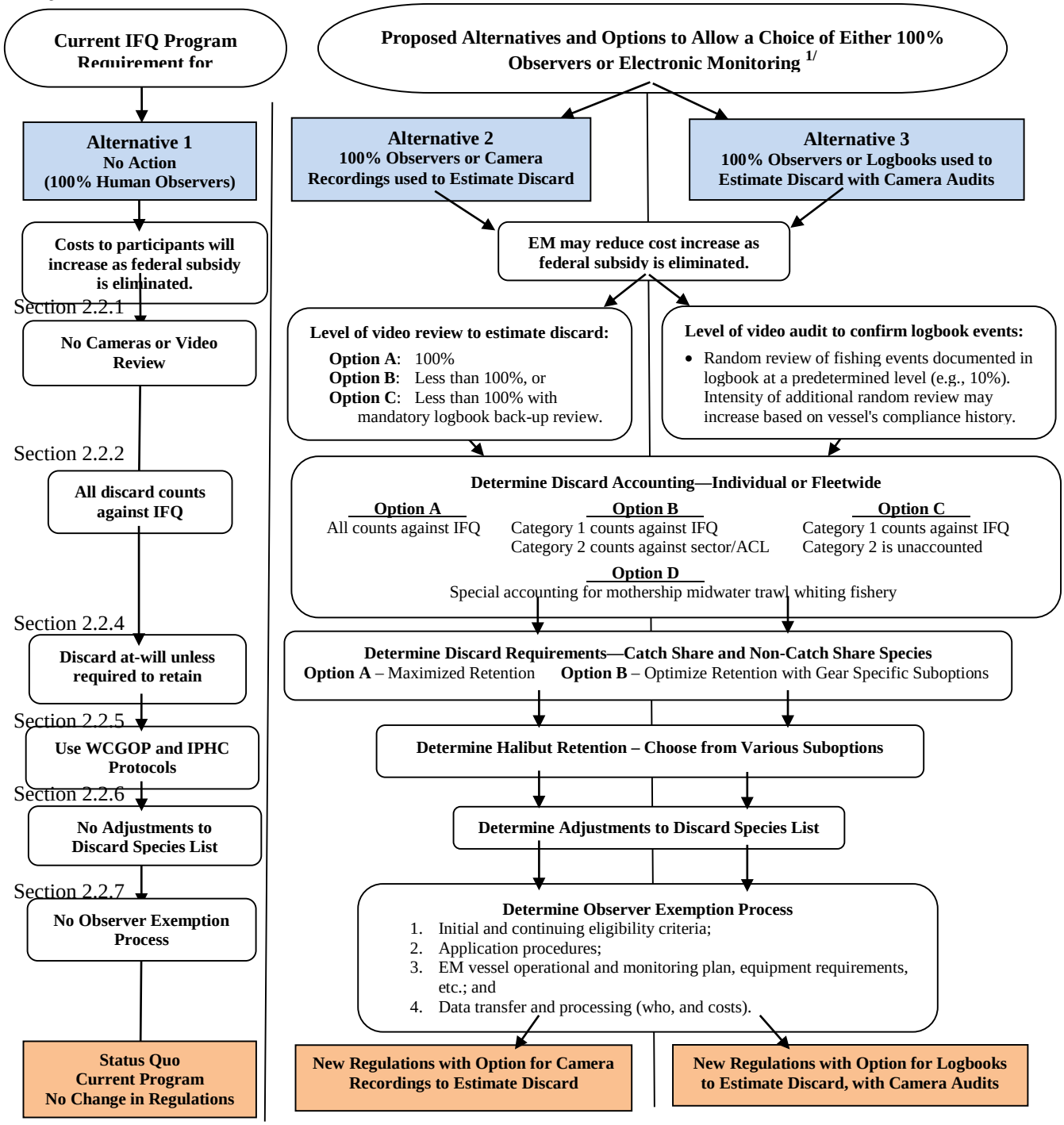
In addition to the goals and objectives of the Pacific Coast Groundfish FMP and trawl rationalization program, several objectives were adopted by the Council at the June 2013 meeting during the public scoping process to develop an EM program for trawl catch share program compliance monitoring:

1. reduce total fleet monitoring costs to levels sustainable for the fleet and agency;
2. reduce observer costs for vessels that have a relatively lower total revenue;
3. maintain monitoring capabilities in small ports;
4. increase national net economic value generated by the fishery;
5. decrease incentives for fishing in unsafe conditions;
6. use the technology most suitable and cost effective for any particular function in the monitoring system; AND
7. reduce the physical intrusiveness of the monitoring system by reducing observer presence; WHILE MEETING THE FOLLOWING CONSTRAINTS,
8. maintaining current individual accountability for catch and preserving equitable distribution of monitoring coverage among members of the fleet,
9. supporting the collection of biological information necessary for managing the fishery, for stock assessments, and to meet other needs for scientific data, with no degradation relative to pre-trawl catch share program standards
10. taking into account agency budgets and abilities to support any new policy,
11. maintaining capabilities for ACL management (e.g. for non-quota species), and
12. following an implementation path most optimal for the fishery.

The first seven items in the above list are direct regulatory objectives, i.e. reasons for considering EM. Items eight through twelve in this list are considerations, i.e. the Council would not be undertaking this action in order to achieve items eight through twelve but rather in pursuing the first seven objectives will be bounded by items eight through twelve.

Overview of Alternatives and Options

General overview of alternatives and decision process for implementing EM for all shorebased IFQ sectors.



1/ See Table 2-7 for further detail on each option and reference to appropriate section of text description.

Some of the Most Notable Considerations

The following is a summary of some of the more important considerations with respect to major decision points before the Council and cross references to sections in the analytical document that cover these issues in more detail.

Cost Issues

One of the main motivations for considering EM is concern about the costs of observers to fishermen. Cost issues are discussed in detail in Section 4.3.1. The following is a summary.

	Alt 1 – Observer Estimates	Alt 2 – Camera Estimates	Alt 3 – Logbook Estimates (Camera Validation)
Discard Data Capture and Reading Costs (May be a Mix of Private and Government Costs)			
Observers	Approx $400-$500/Day fishermen costs (less subsidies).	Observer costs for non-EM vessels may increase	
EM		Taking all costs into account, use of cameras may be less expensive.	
Cameras and Other Hardware • Purchase/Install. • Maintenance	N/A	Data From Shoreside Whiting EFPs **a/** $52/day ($132/day lease) $123/day **b/**	
Discard logbooks	N/A	N/A	$5/day based on BC hook-and-line logbook **a/**
Data Reporting/ Transfers	N/A	May be relatively inexpensive if carried out by catch monitors or vessel personnel already on site. From Shoreside Whiting EFPs = $13/day **a/**	
Video Reading **c/** • During Catch Handling	N/A	100% Review Likely Upper Bound **d/** Whtg **e/** - $25/day NonWhtg – $320/day Longline – $123/day Pot - $60/day	20% Review Likely Upper Bound **d/** Whtg - $12/day NonWhtg – $82/day Longline – $38/day Pot - $20/day
• Other Video Review		There will be more video to review during non-catch sorting time but the speed with which video review occurs will be much higher – particularly when there is no one present on the back deck.	
Private Paperwork Burden			
		Shoreside Whiting EFPs report industry project management costs as $11/day **a/**	
Develop and maintaining an IVMP	N/A		
Make Required Declarations for EM	N/A		
Fill Out Discard Logs	N/A	N/A	

Cooperate In Data Transfer Protocols	N/A		
Government Program Costs			
Program Development	No new costs		Comparable to Alt 2
Program Administration	Costs of running one observer program for the trawl sector.	Increase in overhead as a result of managing two monitoring systems and resulting data flows (an observer compliance monitoring program and an EM program) and a scientific observer program.	
Data System Design and Maintenance (including data storage costs and responding to data requests)			

N/A = not applicable
a/ Lowman, D.M., R. Fisher, MC. Holliday, SA McTee, and S. Stebbins. 2013. *Fishery Monitoring Roadmap.*
b/ Based on field service and travel expenses reported in Lowman et. al. 2013.
c/ Decisions on who will pay for video reading may be important with respect to program performance and have yet to be determined. Some of the decision may rest on legal issues. If industry pays for review then there will be incentives to develop technologies to speed review time and to ensure that video rates can remain low. If government pays for review, additional monitoring burden will be transferred from the private to governing sector.
d/ These are the costs of reading video for the purpose of measuring both retained and discarded catch. If only discarded catch will be measured, the costs will likely be lower.
e/ Shoreside Whiting EFPs report data service and review costs of $45 (as per Lowman et. al., 2013).

Lowman et. al. (2013) report total EM monitoring costs for the shoreside IFQ fishery in 2011 at $514 per day as compared to a total costs per day under the shoreside whiting EFPs of $429 per day. Both of these figures include VMS expenses and both private and government costs. Total costs in the BC hook-and-line EM system were $205 per day with an equipment cost of $1/day (Lowman et. al. 2013). In their PSMFC funded study of EM and observer program costs, Archipelago Marine Research (a provider of EM and observer services in various US and foreign fisheries) states that, taking into account all program costs including private and public, "we believe the cost of an EM program to be less than half the cost of an observer program" (McEldery et. al. 2014, p. 43, http://www.pcouncil.org/wp-content/uploads/F2c_SUP_PubCom_ELECTRICVERSION_JUNE2014BB.pdf). They note that for the whiting fishery in particular the costs would be much less than for an observer program but go on to also note that the EM program is a single purpose program whereas observers perform much broader monitoring functions. They conclude "the choice of monitoring method comes down to a decision of whether the additional cost of an observer program is justified for the additional data collection opportunity."

Selecting Fisheries for EM –

Partial Implementation

As the scope of the EM program increases, average costs of the EM program may decline while the average costs for observers may increase and *visa versa*. Partial implementation of EM is likely to have a lesser impact on observer provider fees than implementation across all sectors. At the same time, with partial implementation those in fisheries that are not included under the EM program will not have the option of switching to EM to control monitoring costs.

Considerations of Appropriateness of EM by Fishery

Whiting Fishery

1. Discards are minimal compared to volume landed (See Appendix A, Table 6-2).
1. Cameras have already been used extensively for monitoring in this fishery, under the EFP program of the last decade.
    a. The whiting camera monitoring program was about to convert from EFPs to regulations when the trawl rationalization, requiring 100 percent observer coverage, was implemented.
    b. During the previous EFP program, there was no individual vessel incentive to discard bycatch species and during the trawl rationalization program observers have been present to monitor fish handling.
2. Opportunities for discarding are minimal
    a. For vessels delivering to the mothership, catch never comes aboard the catcher vessel. Bleeding and spillage are the main sources of discards.
    b. For vessels delivery shoreside, discarding of bycatch species would involve the use of restricted hatch openings and slow dumping of the net to allow crew to pull non-target species of management consequence to the individual vessel (e.g. halibut or non-whiting IFQ species bycatch).
3. Issues –
    a. Can cameras estimate spillage and dumping as well as observers?
    b. To what degree might environment conditions (e.g. lighting) interfere with camera images?
    c. Whiting vessels may be less in need of economic relief than vessels in other trawl sector fisheries (see Table 4-17 through Table 4-19).

Nonwhiting Trawl Fishery

2. Discarding is typically more extensive than for the whiting fishery (See Appendix A, Table 6-1 and Table 6-5)
3. Cameras have not been used for monitoring in this fishery but have been partially tested in studies conducted by PSMFC.
4. Opportunities for discarding are more substantial than in the whiting fishery; fish are generally sorted before delivery.
5. Issues –
    a. Can cameras estimate spillage and dumping as well as observers?
    b. Can cameras speciate and quantify fish brought on board and discarded?
        Video from the PSMFC study showed significant lighting and sorting location challenges that might be overcome by handling fish in a light controlled setting, e.g. discard chutes. See Section Appendix Section 2.2.
    c. To what degree might fluctuating environment conditions (e.g. lighting, camera blockage by crew) interfere with camera images (See Appendix A, Section 2.2. Figure 1)?

d. If camera resolutions are limited such that all or most finfish species must be brought to shore, the volume of fish brought to shore may be high (See Appendix A, Table 6-1 and Table 6-5).
    i. Retained nonmarketable fish take up hold space.
    ii. Some retained species (e.g. dogfish) may require separation to preserve quality of other fish.
    iii. There may be vessel and shoreside handling costs.
    iv. There may be waste disposal challenges shoreside.
e. Nonwhiting trawl vessels may be more in need of economic relief than vessels in other trawl sector fisheries (see Table 4-17 through Table 4-19).

Fixed Gear Fishery

1. Discarding is typically more extensive than for the whiting fishery (See Appendix A, See Appendix A, Table 6-1 and Table 6-5).
2. Cameras have not been used for monitoring in this fishery but have been partially tested in studies conducted by PSMFC.
3. Fish handling in the fixed gear fishery is very different than in the trawl fishery providing different opportunities and challenges.
    a. For longline vessels fish are handled individually. Individual handling provides a focused point of contact for camera monitoring but also means there is some handling and opportunity to discard each individual fish at the rail.
    b. For pot vessels, fish are not handled individually at the rail.
4. Issues –
    a. To what degree might environment conditions (e.g. lighting) interfere with camera images?
    b. Can cameras speciate and quantify fish brought on board and discarded?
        Video from the PSMFC study showed that further study and development of fish handling protocols may improve species identification and weight estimations of the discards (See Section 4.2.1).
    f. If camera resolutions are limited such that all or most finfish species must be brought to shore, the volume of fish brought to shore may be high (See Appendix A, Tables 36 and 37).
        i. Retained nonmarketable fish take up hold space.
        ii. Some retained species (e.g. dogfish) may require separation to preserve quality of other fish.
        iii. There may be vessel and shoreside handling costs.
        iv. There may be waste disposal challenges shoreside.
    c. Fixed gear vessels appear to have somewhat better economic viability than nonwhiting vessels but less net revenue than whiting vessels (see Table 4-17 through Table 4-19).

Risk and Percent Video Review

Risks of moving to EM are associated with the potential for under-reporting of discards (adequate means are available for assessing landings of all retained fish).

Underreporting can compromise achievement of conservation objectives by allowing

- Harvest mortality in excess of ACLs, and
- Bias in fishery dependent data affecting stock assessments.

Underreporting can compromise achievement of socio-economic objectives by allowing

- Harvest mortality in excess of sector allocations, and
- Compromising policies based on individual accountability and fairness.

The primary question associated with EM is how cameras perform relative to observers with respect to

- Measurement of discards: identification and quantification of any trawl rationalization program species for which discard is allowed, and
- Compliance with discard regulations: fishermen compliance with discard restrictions and discard reporting requirements.

Measurement Considerations

Measurement risk pertains only to those IFQ species for which discarding is allowed.

Under Alternative 1, the data on all discards will depend on accurate measurement by observers.
Under Alternative 2, the data on all discards will depend on accurate measurement by cameras.
Under Alternative 3, the data on all discards will depend on accurate measurement by fishermen

If fishermen are completely compliant with the program, under Alternative 2 the question of risk pertains to measurement abilities of the camera system relative to observers, and under Alternative 3 the question of risk pertains measurement abilities of crew members relative to observers. See Section 4.2.1.2 for a summary of results from the PSMFC study of the performance of cameras as compared to observers.

Cameras ability to measure is a factor in compliance considerations.

Compliance Considerations

Under Alternative 1, degree of compliance risk is associated with observer ability to detect any attempts to discard catch that has not been recorded by an observer.
Under Alternative 2, degree of compliance risk is associated with the camera systems ability to

- Capture all discard events
- Determine whether any a discard event is of a permissible discard species.

Under Alternative 3, degree of compliance risks is associated with the camera systems ability to

- Capture all discard events
- Determine whether any a discard event is of a permissible discard species.
- Quantify the species discarded for purpose of validating the vessel logbooks.

Note that under Alternative 2 the ability for the camera to quantify is the basis for the discard estimate while under Alternative 3 the camera's ability to quantify is for the purpose of compliance monitoring. The following are some of the main considerations.

1. Which provides better compliance monitoring, cameras or observers?
    a. Cameras are always on - observers go below deck
    b. Cameras frames are fixed - observers can show up at unexpected places and time.
    c. Camera images can be obscured due to various conditions- observers can be looking the other way (See Appendix A, Section 2.2., Figure 6-1 for the PSMFC study of relative performance).
2. How important is compliance monitoring to program compliance?
    a. Compliance monitoring is one of six factors influencing compliance (see page 105)
        i. Economic return
        ii. Enforcement/Compliance Monitoring
        iii. Legitimacy of the Management Regime
        iv. Fairness of Outcomes
        v. Behavior of Others
        vi. Personal Norms
    b. In addition to direct impact, the Enforcement/Compliance Monitoring factor impacts compliance indirectly through
        i. Economic returns (expectation of getting caught and size of penalties)
        ii. Behavior of others
    c. In most fisheries enforcement contact rates are one percent or less but despite penalties that might be considered inadequate to ensure compliance based on economic incentives alone fisherman compliance is reported to be between 50 and 90 percent—a compliance rate attributed to moral standards.
3. What are the negative effects of non-compliance
    a. Noncompliance can compound leading to a noncompliance behavioral norm.
    b. Those who gain economic advantage through non-compliance may be more likely to accumulate more quota (because the quota will be more valuable to them).
    c. Risks to achievement of conservation and socio-economic objectives, including perceptions of program fairness.

Risk Sensitivity

Different species and species groups will have different degrees of sensitivity to inaccuracies in the identification or quantification of discards. For example, several hundred tons of underreported discards for whiting would have very little conservation importance while a fraction of a ton of underreporting for yelloweye may have important management implications. Degree of risk will depend on what species or types of fish (e.g. all roundfish) can be discarded and ability of the camera to differentiate those species from other species.

Percent Video Review (Section 2.2.1.1)

The percent video review entails different types of risk under Alternative 2 (cameras used for estimation) as compared to Alternative 3 (cameras used for logbook validation). The greatest concerns with discard monitoring may pertain to the rare event encounters with overfished species. Information on the PSFMC study of detection of rare events is provided in Appendix A, Section 2.2.2. This study shows relatively high review rates may be required to capture rare events; however, rare events can still be missed at a higher level of review. PSMFC simulated review rates of 10, 25 and 50% on a fleetwide level (PSMFC 2013, See Appendix A, Figure 6-2). "For each simulated sampling of the observer data, the number of trips where rebuilding rockfish species were detected was summarized. For yelloweye rockfish, discards occurred on two trips. Of the 1,000 samples (simulation trials) taken at a nominal 10% sample rate, close to 80% (close to 800 of the samples) detected no yelloweye discards. In other words, for approximately 800 of the 1,000 times we sampled, the hauls from 2 trips with yelloweye rockfish discards were not included in the sample and those discards were not detected. In the case of Boccacio, there were 5 trips with discards, all five hauls with discard were never detected within a single simulation trial under the nominal 10% sample rate."

There also may be concern as to whether fishermen will attempt to discard more commonly encountered species (e.g. small sized or unmarketable sablefish or other target species for which an individual fishermen's quota pound holdings are limited).

Under Alternative 2, the video images will be used to estimate an individual vessels total catch. Under Section 2.2.1.1., Alternative 2, Option B, video images would be subsampled and the results expanded to cover an entire haul or trip. With such a subsampling approach, the expansion of a rare event may overstate a vessels actual level of encounter. A low sampling rate may be less tolerable when the burden falls on a single vessel (as would occur under the catch share program) than when the estimates are averaged out over the fleet as a whole (as occurred for groundfish previous to the catch share program).

Under Alternative 3, the video images are used to validate fishermen's logs. All rare events are detected by the fisherman and the level of video review needed is that which is sufficient to ensure compliance with logbook reporting requirements. Compliance will be a function of all six of the compliance factors discussed in a previous section.

Discard Choices

Discard Accounting (Section 2.2.2)

Discard accounting deals with different types of discards.

Options

Options for discard accounting by category.

Discard categories	**Option A**	**Option B**	**Option C**	**Option D** – MS Whiting Only
Category 1 – fish brought onboard and discarded	One discard category Monitor/Estimate with EM – Count Against IFQ	Monitor/Estimate with EM – Count Against IFQ	Monitor/Estimate with EM – Count Against IFQ	One discard category Deduct Anticipated Discards Preseason based on Previous Years Discard Rates from Observer Coverage **c/**
Category 2 – fish not brought onboard or brought onboard and consumed **a/b/**		Estimate with Observer Coverage **c/** Count Against Trawl Allocation or ACL	Do Not Count	

a/ Includes: dropped off gear, floating in water, estimates for lost gear, and fish consumed/used as bait.
b/ Consumed includes being eaten by crew or used as bait.
c/ Relies on data from biological observers deployed by the WCGOP.

Pros and Cons

Option A

- Reflects current practices.

Option B

- Reduces video review costs by reducing events to be reviewed and eliminating some of the more difficult events to estimate.
- Would decrease scope of individual incentive to avoid discard.

Option C

- Same as B but would eliminate all catch accounting for category 2 discards (may not be compliant with the MSA)

Option D – Functions similar to Option B but for whiting only.

Discard and Retention Requirements (Section 2.2.4)

Options

Option A: Maximized retention

Must Retain	May Discard	Must discard
• If **not** sorting at sea: prohibited species (halibut, salmon, and Dungeness crab) • all other catch except that listed in the following columns	• minor operational amounts of catch if the discard is accounted for • for safety reasons • fish lost due to a ripped trawl net or a zipper accidentally opened, or • fish falling off hook. • fish washed out of the trawl net or is overflowing. • mud, sponges, coral, inverts, and inorganic material not generally retained for sale or use.	• if sorting at sea: prohibited species (halibut, salmon, and Dungeness crab)

All discards must be enumerated and reported

Option B: Optimized retention

Same as Option A with the addition of gear specific allowances for additional discarding. The following suboption are not mutually exclusive.

Optimized retention suboptions would allow discard for the indicated species categories.

	Options				
Species Categories	a	b	c	d	e
Groundfish					
Catch Share Species					
Flatfish	Discard				
Lingcod and Sablefish		Discard			
Non-Rockfish			Discard		
Any Species Verifiable With EM				Discard	
Non Catch Share Species					
Non-Rockfish			Discard		
Any Species Verifiable With EM				Discard	
Non-groundfish					
Any Species Verifiable With EM				Discard	
All non-groundfish species					Discard

Pros and Cons

Greater discarding

- Increases the reliance on camera images for measurement of catch – increasing risk of accurate measurement as compared to retention and measurement shoreside.
- Increases the video review costs (due to time required to measure discard events – speciate and quantify), and
- Decreases cost of handling and disposal of unmarketable or less valuable catch.

The option selected here sets a starting point for the discards allowed under the EM Program. It is likely that any option selected by the Council will be on the basis of a determination that any allowed discards can be adequately speciated and quantified with EM, as specified in Option B, Suboption d. Option B, Suboption d might set a framework which would allow modification of the allowed discards as it is determined that EM can be more readily used to speciate and quantify additional species (see following section). Suboption d would still require the specification of a list of discard species at some point during the implementation process.

Adjusting the Discard Species List (Section 2.2.6)

Options

Process for adjusting the list of permissible discards

Option A: NMFS to make determination and provide list to fishers through the NMFS approval process to use EM.
Option B: Use Council process for changing species list using routine management measures if initial list is fully analyzed for environmental impacts (e.g., use groundfish specification process, or some other routine management measure).
Option C: Set initial lists in regulation and change at some future point through Council process with full proposed/final rule making.

Pros and Cons

These options explore the management system's ability to specify the species list based on a performance standard that would be evaluated at the time of initial implementation and applied to modify the list of permissible discards as the program moves forward and technologies develop. The development of a performance standard might be explored during the implementation process. Application of the performance standard is likely to entail some judgment as to the clarity of video images for particular species and the sensitivity of the species to unreported discards.

Challenges to Options A and B include the development of an objectively applicable performance standard, development of a NEPA analysis that would be adequate to allow routine action without further analysis and the effect of the change on the vessel accounting system and development of fleetwide mortality estimates for inseason management.

Option A would leave application of the performance standard to NMFS. There would be no Council involvement in the discretionary determinations of discardable species, except to the degree that NMFS decides to consult with the Council. This option would have the least process burden and the least opportunity for public involvement at the time the change to the list is made.

Option B would specify adjustments to the list of species as a routine management action which could be done inseason or as part of the biennial specification process. Additional analysis would likely be required to specify the list of species which could be modified through a routine action.

Routine actions might entail lessor administrative burden but also less opportunity for public involvement that the full rulemaking process.

Option C involves a full standard rule making process to modify the list of species for which discard is required and provides the greatest opportunity for public involvement at the time the change to the list is made.

Additional legal advice may be needed on the viability of Options A and B and the types of analysis necessary to support them.

Observer Exemption Process (Section 2.2.7.1)

There may be a subtle but important legal issue behind the question of whether vessels apply for

- An exemption from having to carry an observer (Approach 1), or
- Permission to use EM in place of the observer (Approach 2).

Under Approach 1, observer coverage would remain mandatory, participants would need to initially apply to NMFS for an exemption to use EM in lieu of an observer and then demonstrate they are complying with the standards and practices to continue using EM. If while operating under the exception a vessel was found to have, for example, defeated some aspect of the EM technology or consistently underreported discards in its logs, the vessel could lose its exemption from the observer requirement. The loss of that privilege could be an administrative matter and not involve an enforcement action.

Under Approach 2, vessels would be required to use either EM or an observer and would apply to use EM though a standard administrative process. Limitation of a vessels ability to participate in the EM program would require an enforcement action.

EM Declarations (Section 2.2.7.6)

Options

The following are options for vessel declaration pertaining to intent to use EM.

Option A - Annual Declaration – vessels declare their intent to use either EM or Observers for the coming year.
Option B - Annual Declaration with Intermittent Use – vessels declare a schedule for periods of EM and periods of observer coverage for coming year. Periods might be monthly or quarterly.
Option C - Declare Until Changed with Some Limit on Frequency
Option D - Declare Until Changed with No Limit on Frequency

For Options A, B, or C, exceptions might be made to allow use of an observer if EM equipment fails or to use EM if an observer is not available.

Pros and Cons

- The more advance planning that can be done, the lower will be both government costs and the costs of observer providers. (Options A and B allow the most advanced planning)
- Advance planning reduces vessel operational flexibility to respond to unpredictable circumstances. (Options C and D provide the most operational flexibility)

Party Responsible for Video Review (Section 2.2.8.4)

Options

There are a variety of options for designating who pays for the video review.

Option A: NMFS
Option B: Pacific States Marine Fisheries Commission
Option C: EM Provider
Option D: Third Party

Pros and Cons

The decision on who does the review constrains who can pay for the review.

Option A would not allow industry to pay
Options B through D potentially allow industry to pay for video review.

Industry payment for video review would

- Provide more incentives for private research to develop and adopt more efficient video technologies
- Provide a compliance incentive (if non-compliance resulted in review of greater percentage of video at the individual vessel's expense).

Other Details – Not Covered In This Summary (Options Provided)

Halibut Discard Mortality Estimation (Section 2.2.5)

The current system relies on observers to document halibut viability prior to discard. These assessments are used to determine halibut mortality. Under EM, some other method would be applied to the vessel.

Midwater trawl whiting:
All halibut would be retained and considered dead (100% mortality) – assuming the no sorting regulations continue.

Bottom trawl and non-whiting midwater trawl gear

Option A: Use IPHC mortality rate for specific gear type: 90% mortality if discarded.
Option B: WCGOP scientific observations (assumed 20-30% coverage) is applied to fleet
Option C: IPHC exemption to allow full retention (need to examine the feasibility of this option)
Option D: Captain and crew provide assessment (training would be required)
Option E: Use an appropriate EM viability assessment (currently conducting study, need IPHC approval)
Option F: Use vessel specific mortality rate (update rates periodically through application of third-party observer rates on non-EM vessels or through WCGOP random observations of EM vessels)

Fixed gear

Option A: Use WCGOP mortality rate for specific gear type: 16% mortality if discarded from longline; 18% mortality rate if discarded from pots.
Option B - **Option F**: same as bottom trawl and non-whiting midwater trawl gear

Individual Vessel Monitoring Plan (IVMP) Expiration (Section 2.2.7.5)

A vessel would be required to have an approved IVMP to use EM.

Option A. No Expiration unless modifications are made
Option B. Annual Expiration or if modifications are made

Data Transfer Processes (Section 2.2.8.2)

There are several options for designating the party responsible for transferring data from the vessels to the video reviewer. The options are not mutually exclusive:

Option A: PSMFC
Option B: EM Provider
Option C: Shoreside catch monitor
Option D: Vessel operator/Crew
Option E: Third Party (hired by processor, port, or fisher)

Payment for Biological Observers (Section 2.2.8.5)

A funding source to continue the biological observation task under an EM program should be identified to support the WCGOP efforts. Three options were developed:

Option A: Government funded, same as pre IFQ
Option B: Industry Funded
Option C: Combination of both Government and Industry

Spatial Variation for High Bycatch Areas (Section 2.2.10)

Monitoring requirements might vary in areas where there is a higher probability of bycatch of overfished species.

Option A: No special provisions
Option B: Higher bycatch areas require observers. (EM elsewhere)
Option C: Higher bycatch areas require higher levels of video review.

Implementation (Section 2.2.11)

Implementation could be organized in a number of ways.

Option A. None, implement all fisheries at one time through regulatory implementation
Option B. Use EFPs to test final Council policy, prior to full regulatory implementation.
Option C. Phase in by sector/gear.
Option D. Phase in retention options over time.
Option E. Use EFPs to inform Council policy decision making prior to regulatory development
Options B-E are not mutually exclusive.

Analysis of an Electronic Monitoring Program for the Pacific Coast Limited Entry Trawl Groundfish Fishery Catch Shares Program

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GLOSSARY

Electronic Technology(ies) – Any electronic tool used to support catch monitoring efforts both on shore and at sea, including electronic reporting (e.g., e-logbooks, tablets, and other input devices) and electronic monitoring (Vessel Monitoring Systems, electronic cameras, and sensors on-board fishing vessels).

Electronic Monitoring (EM) – The use of technologies – such as vessel monitoring systems or video cameras – to passively monitor fishing operations through observing or tracking. Video monitoring is often referred to as EM.

Electronic Reporting (ER) – The use of technologies – such as smart phones, computers and tablets – to record, transmit, receive, and store fishery data.

Fishery-dependent Data Collection Program - Data collected in association with commercial, recreational or subsistence/customary fish harvesting or subsequent processing activities or operations, as opposed to data collected via means independent of fishing operations, such as from research vessel survey cruises or remote sensing devices.

Full Retention – A type of fishery where total catch is retained and brought to shore, without discards. This is a generic definition, used in the Policy Directive for illustrative purposes only. There are multiple stages in the fishing process where intentional and unintentional discards can occur. Such variations (e.g., maximum retention, operational discards, prohibited species catch, etc.) require specific definition in each fishery for regulatory compliance and/or enforcement purposes.

Maximized Retention – A type of fishery where total catch is retained and brought to shore, except for minor operational amounts of catch lost by a catcher vessel. A vessel is generally required to retain all catch share species, non-catch share groundfish species, non-groundfish species (Non-FMP and not prohibited species).

Optimized Retention - A vessel is generally required to retain all catch share species and may be allowed to discard certain species.

CHAPTER 1 INTRODUCTION

The groundfish fishery in the Exclusive Economic Zone (EEZ), offshore waters between 3 and 200 nautical miles (nm), off the coasts of Washington, Oregon, and California (WOC) is managed under the Pacific Coast Groundfish Fishery Management Plan (FMP). The nearshore areas are managed by the states and tribes. The Pacific Coast Groundfish FMP was prepared by the Pacific Fishery Management Council (Council) under the authority of the Magnuson Fishery Conservation and Management Act (subsequently amended and renamed the Magnuson-Stevens Fishery Conservation and Management Act). The FMP has been in effect since 1982.

Actions taken to amend FMPs or to implement regulations to govern the groundfish fishery must meet the requirements of several Federal laws, regulations, and executive orders. In addition to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), these Federal laws, regulations, and executive orders include: National Environmental Policy Act (NEPA), Regulatory Flexibility Act (RFA), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Coastal Zone Management Act (CZMA), Paperwork Reduction Act (PRA), Executive Orders (E.O.) 12866, 12898, 13132, and 13175, and the Migratory Bird Treaty Act.

NEPA regulations require that NEPA analysis documents be combined with other agency documents to reduce duplication and paperwork (40 CFR§§1506.4). Therefore, this EA will ultimately become a combined regulatory document to be used for compliance with not only NEPA, but also E.O. 12866, RFA, and other applicable laws. NEPA, E.O. 12866, and the RFA require a description of the purpose and need for the proposed action as well as a description of alternative actions that may address the problem.

- Chapter One describes the purpose and need of the proposed action.
- Chapter Two describes a reasonable range of alternative management actions that may be taken to meet the proposed need.
- Chapter Three contains a description of the socioeconomic, biological, and physical characteristics of the affected environment.
- Chapter Four examines changes in the socioeconomic, biological, and physical environments resulting from the alternative management actions.
- Chapter Five addresses consistency with the FMP and other applicable laws.
- Chapter Six is the regulatory impact review and regulatory flexibility analysis.
- Chapter Seven is a list of individuals who help prepare this document.
- Chapter Eight provides a list of references for this document.

1.1 Summary of the Proposed Action

The proposed action is to create the regulatory framework for an electronic monitoring (EM) program that could be a less costly and more efficient alternative to 100 percent onboard human observer coverage to monitor fisheries under the shorebased IFQ program for compliance with IFQ and groundfish allocations (See Appendix E of the Pacific Coast Groundfish FMP). The EM program would include a video monitoring system for catch accounting that is adequate to maintain the integrity of the IFQ program and ensure that resource management objectives are being met. The proposed EM program would monitor vessels for compliance with individual fishing quotas (IFQ), individual bycatch quotas (IBQ), or groundfish allocations assigned to quota share (QS) permit holders. The program would be voluntary and includes eligibility requirements to use EM, individual vessel monitoring plans, equipment and installation requirements for a video monitoring system, video data processing protocols, and compliance measures. The requirement for 100 percent observation of trips would be maintained; therefore, vessels would be required to have either a human observer or an EM system to operate in the shorebased IFQ program.

This action is intended to implement a voluntary program that would allow participants under the IFQ program to use EM rather than human observers via long-term Federal regulations. If approved, the action is intended to be implemented in 2016.

1.2 Purpose and Need for the Proposed Action

There is a need to adequately monitor the IFQ program for compliance in an economical and flexible manner while meeting the goals and objectives of national policies and standards, the Pacific Coast Groundfish FMP, the trawl rationalization program, and all applicable laws and acts including the Magnuson-Stevens Act (MSA) and Endangered Species Act (ESA). NMFS and the Council identified that EM may be a viable option to monitor IFQ fisheries for compliance- by serving a number of purposes as listed in the box below..

The purpose of the proposed action is to meet the following regulatory objectives:

1. Reduce total fleet monitoring costs to levels sustainable for the fleet and agency;
2. Reduce observer costs for vessels that have a relatively lower total revenue;
3. Maintain monitoring capabilities in small ports;
4. Increase national net economic value generated by the fishery;
5. Decrease incentives for fishing in unsafe conditions;
6. Use the technology most suitable and cost effective for any particular function in the monitoring system; and
7. Reduce the physical intrusiveness of the monitoring system by reducing observer presence.

1.3 Decisions to be Made

From the information in this document, the Council may refine alternatives, assign focused analysis, and select any preliminary preferred alternatives that may be appropriate for the different fishery sectors. The Council is currently scheduled to make a final decision on a regulatory program recommendation to the NMFS at the September, 2014 Council meeting. At that time, the Council may make final decisions on individual fishery sectors, as opposed to needing to make a final decision for all sectors simultaneously.

1.4 Management of the Pacific Coast Groundfish Fishery and the Trawl Rationalization Program

1.4.1 History of Management

The west coast groundfish trawl fishery is jointly managed by state and Federal authorities under the MSA, which was passed in 1976 to "Americanize" U.S. fisheries. In addition to establishing eight regional fishery management councils, the MSA extended U.S. fishery management authority in territorial waters from 12 miles out to 200 miles from the shore. This created the EEZ, which, including U.S. Federal territorial waters, extends from 3 to 200 miles off shore. For the west coast (California, Oregon, and Washington), the Council coordinates Federal management of fisheries in the Federal EEZ with state management of fisheries occurring in state waters (i.e., between the shoreline and 3 miles offshore).

The groundfish fishery as a whole comprises several different sectors, defined by fishing gear, species targeted, and regulatory context. The list of current trawl target species includes flatfish, roundfish, thornyheads, and a few species of rockfish. Primary flatfish target species include petrale sole and Dover sole. Roundfish target species include Pacific whiting, Pacific cod, and sablefish. Some rockfish species, especially Pacific ocean perch and widow rockfish, were important trawl targets until the mid 1990s. However, seven rockfish species are currently declared overfished pursuant to the MSA. The need to rebuild these stocks to a healthy size has

led to a variety of harvest constraints on groundfish fisheries, and rockfish are generally no longer a target of these fisheries.

The groundfish trawl fishery is subject to a Federal license limitation program (referred to as LE), implemented in 1992; currently there are 178 extant groundfish LE trawl permits. For purposes of analysis in this document, the LE trawl fishery is divided into the shoreside and at-sea midwater trawl fishery (catcher vessels only and does not include at-sea motherships or catcher/processors), mid-water non-whiting trawl fishery, fixed gear fishery (includes longline with hook-and-lines and longline with pots), and bottom trawl.

At its November 2008 meeting, the Council recommended trawl rationalization through an IFQ program for the shoreside fishery and co-ops for the whiting mothership and catcher-processor sectors (hereafter referred to as Shoreside IFQ program). Following the November 2008 meeting, the Council worked on critical trailing actions needed to complete Amendment 20. These actions covered topics such as eligibility to own IFQs, accumulation limits, a set-aside for adaptive management, and miscellaneous clarifications. The Council completed the critical trailing actions at its June 2009 meeting and adopted the related FMP amendment language. The initial allocation of canary quota shares was modified at the November 2009 Council meeting. The Council's final recommendations on Amendments 20 and 21 were submitted to the Secretary of Commerce for approval on May 7, 2010. On August 9, 2010, NMFS issued a letter approving the bulk of both Amendments 20 and 21. The final regulations to initiate implementation of Amendments 20 and 21 were published in the *Federal Register* on October 1, 2010 (the initial allocation rule). A proposed rule for a separate set of regulations required for implementation (the components rule) was published on August 31, 2010. The components rule was finalized December 2010 and implemented January 11, 2011. Since implementation, the Council has recommended a number of adjustments to the trawl catch share program (see Trailing Amendments and Actions on Trawl Rationalization [Catch Shares]).

The Shoreside IFQ program for the limited entry bottom trawl fleet and two distinct cooperative programs for the at-sea hake mothership and catcher-processor trawl fleets. The bottom trawl fleets traditionally operates from the U.S./Canadian border to Morro Bay, California. The at-sea hake fleet operates off the coasts of Oregon and Washington. Observer data is used to account for any IFQ discarded catch, including the mandatory discarding of Pacific halibut. Observer data, in combination with landings data, enable fishermen to track their individual fishing quotas and allow managers to monitor the progress of the fishery. The program requires that each vessel acquire quota pounds (QP) to cover its catch (including discards) of nearly all groundfish species.[1] Proper functioning of the program requires some form of at-sea monitoring to ensure that discards are enumerated for each vessel. The catch share program specified that this monitoring function be achieved through 100% at-sea observer coverage (compliance monitoring).

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

1 Exceptions were made for some species rarely caught in the trawl groundfish fishery.

Catch delivered to shore-based processors (IFQ):

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

Catch processed at-sea (Coop Program):

- At-sea motherships, mothership catcher vessels, and catcher-processors: Midwater trawl nets are used to catch Pacific hake. Catcher vessels deliver unsorted catch to a mothership. The catch is sorted and processed aboard the mothership. Catcher-processors catch and process at-sea.

1.5 WCGOP Scientific Observations

The NMFS Northwest Fishery Science Center Fisheries Observation Science Program collects and analyzes critical fisheries data from U.S. West Coast fishing vessels. Independent field biologists known as observers are deployed aboard working fishing boats to collect this scientific data. While at sea, observers collect a variety of data on fishing operations, catch composition, and protected resources. They also collect biological samples from the catch. Staff provide logistical and scientific support, ensure data quality, and train observers. The scientists also produce a variety of data products and reports to support fisheries management and the NOAA mission. Fishery scientists and managers depend on observer data and analysis for stock assessments, management decisions, in-season quota tracking, and scientific research.

1.5.1 **Observer Programs**

There are currently two Federal observer programs being operated by the NMFS Northwest Fishery Science Center in the Pacific coast groundfish fishery: Shorebased IFQ Program and the WCGOP.

These two programs are very different from each other particularly in how they are funded, the type of sampling and fishery data that are used to derive total catch, and availability of data for inseason management. Two types of funding mechanisms are currently used to fund observers: federally funded observers and third-party or “pay-as-you-go” observers. The WCGOP is federally funded and currently provides observer coverage in the LE and open access nonwhiting fisheries. Federal funds are used to run the program infrastructure (training, debriefing, and data management) and to hire, equip, insure, and transport observers. Third party providers are used to observe fishing activity under the Shorebased IFQ program and are funded by the fishery participant directly to the third party provider.

1.5.1.1 West Coast Groundfish Observer Program

The WCGOP is a year-round program that provides observers for all of the commercial groundfish fisheries . Because monitoring of the Pacific whiting shoreside sector has been carried out under EFPs, WCGOP observers have not been used to provide coverage for that sector. All WCGOP sampling protocols and coverage strategies are defined by NMFS. Because there are few observers relative to the number of vessels in the groundfish fishery, observer sampling coverage has focused on obtaining bycatch data at sea that can be combined with state fish ticket data to derive bycatch ratios for different fishing areas and target fishing strategies. Vessel logbook data are used to estimate fleetwide fishing effort. Using observer, fish ticket, and logbook data, the fishery is modeled to derive an estimate of total catch by species. Due to the delayed availability of fish ticket and logbook data, and the time needed to process observer data, the final analysis of estimated total catch by species is typically not finalized until well over one year after the fishing year has ended.

Observer coverage goals for the WCGOP are detailed in a coverage plan (NMFS 2006a). Observers initially covered about 10 percent of the west coast LE trawl fleet effort, selected via a stratified random sample. Trawl fleet coverage has since increased to about 25 percent and has also been expanded to include the LE fixed-gear and open access vessels.

1.5.1.2 IFQ Fisheries Observer Program

Third party providers are used to secure observers for IFQ fishing trips. These observers are trained in the same manner as those observers in the WCOP. The NMFS-permitted observer providers collect the fees directly from the vessels, recruit qualified individuals, provide insurance and benefits to the observers, deploy the observers, and ensure that the observer data are delivered to NMFS.

The IFQ Program requires 100% at-sea observer coverage, as all catch of IFQ species/species groups must be accounted for. The observer data is used to account for any IFQ discard, including the mandatory discarding of Pacific halibut. The observer data, in combination with landings data, will enable the fishermen to track their individual quotas and allow managers to monitor the progress of the fishery. Because both the discarded and the retained weights are estimates; the observed estimates of total catch contain some uncertainty.

Vessels that require observer coverage are:

- All whiting and non-whiting groundfish trawl and non-trawl vessels.
- All motherships participating in the at-sea whiting fishery.
- All mothership catcher-vessels participating in the at-sea whiting fishery.
- All catcher processors participating in the at-sea whiting fishery.

Under the IFQ program both observers (at sea) and catch monitors (at shoreside facilities) are used to monitor total catch. Observers are highly trained biologists that work independently aboard vessels to quantify total catch. They estimate bycatch, collect biological samples, and monitor for fishery interactions with marine mammals, sea turtles, and seabirds. A catch monitor

is someone who is land-based at first receiver facilities and confirms that total landings are accurately sorted, weighed, and recorded on fish tickets (landing receipts).

Observers focus on scientific data collection at sea, while catch monitors ensure compliance with IFQ landed fish sorting requirements, and together they give NMFS a very accurate and complete picture of the fishing mortality in the IFQ program. First receivers must use an approved electronic fish ticket reporting software to and submit the data to Pacific States Marine Fisheries Commission.

Observers collect the following information:

- Fishing activity, including areas and depths fished, gear set, and retrieval times.
- Catch, such as how much of each species was discarded.
- Individual fish, including length, weight, and sex.
- Bycatch of protected species like marine mammals.

All IFQ catch is delivered to licensed first receivers. This can be a person or company that receives, purchases, or takes custody, control, or possession of catch onshore from a vessel that harvested fish under the IFQ Program (e.g., fish buyer station or processing plants). All buyers must hold a first receiver site license for each physical landing site. Site licenses are effective for one year from the date of issuance. First receivers currently holding a site license, must register prior to the ending date to continue to receive landings from the IFQ program. New first receivers must contact the Pacific States Marine Fisheries Commission to install electronic fish ticket software.

Each first receiver taking delivery of IFQ species is required to have a certified catch monitor present for the entire duration of the landing. Catch monitors are certified by NMFS and must meet responsibilities specified in the regulations at § 660.17. Once verified, catch monitors independently report catch data to the Pacific States Marine Fisheries Commission and NOAA Fisheries catch accounting databases. Catch monitors are available from approved observer providers. Catch monitors perform more of a compliance role than that of a biologist and are required to report any observations of suspected violations of regulations.

1.5.2 Applicable Federal Permits, Licenses, or Authorizations Needed in Conjunction with Implementing this Proposal

The Shorebased IFQ Program applies to qualified participants in the Pacific Coast Groundfish limited entry fishery and includes a system of transferable quota shares (QS) for most groundfish species or species groups, individual bycatch quota (IBQ) for Pacific halibut, and trip limits or set-asides for the remaining groundfish species or species groups. A QS permit would be required to participate in the proposed EM program. NMFS will issue a QS permit to eligible participants and will establish a QS account for each QS permit owner to track the amount of QS or IBQ and quota pounds (QP) or IBQ pounds owned by that owner. NMFS will establish a vessel account for each eligible vessel owner participating in the Shorebased IFQ Program, which is independent of the QS permit and QS account. In order to use QP or IBQ

pounds, a QS permit owner must transfer the QP or IBQ pounds from the QS account into the vessel account for the vessel to which the QP or IBQ pounds is to be assigned. Harvests of IFQ species may only be delivered to an IFQ first receiver with a first receiver site license. A Pacific Coast groundfish limited entry permit is required to establish a vessel account and, amongst other requirements, a limited entry permit would be required to participate in the EM program.

1.5.3 Background on Decisions to Consider EM

1.5.3.1 Why is 100% Monitoring Needed for this Fishery?

Prior to the trawl rationalization program, the West Coast groundfish observer program monitored approximately 20 percent of the trips taken on groundfish trawl vessels. The trawl rationalization program relies on the monitoring of all trips. One hundred percent monitoring is required to provide for the individual accountability on which the program relies, to fully achieve the potential program benefits, and to prevent the complexity and challenging enforcement circumstances which would arise if some vessels were monitored and others were not.

The trawl fishery is a multispecies fishery in which the allowable harvest levels for some stocks (potentially including overfished species) constrain total harvest. If a vessel were not monitored on a particular trip, the elimination of individual accountability would generate an incentive to alter fishing behavior and target stocks that are more difficult to catch without encountering high levels of constraining species. The trawl rationalization program has helped the fleet make tremendous gains in bycatch avoidance. During an unmonitored trip the incentive to avoid bycatch would be minimal. Alternative regulations would have to be developed for unmonitored trips, adding to regulatory complexity. Those regulations would have to assume high bycatch rates for constraining species in order to ensure that the trawl allocations not be exceeded. The assumption of such high bycatch rates would increase vessel operation costs (require the vessel to use more quota) and diminish quota potentially available for the remainder of the fleet. To provide more opportunity, different bycatch rates could be created for different harvest areas. However, this would increase regulatory complexity with a greater number of management lines and assumed bycatch rates, make the calculation of trip catch more complex and time consuming, and potentially burden enforcement with determination of whether any tows on the trip crossed into the high bycatch area. This example assumes that area of catch is the only parameter affecting high bycatch rates of constraining species. Other parameters such as the sonar signal on which fishermen set their gear and the configuration and manner in which the gear is fished may also affect bycatch rates. For example, halibut excluders might be disabled on unmonitored trips in order to increase CPUE.

Finally, the Council is in the process of considering how to more fully achieve the potential benefits of the individual incentives provided by the trawl rationalization program by liberalizing a number of regulations governing trawl vessels (e.g. gear regulations). If some vessels were unmonitored, two sets of regulations might need to be maintained, one for monitored vessels the other for unmonitored vessels, further increasing regulatory complexity. For these reasons, 100 percent monitoring is required for effective function of the program.

1.5.3.2 Why Monitor With Observers?

Currently 100% monitoring is achieved through the use of observers on the vessels. The Council's final action on trawl rationalization included a provision allowing vessel observes to be supplemented with cameras (one of the most common forms of electronic monitoring), but not allowing the use of cameras to completely fulfill the monitoring function. At the time the Council took final action, the program had already been in development for over five years and consideration of camera monitoring may have further delayed implementation. The trawl rationalization program entailed a tremendous change to the fishery and, while the change was expected to be positive, there was concern about the potential for unexpected consequences. Even though cameras had been successfully used to monitor the whiting fleet on an experimental basis, the incentives provided by individual accountability also create an incentive to avoid detection, which was not present during the development of the camera monitoring program for the whiting fishery. The West Coast Groundfish Observer Program was successfully monitoring about 20 percent of the trips and, thus providing a familiar tool. While the incentives to avoid detection could also lead to behaviors frustrating the observer's role, a human observer has more ability than a camera system to detect and respond to contingencies and collect information useful to modifying the monitoring program. Thus, the decision to not include cameras as an alternative to observes was made in the context of uncertainties about the performance of the overall program and cameras and potential delays in program implementation that may have resulted from a more careful considering of the camera options.

1.5.3.3 Why Monitor With EM?

The circumstances, under which electronic monitoring was originally rejected, have changed. Fishery managers have now had two years of experience under the program, which has provided a better understanding of how the fishery performs and how fishermen operate under the program. This has reduced some of the uncertainty about potential unintended consequences. Now, increasing information is becoming available on the performance of electronic monitoring and there is time to more carefully consider the utility of electronic monitoring relative to human observers. There are a number of needs that an alternative to monitoring with observers may address. First, for vessels, the need to pay for vessel observers is one of the most expensive compliance costs associated with participation in the trawl rationalization program. For the first years of the program, NMFS has subsidized observer costs to help the fleet though the period of adjusting to the new management system. Overall fleet profits, and consequently the price of quota, will be below what they might otherwise be if less expensive monitoring is available. Second, small vessels may be disproportionately affected by observer costs. Vessels are billed for observers on a per day basis, and because smaller vessels may have a lower total revenue per day at sea observer costs reduce vessel net revenue disproportionately more than for larger vessels. On this basis, over time it might be expected that quota will migrate to larger vessels and there will be fewer smaller vessels in the fleet—assuming small vessels do not have other countervailing advantages. Third, because of the overhead involved with maintain observer availability in small, somewhat isolated ports with relatively low demand for observers, at least one observer company has indicated that it may pull out of at least one of the small ports on the West Coast. In addition some observer companies may not be willing to provide observers for safety reasons. Thus, over time, smaller ports may be disadvantaged by the observer requirement, relative to larger ports. Fourth, if overall monitoring costs can be reduced (those

borne by both private parties and the public), national net economic benefits may be increased. And finally, the observer fee system puts pressure on vessels to fish in unsafe conditions. Because vessels are billed on per day both for at-sea and for standby time, vessels may incur higher costs for standing down due to marginal weather conditions.

1.6 ESA Opinions and Thresholds for the Pacific Coast Groundfish Fishery

Six marine mammal species are known to have interacted with groundfish trawl gear: California sea lion, harbor seal, harbor porpoise, pacific white-sided dolphin, northern elephant seal, and Stellar sea lion (unidentified sea lions are also recorded, which could be either California or Stellar). Various seabird species have been observed taken in the groundfish trawl fishery; none is ESA-listed.

On December 7, 2012, NMFS issued a Biological Opinion (Opinion) under the ESA on the continuing operation of the Pacific Coast groundfish fishery. NMFS concluded that the fishery is not likely to jeopardize the continued existence of green sturgeon *(Acipenser medirostris),* eulachon *(Thaleichthyspacificus),* humpback whales *(Megaptera novaeangliae),* Steller sea lions *(Eumetopiasjubatus),*and leatherback sea turtles *(Dermochelys coriacea).* We also conclude that the proposed action is not likely to destroy or adversely modify designated critical habitat of green sturgeon or leatherback sea turtles. Furthermore, NFMS concluded that the proposed action may affect, but is not likely to adversely affect the following species and designated critical habitat:

Sei whales *(Balaenoptera borealis),*
North Pacific Right whales *(Eubalaena japonica),*
Blue whales *(Balaenoptera musculus),*
Fin whales *(Balaenoptera physalus),*
Sperm whales *(Physter macrocephalus),*
Southern Resident killer whales *(Orcinus orca),*
Guadalupe fur seals *(Arctocephalus townsendi),*
Green sea turtles *(Chelonia mydas),*
Olive ridley sea turtles *(Lepidochelys olivacea),*
Loggerhead sea turtles *(Carretta carretta),*
Critical habitat of Southern Resident killer whales, and Critical habitat of Steller sea lions

On November 21, 2012, the US Fish and Wildlife Service (USFWS) issued an Opinion under the ESA on the continuing operation of the Pacific Coast groundfish fishery. USFWS concluded the fishery would not jeopardize the continued existence of short-tailed albatross *(Phoebastria albatrus),*and concurred that the fishery is not likely to adversely affect the marbled murrelet
(Brachyramphus marmoratus), California least tern (*Sterna antillarum browni),* southern sea otter *(Enhydra lutris nereis),* and the federally threatened bull trout *(Salvelinus confluentus)* and its designated critical habitat. The USFWS anticipates a yearly average of one short-tailed albatross could be taken as a result of the fishery. The incidental take is expected to be in the form of short-tailed albatross killed from longline hooks or trawl cables.

The most recent Biological Opinion covering the incidental take of ESA-listed salmon in groundfish fisheries was published in 2006 (NMFS 2006c). That document includes a detailed history of section 7 consultations on the groundfish fishery.

Salmon are caught incidentally in both the at-sea and shore-based segments of the whiting fishery and bottom trawl. This bycatch is closely monitored through an at-sea observer program and dockside sorting of shore deliveries. A salmon bycatch reduction plan has also been implemented in this fishery. NMFS issued a Supplemental Biological Opinion on March 11, 2006 concluding that neither the higher observed bycatch of Chinook in the 2005 whiting fishery nor new data regarding salmon bycatch in the groundfish bottom trawl fishery required a reconsideration of its prior "no jeopardy" conclusion. NMFS also reaffirmed its prior determination that implementation of the Groundfish PCGFMP is not likely to jeopardize the continued existence of any of the affected ESUs. The 1999 biological opinion concluded that the bycatch of salmonids in the Pacific whiting fishery were almost entirely Chinook salmon, with little or no bycatch of coho, chum, sockeye, and steelhead.

NMFS will continue to monitor and collect data to analyze take levels for all protected species.

1.7 Environmental Review Process and Public Scoping

The purpose of the environmental review process is to determine the range of issues that the NEPA document needs to address. The environmental review process is intended to ensure that problems are identified early and properly reviewed; issues of little significance do not consume time and effort; and that the draft NEPA document is thorough and balanced. The environmental review process should: identify the public and agency concerns; clearly define the environmental issues and alternatives to be examined in the NEPA document; eliminate non-significant issues; identify related issues; and identify state and local agency requirements that must be addressed. The following public review and scoping presented in this document is in reference to the development of an EM program for the Shoreside IFQ program.

In 2011, NMFS implemented a Council developed catch share program for the West Coast limited entry groundfish trawl fishery. The program requires that each vessel acquire quota pounds (QP) to cover its catch (including discards) of nearly all groundfish species.[2] Proper functioning of the program requires some form of at-sea monitoring to ensure that discards are enumerated for each vessel. The catch share program specified that this monitoring function be achieved through 100% at-sea observer coverage. Electronic monitoring (EM) is being explored as a potential technically and economically viable substitute for the use of human observers in the function of compliance monitoring for the catch share program.

At the November 2012 Council meeting, the Council directed that an EM workshop be held. The workshop was held February, 2013. The purpose of the workshop was to begin developing

2 Exceptions were made for some species rarely caught in the trawl groundfish fishery.

the policy context and identify necessary elements for a thorough Magnuson-Stevens Act (MSA) process to use EM in the West Coast groundfish trawl catch share program.

The Council decided at the April, 2013 Council meeting to move forward with consideration of the possible use of EM for the trawl catch share program. At that time, the Council decided that the primary focus of integrating EM into the trawl catch share program would be to achieve the compliance monitoring required for individual accountability of catch and bycatch, as opposed to using EM to meet needs for biological data or other scientific information monitoring. A set of regulatory objectives and calendar from the February EM workshop report were adopted. Also, at the April meeting a set of recommendations on the 2013 EM field study was approved for forwarding to Pacific States Marine Fisheries Commission. A similar field study was conducted in 2012. Both studies focus on comparison of video and observer data.

At the June 2013 Council meeting, the Council established two EM committees to focus on the development of options for EM use in the trawl catch share program. In August 2013 both the Groundfish Electronic Monitoring (GEM) Policy Advisory Committee (GEMPAC) and the GEM Technical Advisory Committee met to further the Council scoping process. The GEMPAC report for their August meeting provides a draft set of EM program alternatives for Council consideration and were presented at the September 2013 Council meeting. The Council provided guidance to the GEMPAC for continued development of EM program alternatives.

The GEM Committees met again in October, 2013 to discuss the guidance provided by the Council. The GEMPAC refined the draft alternatives and developed a GEMPAC report with recommendations for Council consideration at their November, 2013 meeting. The Council decided to revise the alternatives with the modifications recommended in the Enforcement Consultants report and to move forward with an impact analysis of the draft alternatives. The Council is scheduled to hear an update on the analysis in April, 2014 and in June will review the full analysis to pick preliminary preferred alternatives. The Council is scheduled to pick its final preferred alternatives for an EM program at its September 2014, meeting with the expectation of implementing an EM program by January 2016.

Trawl Catch Share Program Electronic Monitoring (EM) Workshop Report
The Pacific Fishery Management Council held a workshop on the potential use of electronic monitoring (EM) in the trawl fishery catch share program, February 25-27, 2013. The full report is available at: http://www.pcouncil.org/wp-content/uploads/D7b_EM_WKSHOP_RPT_APR2013BB.pdf)

During the EM workshop there was a discussion of the potential regulatory requirements for an EM system and the need for regulatory flexibility, both with respect to technologies employed and processes. The needed flexibility would allow private industry to develop efficient and effective monitoring system and to continue to innovate as new technologies become available over time. It was suggested that rather than being prescriptive, regulations should specify performance standards which must be met. This recommendation is in line with Executive Order 12899, which requires that each agency "identify and assess alternative forms of regulation and shall, to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt."

1.7.1 Trawl Catch Share Program Electronic Monitoring (EM) Workshop Report

The Pacific Fishery Management Council held a workshop on the potential use of electronic monitoring (EM) in the trawl fishery catch share program (Shorebased IFQ program), February 25-27, 2013. The full report is available at: http://www.pcouncil.org/wp-content/uploads/D7b_EM_WKSHOP_RPT_APR2013BB.pdf)

During the EM workshop there was a discussion of the potential regulatory requirements for an EM system and the need for regulatory flexibility, both with respect to technologies employed and processes. The needed flexibility would allow private industry to develop efficient and effective monitoring system and to continue to innovate as new technologies become available over time. It was suggested that rather than being prescriptive, regulations should specify performance standards which must be met. This recommendation is in line with Executive Order 12899, which requires that each agency "identify and assess alternative forms of regulation and shall, to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt."

1.7.2 NMFS Policy Directive

On May 3, 2013, NMFS released its Policy on Electronic Technologies and Fishery Dependent Data Collection to " adoption of electronic technology solutions in fishery-dependent data collection programs" (NMFS, 2013). A complete copy of this policy has been posted on the EM page of the Council web site (http://www.pcouncil.org/groundfish/trawl-catch-share-program-em/). The objective for this policy is stated as follows:

> It is the policy of the National Oceanic & Atmospheric Administration's (NOAA's) National Marine Fisheries Service (NOAA Fisheries) to encourage the consideration of electronic technologies to complement and/or improve existing fishery-dependent data collection programs to achieve the most cost-effective and sustainable approach that ensures alignment of management goals, data needs, funding sources and regulations.

Appendix A contains NMFS policy directive, and the goals and objectives of the MSA, the trawl rationalization program, and the Pacific Coast Groundfish FMP.

1.7.3 Issues and Concerns Raised Through Scoping

In addition to the goals and objectives of the Pacific Coast Groundfish FMP and trawl rationalization program, several objectives were adopted by the Council at the June 2013 meeting during the public scoping process to develop an EM program for trawl catch share program compliance monitoring:

13. reduce total fleet monitoring costs to levels sustainable for the fleet and agency;
14. reduce observer costs for vessels that have a relatively lower total revenue;

15. maintain monitoring capabilities in small ports;
16. increase national net economic value generated by the fishery;
17. decrease incentives for fishing in unsafe conditions;
18. use the technology most suitable and cost effective for any particular function in the monitoring system; AND
19. reduce the physical intrusiveness of the monitoring system by reducing observer presence; WHILE taking into account the following constraints
20. maintaining current individual accountability for catch and preserving equitable distribution of monitoring coverage among members of the fleet,
21. supporting the collection of biological information necessary for managing the fishery, for stock assessments, and to meet other needs for scientific data, with no degradation relative to pre-trawl catch share program standards
22. taking into account agency budgets and abilities to support any new policy,
23. maintaining capabilities for ACL management (e.g. for non-quota species), and
24. following an implementation path most optimal for the fishery.

The first seven items in the above list are direct regulatory objectives, i.e. reasons for considering EM. Items eight through twelve in this list are considerations, i.e. the Council would not be undertaking this action in order to achieve items eight through twelve but rather in pursuing the first seven objectives will be bounded by items eight through twelve.

CHAPTER 2 **ALTERNATIVES**

2.1 Overview

Under the National Environmental Policy Act, a reasonable range of alternatives must be identified for a federal action, and includes the "no-action" alternative or status quo. The alternatives were developed to examine potential components and options for an EM program and are compared to the no-action alternative.

This chapter describes alternative management actions that could be implemented to establish an EM program within the current shorebased IFQ program. The alternatives take various approaches to ensure regulatory compliance of the participants with the goal of more flexibility and less cost than the current requirement for 100 percent coverage by human observers.

The EM program would need to account for discard events at sea, and provide sufficient information to identify fish species and enumerate the weight of fish discarded so that IFQ accounts and catch allocations can be debited. Under the proposed options for an EM program, vessels would need to apply for an exemption to use EM rather than a human observer and also qualify for the exemption. It's expected that participants would need to secure an EM provider, purchase or lease an approved EM system, and incur the cost for its maintenance and the video review. This information is analyzed in Section 4.2.2, under subsections on costs and impacts to different segments of the fishery and communities. Even if an exemption from required observer coverage is provided by NMFS for vessels that choose to use EM, observers would still need to be randomly deployed to collect scientific information, such as biological data, bycatch estimates, and protected species interactions.

An EM program could be developed that is specific to each fishery that operates in the shorebased IFQ program. Currently these fisheries are identified as:

- The shoreside and at-sea midwater trawl fishery (catcher vessels only and does not include at-sea motherships or catcher/processors);
- The mid-water non-whiting trawl fishery;
- The fixed gear fishery (includes longline with hook-and-line and longline with pots);and
- The bottom trawl fishery.

Two major decision points must be made prior to selecting each component of an EM program:

1. What is the data source for the discard information - logbooks or video; and
2. Which species may be discarded that would preserve the integrity of individual accounting in the IFQ system.

The decision may vary based on fishery, vessel operations, and the ability to accurately account for catch. For example, it may be optimal to require the midwater trawl whiting fishery to continue fishing under a maximize retention regulatory environment, use logbooks as

documentation for discards, then review a fixed percentage of the video to verify the discard documented in the logbooks (i.e., maximized retention with self-reporting and audit). For fixed gear (i.e., longline and pot), it may be optimal to allow discard of certain species because each fish is handled by the crew and video cameras could be used to document the species, length, and weight before it is discarded. Then, a review of all video images could be conducted to enumerate discards (i.e., optimized retention with video census). For bottom trawl, discard may be limited to certain species that can be identified on video, then audit the logbooks to verify events recorded in the logbooks are accurate and complete (i.e., optimized retention with self-reporting and audit). These potential combinations are described in more detail in Section 4.2.2, under subsections on costs and impacts to different segments of the fishery and communities.

To help introduce and highlight the major differences, components, and options within the alternatives the Council is considering, Figure 2-1 displays a simplified, diagrammatic overview of the current set of three alternatives for all shorebased IFQ fisheries. A more complete description of each item is provided in the chapter text and summarized in Table 2-7. In addition, Table 2-8 lists four specific analytical scenarios developed by staff following the June 2014 Council meeting to compare the impacts of specific components and options within the overall alternatives.

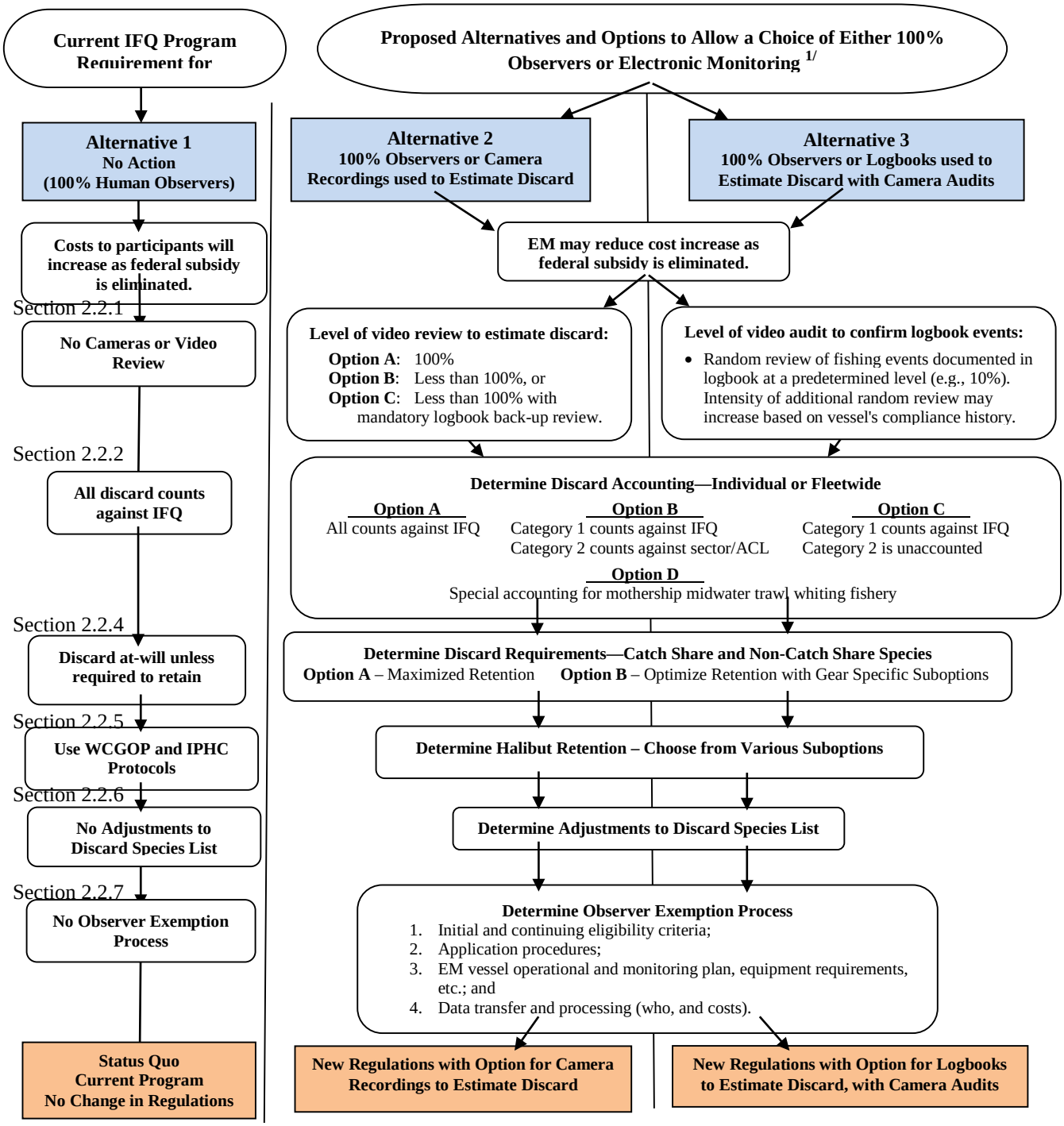


Figure 2-1. General overview of alternatives and decision process for implementing EM for all shorebased IFQ sectors.

2.2 Detailed Description of EM Alternatives and Options for All Fisheries

2.2.1 Discard Documentation Technology and Coverage

All IFQ trips must be monitored for catch and discard in an adequate manner to provide the necessary data to debit QP accounts or catch allocation (see Section 2.2.2). Catch that is landed would continue to be monitored shoreside with catch monitors that are employed as a third-party observer. Currently, all discard at sea on IFQ trips must be monitored by a human observer in order to monitor the fisheries for compliance with the IFQ program and estimate total discard. Observers participating in the IFQ program are referred to as IFQ program observers and are employed by private third-party companies. Vessels make arrangements with the third-party observer provider to secure an observer for a trip and pay the provider directly. An at-sea observer will often fill the role of conducting at-sea observations for discard and biological collection then get off the vessel and act as a shoreside catch monitor to monitor the landing.

The Northwest Fisheries Science Center trains, certifies, and equips IFQ program observers; ensures data quality; and stores, maintains, and analyzes data collected by observers. It's expected that third-party observer providers would continue to provide human at-sea and shoreside monitoring for vessels in the IFQ program.

Under the alternatives, the requirement for 100% observation of all IFQ trips would continue; however, a vessels would be able to choose a human observer or EM to estimate the discard at sea. A voluntary EM program provides the industry a flexible and potentially economical opportunity to monitor their compliance with IFQs, IBQs, and catch allocations. The use of EM would supplant the observer's discard data collection process; therefore, a different data source must be used to estimate the species and weight of the discard to properly debit the IFQ account for the fishing trip. The data source of discard estimation is the driver of continuing the individual accountability in the IFQ program. Under Alternative 2, the video recordings would be the data source of the total discard; under Alternative 3 the logbooks would be the data source and the video recordings would be used to verify the logbook data (See Section 2.2.1.1).

2.2.1.1 Video Reading Protocols

A discard monitoring method that would adequately account for discard in each fishery is necessary and likely the most critical component of an EM program. The data source to accurately account for discard is either a human observer (Alternative 1 – No Action), video data (Alternative 2) or, a logbook (Alternative 3). This is the first step in building an EM program.

Alternative 1 - No Action

The No Action Alternative or status quo (Alternative 1) defines the default management structure if no Federal action was taken. Under Alternative 1, the current mandatory 100% human observer coverage would continue in order to monitor fishery participants for compliance with IFQs, IBQs, and allocated groundfish. Existing requirements and regulations to participate in the Shorebased IFQ program would be maintained. This information is described in subparts C through E of Part 50 of the Code of Federal Regulations (CFR). These subparts include, but

are not limited to, requirements for a limited entry and QS permit, use of a vessel monitoring system (VMS), at sea observer requirements, human catch monitors at shoreside first receiver locations, and reporting requirements (i.e., logbook, fish ticket, economic data collection program, and prohibitions).

Under Alternative 1, the cost for observer coverage in the near future will no longer be federally subsidized. It's expected that the industry will pay the full amount for compliance monitoring by human observers. The 2014 subsidy rate by the Federal government is 48% of the cost for an observer per day of fishing activity.

Alternative 2 - Camera Recordings Used to Estimate Discard

Under Alternative 2, the video images are the primary data source for estimating discards. The video is reviewed for fish discarded by fishermen, the species are identified, assign an estimated weight, and the QP account is debited. Three options were identified under Alternative 2 to conduct the review and estimate the catch:

Option A: 100% - census all video footage and estimate discard.

Option B: Subsample Video and expand discard estimate to whole trip; % subsample for the review must be developed.

Option C: Same as Alternative B but includes a mandatory logbook requirement to document discard.

Option A is to conduct a census of all video images and estimate the total discard for each set or haul that occurred in a trip. The discarded species would need to be accurately identified, assigned a weight, and debit the QP account in a timely manner.

Option B is to subsample the video images at some predetermined percent of video review (e.g., 10%, 25% and 50%), speciate the discard, estimate the weight of the discard, then expand the discard rate to the entire trip to provide a total estimated discard for the trip. A rate of review that is appropriate to estimate the weight yet capture rare events would likely be higher however there are issues that surround this method of estimation. For example, the expanded estimate of discard may be greater than or less than the actual discard. In addition, the discarded species may not be seen when video sampling is conducted therefore no accounting would occur. At this time the Council was not provided options for the level of random sampling since it may be more appropriate for managers of the data to examine what may be optimum and most cost effective to achieve the management goal of low cost to fishermen yet accurate for accounting purposes.

Option C is the same as Option B however a logbook would be required to document discard events and provide a back-up data source to verify discard if an EM system fails to capture the necessary data.

Alternative 3 - Logbooks Use to Estimate Discard, with Camera Audits

Alternative 3 provides the opportunity for the fishermen to speciate and estimate the total discarded weight of the fish for each set or haul and provide this information in a logbook. Then, the video images would be reviewed to verify discard events and the species/weight estimates for the trip. A random review of the video images would be conducted at some predetermined level (e.g., 10%) to verify the discard. The audit, for example, would be to review X% of all fishing events for a trip, with a minimum review of one event per trip to compare the logbook discard with the discard documented for that event. A fishing event would need to be defined. It's possible that discard can occur between gear deployments or when the vessel returns to the dock. Therefore, for analysis purposes, a fishing event is defined as the time gear sensors document the start of gear deployment to when the next gear deployment begins, or if it's the last set/haul of the trip the event would end when the trip ends at the dock. This would ensure the vessel is in compliance with the EM program and documentation of all discard events. Random review could be increased based on compliance. For example 50% of all video may be conducted if vessel is not fully documenting or accurately estimating discard. The additional video review would be an added cost to a fisherman. To prevent abuse, a threshold would need to be developed for non-compliance issues that trigger the inability to use EM. Also large discards could trigger review. For example, if a logbook entry documents a release of fish that is 10,000 pounds or greater, then the imagery of that event must be reviewed.

There may be discrepancies in weight estimations between the logbook and the video image. The policy could be that the larger weight estimate would be used to debit the IFQ account.

If a video reviewer estimates a release of fish in excess of some threshold of weight or sees a discard event that was not documented in the logbook, then some action would need to be taken to enforce compliance. For example, 100% of all fishing events from the trip could be reviewed along with subsequent 100% viewing of all fishing trips at the fishermen's expense for the remainder of the season or until NMFS has approved that review levels can return to the original predetermined level.

If the discrepancy is speciation, then more review of the video images may be needed for that given haul or set to help identify the species. This may include another reviewer or looking at additional video footage to see if similar species were being caught on the trip.

If the vessel is under a coop agreement, then some enforcement within the coop may be exercised under the agreement; however, incidents of non-compliance would still be monitored by NMFS to determine if additional enforcement action is necessary.

Census vs. Logbook Audit

The main issues that surround the choice of the data source are 1) speciation/weight estimates, and 2) a trusted data source. First, if EM video data is the primary source (Alternative 2A, 2B and 2C), speciation and accurate weight estimates are needed. Alternative 2A (census) could capture enough data; however, speciation and weight estimates from video is still a challenge if discarding is allowed under optimized retention. Under 2B and 2C, subsampling the video and expanding the weight to the whole trip may be a challenge if discard is allowed; however, even under maximized retention getting an accurate weight of a large discard event can be difficult if

multiple specie are discarded at one time. Anything less than 100% video review will result in missing some species for expansion and creates more risk than Alternative 1, 2B and 2C. Sampling and expansion generally works for a whole fishery sector and not for an individual vessel (Stanley et al. 2011). There is risk of subsampling the video and expanding it to the trip level and expansion may not be representative of the whole trip. For example, expansion of one yelloweye rockfish could cause an individual vessel to exceed their IFQ for that overfished species even though the fishermen may never encounter another fish the rest of the trip or entire year. Also if the encounter is a rare event and a large amount, expansion could be unrealistic. Even if a logbook is required for verification when there is uncertainty in the primary source (Alternative 2C), protocols on how to deal with rare events would need to implemented and statistically appropriate. If video is the primary data source, it may be most appropriate to require a census of the video *and* a logbook for a verification of the video image; but this option has not been developed by the Council.

Second, if logbooks are the primary data source then management must trust the data reported by the fishermen and provide incentives for fishermen to accurately report the catch. Generally fishermen can speciate and provide an estimate of weight for a discard but an analysis of this information has not been conducted. No confidence intervals have been developed to gauge the accuracy or error made by fishermen as it compares to video imagery or observer's estimates. However, Stanley et al. (2001) showed that fishermen in the hook-and-line fishery in British Columbia (B.C.), after a period of 4 years, increased their accuracy and logbooks were the trusted data source.

If managers want to audit the fishermen's logbook to verify the accuracy of the report or look for discards not recorded, then the critical questions to ask is "what are the incentives to accurately record the catch." Mangers could lower the risk of non-reporting by implementing strict penalties when it occurs. An appropriate level of review (ex. 10, 25, or 50%) may then be driven by cost of review (assuming a higher level of review costs more) rather than implementing a higher review to gain more compliance. The B.C. hook-and-line fishery logbooks are sampled at a rate of 10% to validate entries and this level of review was also found to be efficient and cost effective. Strict rules apply in that fishery for compliance therefore the fishery has a high compliance rate. Test scores of whether logbooks match the EM imagery are high for greater than 80% of the logbooks collected.

Stanley wrote that in the B.C. hook-and-line fishery, harvesters believe that catch estimation process is:

> "…intuitive, transparent, and immediate, because it is based on their own records, unless the audit fails. With the census approach, estimates of the discarded catch proportion would come from a delayed and outsourced process, conducted in a remote location, by persons unknown to the harvester. One could anticipate a never-ending stream of appeals from harvesters questioning the different estimates from the black-box approach compared with their logbook records. This lack of confidence at a trip level would also affect the fleet-wide catch estimates to the extent of it being unclear whether the quotas were actually being filled. In addition, it was suggested by some participants that using the harvesters' own records instead of 100% EM video review fostered a greater sense of ownership in the overall

programmme and a greater willingness to work through the practical problems of implementing the new procedures."

2.2.2 Discard Accounting – Individual or Fleetwide

Under the catch shares program, total catch must be accounted for to debit individual quota share accounts and fishery allocations. Retained and discarded catch is combined to get total catch. Shoreside monitors are used to verify retained catch when it is landed on motherships or shoreside processors and the West Coast Groundfish Observer Program (WCGOP) uses at-sea monitors to estimate and report discards by species.

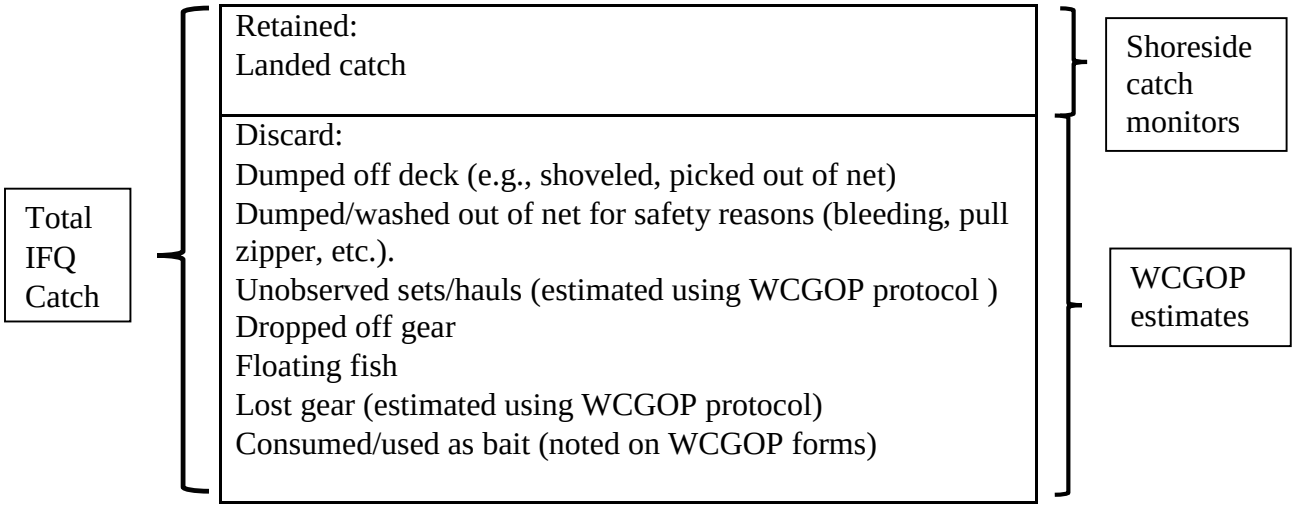


Figure 2-2. General depiction of total catch accounting in the Shorebased IFQ program.

Under an EM program, the estimation (speciation and weight) for these discard events would be conducted using EM rather than the WCGOP. However some of the discard events and scenarios noted in Figure 2-2 may not be captured by EM, such as lost gear, crew consuming fish onboard the vessel, using fish caught as bait, and unobserved hauls/sets that had discard (i.e., EM failed to

record the discard), therefore; some other source of data may be needed to account for the discard activity. In addition, some events may be captured by EM but are difficult to quantify or are rare, such as floating fish on the surface of the water or a fish dropped from the gear.

If these events cannot be estimated using EM, then they could be estimated either annually by the WCGOP or not at all. The discard could be estimated using historical observations by the WCGOP for the time period of 2010 to 2014 to get an average number per year or through the annual observations made by WCGOP that are on vessels that do not use EM in combination with vessels that are randomly selected to have a scientific observer while the vessel uses EM.

In addition, rather than accounting for this discard at the individual level (IFQ), it's possible to account for it during the specification process for Annual Catch Limits (ACL), at the sector level, or not at all. Assuming that the total mortality estimated at the sector level from this activity is minor amounts and would not affect individual vessels quota share accounts or other fishery participants, the estimated mortality could be deducted from the ACL prior to allocation to each sector or at the sector level to be taken "off-the-top" prior to IFQ distribution and catch allocation distributions.

Potential changes were developed in the following way:
1) Discard events were grouped into discard categories 1 and 2;
2) Accountability was established (i.e., IFQ, Fleetwide, or not accounted);
3) Data source were identified as either EM or the WCGOP.

Three possible options were developed for discard accounting:

Option A: **Estimate Discard with EM and Count against IFQ**
One discard category and all discards are estimated using EM and counted against IFQ:
• Dumped off deck (e.g., shoveled, picked out of net)
• Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.).
• Dropped off gear
• Floating fish
• Lost gear (not captured by EM, estimate using WCGOP protocol)
• Consumed/used as bait (not captured by EM)
• Unobserved sets/hauls (not captured by EM, maybe apply discard rate using EM estimates from previous sets/hauls)

Option B: **Split into two discard categories; Category 1 count against IFQ, Category 2 count against sector or ACL; for some discard the estimate is based on trips with observer coverage**

Discard 1 IFQ Accounting:
• Dumped off deck (e.g., shoveled, picked out of net)
• Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.).
• Unobserved sets/hauls (not captured by EM, apply discard rate using WCGOP

Discard 2 Sector or ACL accounting:

• Dropped off gear (use WCGOP estimates)
• Floating fish (use WCGOP estimates)
• Estimated from lost gear (estimate using WCGOP protocol)
• Consumed/used as bait (not captured by EM, use WCGOP estimates)

Option C: Split into two discard categories; no accounting for discard 2 category:

Discard 1 IFQ Accounting:
• Dumped off deck (e.g., shoveled, picked out of net)
• Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.).
• Unobserved sets/hauls (not captured by EM, apply discard rate using WCGOP

Discard 2 No accounting:
• Dropped off gear
• Floating fish
• Lost gear
• Consumed/used as bait

Council staff note: In order for option 3 to be valid it would have to comply with MSA national standards. All catch and discard must be accounted to estimate total mortality estimates and ensure annual catch limits are not exceeded.

Option D: Deduct unintentional discards of whiting preseason from the MS coop allocation.

No category is used; unintentional discards of whiting would be deducted preseason from the MS coo-op allocation of whiting.

A proxy of the average percentage of discard from 2011, 2012, 2013, 2014, and any additional averaging from future years would be used for the deduction. Discard of bycatch species would be determined by pro-rating the observer data from the MS processor.

2.2.3 Definitions for Total Catch Accounting - Total Catch, Discard, Retained

For analysis purpose, draft definitions were developed for the total, retained, discarded catch. WCGOP provided draft definitions of total catch and discard that are specific to trawl and fixed gear. The GEMPAC consolidate the individual gear definitions for total catch and discard into the following draft definitions:

Total catch for trawl: Total catch is defined as the sum, or estimated weight, of all organic and inorganic material caught by the gear, to include any organic or inorganic material confined within a trawl net as the net is being landed, lost gear, as well as any visually discernible catch lost during the retrieval process that can be reasonably attributed to the vessel.

Total catch for fixed gear: Total catch is defined as the sum, or estimated weight, of all organic and inorganic material caught by the gear to include any fish hooked or in a pot as the gear is being landed, lost gear, as well as any visually discernible catch lost during the retrieval process that can be reasonably attributed to the vessel.

Retained catch for fixed gear and trawl: Retained catch is any portion of the total catch that is delivered to a buyer or processor.

Discard for fixed and trawl gear: Discard is any portion of the total catch that is not delivered to a buyer. Fish caught for bait or onboard consumption are considered discard. For gear that is lost or sets and hauls that are unobserved, discard rates will be applied based on similar sets and hauls.

2.2.4 Discard Requirements

Currently, under the trawl rationalization program each fishery may discard, or is required to discard, certain species. Under an EM program, discard events will be documented with video; however, it may be difficult to identify some species or differentiate between species on video. Therefore, each fishery is examined for potential discard options and retention requirements under an EM program (see Section 4.2.2.). For example, when longline fishing, video cameras may be able to capture each individual species as it is hauled above the surface of the water and boarded. However, it still may be difficult to see which species of fish incidentally fell off the hook or was discarded prior to being boarded. In addition, when retrieving a midwater trawl net, fish may "bleed" out of the net as it surfaces so it may be difficult to capture the weight and identification of species when they are unintentionally discarded as a mixed group.

Some statutory management measures such as the Endangered Species Act (ESA) or the Marine Mammal Protection Act (MMPA) may restrict the consideration of some retention rules. Currently, there is an exception for the midwater trawl fishery that targets whiting which allows retention of salmon and halibut if the fish are not sorted at sea. Therefore, exceptions are provided as part of the description of alternatives.

There are three Options identified that allow for discard (Table 2-7, Section 2.2.4) maximized retention (minimal discard allowed), B) optimized retention (some allowable discard of IFQ species), and C) discard at will (discard any species). The retention and discard requirements are described under each alternative. Exceptions for allowable discard are also described and includes the species groups that may potentially be discarded under each alternative. The discard species are grouped by catch share groundfish species, non-catch share groundfish species, non-groundfish species, prohibited species (halibut, salmon and Dungeness crab), and ESA/MMPA protected species (turtles, marine mammals, seabirds, etc.). Table 2-1, Table 2-2 and Table 2-3 contain species lists.

For analysis purpose the GEMPAC has developed draft definitions for the retention of species under an EM program. The draft definitions were developed based on existing descriptions for maximized and optimized retention options developed in previous GEMPAC reports and

adopted by the Council in November 2013. Both definitions contain the same existing regulatory requirements and discard exceptions.

2.2.4.1 Option A: Maximize Retention

Definition: A vessel is generally required to retain all catch share species, non-catch share groundfish species, non-groundfish species (Non-FMP and not prohibited species).

- No selective discard for catch share species, non-catch share groundfish species
- No selective discard for non-groundfish species
- Allow selective discard of trash, mud coral, etc.
- Require selective discards of prohibited species (except whiting trips);
- Require selective discards of ESA and MMPA species (i.e., protected species).
- Non-selective discard for e.g., safety, "bleeding net", zipper accidentally opened, fish came off hook, gilled in net

The following regulatory requirements or discard exceptions apply:

Existing Regulatory Requirements
Vessels must discard prohibited, ESA-listed, and marine mammal species unless otherwise allowed to retain them by regulation or under federal exemption for scientific purposes. The following regulatory requirements apply:

- Mid-water trawl IFQ trips for whiting that deliver to shoreside processors must retain prohibited species (halibut, salmon, and Dungeness crab) unless sorting at sea.
- Mid-water trawl catcher vessels delivering to motherships must retain prohibited species (halibut, salmon, and Dungeness crab).
- Midwater trawl whiting trips that are unsorted may discard minor amounts of catch not delivered to shoreside or mothership processors. (current regulation**: "**Maximized retention vessels participating in the Pacific whiting IFQ fishery may discard minor operational amounts of catch at sea if the observer has accounted for the discard (i.e., a maximized retention fishery).")
- For LE fixed gear 22 or 24 inch lingcod must be discarded or if the vessel exceeds their non-IFQ trip limit; i.e Regulatory discards. (The minimum size limit for lingcod is 22 inches (56 cm) total length North of 42^{o} N. lat. and 24 inches (61 cm) total length South of 42^{o} N. lat.) **This information would need to be verifiable under an EM system.**

Discard exceptions when fishing under maximized retention - All discards must be enumerated and reported

- The vessel may discard for safety reasons.
- The trawl net is ripped or zipper accidentally opened, or fish fell off hook.
- Fish washed out of the trawl net or is overflowing.
- Vessels may discard mud, sponges, coral, inverts, and inorganic material not generally retained for sale or use.

2.2.4.2 Option B: Optimize Retention Retain Catch Share Species with Limited Discard Options

The GEMPAC discussed fishery specific discard options under an optimized retention regulatory environment. The definition for optimized retention contains some fishery specific discard options, however it is difficult for the GEMPAC to select which species are appropriate for allowable discard since species identification issues while using EM limit the options. PSMFC has begun to identify species that may be identifiable for discard and further analysis of these options will need be conducted to assist the Council in choosing an initial species list that is specific to each fishery.

Definition: A vessel is generally required to retain all catch share species but may be allowed fishery specific selective discard options of some catch share, non-catch share, and groundfish species if verifiable with EM.

The following regulatory requirements and discard exceptions:

*Existing Regulatory Requirements (**Same as Maximized Retention**)*
Vessels must discard prohibited, ESA-listed, and marine mammal species unless otherwise allowed by regulation or under federal exemption for scientific purposes. The following regulatory requirements apply:

- Mid-water trawl IFQ trips for whiting that deliver to shoreside processors must retain prohibited species (halibut, salmon, and Dungeness crab) unless sorting at sea.
- Mid-water trawl catcher vessels delivering to motherships must retain prohibited species (halibut, salmon, and Dungeness crab).
- Midwater trawl whiting trips that are unsorted may discard minor amounts (**define?**) of catch not delivered to shoreside processors.
- For LE fixed gear 22 or 24 inch lingcod must be discarded or if the vessel exceeds their non-IFQ trip limit; i.e Regulatory discards. (The minimum size limit for lingcod is 22 inches (56 cm) total length North of 42^{o} N. lat. and 24 inches (61 cm) total length South of 42^{o} N. lat.) T**his information would need to be verifiable under an EM system.**

*Discard exceptions when fishing under maximized retention - All discards must be enumerated and reported (**Same as Maximized Retention**)*

- The vessel may discard for safety reasons (**define?**)
- The trawl net is ripped or zipper accidentally opened, or fish fell off hook.
- Fish washed out of the trawl net or is overflowing
- Vessels may discard mud, sponges, coral, inverts, and inorganic material not generally retained for sale or use.

***Potential Gear Specific Sub-options under Optimized Retention**:*
This information would need to be verifiable under an EM system. Options here are not mutually exclusive; however, there must be adequate images for species identification and weight estimates of catch share species discards.

Midwater trawl non-whiting trips, bottomtrawl, and fixed gear trips may discard the following species if verifiable under the EM program and approved by NMFS:

a) For catch share species
   Option a – Allow discard of flatfish
   Option b – Allow discard of lingcod and sablefish
   Option c – Allow discard of all non-rockfish groundfish (full retention of rockfish only)
   Option d – Allow discard if species that are verifiable with EM
b) For non-catch share groundfish species
   Option c – Allow discard of all non-rockfish groundfish (full retention of rockfish only)
   Option d – Allow discard if species that are verifiable with EM
c) For non-groundfish (Non-FMP and not prohibited species)
   Option e – Allow discard of all non-groundfish species
   Option d – Allow discard if species that are verifiable with EM

Table 2-1. IFQ program and Non-IFQ groundfish species groups that are noted in section 2.2.4 as potential discards. Source regulations are noted in each list.

Catch share species (IFQ program groundfish species, From: 660.140(c)(1))	**Non-catch share species** (Non-IFQ Groundfish Species From: Table 1 and 2 to Part 660, Subpart D -- Limited Entry Trawl Rockfish Conservation Areas and Landing Allowances for non-IFQ Species and Pacific Whiting North and South of 40₀10' N. Lat.)
ROUNDFISH	Minor nearshore rockfish & Black rockfish
Lingcod N. of 40°10’ N. lat.	Cabezon
Lingcod S. of 40°10’ N. lat.	Shortbelly
Pacific cod	Spiny dogfish
Pacific whiting	Longnose skate
Sablefish N. of 36° N. lat.	Longspine thornyhead South of 34º27' N. lat.
Sablefish S. of 36° N. lat.	Minor nearshore rockfish & Black rockfish
FLATFISH	California scorpionfish
	Other Fish (sharks (except spiny dogfish), skates
Arrowtooth flounder	(except longnose skate), ratfish, morids,
Dover sole	grenadiers, and kelp greenling).
English sole	
Other flatfish stock complex	
Petrale sole	
Starry flounder	
Pacific halibut (IBQ) N. of 40°10' N. lat.	
ROCKFISH	
Bocaccio S. of 40°10' N. lat.	
Canary rockfish	
Chilipepper S. of 40°10' N. lat.	
Cowcod S. of 40°10' N. lat.	
Darkblotched rockfish	
Longspine thornyhead N. of 34°27' N. lat.	
Minor shelf rockfish complex N. of 40°10' N. lat.	

Minor shelf rockfish complex S. of 40°10' N. lat.
Minor slope rockfish complex N. of 40°10' N. lat.
Minor slope rockfish complex S. of 40°10' N. lat.
Pacific ocean perch N. of 40°10' N. lat.
Shortspine thornyhead N. of 34°27' N. lat.
Shortspine thornyhead S. of 34°27' N. lat.
Splitnose rockfish S. of 40°10' N. lat.
Widow rockfish
Yelloweye rockfish
Yellowtail rockfish N. of 40°10' N. lat.

Table 2-2. Co-op program groundfish species lists noted section 2.2.4 as potential discards.

Catch share species (Co-op groundfish species formally allocated, From: MS Co-op program species, 660.150(c)(1)(i))	
Pacific whiting	Pacific Ocean perch
Canary rockfish	Widow rockfish
Darkblotched rockfish	
Non-catch share species (At-Sea Whiting Fishery Annual Set-Asides, 2013, From Table 1d. To Part 660, Subpart C)	
Arrowtooth Flounder	Minor Slope Rockfish, N. of 40°10 N. lat.
BOCACCIO, S. of 40°10 N. lat.	Minor Slope Rockfish, S. of 40°10 N. lat.
Chilipepper, S. of 40°10 N. lat.	Other Fish, Coastwide
COWCOD, S. of 40°10 N. lat.	Other Flatfish, Coastwide
Dover Sole, Coastwide	Pacific Cod, Coastwide
English Sole, Coastwide	Pacific Halibut, Coastwide
Lingcod, N. of 40°10 N. lat. 15	Petrale Sole, Coastwide
Lingcod, S. of 40°10 N. lat.	Sablefish, N. of 36° N. lat.
Longnose Skate, Coastwide	Sablefish, S. of 36° N. lat.
Longspine Thornyhead, N. of 34°27 N. lat.	Shortspine Thornyhead, N. of 34°27 N. lat.
Longspine Thornyhead, S. of 34°27 N. lat.	Shortspine Thornyhead, S. of 34°27 N. lat.
Minor Nearshore Rockfish, N. of 40°10 N. lat.	Starry Flounder, Coastwide
Minor Nearshore Rockfish, S. of 40°10 N. lat.	YELLOWEYE, Coastwide
Minor Shelf Rockfish, N. of 40°10 N. lat.	Yellowtail, N. of 40°10 N. lat.
Minor Shelf Rockfish, S. of 40°10 N. lat.	

Table 2-3. ESA-listed species that may be found in the area of operation for groundfish fisheries.

ESA Species	

Green sturgeon *(Acipenser medirostris)* Eulachon *(Thaleichthys pacificus)* Humpback whales (*Megaptera novaeangliae*) Steller sea lions *(Eumetopiasjubatus)* Leatherback sea turtles (*Dermochelys coriacea*) Sei whales *(Balaenoptera borealis)* North Pacific Right whales *(Eubalaenajaponica)* Blue whales *(Balaenoptera musculus)* Fin whales *(Balaenoptera physalus)* Sperm whales *(Physter macrocephalus)*	Southern Resident killer whales *(Orcinus orca)* Guadalupe fur seals *(Arctocephalus townsendi)* Green sea turtles *(Chelonia mydas)* Olive ridley sea turtles *(Lepidochelys olivacea)* Loggerhead sea turtles (Carretta carretta) Short-tailed albatross *(Phoebastria albatnfs)* Marbled murrelet *(Brachyramphus marmoratus)* Southern sea otter *(Enhydra lutris nereis)* California least tern (*Sterna antil/arum browni*)

2.2.5 **Halibut Retention/Discard with Fishery Specific Options**

Pacific Halibut Data Collection in the Shore-delivery IFQ Fishery
The WCGOP designed sampling methodologies that help ensure P. halibut mortality can be estimated, regardless of the limitations imposed by the vessel, catch composition, or catch quantity. Three pieces of information are necessary to estimate Pacific halibut mortality (Table 2-4):

1. A count of individual P. halibut in the haul or sample
2. Actual or visual length measurements (cm)
3. A viability obtained by physical assessment of individual P. halibut using IPHC designed dichotomous keys that relate the physical condition of the fish to a viability code (NWFSC 2013). A unique key is used for each gear type (trawl, longline, pot).

Observers could sample all or a subset of P. halibut caught in a haul/set. The proportion of P. halibut sampled is based on the number of P. halibut caught in the haul/set, the level of assistance provided by the crew, as well as other variables (e.g., physical space, time of day, weather). Sampling and assessment of P. halibut is dependent on crew assistance and cooperation. Regulations prohibit vessel crew from discarding any P. halibut without first notifying the observer. The vessel crew must comply with any and all requests by the observer to ensure proper P. halibut sampling, including but not limited to: modifying P. halibut sorting procedures, assisting the observer by delivering the P. halibut to the observer, and modifying operations to ensure P. halibut sampling is completed. Table 2-4 describes the P. halibut data obtained on IFQ-permitted vessels fishing different gear types.

Table 2-4. Data collected from Pacific halibut caught on IFQ vessels using different types of gear. Viability is assessed at the point of fish release when returned to sea.

Gear	Count	Length Measurement	Viability
Bottom trawl	all in the haul	actual, all or subset	yes
Midwater trawl	all in the haul	actual, all or subset	yes
Pot	all in sampled portion	actual, all or subset	yes
Hook -and- line	all in sampled portion	visual, all or subset	no

Specific mortality rates are applied to the gear based on certain conditions of the halibut (viability assessment) and viability categories are used to assign mortality rates to P. halibut (Table 2-5 and Table 2-6. Mortality rates for vessels fishing bottom trawl gear are based on mortality data collected by Hoag (1975), who found some survivorship among fish in the dead condition category. Mortality rates for vessels fishing pot gear are based on conservative assumptions of likely survival from pot-induced injuries (Williams and Wilderbuer 1995). Because of the difficulties of collecting P. halibut viability on hook-and-line vessels, we used a discard mortality rate (DMR) of 16%, which represents an average of DMRs over all years for the Bering Sea/Aleutian region longline fishery (Williams 2008). For pot gear, NMFS relies on discard mortality rates computed for groundfish fisheries off Alaska (Williams 2008). Therefore, an 18% discard mortality rate is applied to estimates for pot gear, coinciding with the DMR used for the sablefish pot CDQ fishery in Alaska. Discard mortality was assumed to be 100% for midwater trawl bycatch estimates and 90% for bottom trawl.

Table 2-5. Mortality rates used for each of the condition categories (*mc*) for IFQ bottom trawl vessels (Clark et al. 1992).

m_c	Rate
m_{exc}	0.20
m_{poor}	0.55
m_{dead}	0.90

Source: Jannot et al. 2013

Table 2-6. Mortality rates used for each of the condition categories (*mc*) for IFQ pot gear vessels (IPHC).

m_c	Rate
m_{exc}	0.00
m_{poor}	1.00
m_{dead}	1.00

Source: Jannot et al. 2013

The Council had specific questions regarding the options for the retention or discard of halibut in each fishery. The GEMPAC developed fishery specific options and took into

account the existing regulatory requirements, the current process for viability assessments that are normally conducted by observers, and discard mortality estimations that are applied to each type of gear. IPHC provides the mortality "keys" by fishing gear type that observers use to determine mortality of pacific halibut. The IPHC also determines what mortality rates apply to the different viabilities (Excellent, Poor, Dead for trawl and pot or Minor, Moderate, Severe, Dead for hook and line). The IPHC also has sector specific average mortality rates (i.e., longline and pot). Vessel or sector specific mortality rates based on data from the catch share program could be developed by the WCGOP.

The following gear specific options need to be examined for feasibility and IPHC may need to approve certain options. Council staff and NMFS will work with the IPHC to examine potential changes to halibut mortality assessment methods and the use of sector or vessel specific mortality rates. Overarching fishery specific percentage are applied in Option A. These are the rates that are applied when the IPHC does not have a viability assessment.

For midwater trawl whiting:
Since the fishery is already a maximized retention fishery and all catch is allowed to be retained and landed, all halibut would be considered dead (100% mortality). Current regulations allow fishermen to sort whiting at sea, and if a fishermen chose to do so, would be required to discard halibut. The GEMPAC and GEMTAC believe that sorting at-sea does not occur so only one option was developed for the EM program. If the impact analysis reveals that another option is needed, Council staff will consult the GEMPAC.

For bottom trawl and non-whiting midwater trawl gear:
Option A: Use IPHC mortality rate for specific gear type: 90% mortality if discarded.
Option B: WCGOP scientific observations (assumed 20-30% coverage) is applied to fleet
Option C: IPHC exemption to allow full retention (need to examine the feasibility of this option)
Option D: Captain and crew provide assessment (training would be required)
Option E: Use an appropriate EM viability assessment (currently conducting study, need IPHC approval)
Option F: Use vessel specific mortality rate (update rates periodically through application of third-party observer rates on non-EM vessels or through WCGOP random observations of EM vessels)

For Fixed gear:
Option A: Use WCGOP mortality rate for specific gear type: 16% mortality if discarded from longline; 18% mortality rate if discarded from pots.
Option B - Option F: same as bottom trawl and non-whiting midwater trawl gear

2.2.6 Discard Species List Adjustments

In the future, it's expected that recognition software programs may assist in further refinement or expansion of a species discard list under an optimized retention regulatory environment. During the GEMPAC discussions the group identified that a process to update the species discard list to accommodate advances in fish identification technology or an increase in the ability to identify more species using video review. The development of a species discard list for each fishery is a difficult task and changing technology may allow expansion of these lists after their initial creation. Each fishery will likely have a specific species discard lists. In the future, recognition software may be further developed or regulatory actions could provide the option to expand or change the species lists, therefore; a process that is efficient and flexible to change the list should be developed. Therefore a new component was added to the EM program options.

The GEMPAC identified three options to account for technological changes and to streamline the revision of species discard lists for an EM program:

Option A: NMFS to make determination and provide list to fishers through the NMFS approval process to use EM.
Option B: Use Council process for changing species list using routine management measures if initial list is fully analyzed for environmental impacts (e.g., use groundfish specification process, or some other routine management measure).

Option C: Set initial lists in regulation and change at some future point through Council process with proposed/final rule making.

2.2.7 Vessel Operation Provisions

The following sections discuss provisions that relate to vessel operations and include approval and application processes, and EM system requirements.

2.2.7.1 Observer Exemption Process

> Since observer coverage is mandatory under the trawl rationalization program, participants would need to initially apply to NMFS for an exemption to use EM in lieu of an observer and then demonstrate they are complying with the standards and practices to continue using EM. Therefore, both initial eligibility criteria and continued eligibility criteria are needed. Since EM use would be a privilege, participants must show they are diligently and effectively using the system to monitor their activity. If vessels do not comply, then the privilege may be revoked and the vessel would be required to use a human observer to monitor their activity. The requirement to be in compliance would provide an administrative incentive for proper use of EM.

The following sections describe potential observer exemption process, eligibility for using EM, IVMP requirements, duration of effectiveness of the IVMP, and participant's requirements to declare when a vessel will use EM. As appropriate, regulations will be specific or performance based for the proposed criteria.

2.2.7.2 Eligibility for Camera Use

Under the proposed EM program, participants would need to eligible to use EM. Participants would need to apply for an exemption from the existing observer requirement for all IFQ trips. Participants would need to meet certain "eligibility requirements" and NMFS would review the application for approval. The application would also include a NMFS approved individual vessel monitoring plan (IVMP, See Section 2.2.7.3).

Option A: Eligibility requirements for all fisheries

Initial eligibility criteria:

1. Limited entry groundfish trawl permit
2. Quota share permit
3. No IFQ deficits
4. No civil penalties related to fishing activity exceeding a certain amount and timeframe
5. Schematic and Description of NMFS approved Individual Vessel Monitoring Plan (IVMP)
    a. IVMP unique for each vessel
    b. Multiple IVMPs included if submitted by group of vessels
6. Self-Governing Plan (if applicable, not required, see section 0)
    a. Data Delivery and Analysis (DDA) specifications
    b. submitted by either a group of vessels or an individual vessel

Continued eligibility:

1. Participants must be in compliance with their IVMP
2. Demonstrate proper documentation of the discards in logbooks or on video
3. No civil penalties related to fishing activity exceeding a certain amount within the time period of EM use

Option B: Eligibility requirements for all fisheries with additional for bottomfish vessels

Same as Option A, however; vessels that participate in bottomfish fishing in the IFQ program would be also be required to be a member of a fishery co-op to be eligible for EM use. This option may provide a mechanism for a coop to cover an individual vessel if it exceeded an IFQ for that vessel and, if necessary, to assess a penalty for an individual vessels based on coop agreements.

Self-Governing Plan Elements

If vessels choose to develop and join group or self-governing agreements, then the following information would also be required under Options A and B.

Group Self-Governing Agreement (not inclusive of all elements)

a. Comply with all Federal and State Regulations
b. Retention / Discard Requirements
c. Time and Area Restrictions
d. Data Collection Equipment Criteria

e. Data Collection Requirements
f. Data Analysis Agreement Clause
g. Discard Assessment Protocols and Procedures
h. Vessel / Operator Performance Standards
i. Vessel / Operator Responsibility
j. Compliance Criteria
    i. By Example: escalation of consequences (to be defined by group)
    ii. No Further use of Camera Use Alternative Criteria
k. Escape Clause

Individual Self-Governing Agreement (not inclusive of all elements)

a. Comply with all Federal and State Regulations
b. Retention / Discard Requirements
c. Time and Area Restrictions
d. Data Collection Equipment Criteria
e. Data Collection Requirements
f. Data Analysis Agreement Clause
g. Discard Assessment Protocols and Procedures
h. Vessel / Operator Performance Standards
i. Vessel / Operator Responsibility
j. Compliance Criteria
    i. By Example: fail to demonstrate compliance, vessel must use observer for rest of the year.
k. Escape Clause

2.2.7.3 Application Approval and Required Information

Currently vessels are required to carry human observers during an IFQ trip. Under the proposed EM program, a vessel would need to apply for an exemption to this regulation. Applicants would need to follow specific regulations and provide adequate information for NMFS to evaluate the application. An applicant would need to meet certain qualification standards to be eligible for EM use in lieu of an observer. However, even if an applicant qualifies and receives the option to choose EM, the vessel will still be subject to NMFS observer coverage to collect scientific data.

The following is a list of potential information that NMFS would collect from applicants.

1. Operational Information
    a. Installation by certified EMS Provider
    b. EMS service provider responsibilities
    c. Data Confidentiality Standards
    d. Data Storage and Delivery Standards
    e. EMS Coverage Requirements
    f. Monitoring Requirements
    g. Vessel Responsibilities

2. Data Sources
    a. Digital Camera(s)
    b. Winch Sensors
    c. Hydraulic Sensors
    d. Log Book
    e. VMS
    f. GPS

3. EM Data Standards
    a. Secure Watertight Control Box Data Storage
    b. Encrypted Data
    c. Storage Standards
    d. Date and Time Stamp and Counter
    e. Digital File Format
    f. Minimum Frame Rate
    g. Minimum Resolution
    h. Accepted Delivery Methods
    i. Time Frames
    j. Color Optics
    k. Lighting Standards
    l. Power Supply Standards

If NMFS deems the application incomplete, it would provide the applicant an opportunity to revise it appropriately. Specifics regarding denial of an exemption would be provided on a case by case basis but the decision would likely be based on set standards that would be developed by NMFS. This process is identified as a NMFS process; therefore, the standards would likely involve a Council deeming process (see Section 2.2.9).

2.2.7.4 EM Vessel Operational Plan - Individual Vessel Monitoring Plans (IVMP)

IVMPs would play a major role as part of the EM program. These plans would help facilitate an effective program and serve as a clear plan for discard documentation, installation and maintenance of an EM system, protocols for data storage and transfer, among other things.

IVMP requirements

Each vessel operator/owner would be responsible for developing an IVMP for the vessel and acquiring the needed approval from NMFS. An IVMP that is approved by NMFS would be part of the application process to use EM in lieu of an observer (see section 2.2.7.3). NMFS would specify IVMP requirements in regulation. This process is identified as a NMFS process; therefore, the standards would likely involve a Council deeming process (see Section 2.2.9).

A general list of potential categories of information that would be included in the IVMP is provided here:
a) Type of system
b) Hardware
c) Software

d) Emergency protocols
e) Back-up equipment use protocols
f) Catch handling protocols
g) Layout of vessel
h) Screen shots of all camera views
i) Number of cameras needed with placement specifications
j) Care and maintenance of the EM system
k) Types of sensors and data for sensors to capture
l) Download/maintenance schedule
m) Logbook format (electronic or paper)
n) Tamper Resistant/Taper Evident
o) Lighting Locations (Stern, Deck, Discard Shoot, etc.)
p) Bridge Mounted Computer Interface/Monitors
q) GPS Receiver
r) Winch Sensors
s) Hydraulic Pressure Transducers
t) Power Supply / Backup
u) Wire Runs
v) Geo Fencing (NMFS supplied)
w) System's Check Certification
x) Data logger

2.2.7.5 EM Vessel Operational Plan - IVMP Expiration

The duration of the IVMP must be determined. Also if modifications to a plan are necessary then a threshold for additional approval by NMFS may be necessary. A plan may need to be modified, for example, to accommodate changes in fish handing protocols or the number of cameras needed to get more accurate information. If modifications to the IVMP are necessary, changes must be made in agreement between the vessel representative and the EM provider. Some changes may require re-approval by NMFS; therefore, criteria that trigger re-approval will need to be developed.

Three IVMP expiration options have been identified:

Option A – No Expiration unless modifications are made

- Approval of plans by NMFS with no expiration
- Plan modification provisions: (NMFS to decide how this is done)

1. EM Provider and vessel operator provisions – changes that do not need re-approval by NMFS (e.g. camera position changes)
2. NMFS provisions - changes that trigger the need for re-approval by NMFS (e.g. operator will use a different vessel)

Option B – Annual Expiration or if modifications are made

Same as Option A but with annual expiration

2.2.7.6 Declaration of EM Use

Agencies and contractors (i.e., NMFS, PSMFC, EM providers, enforcement, states, and observer providers) will need to know the level of participation for EM use. This will help determine employee workload needs (e.g., how many observers, video reviewers, or catch monitors are needed month to month or annually), scheduling data transfers, EM system maintenance needs, etc. In order to process the fisheries in an orderly way, IVMP must provide a "Declaration of EM Use" and specify when an EM system will be used and when the vessel would, if at all, need an observer for a specified period of time within fishing year.

Option A - Annual Declaration
For the coming year the permittee would declare that is will use EM for the next 12 months and no observer coverage is needed unless EM fails.

Option B - Annual Declaration with Intermittent Use
For the coming year, participants must indicate when it will use EM and when it will use an observer (e.g. monthly or quarterly). The IVMP would include a description of the responsibility for vessel operator to notify NMFS, EM provider, and NMFS observer program when EM will be used and when observer will be used. The time period for EM use would be adhered to unless EM fails and observer is needed.

Option C - Declare Until Changed with Some Limit on Frequency
Under this option, the vessel and the observer provider would need to schedule when observers are needed or available on a per trip basis. The IVMP would provide a description of the responsibility for vessel operator to notify NMFS, EM provider, and NMFS observer program when EM will be used and when observer will be used. However a limit would be imposed on the number of times a vessel could switch from using EM to using an observer and then back to using EM.

Option D - Declare Until Changed with No Limit on Frequency
Same as Option C but with no limit on the number of times a vessel could switch back and for the between using EM and an observer.

Exception for Emergency situations (e.g., camera broke so need an observer tomorrow, vice versa)

2.2.8 Equipment and Protocol Provisions

The success of an EM program relies on the ability to capture the data and process it in a timely manner so EM equipment that provides the necessary data for efficient processing and accurate review is critical. A type approval process will need to be developed by NMFS with the aid of current experience and technology; see section 2.2.9. However, technology will change in the future so a process that incorporates the ability to change the standards for equipment use, data formats, and protocols for data transfer will need to be flexible.

2.2.8.1 EM Equipment Requirements

Although NMFS policy requests the use of open source software so that common platforms can use the data generated or multiple users can access data, allowing both open source and proprietary equipment and software will be allowed if they meet the objectives of the performance standards. The following topics would need to be worked out with technical advisors from NMFS, PSMFC, States, and EM providers.

The following sections describe components of the EM program that need to be developed during implementation. These components would apply to all fisheries under Alternatives 2 and 3, and there are no options to choose from under this section.

Data formats:
A standardized set of data formats will be developed so that data that can be used by multiple users such as PSMFC and NMFS to analyze data or video without a cumbersome conversion process to access the data. This will need to be specified in the future during implementation with the advice of NMFS, PSMFC, states, and other technical advisors such as EM providers.

Video Hardware:
Image quality must be sufficient to allow clear identification of species or species categories being discarded; therefore, performance standards of the video hardware will be developed during implementation between NMFS, PSMFC, states, and EM providers. For example, two types of video cameras are currently used by EM providers, digital and analog. Both have benefits and drawbacks. For example, if a very sharp video image is needed at a close range to identify fish and other species such as sponges then a digital camera may be necessary; however, the use of a digital format will increase the need to for more memory storage of the video files. An analog video could be used for the same purpose to capture images in the same manner and lessen the need for data storage.

Logbook Data Source:
The EM program would allow either paper or electronic logbooks to be used as required under Alternative 2, Option C or Alternative 3. Electronic logbooks may increase efficiencies in the EM analysis by eliminating the need to convert paper logbooks to an electronic format. It may be possible to link the electronic logbook data set to the video data set to increase efficiencies of video review. For example, random selection of the logbook discard events will be necessary under Alternative 3. After the selection is made, a list of those events could be tie to the video events so that reviewers can "jump" to the event in the video data.

On-Vessel Data Storage:
Video hardware, sensor data, vessel location data, and logbook data/data logger would likely be integrated together in a secure format and stored on a hard drive. The hard drive would be removed and a new one replaced. Storage capacity will need to be large (1 terabyte or more). Dependent on the amount of data generated for storage, it's possible that some vessels may need to carry multiple hard drives and be trained to replace them at sea as needed or return to shore for replacement (see section 2.2.8.2).

Onboard operations:
Some onboard operations will need to be standardized for the all vessel under the EM program. Topic examples include:

a) Self check system to ensure proper functioning of EM system ("functionality test" within the EM system with a record that the test was performed)
b) EM system is powered on during entire trip, however cameras could be triggered to turn on at first hydraulic event and remain on for the duration of the trip.
c) Back-up-equipment-use protocols if EM unit or portions of it fail
d) Performance standards need to be developed during implementation between NMFS, PSMFC, states, and EM providers.

2.2.8.2 Data Transfer Process

Protocols need to be established for the transfer of data. This is a critical component of the EM program since it involves the physical transfer of the data from the vessel to the video reviewer. The process of transferring the data could be electronically via a WiFi network or email, or physically pulling a hard drive out of a computer modual and sending it in the mail or driving it from the port to the reviewer. Protocols may also vary based on the type of data being transferred (video, electronic log, or data logger). The method of transfer would be dependent on the amount and type of data being transferred. For example, electronic logbooks can be emailed but a hard drive with a terabyte of data would likely need to be pulled out of the EM system and physically transferred to the reviewer. The method of transfer that would be allowed under the EM program will be developed during implementation however some methods have been identified for use such as Wi-Fi, satellite signal, email, and thumb drives.

Data transfer protocols and frequency may vary by fishing sector. For example, mothership catcher vessels may seldom return to port. This would increase the volume of data to store and affect the frequency of data transfer. If the data transfer processes are to be included in the Council recommended policy then both generic provisions that apply to all vessels or all vessels of a sector, and individual provisions may need to be specified.

The choice of transfer method may drive costs of the program up or down. For example, email would incur minimal costs but hiring personnel to drive port to port to pull hardrives may incur significant costs and is dependent on the frequency of this activity.

Since the data could potentially be used in enforcement actions, data transfer protocols would have to address chain of custody and ensure the integrity of the data is not compromised. Typically the video data is encrypted by the EM provider and cannot be accessed or altered.

Several options have been identified to provide the transfer data from the vessels to the reviewer:

Options (not mutually exclusive):
A. PSMFC
B. EM Provider
C. Shoreside catch monitor

D. Vessel operator/Crew
E. Third Party (hired by processor, port, or fisher)

2.2.8.3 Data Confidentiality/Accessibility/Ownership

All data collected in the EM system (e.g., video, logbooks, and applications) would be considered confidential according to the Magnus-Stevens Fishery Conservation and Management Act, NMFS internal confidentiality rules, and any new or revised rules that are proposed at this time (NMFS confidentiality Final Rule will be released in 2014). This includes access, ownership, and public dissemination of the information.

2.2.8.4 Video and Data Processing and Analysis

EM data processing would likely involve analysis of EM sensor, video data, and logbooks. The following is an outline of some of the considerations. Video review is a critical component of the EM program; therefore, entities that can perform this function must be identified and clearly defined methods for review and validation must be developed.

Video Review Process

The basic review process would include matching video segments with logbook discard events then verifying the discarded species and an estimated weight. Standard review protocols would need to be developed for each fishery and if compliance issues arise that require further review. It's possible that the protocol would need to include defining "audit units" that match fishing logs units (i.e., fishing events, transiting time periods to and from fishing grounds). For some fisheries fishing events are not clearly defined to facilitate an audit and may need to be developed during implementation between NMFS, PSMFC, and EM providers.

Once a fishing trip is reviewed and the total discard is estimated, this information would need to be transferred to NMFS to debit a QP account. This information currently flows through PSMFC then to NMFS for final accounting. Since PSFMC manages the Pacific Fisheries Information Network this data flow protocol is expected to remain. However there may be efficiencies to consider if data is reviewed by an EM provider or a third party and transferred to PSMFC versus directly to NMFS.

The amount of video to review depends on the method chosen to monitor discards. For example, if a census of all video for a fishery is chosen (Alternative 2, Option A) then all video of discard events would be reviewed. The length of time to review all the video would be dependent on the fishery, and the allowable discard. For example, it may take 1 hour to review a midwater trawl whiting trip because they are required to retain all fish (Option A - maximized retention) and few discard events occur. But if a bottomtrawl vessel is allowed to discard certain species of flatfish (Option B – optimized retention) then review time may take 20 hours for a single haul since multiple species are caught, sorted, then discarded. Fish handling protocols would need to be developed to ensure efficient handling of species yet capture the discard data appropriately for a video reviewer to identify the species and estimate the weight of the discard.

If logbooks with audit is chosen (Alternative 3), then video review may take less time since a random review of discard events would likely be less than 100%. However, it would depend on the fishery and the discard that is allowed for that fishery as described above. A determination must be made as to how much video should be reviewed (10, 25 or 50%) that would reduce the risk of missing undocumented discard activity yet provide high level of confidence in the logbook data for IFQ accounting.

An analysis of this information can be found in Section 4, Impact Analysis of the Alternatives (analysis needs further development).

Video reviewers

Video review could be conducted by several entities. One obvious choice is for the EM provider to conduct the review and provide the information to NMFS. However, it's possible that NMFS, PSMFC or some other third party could conduct the reviews. The benefit of an EM provider conducting the review is that it has an acute understanding of its software and video analysis tools, such as Archipelago Marine Research Inc. It may also be more cost effective for a fishing vessel to contract a "package" of an EM system and video review analysis from an EM provider (see section 4.3.1.2). However, NMFS would need to conduct an audit of the EM provider or third party contractor to ensure all parties are in compliance with review protocols and IFQ accountability.

PSMFC is a trusted entity for fisheries management and support of fisheries program and are currently conducting field studies therefore are gaining experience in the process. NMFS and PSMFC would need to develop a program to accommodate the work load and if the industry is required to pay for all video review then there may be difficulties in funding PSMFC or NMFS to conduct the analysis (NEED A DETERMINATION ON THIS FROM NMFS).

Potential reviewers for discard events (not mutually exclusive):

Option A: NMFS
Option B: Pacific States Marine Fisheries Commission
Option C: EM Provider
Option D: Third Party

2.2.8.5 Payment for Scientific data collection/observations

There are two types of duties for observers in the IFQ fishery, compliance observations and scientific observations. Compliance observations are needed to support catch and discard monitoring in the IFQ fishery to estimate total catch by a fishermen. Scientific observations are conducted to collect data to support stock assessments and estimate protected species interactions, amongst other things. If EM is used on IFQ trips and the observer is removed from the vessel without making other program adjustments, significant scientific information would be lost. A continuous need exists for at least some level of scientific observer coverage to collect biological samples and other scientific data on EM trips.

Previous to the IFQ program NMFS provided scientific data collection on roughly 20 percent of the limited entry trawl fleet. This cost was covered by the Government. Under an EM program scientific data collection will be needed from vessels without an observer. It's estimated that the WCGOP will sample roughly 20-30 percent of the EM fleet; however, these rates will need to be examined and a sampling scheme developed by NMFS in the future.

A funding source to continue this task under an EM program must be identified to support the WCGOP efforts. Three options were developed:

Option A: Government funded, same as pre IFQ
Option B: Industry Funded
Option C: Combination of both Government and Industry

2.2.9 NMFS Processes

While working through the development of the alternatives and options certain components or portions of the EM program were identified for NMFS to develop. For example, NMFS will need to set up an internal process to conduct a "type-approval" process that authorizes vessels to use certain EM equipment on a vessel, and set up a process for applicants to submit an "Observer Exemption Application" to request use of EM in lieu of an observer. There are no options to choose from under this section. It's possible that additional tasks would be identified in the future. This section is intended to describe what is currently identified and the process for deeming the regulations that would coincide with their development.

It's expected that some of the development will be done in consultation with the GEMPAC or other technical advisors. In addition, regulations will need to be developed to provide specific guidance to fishermen and EM providers, or observer providers (e.g., fill out applications, make changes to individual vessel monitoring plans, or for compliance with program rules). The development of these processes and associated regulations would likely involve a Council deeming process for the Council to review the draft regulations before they go into the proposed rule stage. Approval from the Office of Management and Budget for the collection of information under the Paperwork Reduction Act (PRA) will be needed when appropriate and are preliminarily identified in the list below. The list may be updated as the decision document is developed and the impact analysis expanded.

- Observer Exemption Process (including an application for fishermen, PRA)
- Individual Vessel Monitoring Plan Approval (including a form for submission to NMFS for review, PRA)
- Equipment Type Approval (including a list of specifications for EM providers to accommodate, PRA)
- Approved EM Provider List (including a list of specific criteria for providers to demonstrate their capability and standards, PRA)
- Eligibility Criteria (Initial and Continued)
- Declaration Process to Use EM (possibly including port hail in/out process, PRA)
- Confidentiality Rules (if different from status quo)

- WCGOP Scientific Observation Sampling Scheme

2.2.10 Spatial Variation for High Bycatch Areas

These management options could be applied to allow the use of EM based on ocean areas that are known for high or low bycatch and would only apply to bottom trawl activity under the IFQ program. Under these options, management areas would need to be identified and designed for explicit use of EM. It's possible to use preexisting areas such as the Rockfish Conservation Area or Essential Fish Habitats.

Option A - No special provisions

Option B - Under this option, fishing activity in areas that are likely to have lower bycatch could be monitored with EM rather than using observers; no EM would be allowed in high bycatch areas. Vessels would declare their fishing area prior to departure and be required to follow the appropriate fishing protocols for that area.

Option C - Under this option, if you chose to fish in a high bycatch area, a higher level of EM review may be required. The level of review would need to be determined.

This type of additional spatial management may add complexity to the management of the IFQ fishery and would require identifying additional management areas which in turn may be difficult and costly to manage. However it may be possible to develop a management tool of certain depths to identify areas with less bycatch. For example, when fishing outside the RCA depth fathom of 200 meters for bottomfish, species composition can be less complex and contain less bycatch; therefore, EM could be used as noted under Option B.

2.2.11 Adaptive or Phased Implementation

Implementation of an EM program could be done for all fisheries at one time through regulation (Option 1). However, there may be other options. Implementation of an EM program could be done through a pilot program using an Exempted Fishing Permit (ESP.) (Option 2). For example, an EM program may be developed for a fishery, and then implemented on a temporary basis through an EFP to identify issues and improve the program before it is implemented full scale for a particular fishery or all fisheries. It could also be done through a "phased-in" approach. For example, if development of an EM monitoring program (i.e., regulations, camera system, EM providers, review process, accounting protocols, enforcement, etc.) is ready for use in the mid-water trawl fishery then NMFS could implement the program by regulation before other EM programs are fully developed for use in other fisheries such at the bottom trawl (Option 3).

Another approach would be to implement an EM program based on retention rules (Option 4), starting with any gear types that are willing to fish under a maximized retention type fishery (See Alternative 2 in Section 2.2.4 for a description of a maximize retention fishery). For example, bottom trawl and non-whiting mid-water trawl vessels that are willing to

retain and land all fish (excluding prohibited species and ESA/MMPA species) would be allowed to use EM. Then, as EM capabilities improve to provide verifiable species identification (for example distinguishing aurora rockfish from rough eye rockfish), the EM program could be expanded to include other discard options. A list of species that are shown to be verifiable with EM would need to be developed over time.

Implementation could be organized in a number of ways.
Option A. None, implement all fisheries at one time through regulatory implementation
Option B. Use EFPs to test final Council policy, prior to full regulatory implementation.
Option C. Phase in by sector/gear.
Option D. Phase in retention options over time.
Option E. Use EFPs to inform Council policy decision making prior to regulatory development
Options B-E are not mutually exclusive.

2.3 Alternatives Considered but Eliminated from the Detailed Analysis

The following topics were discussed during the public scoping process; however the Council eliminated them from further consideration and not analyzed in this document. An explanation is provided under each topic.

2.3.1 Mandatory Use of an EM program

Under this option, all participants in the Shoreside IFQ program would be required to use EM. No human observers would be used to monitor for compliance with IFQs, IBQs, or catch allocations. Making the EM program mandatory was considered during the public scoping; however, it was not further analyzed in this EA because some participants may not want to use EM and only want a human observer. If the system breaks down vessel would not be able to fish until the system is working. This could delay fishing activity until a technician can repair the system. This limits vessels options and can monetarily impact a vessel significantly depending on the amount of time the vessel is tied up, the target species, and the price of fish.

2.3.2 Full retention of All Catch

Under this option, vessels would be required to retain all retain all catch share species and non-catch share groundfish species for the IFQ and co-op fisheries (see Table 2-1 and Table 2-2, respectively), non-groundfish species, prohibited species; ESA species (Table 2-3); and MMPA species. Vessels would not be allowed to discard species for safety reasons, bleeding nets or any other reason.

This option was considered impractical and potentially dangerous. Vessels would not be able to retain marine mammals or ESA listed species unless instructed to do so through a Federal exemption. Although exemptions can be made, it's typically done for special cases and research purposes. In addition, retaining large marine organisms is not possible or safe in some cases. Also, trying to capture fish they may have accidentally been released would be impractical and by not allowing vessels to discard fish for safety reasons could endanger vessel crew.

2.3.3 Discard at Will under EM Alternatives 2 and 3

The following option was removed for further consideration:
Option C: Discard At Will (Status Quo)
Vessels would be allowed to fish in the same manner as they currently do and may discard any species or be required to retain species according to current regulations.

- May discard any species unless regulations require you to retain them
- May discard catch share species, non-catch share species
- May discard non-groundfish
- Allow selective discard of trash, mud coral, etc.
- Require selective discards of prohibited species (except whiting trips);
- Require discards of ESA and MMPA species (i.e., protected species).

This option was removed from further consideration because the Council believes at this time, the fisheries would not be able to discard at will under the current EM capabilities. Species identification under video monitoring is currently difficult to conduct using the current video systems and review techniques. It's thought that in the future, advances in EM system software and technology may provide an opportunity for some fisheries to discard at will and the Council could continue to refine the list of species that may be discarded under the current EM program considerations.

2.3.4 No declaration of EM use

Under this option, vessels would not be required to declare to appropriate agencies and contractors their intention to use EM. This option was not further analyzed because federal and non-federal agencies, EM providers, observer providers and enforcement need this information for budgetary and labor planning purposes.

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
	Compliance Monitoring Basic Provisions			
2.2.1	Discard Documentation Technology	Observers	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program Individual vessel choice to use cameras in lieu of human observer	
2.2.1	Documentation Coverage	100%	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program 100% of all IFQ trips must either have observer or cameras	
2.2.1.1	Video Reading Protocols	None	**Option A**: 100% (census all video footage and estimate discard). **Option B**: Subsample Video and expand discard estimate to whole trip (% review must be developed) **Option C**: Subsample Video with a mandatory logbook requirement to document discard (% to review must be developed)	Audit logbook Review discard events documented in logbook and at some predetermined level then conduct a random review at some level (x%) of video for events not documented. (intensity of random review varies based on vessel's compliance history)

2.2.2	Discard Accounting - Individual or Fleet-wide	Observers/IFQ	**Accounting of discards are either accounted against IFQ, accounted against sector-wide, annual catch limit (ACL), or not accounted. Estimation of discard may be done through EM, WCGOP observer program, or not estimated.** **Option A**: One discard category and all discards are estimated using EM (or another data source when necessary) and counted against IFQ: • Dumped off deck (e.g., shoveled, picked out of net) • Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.). • Dropped off gear • Floating fish • Lost gear (not captured by EM, estimate using WCGOP protocol) • Consumed/used as bait (not captured by EM) • Unobserved sets/hauls (not captured by EM, maybe apply discard rate using EM estimates from previous sets/hauls) **Option B**: Split into two discard categories; Category 1 count against IFQ, Category 2 count against sector or ACL; for some discard the estimate is based on trips with observer coverage: Discard 1 IFQ Accounting: • Dumped off deck (e.g., shoveled, picked out of net) • Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.). • Unobserved sets/hauls (not captured by EM, apply discard rate using WCGOP Discard 2 Sector or ACL accounting: • Dropped off gear (use WCGOP estimates) • Floating fish (use WCGOP estimates) • Estimated from lost gear (estimate using WCGOP protocol) • Consumed/used as bait (not captured by EM, use WCGOP estimates) **Option C:** Split into two discard categories; Category 1 count against IFQ, no accounting for discard 2 category: Discard 1 IFQ Accounting: • Dumped off deck (e.g., shoveled, picked out of net) • Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.). • Unobserved sets/hauls (not captured by EM, apply discard rate using WCGOP Discard 2 No accounting: • Dropped off gear • Floating fish • Lost gear • Consumed/used as bait

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
			Option D: For the Mothership midwater trawl whiting fishery. No category is used; unintentional discards of whiting would be deducted preseason from the MS coo-op allocation of whiting. A proxy of the average percentage of discard from 2011, 2012, 2013, 2014, and any additional averaging from future years would be used for the deduction. Discard of bycatch species would be determined by pro-rating the observer data from the MS processor. **Council staff note: In order for Option C to be valid it would have to comply with MSA national standards. All catch and discard must be accounted to estimate total mortality estimates and ensure annual catch limits are not exceeded.**	

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
2.2.3	Definitions for Total Catch Accounting - Total Catch, Discard, Retained	Use WCGOP definitions	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program **NOTE: Under the IFQ and catch allocation system all catch must be accounted for to debit individual QS accounts and fishery allocations, regardless if it categorized as retained catch or discard.** **Total catch for trawl:** Total catch is defined as the sum, or estimated weight, of all organic and inorganic material caught by the gear, to include any organic or inorganic material confined within a trawl net as the net is being landed, lost gear, as well as any visually discernible catch lost during the retrieval process that can be reasonably attributed to the vessel. **Total catch for fixed gear:** Total catch is defined as the sum, or estimated weight, of all organic and inorganic material caught by the gear to include any fish hooked or in a pot as the gear is being landed, lost gear, as well as any visually discernible catch lost during the retrieval process that can be reasonably attributed to the vessel. **Discard for fixed and trawl gear:** Discard is any portion of the total catch that is not delivered to a buyer. Fish caught for bait or onboard consumption are considered discard. For gear that is lost, or sets and hauls that are unobserved, discard rates will be applied based on similar sets and hauls. **Retained catch for fixed gear and trawl:** Retained catch is any portion of the total catch that is delivered to a buyer or processor.	

2.2.4	Discard Requirements	Discard at will unless required to retain. • May discard any species unless regulations require you to retain them. • May discard catch share species, non-catch share species. • May discard non-groundfish • Allow discard of trash, mud coral, etc. • Require discard of prohibited species. • Require discards of ESA and MMPA species (protected species).	**Option A**: **Maximized Retention** - A vessel is generally required to retain all catch share species, non-catch share groundfish species, non-groundfish species (Non-FMP and not prohibited species) • No selective discard for catch share species, non-catch share groundfish species • No selective discard for non-groundfish species • Allow selective discard of trash, mud coral, etc. • Require selective discards of prohibited species (except whiting trips); • Require selective discards of ESA and MMPA species (i.e., protected species). • Non-selective discard for e.g., safety, "bleeding net", zipper accidentally opened, fish came off hook, gilled in net **Option B**: **Optimize Retention of Catch Share Species with Limited discards** - A vessel is generally required to retain all catch share species. • Allow selective discard of trash, mud coral, etc. • Require selective discards of prohibited species (except whiting trips); • Require selective discards of ESA and MMPA species (i.e., protected species). • Non-selective discard for e.g., safety, "bleeding net", zipper accidentally opened, fish came off hook, gilled in net **Potential Gear Specific Sub-options under Optimized Retention (must be verifiable under EM)**: Allowable Discards Midwater trawl non-whiting trips, bottomtrawl, and fixed gear trips may discard the following species if verifiable under the EM program: **1) For catch share species** SubOption 1.a – Allow discard if species that are verifiable with EM SubOption 1.b – Allow discard of all non-rockfish groundfish (full retention of rockfish only) SubOption 1.c – Allow discard of lingcod and sablefish SubOption 1.d – Allow discard of flatfish **2) For non-catch share groundfish species** SubOption 2.a – Allow discard if species that are verifiable with EM SubOption 2.b – Allow discard of all non-rockfish groundfish (full retention of rockfish only) **3) For non-groundfish (Non-FMP and not prohibited species)** SubOption 3.a – Allow discard if species that are verifiable with EM SubOption 3.b – Allow discard of all non-groundfish species

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
2.2.5	Halibut Retention/Discard with Fishery Specific Options	Use WCGOP and IPHC protocols	**Option A**: Apply IPHC mortality rate for specific gear type: MDWT Whiting 100% mortality; MDWT non-whiting and BTW 90% mortality if discarded; Fixed gear longline 16% mortality if discarded; Fixed gear pot 18% mortality if discarded. **Option B**: WCGOP scientific observations (assumed 20-30% coverage) is applied to fleet **Option C**: Use vessel specific mortality rate (update rates periodically) **Option D**: IPHC exemption to allow full retention, 100% mortality **Option E**: Captain and crew provide assessment (training would be required) **Option F**: Use EM viability assessment (currently conducting study, need IPHC approval)	
2.2.6	Discard Species List Adjustments	None	**Options for a process to expand or change the species lists:** **Option A**: NMFS to make determination and provide list to fishers through the NMFS EM Observer Exemption Process. **Option B**: Use Council process for changing species list using routine management measures if initial list is fully analyzed for environmental impacts (e.g., use groundfish specification process, or some other routine management measure). **Option C**: Set initial lists in regulation and change at some future point through Council process with proposed/final rule making.	
	Vessel Operation Provisions			
2.2.7.1	Observer Exemption Process	None	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program NMFS to Develop Application and Approval Process	

2.2.7.2	Eligibility For Camera Use	N/A	These requirements would apply to both alternatives 2 and 3. The suboption adds that participants in the bottomfish fishery would be required to meet the initial requirements and continued eligibility requirements as outlined with an additional requirement that, in order to use EM while bottomfish fishing, participants must be part of a fishery co-op. A vessel must be in good standing and has approved equipment and operational plan certifications. **Option A: Eligibility Requirements for all fisheries:** **Initial eligibility criteria**: 1. Limited entry groundfish trawl permit 2. Quota share permit 3. No IFQ deficits 4. No civil or criminal penalties related to fishing activity exceeding a certain amount and timeframe 5. Schematic and Description of NMFS approved Individual Vessel Monitoring Plan (IVMP) a. IVMP unique for each vessel b. Multiple IVMPs included if submitted by group of vessels 6. Self-Governing Plan (if applicable, not required) a. Data Delivery and Analysis (DDA) specifications b. submitted by either a group of vessels or an individual vessel **Continued eligibility for all fisheries**: 1. Participants must be in compliance with their IVMP 2. Demonstrate proper documentation of the discards in logbooks or on video 3. No civil penalties related to fishing activity exceeding a certain amount within the time period of EM use **Option B for bottomfish fishery only:** Same as Option A, however; vessels that participate in bottomfish fishing in the IFQ program would also be required to be a member of a fishery co-op to be eligible for EM use.

2.2.7.3	Application Approval and Required Information	N/A	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program. <u>Requires application to NMFS to use EM, could include</u>: 1. Operational Informational information. a. Installation by certified EMS Provider b. EMS service provider responsibilities c. Data Confidentiality Standards d. Data Storage and Delivery Standards e. EMS Coverage Requirements f. Monitoring Requirements g. Vessel Responsibilities 2. Data Sources a. Digital Camera(s) b. Winch Sensors c. Hydraulic Sensors d. Log Book e. VMS f. GPS 3. EM Data Standards a. Secure Watertight Control Box Data Storage b. Encrypted Data c. Storage Standards d. Date and Time Stamp and Counter e. Digital File Format f. Minimum Frame Rate g. Minimum Resolution h. Accepted Delivery Methods i. Time Frames j. Color Optics k. Lighting Standards l. Power Supply Standards

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
2.2.7.4	EM Vessel Operational Plan - Individual Vessel Monitoring Plans (IVMP)	No plan required	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program. **EM Operational Plan Required** Potential categories of information in an IVMP: a) Type of system b) Hardware c) Software d) Emergency protocols e) Back-up equipment use protocols f) Catch handling protocols g) Layout of vessel h) Screen shots of all camera views i) Number of cameras needed with placement specifications j) Care and maintenance of the EM system k) Types of sensors and data for sensors to capture l) Download/maintenance schedule m) Logbook format (electronic or paper) n) Tamper Resistant/Taper Evident o) Lighting Locations (Stern, Deck, Discard Shoot, etc.) p) Bridge Mounted Computer Interface/Monitors q) GPS Receiver r) Winch Sensors s) Hydraulic Pressure Transducers t) Power Supply / Backup u) Wire Runs v) Geo Fencing (NMFS supplied) w) System's Check Certification x) Data logger	

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
2.2.7.5	EM Vessel Operational Plan - IVMP Expiration	No plan required	**Option A – No Expiration** unless modifications are made • Approval of plans by NMFS • Plan modification provisions: (NMFS to decide how this is done) 1. EM Provider and vessel operator provisions – changes that do not need re-approval by NMFS (e.g. camera position changes) 2. NMFS provisions - changes that trigger the need for re-approval by NMFS (e.g. operator will use a different vessel) **Option B – Annual Expiration** or if modifications are made Same as Option A but with annual expiration	
2.2.7.6	Declaration of EM Use	No declaration except for current VMS requirements	**Option A - Annual Declaration** Use EM all year; no observer coverage needed unless EM fails **Option B – Annual Declaration with Intermittent Use** For the coming year participants must notify NMFS, EM provider, and observer provider when it will use EM and when it will use an observer (e.g. monthly or quarterly). **Option C –Declare Until Changed with Some Limit on Frequency** Vessel and the observer provider would need to work out when observers may be available (e.g., per trip basis or every 6 months). However a limit would be imposed on the number of times a vessel could switch from using EM to using an observer and then back to using EM. **Option D – Declare until Changed with No Limit on Frequency** Same as Option C but with no limit on the number of times a vessel could switch back and for the between using EM and an observer. **Exception for Emergency Situation for Option A and B** For example, camera broke so need an observer tomorrow, vice versa	

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
2.9	**Equipment and Protocol Provisions**			
2.2.8.1	EM Equipment Requirements	N/A	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program. Specification of technology, hardware, and data formats, etc. including consideration for changes through time would developed by NMFS. Both "Open Source" and Proprietary should be allowed if they meet the performance criteria.	
2.2.8.2	Data Transfer Process	Completed by observers	Video data transfer, electronic/paper logbook, and data logger information will be developed during implementation of the program. Some of this information would be disclosed in an IVMP. Includes secure transfer for data and chain of custody requirements. **Options** (not mutually exclusive) **A. PSMFC** **B. EM Provider** **C. Shoreside catch monitor** **D. Vessel operator/Crew** **E. Third Party (hired by processor, port, or fisher)**	
2.2.8.3	Data Confidentiality/ Accessibility/Ownership (all data collected in the EM system)	Status quo	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program. Only data according to Magnuson-Stevens Act is confidential. Describe confidentiality standards for fishery participants. Status quo protocols will be used for access, ownership, and public dissemination. Video data collected is considered confidential observer data under the MSA.	

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
2.2.8.4	Video and Data Processing and Analysis	N/A	Potential video reviewers **Options** (not mutually exclusive): **Option A** -NMFS **Option B** -PSMFC **Option C** - EM Provider **Option D** - Third Party	
2.2.8.5	**WCGOP Scientific Observations**			
2.2.8.5	Payment for Scientific data collection/observations	Status quo however in near future industry will need to pay for all observer costs	**Option A**: Government funded, same as pre IFQ **Option B**: Industry Funded **Option C**: Combination of both Government and Industry [Need to discuss allocating costs]	
2.2.9	**NMFS Processes**	N/A	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program Identify items for NMFS to work out and then conduct a formal deeming process with the Council (i.e., Observer Exemption Application, Application and Approval Process, EM Equipment Type-Approval, IVMP Review)	
2.2.10	**Bottom trawl Spatial Variation for High Bycatch Areas**	Status quo for current are restrictions (e.g., Rockfish Conservation Areas)	**Option A** - No special provisions **Option B** - For bottom trawl fishery only, fishing activity in areas that are likely to have lower bycatch could be monitored with EM rather than using observers; no EM in high bycatch areas **Option C** - For bottom trawl fishery only, under this option, if you chose to fish in a high bycatch area, a higher level of EM review may be required	

Table 2-7. Summary of EM program components and alternatives with options for all fisheries. NOTE: Section references in the table coincide with descriptions following the table.

		DETAILED COMPONENTS FOR All FISHERIES		
Section Reference	**Component**	**Alternative 1 Status Quo: Human Observers Estimate Discard**	**Alternative 2 Camera Recordings Used to Estimate Discard**	**Alternative 3 Logbooks Used to Estimate Discard, with Camera Audits**
2.2.11	**Adaptive or Phased Implementation**	N/A	**Option A**. None, implement all fisheries at one time through regulatory implementation **Option B**. Use EFPs to test final Council policy, prior to full regulatory implementation. **Option C**. Phase in by sector/gear. **Option D**. Phase in retention options over time. **Option E.** Use EFPs to inform Council policy decision making prior to regulatory development **Options B-E are not mutually exclusive.**	

2.4 Analytical Scenarios for Impact Analysis

Since there are many options to choose from and a multitude of potential combinations that could be used in an EM program, we developed four specific "analytical scenarios" (AS) for impact analysis (Table 2-8), each built around a specific management goal. Based on the goal for the AS, an EM program alternative was identified and then options for each program element were added to that column. These scenarios were developed to help the reader understand the impact of choosing a certain management goal, an alternative, and options that generally support the management goal. Summaries of each scenario are provided here. The scenarios are meant to illustrate the range of choices available for management and the effect those choices have on the physical, biological and social environment. Further discussion of the impacts analysis is provided in Sections 4.1 through 4.2.2. Not all options for each program element are included in one of the analytical scenarios, though, in general, the options chosen tend to bracket the range of choices. The impact of replacing one option in the AS with another option is also analyzed for certain components to help the reader understand the impact of specific choices. For any particular element, a complete description of the tradeoffs among all of the options for that element is provided in the corresponding section in Appendix A.

Finally, in section 2.14, fishery sectors were grouped and tables were developed for mangers to choose an alternative for that fishery sector or fishery sector group, and add options to build an EM program.

2.4.1 Analytical Scenario Description

In the second column of Table 2-8, the management goal for AS-1 is to minimize the biological risk to all resources affected by the action (fish, marine habitat, protected species, and other marine species). Under AS-1 (lowest biological risk for all fishery sectors), we chose Section 2.2.2, Alternative 2, Option A (census all video) whereby video is the sole data source and 100% of the video is reviewed for discard events to capture the most information. This may have the lowest biological risk for all fisheries since video could be re-reviewed if necessary to get the best available information from any unintentional discards.

We chose Option A for the Discard Category component (one category for all discard events) to ensure that all discard is accounted for under the IFQ system. We chose Option A (maximized retention, Section 2.2.4.1) to ensure all fish is accounted for under the IFQ system through dockside monitoring. This option also reduces the need for review of discard events, thereby lowering the risk of missing overfished species discards that are rare in some fisheries, and reduces the need to resolve discrepancies of weight estimates for discards between logbooks and video data. All halibut would be retained (Option D) and accounted for as 100% mortality. While this would increase the mortality rate, mortality limits would not be exceeded and the estimation for total mortality for the fisheries would be improved. Under this scenario, unintentional discards that contain halibut would likely be the only source of uncertainty.

Regarding eligibility the most conservative approach would be to implement the initial and continued eligibility requirements as stated in Table 2-8 for all fisheries and include the bottomtrawl vessels option that requires vessels to be part of a coop agreement (Section 2.2.7.2, Option B). It's thought that this additional option for the bottomtrawl vessels may assist in the sharing of bycatch limits and IFQs amongst coop members and lower the risk of some vessels exceeding IFQs without the ability to cover the excess with quota shares. An annual expiration of a vessel's IVMP (Section 2.2.7.5, Option B) and annual declaration of EM use (Section 2.2.7.6, Option A) may provide managers with the most up to date information about a vessel's operators, operations, and intent to use EM - assisting in timely and affective administration and enforcement. Since vessels would use EM all year, an annual declaration would allow NMFS to plan an at-sea sampling scheme for biological collections on EM vessels with more certainty.

Regarding spatial variations for bottomtrawl (section 2.12), we chose Option B. Option B would require the use of observers in high bycatch areas (No EM use). Since bottomtrawl vessels can catch a large mix of species on some hauls, observers would be able to estimate discards at a much higher level of certainty than EM. Under this scenario bottomtrawl vessels would be fishing under a maximized retention regulations and discard should be near zero. If a vessel was fishing in a high bycatch area and needed to discard for safety reasons an observer may be able to provide a better estimate of the discard versus EM. In addition, 100% video review would be the maximum that could be implemented for the bottomfish fishery however if vessels were to fish in high bycatch areas then observers may provide a better estimate for any discard activity because EM is not capable of identifying unsorted, multiple species discard events.

Finally, Implementation of EM (Section 2.2.11) for all fishery sectors could be done by conducting EFPs after a policy decision is made then test that policy (Option B) or to use the EFPs to develop the policy further and remove uncertainties in the catch accounting for total mortality (Option E). Both have already occurred or are occurring in the current process.

AS-2 would implement EM program for the shoreside and mothership whiting fishery only and all other IFQ fisheries sectors would use observers. The management goal would be to choose an alternative with options that are the lowest cost for the whiting industry. This alternative also allows exploration of the impacts of stepwise implementation on each affected sector.

Under AS-3, EM would be implemented for all fishery sectors but the goal would be to choose the lowest cost alternative and options for the non-whiting sectors only (fixed gear, non-whiting midwater trawl, and bottomtrawl).

AS-4 would implement an EM program for all fishery sectors that would create the lowest administrative burden for all management entities (NMFS, PSMFC, Council, and Enforcement).

Table 2-8. Table of four analytical scenarios (AS) for impact analysis.

Analytical Scenario (AS)	**AS - 1** **EM for All Sectors (Lowest Biological Risk)**	**AS-2** **EM for Whiting Sector (Observers for Others) (Low Cost for Whiting Sector)**	**AS-3** **EM for All Sectors (Low Cost for Non whiting Sectors Industry)**	**AS-4** **EM for All Sectors (Lowest Administrative Burden)**
2.2.2 Video Reading Protocol (percent review)	Alternative 2 - Option A. 100% video census	Alternative 2 - Option A. 100% video census for whiting - SS discard logbook for timeliness.	Alternative 3- Logbook audit with 10% random review of video	Alternative 3 - Logbook validation with 10% random review of video (100% for whiting)
2.3 Discard Accounting - Individual or Fleetwide	Option A. One Discard Category, Full Accounting for All Discards	Option D. For MS Whiting, Deduct "unintentional minor" Discards Preseason, For SS Whiting Deduct Category 2 from ACL.	Option B. Two Discard Categories, Sector or ACL Deduction for Category 2 Discards	Option A. One Discard Category, Full Accounting for All Discards
2.5 Retention Requirements	Option A. Maximize	Option A. Maximize	Option B. Optimize	Option A. Maximize
2.6 Halibut Retention/Discard with Fishery Specific Options	Option D. Discard Exemption (100% retained)	Option D. Discard Exemption (100% retained)	Use Default Rates Option A. IPHC Gear Rate Option B. WCGOP Rate Option C. Vessel Specific Rate	Option D. Discard Exemption (100% retained)
2.7 Discard Species List Adjustment	Option C. Full Council Rulemaking Process	Option B. Routine Process	Option B. Routine Process	Option B. Routine Process

2.8.2 Eligibility for Camera Use	B. Initial and Continued Eligibility Requirements – with BTW Vessel Must be in Co-op to use EM	A. Initial and Continued Eligibility Requirements	A. Initial and Continued Eligibility Requirements	B. Initial and Continued Eligibility – with BTW Vessel Must be in Co-op to use EM
2.8.5 EM Vessel Operation Plan - IVMP Expiration	Option B. Annual Expiration	Option A. No Expiration	Option A. No Expiration	Option B. Annual Expiration
2.8.6 Declaration of EM Use	Option A. Annual - choose for entire year	Option D. Declare Until Changed (no limit on frequency)	Option D. Declare Until Changed (no limit on frequency)	Option A. Annual - choose for entire year
2.9.2 Data Transfer Process	Option C. SS Catch Monitor	Option D. Vessel Operator	Option D. Vessel Operator	Option C. SS Catch Monitor
2.9.4 Video Review	Option B. PSMFC	Option A. NMFS	Option A. NMFS	Option B. PSMFC
2.10.1 Payment for Scientific Data Collection/Observers	Option A. Government	Option A. Government	Option A. Government	Option A. Government
2.12 Spatial Variation for High Bycatch Areas (BTW Only)	Option B. In High Bycatch Areas Use Observers	Option A. None	Option A. None	Option A. None
2.13 Implementation	Option E. Use EFPs to Develop Policy; Option B. Use EFPs to Test Policy	Option A. None	Option A. None	Option E. Use EFPs to Develop Policy; b. Use EFPs to Test Policy

(w logbook for redundancy) [a/]

2.5 Fishery Sector Specific Alternatives and Options

After reading through the details of the alternatives and options in Table 2-7 and the Analytical Scenarios in Table 2-8, and the impact analysis, the following tables are provided for potential creation of Preferred Alternatives for policy development and implementation for each fishery sector or sector groups. A table of alternatives and options for each fishery sectors groupings were created for decision making purposes (Table 2-9 through Table 2-11.

Here the shoreside and mothership whiting fisheries are grouped together because they operate in a similar manner (they retain all catch and are maximized retention). Therefore, the alternatives and options available for EM program development are the same for the whiting fisheries. The fixed gear group includes longline and pot fishing activity and, in general, operate in a similar manner. Bottomtrawl and non-whiting midwater trawl are also grouped together because they both haul multiple species aboard the vessel, have similar fish handling protocols, and may discard several species of fish in large volumes. Therefore, alternatives and options for these two fisheries are the same.

Table 2-9: Shoreside and mothership whiting fishery
Table 2-10 Fixed gear (longline and pot)
Table 2-11 Bottomtrawl and non-whiting midwater trawl

Table 2-9. Shoreside and mothership whiting fishery decision making template of alternatives and options.

Alternatives/Option Choices for Shoreside and Mothership Whiting Fishery					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
EM Component	**Options for Each EM Component Category**				
2.2.1.1 Video Reading Protocol (% review)	A. 100% (Alt 2 only)	B. X% (Alt 2 Only)	C. X% (Alt 2 Only) plus logbook review	Select % Logbook Audit (Alt 3 Only)	
2.2.2 Discard Accounting - Individual or Fleetwide	A. One Discard Category, Full Accounting for All Discards a/	B. Two Discard Categories, Sector or ACL Deduction for Category 2 Discards b/	C. Two Discard Categories, No Accounting for Category 2 Discards b/	D. For MS Whiting, Deduct "unintentional minor" Discards Preseason, For SS Whiting Deduct Category 2 from ACL.	
2.2.4 Retention Requirements	A. Maximize				
2.2.5 Halibut Retention/ Discard with Fishery Specific Options	D. Discard Exemption (100% retained, 100% mortality)				
2.2.6 Discard Species List Adjustment	A. NMFS Rulemaking Process	B. Routine Process c/	C. Full Council Rulemaking Process		
2.2.7.2 Eligibility for Camera Use	A. Initial and Continued Eligibility Requirements				
2.2.7.5 EM Vessel Operation Plan - IVMP Expiration	A. No Expiration	B. Annual			
2.2.7.6 Declaration of EM Use	A. Annual - choose for entire year	B. Annual - project for year (monthly/quarterly)	C. Declare Until Changed (some limit on frequency of change)	D. Declare Until Changed (no limit on frequency)	
2.2.8.2 Data Transfer Process	A. PSMFC Staff	B. EM provider	C. SS Catch Monitor	D. Vessel Operator (crew)	E. 3rd Party
2.2.8.4 Video Review	A. NMFS	B. PSMFC	C. EM Provider	D. 3rd Party	

Alternatives/Option Choices for Shoreside and Mothership Whiting Fishery					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
2.2.8.5 Payment for Scientific Data Collection/Observers	A. Government	B. Industry	C. Combination		
2.2.10 Spatial Variation for High Bycatch Areas (BTW Only)	A. None	B. In High Bycatch Areas Use Observers	C. In High Bycatch Areas Review more Video		
2.2.11 Implementation	A. None	B. Use EFPs to Test Policy	C. Phase in By Sector - Whiting; BTW/Mid-nonwhiting, Fixed Gear	D. Loosen Species Retention Over Time	E. Use EFPs to Develop Policy;

a/ Category 1 discards include fish dumped off deck (e.g., shoveled, picked out of net), dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.), unobserved sets/hauls, fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.

b/ Category 2 discards include fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.

c/ "Routine process" would establish a list of species for which discard requirements can be changed through routine inseason action as specified in Section 6.2.1 of the groundfish FMP.

Table 2-10. Fixed gear fishery (longline and pot) EM decision making template of alternatives and options.

Alternatives/Option Choices for Fixed Gear Fishery (longline and pot)					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
EM Component	**Options for Each EM Component Category**				
2.2.1.1 Video Reading Protocol (% review)	A. 100% (Alt 2 only)	B. X% (Alt 2 Only)	C. X% (Alt 2 Only) plus logbook review	Select % Logbook Audit (Alt 3 Only)	
2.2.2 Discard Accounting - Individual or Fleetwide	A. One Discard Category, Full Accounting for All Discards a/	B. Two Discard Categories, Sector or ACL Deduction for Category 2 Discards b/	C. Two Discard Categories, No Accounting for Category 2 Discards b/	D. For MS Whiting, Deduct "unintentional minor" Discards Preseason, For SS Whiting Deduct Category 2 from ACL.	
2.2.4 Retention Requirements	A. Maximize	B. Optimize			
2.2.5 Halibut Retention/ Discard with Fishery Specific Options	Default Rates A. IPHC Gear Rate longline 16%; pot 18% mortality	Default Rates B. WCGOP Rate C. Vessel Specific Rate	D. Discard Exemption (100% retained)	E. Captain/Crew Evaluation	F. With EM Data - Via IPHC Approved Method
2.2.6 Discard Species List Adjustment	A. NMFS Rulemaking Process	B. Routine Process c/	C. Full Council Rulemaking Process		
2.2.7.2 Eligibility for Camera Use	A. Initial and Continued Eligibility Requirements	B: Initial and Continued Eligibility with BTW Vessel Must be in Co-op to use EM			
2.2.7.5 EM Vessel Operation Plan - IVMP Expiration	A. No Expiration	B. Annual			
2.2.7.6 Declaration of EM Use	A. Annual - choose for entire year	B. Annual - project for year (monthly/quarterly)	C. Declare Until Changed (some limit on frequency of change)	D. Declare Until Changed (no limit on frequency)	
2.2.8.2 Data Transfer Process	A. PSMFC Staff	B. EM provider	C. SS Catch Monitor	D. Vessel Operator (crew)	E. 3rd Party
2.2.8.4 Video Review	A. NMFS	B. PSMFC	C. EM Provider	D. 3rd Party	

Alternatives/Option Choices for Fixed Gear Fishery (longline and pot)					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
2.2.8.5 Payment for Scientific Data Collection/Observers	A. Government	B. Industry	C. Combination		
2.2.10 Spatial Variation for High Bycatch Areas (BTW Only)	A. None	B. In High Bycatch Areas Use Observers	C. In High Bycatch Areas Review more Video		
2.2.11 Implementation	A. None	B. Use EFPs to Test Policy	C. Phase in By Sector - Whiting; BTW/Mid-nonwhiting, Fixed Gear	D. Loosen Species Retention Over Time	E. Use EFPs to Develop Policy;

a/ Category 1 discards include fish dumped off deck (e.g., shoveled, picked out of net), dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.), unobserved sets/hauls, fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.

b/ Category 2 discards include fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.

c/ "Routine process" would establish a list of species for which discard requirements can be changed through routine inseason action as specified in Section 6.2.1 of the groundfish FMP.

Table 2-11. Bottomtrawl and non-whiting midwater trawl fisheries EM decision making template of alternatives and options.

Alternatives/Option Choices for Bottomtrawl and Non-Whiting Midwater Trawl Fisheries					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
EM Component	**Options for Each EM Component Category**				
2.2.1.1 Video Reading Protocol (% review)	A. 100% (Alt 2 only)	B. X% (Alt 2 Only)	C. X% (Alt 2 Only) plus logbook review	Select % Logbook Audit (Alt 3 Only)	
2.2.2 Discard Accounting - Individual or Fleetwide	A. One Discard Category, Full Accounting for All Discards a/	B. Two Discard Categories, Sector or ACL Deduction for Category 2 Discards b/	C. Two Discard Categories, No Accounting for Category 2 Discards b/	D. For MS Whiting, Deduct "unintentional minor" Discards Preseason, For SS Whiting Deduct Category 2 from ACL.	
2.2.4 Retention Requirements	A. Maximize	B. Optimize			
2.2.5 Halibut Retention/ Discard with Fishery Specific Options	Default Rates A. IPHC Gear Rate MDWT non-whiting and BTW 90% mortality if discarded	Default Rates B. WCGOP Rate C. Vessel Specific Rate	D. Discard Exemption (100% retained)	E. Captain/Crew Evaluation	F. With EM Data - Via IPHC Approved Method
2.2.6 Discard Species List Adjustment	A. NMFS Rulemaking Process	B. Routine Process c/	C. Full Council Rulemaking Process		
2.2.7.2 Eligibility for Camera Use	A. Initial and Continued Eligibility	B: Initial and Continued Eligibility with BTW Vessel Must be in Co-op to use EM			
2.2.7.5 EM Vessel Operation Plan - IVMP Expiration	A. No Expiration	B. Annual			
2.2.7.6 Declaration of EM Use	A. Annual - choose for entire year	B. Annual - project for year (monthly/quarterly)	C. Declare Until Changed (some limit on frequency of change)	D. Declare Until Changed (no limit on frequency)	

Alternatives/Option Choices for Bottomtrawl and Non-Whiting Midwater Trawl Fisheries					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
2.2.8.2 Data Transfer Process	A. PSMFC Staff	B. EM provider	C. SS Catch Monitor	D. Vessel Operator (crew)	E. 3rd Party
2.2.8.4 Video Review	A. NMFS	B. PSMFC	C. EM Provider	D. 3rd Party	
2.2.8.5 Payment for Scientific Data Collection/Observers	A. Government	B. Industry	C. Combination		
2.2.10 Spatial Variation for High Bycatch Areas (BTW Only)	A. None	B. In High Bycatch Areas Use Observers	C. In High Bycatch Areas Review more Video		
2.2.11 Implementation	A. None	B. Use EFPs to Test Policy	C. Phase in By Sector - Whiting; BTW/Mid-nonwhiting, Fixed Gear	D. Loosen Species Retention Over Time	E. Use EFPs to Develop Policy;

a/ Category 1 discards include fish dumped off deck (e.g., shoveled, picked out of net), dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.), unobserved sets/hauls, fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.

b/ Category 2 discards include fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.

c/ "Routine process" would establish a list of species for which discard requirements can be changed through routine inseason action as specified in Section 6.2.1 of the groundfish FMP.

CHAPTER 3 **AFFECTED ENVIRONMENT**

This chapter describes the Pacific Coast groundfish fishery and the resources that would be affected by the alternative action. Physical resources are discussed in Chapter 3.2, biological resources are described in Chapter 3.3, and socio-economic resources are described in Chapter 3.3. Rather than repeat information detailed in the other NEPA documents, the information has been summarized in this document and the reader is referred to the appropriate sections in the other NEPA documents for further detail.

3.1 Action Area and Physical Characteristics of the Affected Environment

The action area is the state and federal waters of the U.S. and includes the shoreline out to the 200 nautical mile line of the U.S. Exclusive Economic Zone. The area of operation of the Pacific Coast groundfish fishery is within this area (Figure 3-1).

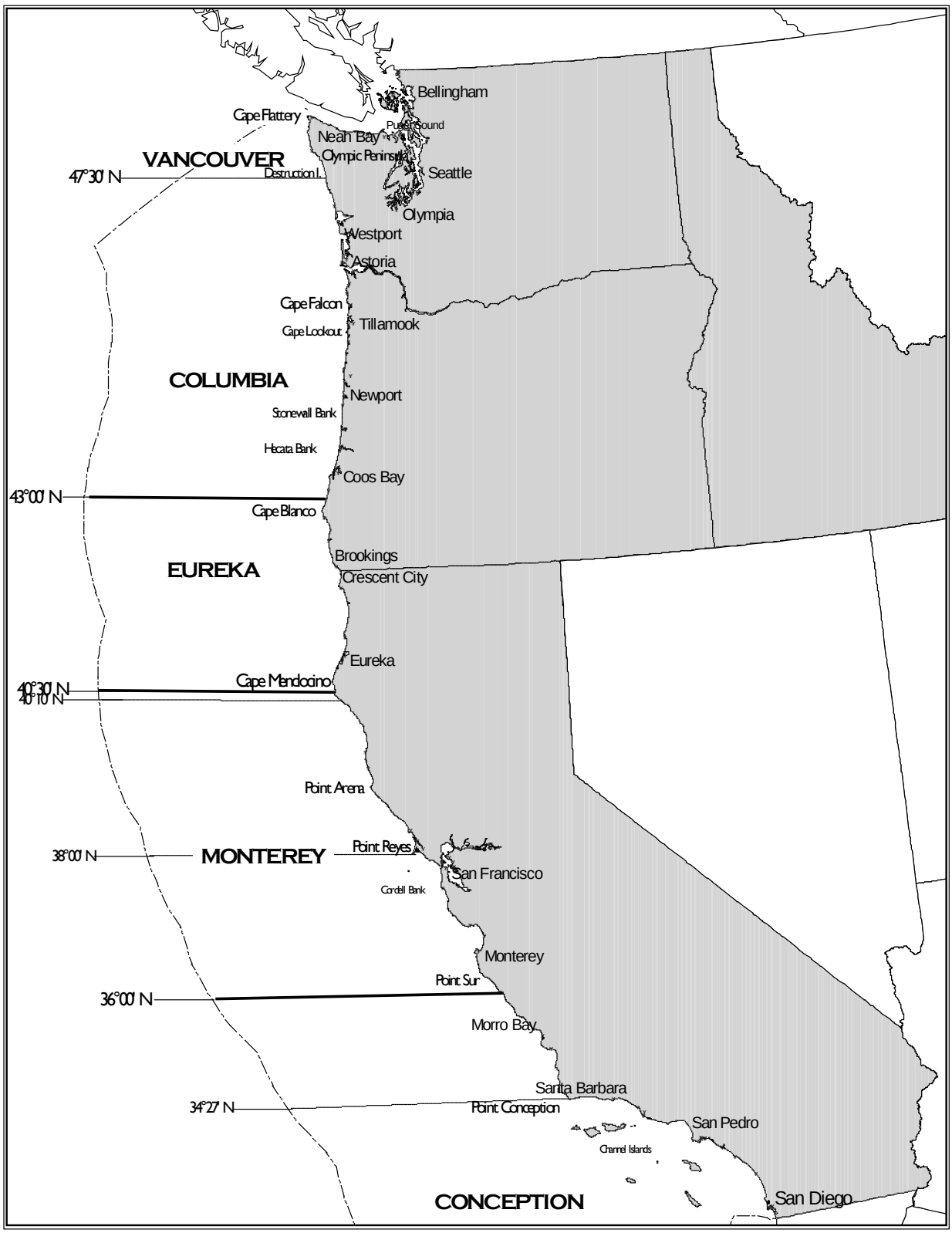


Figure 3-1. Fishery management lines on the U.S. west coast. Source: PFMC 2014, SAFE.

3.2 Biological Characteristics of the Affected Environment

3.3 Socio-Economic Characteristics of the Affected Environment

3.3.1 Landings, Revenue, and Participation

Section 3.2 in the 2015-16 Groundfish Harvest Specifications FEIS (as well as EISs for earlier biennial periods) describes commercial fisheries targeting groundfish and characterizes west coast fishing communities with respect to groundfish fisheries. Section 3.2.1 of the FEIS describes revenue trends for commercially important groundfish. That information is incorporated by reference here. The 2014 Groundfish SAFE document contains a series of tables summarizing landings and ex-vessel revenue in groundfish fisheries, landings and revenue by port, and indicators of fishery participation. These data may be summarized here to highlight current fishery trends. Both long-term historical landings, revenue, and price data (the full PacFIN database time series) and a recent a 10-year baseline period of 2003-2012 are used to characterize fisheries and communities.

Table 3-1 shows the share of landings and inflation-adjusted ex-vessel revenue by groundfish fishery sector (IFQ, whiting catcher processor, and whiting mothership) for the 2012 baseline period.

Table 3-1. Exvessel revenue and total pounds landed in 2012 by month and fishery sector.

Key IFQ = Individual Fishing Quota, CP = Catcher processor or CP, and Mothership or MS.

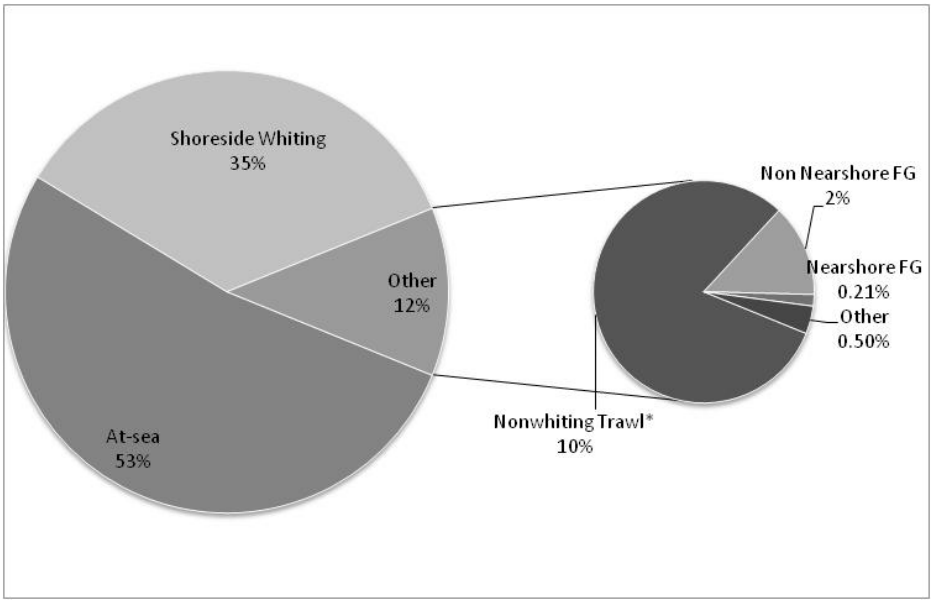
Year	Month	IFQ lbs.	IFQ rev.	CP lbs.	CP value	MS lbs.	MS value
2012	Jan	1,491,862	1,141,585	0	0	0	0
2012	Feb	2,395,897	1,639,885	0	0	0	0
2012	Mar	3,329,906	2,110,348	0	0	0	0
2012	Apr	4,954,879	2,844,151	0	0	0	0
2012	May	4,265,175	2,236,024	44,844,730	6,329,660	9,390,741	1,325,467
2012	Jun	13,934,687	3,411,107	0	0	6,049,386	922,719
2012	Jul	26,469,461	5,863,888	0	0	1,097,743	167,691
2012	Aug	36,519,674	7,520,641	8,223,969	1,251,804	4,642,409	744,548
2012	Sep	26,705,062	6,256,446	35,760,005	4,935,301	12,818,454	1,721,627
2012	Oct	35,277,242	7,111,834	32,687,073	4,246,301	47,645,273	6,213,841
2012	Nov	25,327,203	5,737,083	0	0	2,850,173	357,770
2012	Dec	4,049,970	2,309,175	0	0	0	0
2012	**Sum**	184,721,018	**48,182,167**	121,515,776	**16,763,066**	84,494,178	**11,453,663**

Source: Cost Recovery Annual Report, NMFS 2014

Pacific whiting fisheries dominate in terms of landings, accounting for 88% of the total. However, because whiting fetches a low price per pound, those sectors accounted for only 39% of inflation-adjusted ex-vessel revenue. Non-whiting trawl/shoreside IFQ accounts for the next largest share of landings and revenue, 10% and 34% respectively. Fixed gear landings fetch a relatively higher price so while those sectors accounted for only a little more than 2% of landings, they garnered a quarter of groundfish revenue, primarily in the non nearshore sector that targets sablefish.

Figure 3-2 shows revenue trends for groundfish sectors over the baseline period. Revenues have been more stable for nonwhiting sectors compared to whiting. One way of assessing variability is the coefficient of variation (the standard deviation divided by the mean). The values for the sectors (over the baseline period) shown in the figure are as follows: nonwhiting trawl (including non-trawl IFQ in

2011-2012): 0.131; shoreside whiting trawl: 0.584; non nearshore fixed gear: 0.269; nearshore fixed gear 0.074; at-sea catcher-processors: 0.503; at-sea mothership catcher vessels: 0.551.



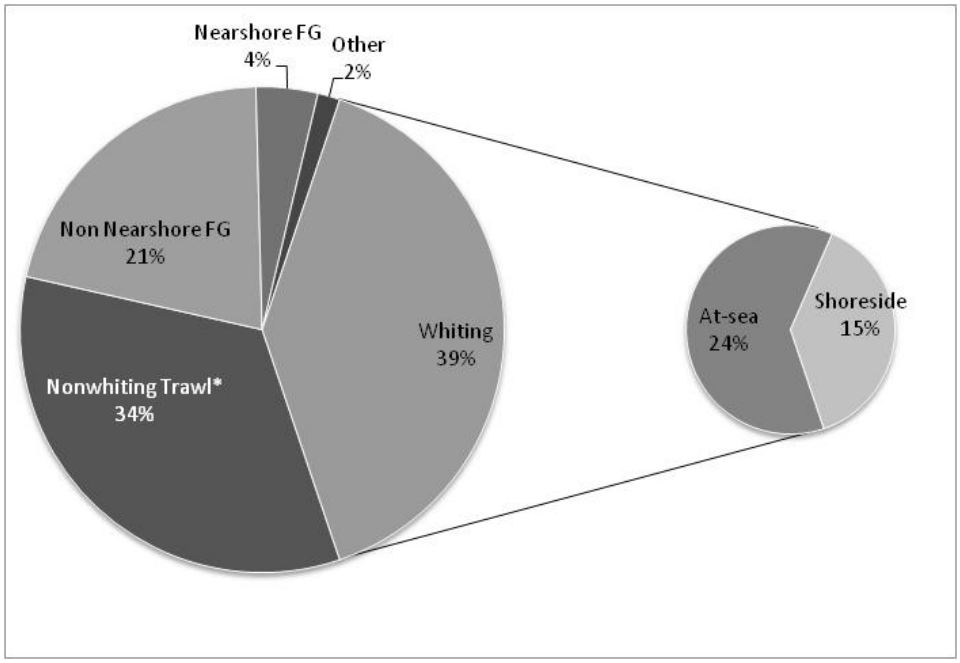


Figure 3-2. Share of groundfish landings (top) and inflation adjusted ex-vessel revenue (bottom) by fishery sector, 2003-2012. Source: *2011-2012 non-whiting trawl includes IFQ non-trawl landings. SAFE Tables 12a-b and 14a-b

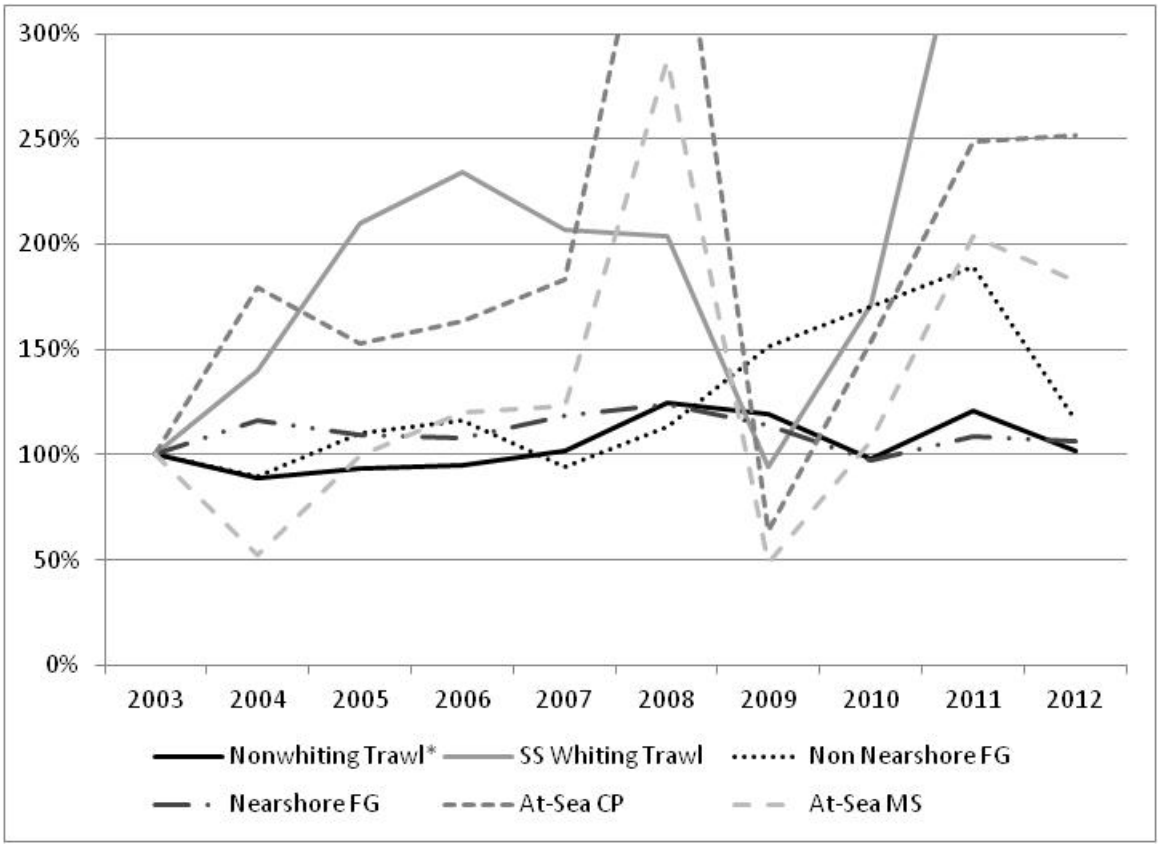


Figure 3-3. Ex-vessel revenue trends (inflation adjusted, 2012, from groundfish only) for groundfish fishery sectors, 2003-2013; 2003=100. *Nonwhiting trawl includes non-trawl IFQ in 2011-2012. Value outside figure scale (>300%): 2008 at-sea CP whiting 408%, 2011shoreside whiting 342%. Source: SAFE Tables 12b and 14b.

CHAPTER 4 **IMPACT ANALYSIS OF THE ALTERNATIVES**

The terms "effect" and "impact" are used synonymously under NEPA. Impacts include effects on the environment that are ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Direct effects are caused by the action itself and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include
growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Cumulative impacts are those impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Sections 4.1 through 4.2.2 of this document discuss the direct and indirect impacts on the physical, biological, and socio-economic environment that are likely to occur under each of the proposed alternatives, including the No Action alternative. Section 4.4 presents the reasonably foreseeable cumulative effects of the environment from the proposed alternatives.

A general statement is provided in each section and then the Analytical Scenarios (see Section 2.4.1) are examine. The scenarios provide context for a management goal and the potential impact the alternatives and options may have on the physical, biological and socio-economic environment.

4.1 Impacts on the Physical Environment

The physical environment is described as the marine environment in the area of operation of the fisheries described in this document and includes California Current Ecosystem, the Essential Fish Habitat (EFH), and Habitats of Particular Concern (HAPC). This marine habitat information is described in detail in the Council's Pacific Coast Groundfish Fishery Management Plan, and the 2014 Groundfish Harvest Specifications and Management Measures and Amendment 24: Environmental Impact Statement (hereafter referred to as 2014 Specification EIS) (CITE REFERENCE).

The proposed action is largely administrative and focuses on monitoring fishing activity. Alternatives 2 and 3 would implement an EM program that is a framework for an alternate way to conduct at-sea monitoring, gather data, and process the data for Shorebased IFQ fisheries. There are several options to choose from within the alternatives that can be specific for each IFQ gear sector and may be appropriate for one sector and not the other. In addition, an EM program could be implemented for all fisheries or for one at a time in the future.

Impacts to essential fish habitat (EFH) and other marine habitats are not expected to change as a result of the proposed action since fishing practices (number of hooks, pots, trips, set/hauls) and areas fished

are not expected to change significantly. Increases in gear loss, contact with the ocean floor, and fishing operations (area fished, effort, gear used) are not expected to change under the proposed action; therefore, this action is not likely to result in changes to the physical environment beyond the considerations discussed in the 2014 Specification EIS. The EIS examined current fishing practices of the west coast groundfish fisheries under the Council's fishery management plan, associated impacts to changes in harvest specifications for years 2015 and 2016, and discussed potential changes to EFH designations; however, those reasonably foreseeable future federal actions would not change the outcome of this proposed action (See Section 3.3 of the 2014 Specification EIS).

Under the option to allow EM in low bycatch areas (Spatial Management Option B) or higher review of EM video in areas with high bycatch (Spatial Management Option C) could modify fishing behavior and change areas fished by the bottomfish fleets if they chose to fish more in areas with low bycatch or chose to avoid high bycatch areas. Generally fishermen already try to fish in low bycatch areas or avoid high bycatch areas so a change in fishing behavior or area fished is not expected under these two options. Impacts to the physical environment by other non-IFQ fisheries under the jurisdiction of the Council or States are not expected to change as a result of implementation of an EM program for the Shorebased IFQ fisheries. Some gear switching currently occurs form IFQ to non-IFQ fishing activity since fishermen try to optimize their IFQ quota and the fish stocks available outside the IFQ system. This activity would likely continue and non-IFQ fishery activity is not expected to increase or decrease under the proposed action.

4.2 Impacts on the Biological Environment

Effects on the biological environment from fishery management actions primarily include potential changes in individual and total species mortality levels and certainty in the data produced. Impact topics analyzed are divided into the following section:

4.2.1 Impact on Total Mortality
4.2.2 Impacts to Overfished Species
4.2.3 Impacts to Bycatch
4.2.4 Impacts to Prohibited Species
4.2.5 Impacts on Tracking and Monitoring

The analysis starts with the No Action alternative and discusses the status quo as it relates to the impact topics. Then the action alternatives are discussed based on the AS developed in Section 2.4.1. The analysis focuses on a few key considerations:

- Increase in mortality
- Risk factors such as:
    - missing discarded fish,
    - precision and accuracy in accounting at Annual Catch Limit (ACL) and IFQ levels
    - potential for exceeding an ACL
    - potential effects on data used for stock assessments
- Expected change to individual accountability

Risk factors for IFQ species are mainly tied to fisherman compliance. If it were assumed that all fishermen would be compliant, then the risk in moving from at-sea observer to fishermen self-reporting in logbooks (AS-3 and AS-4) would simply be a matter of whether or not there were any relative differences in the skills of observer versus the skills of crew with respect to species identification and

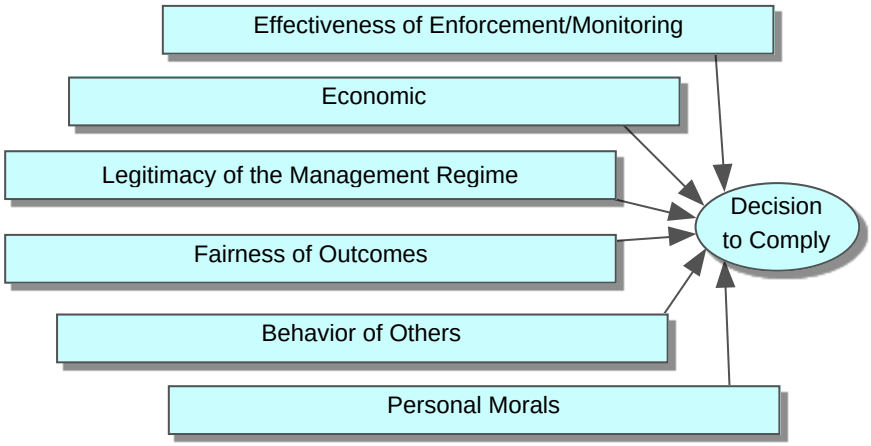
measurement. Similarly, for the alternative of using video to estimate discards (AS-1 and AS-2), if complete compliance is assumed then the risk factor is the video camera's ability to speciate and measure any IFQ species for which discard is allowed as compared to the ability of the observer. Under AS-1, AS-2, and AS-4 maximized retention is required, all IFQ species would be retained and available for measurement shoreside (speciation and quantification). Under AS-3 (optimized retention), some IFQ species might be discarded but these would be accurately reported in the vessel log so there would be no additional risk. The following text box discussed the factors affecting compliance in more detail. For AS-1 and AS-2, the level of video review needed is that necessary to ensure compliance and develop catch estimates that would be considered reasonably accurate at the vessel level (as opposed to estimates considered accurate when aggregated across the fleet). The primary challenge is the estimation for rare catch events (e.g. catch of an overfished species such as yelloweye) for which there is a reasonable probability that the event may be missed even at a 50 percent sampling rate (Appendix A, Section 2.2). Under the logbook approaches (AS-3 and AS-4) all rare events would be detected and the only question is one of compliance with reporting requirements.

Only some of the components may impact the biological environment and will be analyzed here. Many components are administrative and therefore would not directly affect the biological environment so they are not considered in the biological impact analysis. However, any indirect effects of the administrative components are considered.

Summary tables are provided under each impact section to rank the effect of the alternative and options selected under each AS followed by a discussion of potential impacts. We also consider other EM component options available that were not added to the AS to give contrast to the effect of choosing different options within the component for that AS.

Six Factors Influencing Compliance and Effect of Compliance on Quota Transfers

As the Council considers how the current system is performing and the risk of any changes to the program, it is important to consider the issue of compliance. This discussion focuses on six types of factors identified by Randall (2004) as affecting compliance, only one of which (effectiveness of enforcement/monitoring) may be directly affected by the change to EM. Two other factors (economic and behavior of others) may be indirectly through effectiveness of enforcement/monitoring.[3]



Enforcement/Monitoring. The expected cost of getting caught is also a function of the effectiveness of the enforcement and monitoring system. There are three main influences on the effectiveness of enforcement: the effectiveness of the particular enforcement agency (agencies have different reputations), the type (whether it is at-sea or shoreside), and frequency of inspections/contacts. For EM, the enforcement agency effectiveness might also include the expected effectiveness of video cameras and the entity doing the video review (e.g. the agency or a contractor); and frequency would be the sampling rates used to verify logbooks under Alternative 3 (or verify compliance with discard prohibitions under Alternative 2). The enforcement penalty associated with a conviction might be considered part of the enforcement system, but here we have included it as an economic factors.

Economic. There are three main factors influencing the fishermen's assessment of the economic situation with respect to compliance: the potential additional profit, the expected cost of getting caught, and economic stress (utility of additional income). The benefits from noncompliance relative to the size of penalty for cheating and the fisherman's degree of risk aversion determine the economic yield. As with all of the factors, the economic factor alone does not determine the outcome but is only one potential influence. For example, Randall reports that in a New England system in which there was an extensive culture of violations there was still a core of fishermen who maintained integrity with the regulations.

The action alternatives will modify the effectiveness of the enforcement and monitoring system in an uncertain manner. There are reasons to believe that there are ways that cheating can occur when an observer is on board and there may be ways that cheating can occur when monitoring is carried out with cameras.

[3] The discussion provided here loosely follows Randall's model.

Legitimacy of the Management Regime. There will tend to be more compliance when management regimes are considered legitimate. Legitimacy is positively influenced when stakeholder input is seen to have an influence on outcomes, when stakeholders are fairly represented in the process, when the scientific information on which management is based is viewed as being credible and when external influences (court and political interventions) are at low levels. Fairness of procedure influences the view of legitimacy of the management regimes.

Fairness of Outcomes. Fairness of outcomes of the management regime related to the equity and practicality of the management regulations.

Behavior of Others. As with most people, fishermen may be influenced toward violations when they observe others violating the regulations. Under such circumstances, when there are significant ongoing violation patterns, there may be less likelihood that any one person may be caught and with morality erosion the patterns become a behavioral norm. Alternatively, when there is good compliance already in the fishery, behavioral norms may encourage more fishers toward compliance.

Personal Norms. "Fishermen often choose to comply with the rules regardless of the tangible incentives [for noncompliance]" (Randall, 2004). Personal norms, while influenceable to some degree by current behavior of others, are also established much earlier in a person's life experience and are influenceable up to a limits (which vary by individual).

From a narrower view, compliance is a function of frequency of contact rates and the penalty for getting caught (Becker, 1968). Low frequencies require high penalties to achieve compliance. Kuperan and Sutinan (1998) reviewed literature indicating that in fisheries, contact rates are generally below one percent and the penalties are not severe enough to lead to compliance solely on the basis of an economic calculation. Yet they note that compliance rates are believed to be in the 50 to 90 percent range and attribute this to fishermen's tendancy to "do the right thing" out of a "sense of moral obligation" p. 312.

While enforcement and monitoring is the only factor that directly affects compliance, it has indirect influence with respect to economics (the probability of incurring financial penalties) and collective behavior, the latter of which influences the expression of personal norms.

Individual accountability is one of the main emphases of the trawl rationalization program. However, there are also collective dynamics which occurs through systems which link the fishermen together. Two of primary systems which provide that connection are the conditions of the fish stocks and prices in the market, and in particular, the prices for quota. *With regard to quota prices, to the extent that those who are not compliant with the program achieve an advantage over others, the quota will be more valuable to them and they will be willing to pay more, bidding the price up in the market and bringing more quota into the hands of those who are not compliant.*

4.2.1 **Impact on Total Mortality**

4.2.1.1 No Action (Status Quo)

Total mortality under the current IFQ program has not resulted in exceeding current ACLs or IFQ limits therefore the same level of total mortality would be expected under the No Action alternative. Under the No Action Alternative (Alternative 1), vessel's would still be required to have a limited entry permit with a QS permit and must have quota pounds in their account to continue fishing under the IFQ Program. Participants in the IFQ Program must continue using human observers on 100% of all IFQ trips. Observers would continue to estimate catch and discard to provide full accounting of all IFQ catch and submit this information to PSMFC, and NMFS would debit IFQ QS accounts. Catch monitors would still be required to monitor offloading and verify catch accounting by observers. Fishermen would still be allowed to discard any species, regardless if it is an IFQ or non-IFQ species, and continue to discard species they are required to discard under the current groundfish regulations. Fishermen would continue to use existing procedures regarding logbook reporting requirements for permit holders/vessel operators, to submit this information along with economic data, and be required to use VMS. Observer coverage is currently subsidized by NMFS; however, in the near future full payment will be required by the industry.

Mortality levels would likely remain the same as current estimates in NMFS 2012 Estimated Discard and Catch of Groundfish Species in the 2012 U.S. West Coast Fisheries (See Appendix A, Section 2.5). Only three IFQ species (petrale sole, Pacific whiting, and sablefish) had fishing mortality estimates that were between 80 to 100% of the ACL goals whereas all other IFQ species were harvested at less than 50% of their ACL goal (Figure 4-1. Percent of 2012 IFQ ACLs retained and discarded in the 2012 IFQ fishery. After fishers meet their IFQ for petrale and sable fish, these species tends to restrict targeting of other species. Unless fishers change targeting strategies or find other means to access more of the remaining IFQ species it's likely that mortality levels in the IFQ fishery will remain at this level under the No Action Alternative.

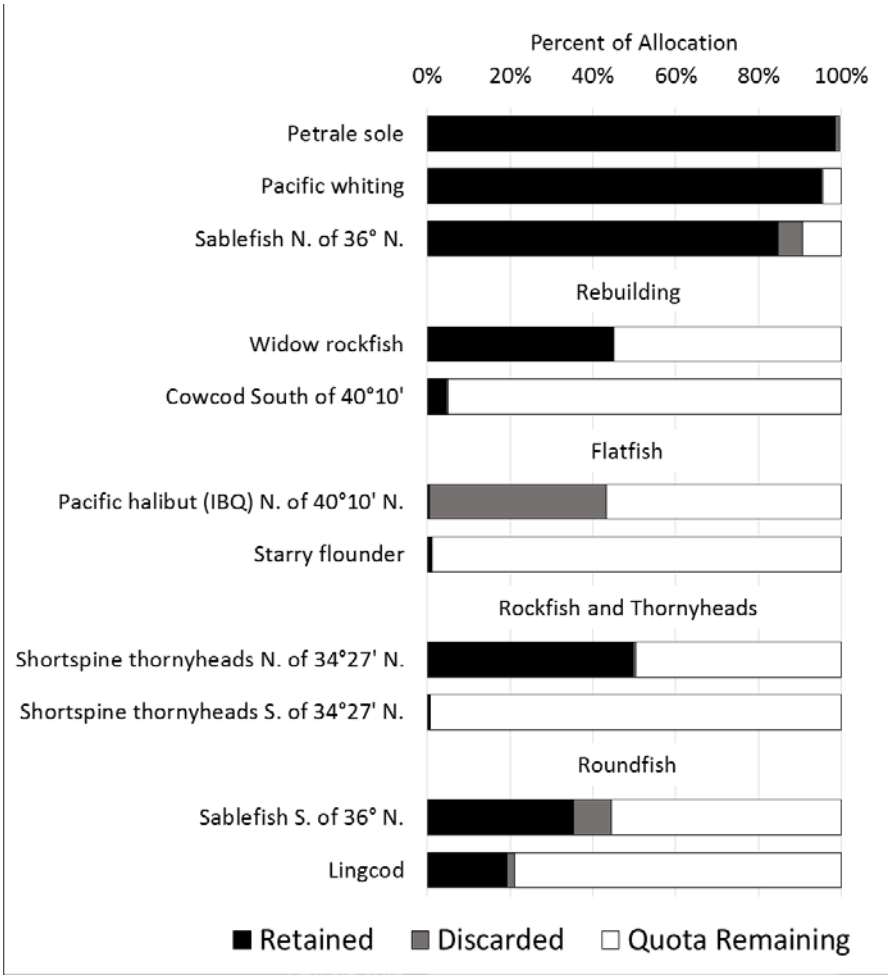


Figure 4-1. Percent of 2012 IFQ ACLs retained and discarded in the 2012 IFQ fishery.

Source PSMFC powerpoint, PFMC Council meeting November 2013)

4.2.1.2 Action Alternatives

Selecting an Alternative and Options

The one major difference between the Alternatives 2 and 3 is how discard is documented and enumerated to debit a vessels QP account. Under Alternative 2, video documentation of the discard events would be reviewed to identify and enumerate the discard either through a census of all video (Alternative 2A) or through a sampling and expansion of the discard that is documented in the video (Alternative 2B). Alternative 2C is the same as Alternative 2B but requires a logbook as a back-up data source if EM fails or could be used to verify discard events when the video image is poor or cannot be used.

Under Alternative 3, a vessel captain "self-reports" the discard by species and provides a weight in a logbook. Video documentation of those discards are then reviewed, at some predetermined sampling rate, to verify the discarded species and weight, and for events that are not recorded in the logbooks. If there are no discrepancies between the two data sources then the logbook data is used to debit the QP account. Protocols for resolving discrepancies would be used. For example, the higher weight of the two sources would be used.

Analytical Scenario Analysis

The analytical scenarios (AS) are described in Analytical Scenario Description 2.4.1.

Video Reading Protocol (Census vs. Logbook Audit)

AS-1

There is risk of increased mortality if fish discarded are not accounted for. Even under 100% video review, some discards can be missed by a video reviewer or the video image can be affected by glare, nighttime lighting issues, water spots on the lens, and others. In addition, speciation of discards can be difficult in the multispecies bottomfish fishery. One possible way to reduce the risk would be to add a logbook requirement to the 100% video census option to increase the data available to managers when discrepancies arise, video images cannot be clearly reviewed, or a mixed species discard event occurs that requires some human observation and estimation by the crew or captain. The option of video census with a logbook requirement was not adopted by the Council, however, the Council could add in the option if it desires. Logbooks are already required in the midwater and bottom trawl fisheries and Oregon requires fixed gear logbooks. These logbooks could be modified to add discard weight fields to assist in data documentation and video review. A logbook requirement would need to be added to the regulations for Washington and California fixed gear fisheries.

For the midwater trawl whiting fishery 100% video census may be a plausible approach since it is a maximized fishery and generally most of the discards contain whiting (NMFS 2013). Much of the review could focus on large discard events and review time can be expedient. This could also capture all large discard events rather quickly and assure that these events are accounted for in the data management system. Impacts to mortality would likely remain similar to the No Action Alternative since vessel operations are not likely to change under the video reading protocol of 100%. Based on the PSMFC field studies (2014) and McElderry et al. (2014) discard can be accurately estimated through video review if those discards are 2,000 lbs or larger. Discards less than this can be difficult to estimate but, when combined, these smaller discard event estimations would likely not exceed the catch allocation or the ACL accounting. Fishery operations in the both the shoreside and mothership whiting fisheries are well documented through EM therefore the average fleetwide and vessel specific volumes of whiting and bycatch that are annually discarded are known.

For the fixed gear fishery 100% video review could account for any unintentional discards and it's not likely that current total mortality estimates would change from the current levels if fish can be identified and weight estimates be applied. In general, PSMFC found it's possible to speciate fish that are discarded in the longline fisheries but it may be difficult to distinguish between rockfish species and flatfish if the discard is not placed under a camera. Length-weight conversions can then be applied however not all species have this conversion factor. Sampling for expansion (Alternative 2B and 2C) was not chosen because those options may not provide an accurate estimate of discard when expanded and result in an over or underestimation in total mortality thereby increasing the uncertainty in total mortality. Therefore it may be more optimum to rely on fishermen to provide a weight estimate in a logbook (Option 3, logbook audit).

For the bottomtrawl fishery, 100% review would be possible if fish handling of discards was conducted by sorting fish indirect view of the camera and bins were used with known weight estimates for each allowable discard. However at this time, no information is available to provide accurate estimates. Even under maximized retention, speciation and weight estimates would be problematic for unintentional discards. Therefore this option creates uncertainty in mortality estimates and lowers individual

accountability. Therefore it may be more optimum to rely on fishermen to provide a weight estimate in a logbook (Option 3, logbook audit).

AS-2
Under AS-2 the options were developed for the shoreside and mothership fishery sectors only. All other fishery sectors would use observers. AS-2 is similar in impacts as described under AS-1. However, for the shoreside fishery we added a logbook requirement to reduce the risk of missing fish or provide a back-up data source.

AS-3 and AS-4
Under these two scenarios the logbook audit is selected for analysis for the non-whiting fisheries and both suggest using 10% random review. Speciation in the fixed gear, mid-water trawl and bottomfish fisheries may be accurate with if clear fish handling instructions are conducted in close range of the camera when possible.

For whiting, if the logbook audit was chosen (AS-3), fishing operations and discard may be similar to the No Action alternative and AS-1 and AS-2. However it's possible that if incentives for compliance are not strict or enforced then some discard may occur and go undocumented when a low level (e.g., 10%) of review is implemented. An audit may not capture the lager discard events appropriately as discussed earlier. This would increase the uncertainty of total mortality estimates.

As noted by Stanley, the video census approach may not work for the fixed gear fishery and may be more efficient and accurate to use the logbook audit approach with 10% review rate. This may apply to the bottomtrawl fishery as well. However, weight estimation methods through video review (and by the fishermen) must be developed. Volume and weight estimate experiments using totes and on-board bins are currently being conducted by PSMFC to provide some potential solutions but these are not fully developed yet. This information would further the development of using the video as the primary source of discard data or assist the vessel captain in developing an accurate way to estimate their own catch for the logbook before discarding (under optimized retention). It would also assist video reviewers in verifying the catch and weight estimates when conducting a logbook audit. In addition, a statistical analysis to test of the validity of logbook entries for fixed gear and the other fisheries (other than whiting) must be conducted. If fishers are found to be accurate in their discard estimations then we would expect total mortality to be similar to the No Action alternative and the risk to be relatively low compared to Alternative 2 A through 2B since additional video review can be conducted if non-compliance or errors are found.

Discard Accounting Analysis

AS-1 and AS-4
Under AS-1, all fisheries would account for discard under the IFQ system. This would likely not affect the estimates of total mortality or erode the IFQ accountability. However, some of the discard events may need to be estimated using some other data source if EM cannot capture the information (See 2.2.2). For example, the WCGOP program could collect discard information for lost gear, crew consuming fish onboard the vessel, using fish caught as bait, and unobserved hauls/sets that had discard (i.e., EM failed to record the discard) while conducting random sampling on EM vessels for scientific purposes. In addition, some events may be captured by EM but are difficult to quantify or are rare, such as floating fish on the surface of the water or a fish dropped from the gear. Historical observations by the WCGOP for the time period of 2010 to 2014 could also be used to get an average number per year for these events. If a fishermen documents these events accurately then estimates could be applied. A

thorough analysis is needed to understand the amount and frequency of these events from the WCGOP for each fishery.

AS-2
A comparison of the PSMFC video and catch monitor (CM) observed rates are compared to the 2013 WCGOP discard rates to examine the most current discard estimations for both whiting sectors (See Appendix A Section A-2.3). We applied the estimated discard rates from PSMFC and the 2013 WCGOP observed rate to the 2014 Pacific whiting allocations for shoreside and mothership (Table 4-1). As noted in the table, the PSMFC CM rates and WCGOP rates for the shoreside fishery are similar, and the PSMFC video rate is nearly double the rate for the WCGOP rate. The mothership rates are more varied but the PSMFC video rates and the WCGOP rates show discard in the mothership fishery is double than that of the shoreside fishery. It's not certain why the PSMFC CM rate does not follow the same discard rate patterns as the PSMFC video and WCGOP rates.

Table 4-1. Estimated discard rates (PSMFC study and WCGOP) and estimated total allocation reductions based on 2014 Pacific whiting allocations for the shoreside and mothership fisheries.

	Shoreside	Mothership	Total discard based on 2014 allocation: Shoreside (mt)	Total discard based on 2014 allocation: Mothership (mt)
PSMFC video rates	0.0039	0.0078	420	485
PSMFC CM rates	0.0024	0.0014	260	87
WCGOP rates	0.0020	0.0041	213	253

Note: 2014 Pacific whiting allocation for mothership was 62,249 mt and for shoreside 108,935 mt (79FR27198, May 13, 2014).

Discard Accounting Analytical Scenario Analysis
Under AS-1 for, all discard events would be debit from the whiting allocations. Under AS-1 (all sectors, including whiting) and AS-2 (whiting only) we could expect similar discard rates to continue into the future and be similar to the No Action alternative.

Option D. For MS Whiting, Deduct "unintentional minor" Discards Preseason, For SS Whiting Deduct Category 2 from ACL would require preseason estimates based on historical discards for the whiting fisheries. As noted earlier fishery operations in the both the shoreside and mothership whiting fisheries are well documented through EM and observer data therefore the average fleetwide and vessel specific volumes of whiting and bycatch could be applied into the future. Estimates form the video review can be applied during the Groundfish Specification Process every two years and incorporated in to total mortality estimates for the fisheries when developing the ACL and the fishery allocations.

This option would reduce the individual accountability in the whiting fishery sectors but it's not likely to increase total mortality.

Maximize vs. Optimized Retention Analysis

The most important decision is which species will be retained and which will be allowed for discard in each fishery (i.e., midwater trawl whiting, midwater trawl non-whiting, bottom trawl and longline).

Allowing discard will hinge on whether video can appropriately capture the discard in a clear image so a video reviewer can identify the species and estimate the weight of the discard. Two options are provided: 1) maximize retention; and 2) optimum retention (some selective discard of certain species).

Under optimized retention, further analysis is provided regarding the impact of choosing several species or species groups for discard in each fishery. In general impacts to fish resources may be greater under Option A (maximize retention requirements) since vessels would be required to retain nearly all catch and bring it to shore or deliver it to motherships, as is the case with the current midwater trawl whiting fishery. Impacts to fish resources may be less under Option B (optimize retention) if certain species are allowed to be selectively discarded by fishermen, assuming fish mortality rate estimates do not change.

Option B, fishermen in the non-whiting midwater trawl, whiting vessels that sort at sea, bottom trawl, and fixed gear (pot and longline) would be allowed to discard some species unless required to retain them by regulation. Therefore Option B would have the least impact on fish resources and discard amounts and mortality rates could be similar to what is estimated under the No Action Alternative for certain species. However, fish identification is most difficult with EM under Option B and least under Option A. At this time multiple efforts are being pursued to help identify fish through different fish handling protocols (such as with chutes, fish length boards and discard stations, and fish recognition software).

The PSMFC field study has discussed potential groupings of species that can be identified but may not be adequate for IFQ at this time. The suboption discard categories identified by the Council are discussed in the following sections.

<u>SubOption 1.a (Allow discard if species that are verifiable with EM)</u>
Generally, for all fisheries in the PSMFC study (midwater trawl whiting, fixed gear and bottomtrawl) the IFQ complexes that *are not* readily identifiable in retained and discarded catch are:
• Longspine thornyheads
• Longspine & small Shortspine thornyheads
• Splitnose rockfish (RF)
• Splitnose & Aurora RF (Slope)
• Rougheye & Shortraker RF (both Slope Rock)
• Small Arrowtooth & English sole
• Sanddab (Other flat) & Slender sole (not IFQ)
• Yellowmouth (Slope) & Aurora (Slope) & POP (Slope S 40-10)
• Small Dover & Rex sole (Other flats)
• Petrale & Flathead (Other flats) & English sole
• Canary & Vermillion RF (Shelf)
• Yellowtail (Shelf S 40-10) & Widow RF
• Boccacio (Shelf N 40-10) & Silvergray RF (Shelf)
• Any small fish

For midwater trawl whiting:
Fishery currently working under Option A (Maximized retention)
Conclusion: EM Data generally supports discard detection of larger discards (> 2,000 pounds)
• Discards are typically from the deck
• Could not speciate well enough to support any selective discarding (Options B) with current configuration

For fixed gear:
For the PSMFC field study, the catch monitor was often in a corner of the deck where a good view by video was not available. It's possible that further study and development of fish handling protocols may improve species identification and weight estimations of the discards.
The following options were examined by PSMFC for plausible species discard options:

SubOption 1.c (Allow discard of sablefish and lingcod):
– Sablefish: Target species retained and discards successfully quantified, however count of fish is more accurate than weight estimates.
– Lingcod: the study did not see lingcod therefore this category may not be suitable for EM at this time.

SubOption 1.d (Allow discard of flatfish):
– Petrale not identifiable
– Discard & retained disposition problem
This option may not be suitable for EM at this time.

Implementation of an alternative that changes fish retention and discard requirements could have a direct biological effects; however, the fisheries would continue to operate under current ACLs and IFQ limits. Additional mortality of some species (halibut, lingcod, and sablefish) could be realized if maximum retention was required in all fisheries. Under Optimized retention, mortality rates could be applied for halibut, lingcod and sablefish while others, whether retained or discarded, are considered dead. Although no credit is given when ACLs are set for survival of these other species, these fish may survive when discarded. However, fish handling protocols and time on deck would likely influence their survivability. Fish handling on deck may take more time under the optimized retention options because it may take more time to sort all species so the video has a clear image to accurately identify them and estimate species weights before they are discarded.

Overall, impacts to fish resources are not expected to change significantly under any alternative or option since most fish discarded are considered dead after release (except halibut, lingcod, sablefish, spiny dogfish and longnose skate). Since the fishery is under an IFQ system, exceeding ACLs is unlikely. Most of the IFQ species are not being caught and there is room for increase. If fish are discarded and not reported or captured by EM then impacts could increase but it will be difficult to enumerate this.

If optimize retention is chosen for a given fishery and discard of halibut, lingcod, sablefish, spiny dogfish and longnose skate is allowed then one of the options for applying discard mortality rate for halibut must be used or developed for use in the future (See section 2.2.5) and some mortality rate would need to be applied to the others based on Gertseva and Taylor (Table 4-2).

Table 4-2. Discard mortality rates by commercial gear type used to manage west coast groundfish.

Stock	Discard Mortality Rate (# dead/# discarded)	Gear Type
Lingcod	50%	Trawl
Longnose skate	50%	Trawl and fixed gear
Sablefish	50%	Trawl
Sablefish	20%	Fixed gear
Spiny dogfish	50%	H&L fixed gear

Source: Gertseva and Taylor 2011

Analytical Scenario Analysis – Maximized vs. Optimized

For halibut under AS-1, Option D (retain all fish caught through an exemption from the IPHC) is chosen to ensure that all fish are accounted for; however; this would increase the mortality rate for fisheries other than whiting so the MORT factor is 3 (high) and would be greater than the No Action Alternative. There are other options for halibut that are fishery specific that could reduce the MORT factor such as:

For bottom trawl and non-whiting midwater trawl gear:
Option A: Use IPHC mortality rate for specific gear type: 90% mortality if discarded.
Option B: WCGOP scientific observations (assumed 20-30% coverage) is applied to fleet
Option D: Captain and crew provide assessment (training would be required)
Option E: Use an appropriate EM viability assessment (currently conducting study, need IPHC approval)
Option F: Use vessel specific mortality rate (update rates periodically through application of third-party observer rates on non-EM vessels or through WCGOP random observations of EM vessels)

For Fixed gear:
Option A: Use WCGOP mortality rate for specific gear type: 16% mortality if discarded from longline; 18% mortality rate if discarded from pots.
Option B - Option F: same as bottom trawl and non-whiting midwater trawl gear

Under AS-1, if Option A is used (gear specific mortality rates) then the MORT factor would be reduced compared to Option D. However the gear specific default rates would be higher than the No Action alternative which uses rates from the WCGOP observations and applied to the vessel. Options B, D, E, and F may result in similar mortality rates as the No Action alternative but at this time there are no data to conduct a comparison. Further development of these options would require specific studies conducted by the NMFS observer program in conjunction with the IPHC.

For the longline fishery limited information is available however the PSMFC field studies reviewed discard events under the current fishery regulatory environment that allows fishermen to discard at-will.

The risk could go down if a logbook requirement was added to the option as a back-up source for any missing data or if the reviewer is unable to identify and enumerate the discard. However, this option is currently not available under the Council's adopted alternatives and options.

- missing discarded fish,
- precision and accuracy in accounting at Annual Catch Limit (ACL) and IFQ levels
- potential for exceeding an ACL
- potential effects on data used for stock assessments

However, fish handling under optimized retention could increase discard mortality if fish are left on deck for longer periods of time so that an accurate length or image is needed, especially if there are multiple species on deck. This could occur

Table 4-3. Summary of aggregated recorded catch by the catch monitor and the video reviewer in 2012 Fixed gear (counts only), 2013 fixed gear (counts and weights), and 2013 bottom trawl (weights only). Source: PSMFC 2014

	BottomTrawl - 2013				FixedGear - 2012				FixedGear - 2013							
	Weight				Count				Count				Weight			
	Discarded		Retained		Discarded		Retained		Discarded		Retained		Discarded		Retained	
IFQ Complex	CM	Video	CM	Video	CM	Video	CM	Video	CM	Video	CM	Video	CM	Video	CM	Video
Lingcod	**3,494**	**3,488**	**3,868**	**4,021**												
Pacific Hake	**11,053**	**12,172**	**480**	**3,565**					**30**	**10**			**61**	**16**		
Pacific Halibut	**1,609**	**1,344**		**12**												
Sablefish	**123**	**205**	**61,028**	**62,595**	**372**	**373**	**36,407**	**35,652**	**1,435**	**1,361**	**51,401**	**52,042**	**6,493**	**5,067**	**272,926**	**258,283**
Flatfish																
Arrowtooth Flounder	7,693	5,897	14,400	16,905		4		4	1			1	15			6
Dover Sole	793	245	146,690	163,574	83	53	97	21	28	22	82	84	55	49	124	146
English Sole	734	709	3,878	2,712												
Petrale Sole	32	16	157,812	120,441					2		9		3		14	
Starry Flounder		3	70	40												
Other Flatfish	3,009	1,360	16,776	22,010					3		1	13	2		1	24
Unidentified Flatfish		907		5,485		21		41				1				1
NonIFQ	2,377	2,257		6					5	3	1	1	6	6	1	1
Flatfish Total	**14,636**	**11,392**	**339,626**	**331,173**	**83**	**78**	**97**	**66**	**39**	**25**	**93**	**100**	**81**	**55**	**140**	**178**
Rockfish and Thornyheads																
Rockfish																
Bocaccio Rockfish			632	413												
Canary Rockfish			257	286												
Chilipepper Rockfish	12	3	5,415	5,973												
Cowcod Rockfish			33	44												
Darkblotched Rockfish	9	5	8,158	6,860								5				12
Pacific Ocean Perch Rockfish	8	1	1,280	915							1				2	
Splitnose Rockfish	15,009	29	1,535													
Widow Rockfish			27	15												
Yelloweye Rockfish			7	8												
Yellowtail Rockfish			60	25												
Minor Shelf Rockfish	1,257	1	48	300								1				2
Minor Slope Rockfish	473	6	20,252	14,116	191	1	3,522	20	47	37	1,856	1,799	93	75	3,913	4,709
NonIFQ	15															
Rockfish Total	**16,784**	**44**	**37,704**	**28,954**	**191**	**1**	**3,522**	**20**	**47**	**37**	**1,857**	**1,805**	**93**	**75**	**3,914**	**4,723**
Thornyheads	203		**84,625**	**812**	**6**				**36**				**15**			
Longspine Thornyhead																
Shortspine Thornyhead	413	6	47,945	31,701	18	6	99	84	11	8	57	48	43	48	222	154
Mixed Thornyhead		395		87,160		7		6		22		13		12		25
Thornyheads Total	**616**	**401**	**132,570**	**119,673**	**24**	**13**	**99**	**90**	**47**	**30**	**57**	**61**	**57**	**60**	**222**	**178**
Unidentified Rockfish		12,404	6,385	19,823		173		3,261		17		77		25		184
Rockfish and Thornyheads Total	**17,399**	**12,849**	**176,659**	**168,450**	**215**	**187**	**3,621**	**3,371**	**94**	**84**	**1,914**	**1,943**	**151**	**160**	**4,136**	**5,085**
Unidentified Groundfish		**3**		**33,501**												
Grand Total	**48,314**	**41,453**	**581,661**	**603,316**	**670**	**638**	**40,125**	**39,089**	**1,598**	**1,480**	**53,408**	**54,085**	**6,785**	**5,298**	**277,202**	**263,545**

4.2.2 Impacts to Overfished Species and Rebuilding Plans

Harvest specifications, and the science used as the basis for management decision-making are derived from the most recent assessments and/or rebuilding analyses prepared for those stocks informed by an assessment. Please see the 2015-2016 SAFE document for an explanation of the process that sets the harvest limits for the managed groundfish stocks (PFMC 2014).

There are six overfished west coast rockfish stocks (i.e., bocaccio south of 40º10' N lat., canary rockfish, cowcod south of 40º10' N lat., darkblotched rockfish, Pacific ocean perch, and yelloweye rockfish) and one overfished flatfish stock (i.e., petrale sole) at the start of 2013. All seven of these stocks are rebuilding and three (i.e., bocaccio south of 40º10' N lat., darkblotched rockfish, and petrale sole) are predicted to rebuild by the start of 2015.

Rebuilding plans are in place for six overfished rockfish species, as well as petrale sole, where assessments have indicated spawning biomass has declined to below the MSST. New full and updated assessments and rebuilding analyses were done in 2013 inform the 2015 and 2016 harvest specifications for many of the overfished species. New full assessments were conducted for cowcod, darkblotched rockfish, and petrale sole in 2013; however, a new rebuilding analysis was only prepared for cowcod. The results of the new assessments for darkblotched rockfish and petrale sole indicated those stocks would be rebuilt by 2015 and 2014, respectively. The SSC did not recommend new rebuilding analyses for these two stocks given their imminent rebuilding expectation. An update assessment for bocaccio was prepared in 2013. Like darkblotched, the stock is predicted to rebuild by 2015 and the SSC therefore recommended no new rebuilding analysis be prepared. Catch reports for canary rockfish, Pacific Ocean perch, and yelloweye rockfish were prepared in 2013. These catch reports indicated total catches were within limits prescribed in these stocks' respective rebuilding plans (See Appendix A, Tables A-1, A-2, and A-3).

Stock rebuilding parameters estimated from the most recent rebuilding analyses and current rebuilding parameters specified at the start of 2013 are provided in Table 4-4.

Table 4-4. Rebuilding parameters estimated in the most recent rebuilding analyses and specified in rebuilding plans for overfished groundfish stocks at the start of the 2013-2014 management cycle.

Stock	T_{MIN}	$T_{F=0}$	T_{MAX}	T_{TARGET}	Harvest Control Rule Specification
Bocaccio	2018	2018	2031	2022	SPR 77.7%
Canary	2027	2028	2050	2030	SPR 88.7%
Cowcod	2059	2060	2097	2068	SPR 82.7%
Darkblotched	2012	2016	2037	2025	SPR 64.9%
POP	2040	2043	2071	2051	SPR 86.4%
Petrale sole	2014	2014	2021	2016	25-5 Rule
Yelloweye	2044	2047	2089	2074	SPR 76%

4.2.3 **Impacts to Bycatch Limits**

Under the IFQ system there are individual by catch limits for halibut. In addition, there are bycatch limits for certain groundfish species that are either pooled by groups of fishermen or traded amongst individuals. The at-sea whiting sectors are managed under bycatch limits for selected overfished species. Mandatory co-ops in the mothership sector are allocated a portion of these sector bycatch limits and are accountable for keeping catch of these species within their allocation. Bycatch limits are not expected to change under any of the proposed alternatives.

If a fishery specification for precautionary zone and healthy groundfish species or species groups is exceeded, the risk to the stock is generally lower than it is for overfished species. If a fishery specification of a constraining overfished species was greatly exceeded due to unreported discarding at sea, inaccurate catch accounting, or delayed catch reporting, the risk of exceeding rebuilding-based OYs is increased. There are many variables that affect the time it takes a stock to rebuild, fishing mortality is only one of those variables. However, exceeding the rebuilding based OY could result in an extended rebuilding period for an overfished species.

AS-1, AS-2 and AS-4 (for whiting only). Species composition conducted at the dock can be applied to discard events seen on video to account for some discard events. Unintentional minor discards would be accounted for through species composition application.

4.2.4 **Impacts on Prohibited Species and Protected Species**

Salmonids: None of the alternatives would cause additional impact to salmonids since fishing behavior is unlikely to change and fishers would be required to discard them (except shoreside and at-sea whiting catcher vessels). If other fisheries are required to retain them under Option A Maximized retention then some additional impacts may occur; however, current impacts are minimal in groundfish fisheries. The shoreside and at-sea whiting fishery operates under a limit and an EM program would not increase the limit nor cause an increase in catch rates.

Halibut: Halibut impacts are not expected to increase unless vessels are required to retain them under maximized retention, as is the current practice in the shoreside and at-sea whiting fishery. IF all catch is considered dead then impacts may reach a maximum but would not exceed current IBQs and catch allocations for each sector. If vessel continue to discard them and current IPHC halibut mortality rates are applied then impacts would likely be similar to the status quo. Several options for discard mortality and retention are identified but are not yet analyzed yet: Using WCGOP scientific observations (assumed 20-30% coverage) is applied to fleet (Option B**),** captain and crew provide assessment (Option D), an appropriate EM viability assessment (Option E), or vessel specific viability assessment (Option F).

Marine Mammals: The alternative actions are not likely to affect the incidental mortality levels of marine mammals over what has been considered in previous NEPA analyses.

Seabirds: The alternative actions are not likely to affect the incidental mortality levels of seabirds over what has been considered in previous NEPA analyses.

Sea Turtles: The alternative actions are not likely to affect the incidental mortality levels of sea turtles over what has been considered in previous NEPA analyses.

Endangered Species: The alternative actions are not likely to affect the incidental mortality levels of endangered species over what has been considered in previous NEPA analyses.

4.2.5 Impacts on Tracking and Monitoring Under the Proposed Action

All vessels would be required to carry at-sea observers at their own expense to monitor sorting and discarding of the catch and shoreside landings. There would also have to be an electronic system to report bycatch and landings, which may be integrated with the current state fish ticket (landings reporting) system. NMFS would also continue to administer a system to track QS/QP holdings. A comprehensive EM program is expected to require minimal increases in enforcement effort. Since the EM program would be voluntary, vessels may immediately lose privileges for certain violations. In addition, it's possible that existing coops and new coops could assist in "self-policing" to increase accountability between members and lessen the need for enforcement actions. To resolve ongoing EM monitoring issues or in response to violations, observers may be required in place of EM.

Under Alternative 1 (No Action), at-sea observers would be required on all vessels (100 percent coverage). Observers would be required to monitor the sorting, weighing, and discarding of catch.

Under Alternative 2 or 3, to assure accuracy when QPs are discarded at sea, vessels may be required to meet specified monitoring and weighing provisions, including adequate space for catch sorting, an adequate location for video monitoring, and the equipment necessary for accurately weighing and documenting QP species at sea.

Under all alternatives, biological data collected by shoreside samplers would include age structure data (lengths, otoliths, scales, snouts, etc .) and would continue to provide much needed fishery dependent length and age data use in stock assessments. Providing quality fishery dependent length and age data is expected to have a beneficial effect, as it helps stock assessment scientists better understand a stock's population status and changes in the stock. Stock assessments are important to the management process because they are generally used as the basis for setting future harvest levels.

Under alternative 1, catch composition data would continue to be collected by at-sea observers; however, under alternative 2 and 3, sampling would need to be conducted on EM vessels to collect biological data and possibly verify EM data that is seen by reviewers and logged by vessel operators. The level of sampling and the cost to support these efforts has not yet been evaluated or decided upon.

A catch monitor is present during the entire delivery to ensure that all incidental catch makes it to the point of weighing. This includes monitoring the primary sorting stations and confirming the weight of the catch includes species that may have been missed in the initial sorting, and confirming that all catch is recorded accurately. Depending on a processor's capacity and efficiency, and the size of vessel deliveries, a full offload could take a few hours to the majority of the day. Although this monitoring program would remain in regulation, it's possible that some efficiencies may be lost since many observers depart the vessel and become the shoreside catch monitor. Under Alternative 2 and3 a shoreside monitor will need to be present for vessels that deliver and do not have an observer aboard the vessel. Vessels and processors will need to work together to ensure a catch monitor is available.

Fish ticket data must be submitted within 24 hours of the time the catch was landed rather than daily, electronic fish ticket data for some deliveries may not be submitted until almost two days after the catch was landed and would be available to managers shortly thereafter.

One major consideration for debiting a QP account is the timeframe to get the data into the system. Under Alternative 3 (logbook audit) it's possible to get the data from the logbook into the system within a week; however, it may take up to a month or more depending on the review software and the number of discard events to review, or corrections to be made to get the data into the system and reconcile a QP account. The physical transfer of the video data (via electronic or car) to the reviewer and the length of time it takes for the reviewer to conduct the audit are the limiting factors for the process. Review all the video (Alternative 2, Option A: census), would take the most time and be the most costly to fishermen.

Valid and timely data are needed to monitor total catch of all IFQ species, IBQ species, and catch allocations. Positive indirect biological effects could occur if the quality of catch data were improved such that more timely and accurate data were available for managing the fishery inseason and keeping total catch within the fishery specifications, including: bycatch limits, species allocations, OYs, and biological opinion thresholds. Negative indirect biological effects could result if catch data used to manage the fisheries inseason were inaccurate or delayed such that fishery specifications could not be adequately monitored or the fishing stopped before one of the fishery specifications were exceeded.

2.9.2

Consideration must be given to the timeliness of the data gathered and when/how it is provided to managers for IFQ management. The data source of the discard information and how it flows into the database is key to successful handling of the data expeditiously and correcting the data if necessary when preliminary data is used to debit a QS account. If incorrect or delayed data results in an individual exceeding their IFQ, or IBQ then the fisher must be able to find additional quota to cover the negative balance. This may prevent a fisherman from fishing other quota until the QS account is balanced; thereby, lessening the annual impact on a stock(s).

Indirect effects from fishery management actions include changes in fishing practices that affect the biological environment, but are further away in time or location than those occurring as a direct impact. Indirect biological impacts could result if catch data were inaccurate or delayed such that fishery specifications (bycatch limits, species allocations, optimum yields, and

biological opinion thresholds) could not be adequately monitored or the fishing stopped before one of the specifications were exceeded. If a fishery specification were exceeded, the magnitude of the impact would depend of the status of the stock (healthy, precautionary zone, or overfished), the proportion of allowable fishing mortality represented by fishery specification that was exceeded, and the stock's sensitivity to changes in fishing mortality. If other fisheries could not be effectively managed to stay within the same fishery specification, cumulative indirect impacts could result.

4.3 Effects on the Socioeconomic Environment

This section of the EA looks at direct and indirect impacts, positive and negative, on the socio-economic environment. Basic information regarding the people and the fisheries that are projected to be affected by the management alternatives will be presented in Chapter 3. The following section differs from Chapter 3 in that it discusses what is projected to happen to the affected people and fisheries as well as what social changes are expected to occur, and, how changes are expected to affect fishing communities.

In this section, the primary impact mechanisms that will be traced through to their socioeconomic effects are:

- Increased retention of unwanted fish
- Replacement of human compliance observers with electronic monitoring, on a voluntary basis
- New onboard catch handling restrictions (e.g. ensuring adequate quality camera capture of any discards)
- Other new data collection activities (e.g. discard logbooks)
- New data processing related tasks (e.g. data retrieval and video review)
- Changes in the configuration of the shoreside monitoring task (e.g. use of catch monitors present in the port rather than relying on observers)
- New and changing distribution of responsibility for paying for various tasks (e.g. payment for at-sea biological observations, payment for video review)

One of the main impacts of the alternatives that runs through all sectors, including the government sector, is the impacts on the direct costs of the compliance and biological monitoring programs. For that reason, this section will start with an assessment of the direct compliance and biological monitoring costs of the alternatives followed by a full evaluation of the impacts to each sector.

4.3.1 Analysis of Program Costs for Compliance and Biological Monitoring

There are some significant uncertainties in the assessment of costs including uncertainties about

1. EM program participation rates in aggregate and by port
2. Additional fleet consolidation
3. Organization of the shoreside monitoring function

4. Changes to fees charged by providers for compliance observers and shoreside catch monitors

The outcome for some of these uncertainties will depend on how fishery participants respond to the program. To deal with some of these uncertainties, ranges of estimates will be developed and some results may be presented qualitatively, or quantitatively but without dollar values assigned.

Others uncertainties depend on the eventual design of the program. There are also a number of decision points that will affect the cost estimates and distribution of costs. A few of the more significant ones may be

1. Who will retrieve data from vessels (Section 2.2.8.2).
2. Whether all video must be reviewed (Alternative 1) or only a percentage of it (Alternative 2) (Section 2.2.1.1).
3. What amount of discarding will be allowed (and hence the video that must be reviewed more carefully reviewed) (Sections 2.2.2 and 2.2.4).
4. Who will carry out and who will pay for the video review function (Section 2.2.8.4).

4.3.1.1 Assumptions

Participation Rates

On one of the most important factors – EM participation rates – a range of working assumptions is being considered on a preliminarily basis

Table 4-5. Preliminary working assumptions on rates of vessel participation in the EM program.

Low Rate	Medium Rate	Higher Rate
20	50	80

Fleet Consolidation

Under the No Action Alternative, there may be further fleet consolidation as a continuation of the rationalization process started with the implementation of Amendment 20 in 2011. While there has already been some consolidation, additional consolidation might be expected with the start of QS trading and as subsidies for observer fees end. It would be expected that if the action alternatives have a substantial effect on vessel operating costs there might be an effect on fleet consolidation. The amount of consolidation expected is extremely difficult to predict and it is possible that there would be no additional consolidation under No Action. On this basis, no attempt will be made to model additional fleet consolidation but the possibility or such consolidation will be covered in the discussion of the impact on fishery participants.

4.3.1.2 Cost Categories

The costs considered in developing this analysis are listed in Table 4-6 with an indication of the sectors (private or government) that is expected to directly cover the costs.

Table 4-6. Cost centers for consideration in cost estimation

Component	Private	Government
Electronic Monitoring		
Individual Vessel Monitoring Plans (IVMPs)		
Development of standards for IVMPs (1x)		x
Development of IVMPs by vessels(1x)	x	
Approval of IVMP by NMFS (1x)		x
Maintenance and revision of IVMP	x	x
Vessel Equipment		
Development of standards for equip. (1x)		x
Purchase cost (1x)	x	
Installation cost (1x)	x	
Maintenance - annual	x	
Data Transfers		
Development of protocols and software (1x)		x
Retrieval/submission of data		
-video	?	?
-logbook	?	?
Video/Data Processing		
Development of protocols and software (1x)	?	x
Video/logbook review		
- during gear retrieval & catch sorting b/	?	?
- after sorting and stowage until offload	?	?
Transmission of Data From Reviewers to Catch Accounting System		x
Data Storage and Maintenance		
Development of protocols, software etc. (1x)		x
Equipment costs (1x)		x
Equipment maintance		
Resp to data req.		x
Compliance and Biological Observers		
Government Costs (WCGOP)		
Program planning and development (1x)		x
Ongoing admin costs (e.g. trip notifctn sys)		
Observer training admin costs		x
Observer debriefing admin costs		x
Data QA/QC, summary, and analysis		x
Gear and equipment	-	x
Costs – At-Sea for Biological Observers	-	

Component	Private	Government
Observer provider fees	?	?
Observer boarding costs (e.g. food)	x	
Costs – At-Sea for Compliance Observers		
Observer provider fees	x	
Observer boarding costs (e.g. food)	x	
Shoreside Catch Monitor (CM) c/		
First Receiver - Shoreside CM		
CM training & admin costs		x
CM debriefing & admin costs		x
Gear and equipment		x
CM provider fees	x	

EM

No Action Alternative

Under the No Action Alternative, there would be no administrative cost related to EM other than the likely continuation of developmental initiatives, including EFPs. Even with the implementation of EM, some such initiatives will likely continue under the Electronic Technologies Implementation Plan being developed by NMFS. The following are the other categories of cost impacts identified under the action alternatives.

- **Private - Equipment Costs**
- **Governmental or Private - Video Review Costs**
- **Governmental or Private - Logbooks**

There would be no EM related costs for discard monitoring for any of these categories. Non-EM related direct and indirect discard monitoring costs are discussed below in subsections entitled *Observers - Biological and Compliance Observers* and *Shoreside Catch Monitors*.

Action Alternative

Government - Policy Development, Implementation and Administrative Costs

Government costs have been broken out into a number of categories in Table 4-6 to ensure the full scope of costs implications are considered. The categories may be rolled up and a single cost estimate provided for the program as a whole. Under the action alternatives, EM related program planning and administrative costs would be required for tasks such as

- developing criteria for and then approving individual vessel monitoring plans and electronic monitoring equipment;

- organizing the retrieval, transmission, and storage of data from the field;
- coordinating the video review function (whether carried out as a government or contractor activity); and
- summarizing data and responding to data requests.

Government costs related to adjustments to observer and shoreside monitoring are discussed below in sections related to those topics.

AS-2 is likely to entail the lowest direct administrative costs cost for EM because it covers only the whiting fishery and, through the EFPs conducted in the last decade, substantial work has already been done to develop an EM framework for this gear sector. The options for AS-4 were selected to create the easiest to administer program and are therefore likely to entail lower administrative costs for EM relative to AS-1 and AS-3. AS-1 is the same as AS-4 with the exception of the video reading protocols (Section 2.2.1.1) and process for adjusting the discard species (Section 2.2.6) and would therefore entail similar direct costs as AS-4, perhaps slightly higher than AS-1. Therefore AS-3 would likely have the highest administrative costs. The difference between AS-2 and the other action alternatives is likely to be more significant than the differences among AS-1, AS-2, and AS-4.

The government costs associated with the EM program might be considered costs associated with a LAPP in which case those costs would be recoverable through fees of up to three percent of total exvessel value (maximum on total cost recovery for the trawl rationalization program as a whole). The shorebased IFQ sector is already being charged the maximum 3 percent fee, therefore any increases in government costs for that sector would have to be covered from other sources. The mothership sector is being charged less than the three percent maximum, therefore it might be that some of the government costs associated with the program can be passed through to that sector. It should be noted that for the WCGOP there might be some administrative savings as a result of managing fewer observers but also possible increases related to paying for biological observers. These would have to be taken into account in determining any fee for program costs. Additionally, if the government is responsible for video review costs, some of the associated costs may be charged against the mothership sector, limited by the 3 percent cap.

Private - Equipment Costs

The costs for the camera and related electronic systems would vary between vessels, depending on the configuration of the vessel, the gear used, and the target species (whiting or nonwhiting) but are not likely to vary among the alternatives. Equipment cost estimates have not yet been developed but information is available from other programs. Equipment costs for the whiting EFP program were reported to be $52 per day for vessels that purchased their equipment and $132 per day for vessels that leased their equipment.

Governmental or Private - Video Review Costs

Under the action alternatives there would be a new cost for video review that is not present under the No Action Alternative. It has not been determined who would bear the video review costs. Estimates have been developed for the cost of video review time during initial catch retrieval and

sorting. These are displayed in Table 4-7. These estimates currently include time required to identify catch being retained. Time required for video review may be less than these estimates since only discard events would have to be evaluated for species identification. Additionally, other innovations could be developed which speed video review time.

Vessels need to be monitored for discard events for the entire time fish are onboard the vessel until they are offloaded. This costs is not included in the current video review time estimate. It may be possible that video review between catch sorting activities and arrival in port may be assisted through programming software that identifies video segments where back deck activity is occurring, thus reducing the amount of transit video that needs to be reviewed. Other technologies such has hatch sensors may be useful in increasing the efficiency of reviewing video or eliminating the need for it

Video review might be conducted by:

- NMFS
- PSMFC under contract with NMFS
- 3rd Party (em provider or observer/catch monitor provider or other)

Costs of review and who pays for the review may vary depending on the entity providing the services. If NMFS handles the video review task it would be difficult to create a funding mechanism by which industry would pay for the task. If industry pays for the review there would have to be third party reviewers and a process for NMFS to certify those reviewers to perform the task. Also, if industry pays there would be more private incentive for innovation to develop technologies and software to increase efficiency of the review process.

Table 4-7. Preliminary estimates of video review costs.

	AS - 1 EM for All Sectors (Lowest Biological Risk)	AS-2 EM for Whiting Sector (Observers for Others) (Low Cost for Whiting Sector)	AS-3 EM for All Sectors (Low Cost for Non whiting Sectors Industry)	AS-4 EM for All Sectors (Lowest Administrative Burden)
Video Reading **a/ b/** • During Catch Handling	100% Review Likely Upper Bound **c/** Whtg **d/** - $25/day NonWhtg – $320/day Longline – $123/day Pot - $60/day	100% Review Likely Upper Bound **c/** Whtg **e/** - $25/day	20% Review Likely Upper Bound **c/** Whtg - $12/day NonWhtg – $82/day Longline – $38/day Pot - $20/day	20% Review Likely Upper Bound **c/** Whtg - $12/day NonWhtg – $82/day Longline – $38/day Pot - $20/day
• Other Video Review	There would be more video to review during non-catch sorting time but the speed with which video review occurs would be much higher – particularly when there is no one present on the back deck.			

a/ Adapted from PSFMC report to the Council April 2014 (Agenda Item C.1.b; Supplemental PSMFC PowerPoint (Colpo); April 2014.
b/ Decisions on who will pay for video reading may be important with respect to program performance and have yet to be determined. Some of the decision may rest on legal issues. If industry pays for review then there will be incentives to develop technologies to speed review time and to ensure that video rates can remain low. If government pays for review, additional monitoring burden will be transferred from the private to governing sector.
c/ These are the costs of reading video for the purpose of measuring both retained and discarded catch. If only discarded catch would be measured, the costs would likely be lower.
d/ Shoreside Whiting EFPs report data service and review costs of $45 (as per Lowman et. al., 2013).

Governmental or Private - Logbooks

AS-1 relies on 100 percent camera coverage and there would be no discard logbooks and therefore no logbook associated costs. AS-2 also relies on 100 percent camera coverage but a suboption is included which would also require discard logbooks as a backup in case of failure of the camera system or as a crosscheck with the camera system. AS-3 and AS-4 also require logbooks for discards. Fishermen would be required to report discards by species and provide an accurate estimate of the weight. The current state trawl logbook for midwater and bottom trawl activity would need to be modified to include species discard categories with instructions. This would require additional fields in the Pacific Fisheries Information Network (PACFIN) reporting system and may require additional changes to state computer reporting systems. The logbook system might be implemented as an augmentation to the existing paper logbooks or as an electronic logbook program. Oregon has a discard logbook requirement for fixed gear vessels participating in the trawl catch share fishery. Washington and California might be asked to implement logbook requirements for fixed gear discards. Potential changes to existing logbook system are described in the Table 4-8.

Table 4-8. Potential changes to logbooks or additional logbooks for each fishery under Alternative 3.

Key: MDTW = midwater trawl, LL = longline, BTW = bottom trawl

Fishery/Gear	Additional data fields	Changes to state system	Changes to PACFIN
Whiting/MDTW	Estimated Pounds Discarded Each Tow	Yes if state wants/required to track	Yes if discard info is provided to NMFS via PSMFC, may need to apply species comp to estimated total discard to get individual species discards
Non-whiting/ MDTW; BTW	Estimated Pounds Discarded Each Tow	Yes if state wants/required to track	Yes if discard info is provided to NMFS via PSMFC, may need to apply species comp to estimated total discard to get individual species discards
Fixed gear/LL and Pot	May not need changes for Oregon fixed gear logbook; California trap log – add discard field; Need to develop a logbook for Washington.	Yes if state wants/required to track	Yes if discard info is provided to NMFS via PSMFC; changes to accommodate California and Washington data.

Observers - Biological and Compliance Observers

No Action Alternative

Under the No Action Alternative the West Coast Groundfish Observer Program would continue to administer a program which supports 100 percent observer coverage to vessels operating in the catch share program, with observers provided by provider companies and paid for by harvesters at a rate of $400 to $475 per day plus travel expenses. The current Federal program

for reimbursing observer costs would come to an end, increasing the amounts paid by vessels for observer coverage (Table 4-9).

Table 4-9. Federal reimbursement rates for observers and observer provider fee rates.

	Observer Subsidy	Observer Provider Fee Rates
2011	$328.50/day (90% to a maximum of $328.50)	
2012	$328.50/day (flat rate)	
2013	$258/day (flat rate)	
2014	$216/day atsea (flat rate)	$400-$475 per day plus travel expenses [a/]
2015	(some lower amount probable)	

a/ Higher rates tend to apply for area south of San Francisco.

Action Alternative

Government Costs

With respect to adjustments to at-sea observer activities resulting from EM, the governmental operations most affected would be those of the NWFSC and its WCGOP. The primary impact mechanisms would be

- a reduction in the number of observers in the field,
- a possible change in who pays for the observers, and
- additional tasks related to managing data and developing estimates from a hybrid program.[4]

Under any of the action alternatives, biological observer coverage would need to be reestablished to sample catch and collect other data at-sea on a randomly distributed sample of trips by vessels participating in the EM program. Coverage levels in existence prior to the trawl rationalization program might be reestablished. At that time, approximately 20 to 25 percent of the trips were covered with government paid biological observers. Thus at-sea observers would still be required but at a reduced level. A reduction in the number of observers would reduce

- training costs,
- equipment replacement costs (all equipment has already been purchased),
- costs related to positioning and maintaining observers in the field, and
- debriefing costs.

Depending on the amount of participation in the EM program and advance declaration requirements (Section 2.2.7.6), there may be a need to develop a new system for vessels to provide advance notification of trip in order to allow the WCGOP to achieve the needed coverage.

[4] The NWFSC would likely use information from video review combined with observer data to develop total mortality estimates and other biological information needed to manage the fishery. Additional, NWFSC or some other NMFS unit might also take on the video review function discussed in the previous section.

Under No Action the industry would pay for observers but Section 2.2.8.5 includes an option that would leave the responsibility for paying for observers with vessels. AS-1 through AS-4 include only the option of having NMFS pay for the biological observers. Therefore under these alternatives NMFS would incur the additional costs of observer coverage.

Under all of the action alternatives, it is likely that a portion of the fleet would still use observers rather than switching to EM. There may be costs associated with merging information from two different types of data sources to produce combined estimates and associated statistics

The least participation in EM would be expected under ES-2, which covers only the whiting sectors, and hence the most continued use of observers. For ES-1, ES-3, and ES-4 similar EM participation rates might be expected although ES-3 might be slightly higher because the options selected for it were designed to be the least cost for industry, therefore ES-3 might have the highest EM participation rate and lowest continued use of observers.

Private Costs

With respect to industry borne observer costs, factors to consider include

- payment for biological observers, and
- impact of EM on observer fees paid by those who continue to use an observer

As discussed in the section on government costs, Section 2.2.8.5 includes an option that would leave the responsibility for paying for observers with vessels. Under such circumstances, under all of the action alternatives, on a periodic basis vessels might bear at least part of the expense for EM coverage and observer coverage (depending on ability to switch EM off on a single trip when an observer is onboard and related cost savings).

With EM in place, fewer vessels would be using observers and any fixed costs that providers incur in providing observer services would be spread among fewer observer trips, potentially resulting in an increase in a reduction in profits for observer companies or an increase in observer fees. The reduction in demand for observers for monitoring compliance would be offset to some degree by an increase in the need for biological observers. It is expected that a biological observer would be randomly assigned to approximately 25% of the trips covered with EM. Thus the maximum reduction in demand for observers for the West Coast groundfish trawl fishery would be 75% if every vessel participated in the EM program. For companies that supply observers to other regions and fisheries, some of the fixed costs may be spread out over a number of trips which are much larger than those associated with the West Coast groundfish fishery. At the same time, these companies may have some fixed costs which are specifically incurred as a result of providing services to the West Coast groundfish fishery. The fixed costs of concern are those which are incurred solely due to the provision of observer services for the West Coast and which, given sufficient time, cannot be scaled down in proportion to the reduction in demand for observers. If fixed costs dedicated to the West Coast trawl fishery are small relative to overall costs and revenues, or the industry is highly competitive, some or all of the changes might be absorbed through a reduction in the profit margins. However, in a competitive situation providers would be expected to achieve normal profits (see Section 4.3.8

for additional discussion). The larger the West Coast related fixed costs the more likely it is that there may be some impact on observer fees.

Travel costs are another factor that may impact what vessels pay for observers. Even if per day fees remain unchanged, with a small observer corps it may become more likely that a vessel will have to pay observer travel related expenses to bring an observer in from another part of the coast if there is not one available when needed by the vessel.

Shoreside Catch Monitors

No Action

At present the catch monitoring function is almost always carried out by the at-sea observers who, upon arriving in port, go to shore and fulfill the monitoring function at the first receiver site. Observer time fulfilling the shoreside monitoring function is paid by the first receiver. This is expected to continue under the No Action alternative.

Costs related to catch monitors involve training, equipment, and the observer time (recovered as fees paid to observer provider companies). Currently, in addition to observer training with the NWFSC, most every observer goes to a separate training with PSFMC to learn how to fulfill the shoreside catch monitoring function. Additionally, the PSMFC checks data quality of the reports submitted by catch monitors on a bimonthly basis and debriefs catch monitors annually. The expenses PSMFC incurs for training and debriefing are covered through a government contract.

At present, catch monitors are trained three times a year at a total cost per training session of roughly $7,000, varying depending on the number of trainees (Table 4-10). Roughly 80 to 90 debriefing sessions are held per year at a total cost of around $8,000 per year (Table 4-11). These cost estimates do not include the costs of time for the catch monitors, which are covered by the observer providers (ultimately paid for by vessels and first receivers). These levels are expected to continue under the No Action alternative, though there could be some diminishment in training needs if there is additional fleet consolidation. Some additional consolidation might be expected with the end of the observer cost reimbursement program.

Table 4-10. Catch monitoring trainings and costs, 2010 through 2013 (Source: PSMFC, IFQ Catch Monitoring Program).

CM Training	2010	2011	2012	2013	2014 as of June 30
Trainees (count)	34	78	45	38	14
Trainings (count)	2	4	3	3	1
Length of Training (days)	7[a/] & 3	2.5	2.5	2.5	2.5
Fixed cost per training per training (labor, space, travel etc)	$6,285 per training				
Variable costs per person (manuals, printing etc)	$55/per person				
Example 2014 training cost:	$6285 + (55 * 14) = $7055				

a/ In 2010, one 7 day training was conducted for a non-observer. This included species identification and greater detail on some aspects than is normally covered in our standard training

Table 4-11. Catch monitoring debriefings and costs, 2010 through 2013 (Source: PSMFC, IFQ Catch Monitoring Program)..

Debriefings[a/]	2010	2011	2012	2013	2014 as of June 30
Debriefings (count)		55	86	90	47
Total Debriefing hrs (x 2.5 hrs)		138	215	225	In progress
Total Debriefing Cost (labor)			$7,740	$8,100	In progress

a/ Debriefing does not include data review

Catch monitors use the equipment provided by the NWFSC to fulfill their shoreside monitoring tasks.

Currently, the shoreside catch monitoring task takes an hour or two to a half-day or more to complete, depending on the type of delivery (Table 4-12). Deliveries at southern ports tend to take longer than deliveries at northern ports. In Westport and Bellingham, 56 percent of the deliveries required more than six hours to offload, while in Astoria/Ilwaco the majority, 65 percent required between two and six hours. From Coos Bay down to Fort Bragg, between 70 and 85 percent of deliveries were between two and six hours while from San Francisco south the majority of landings, 56 percent on average, were less than two hours. In this southern area, Moss Landing was an exception; there the majority of landings took between two and six hours. There is no expectation that this pattern would change in any particular way under the No Action Alternative.

Table 4-12. Offload times by port, 2012 and 2013 combined (Source: PSMFC, IFQ Catch Monitoring Program).

		Offload Time (hours)							
		<1	1 to <=2	>2 and <=4	>4 and <=6	>6 and <=8	>8 and <=10	>10	Total Count (2 years)
Bellingham-Astoria	Landings	36	68	456	628	317	188	102	1,795
	Percent	2%	4%	25%	35%	18%	10%	6%	
Newport	Landings	33	81	467	318	70	18	16	1,003
	Percent	3%	8%	47%	32%	7%	2%	2%	
Coos Bay - Brookings	Landings	9	76	187	165	45	9	3	494
	Percent	2%	15%	38%	33%	9%	2%	1%	
Crescent City to Fort Bragg	Landings	9	34	246	168	44	1	1	503
	Percent	2%	7%	49%	33%	9%	0%	0%	
San Francisco south	Landings	250	161	201	101	18	5	5	741
		34%	22%	27%	14%	2%	1%	1%	

Catch monitor billing methods vary by company. One company charges the observer rate for shoreside monitoring but in partial day increments that break at three hours (a half day for less than three hours and a full day for more than three hours). The other company charges by the hour at an hourly rate of approximately $50 for catch monitors. Travel expenses, if any, would be in addition to these rates. The current observer reimbursement program also applies to catch monitors, however, as with the observer reimbursements, the reimbursements for catch monitors are scheduled to phase out.

Vessels and processors (buyers) need someone available to carry out the shoreside monitoring task wherever landings are occurring. Figure 4-2 shows the distribution of landings among ports for the shoreside whiting, nonwhiting, and fixed gear fleets. The ports with the greatest number of landings, in order, are Astoria, Newport, Coos Bay, Eureka, Westport, and Morro Bay. Whiting IFQ landings have been concentrated in Westport, Astoria, and Newport, while nontrawl (fixed gear) IFQ landings have been concentrated in Morro Bay and Avila. Without their whiting landings, Newport would be more toward the smaller end of the trawl ports, and Westport would be one of the smallest trawl sector ports. Nonwhiting landings are more spread along the coast, with the greatest numbers of landings occurring in Astoria, Coos Bay, Eureka, and Fort Bragg. Figure 4-3 and Figure 4-4 show the numbers of vessels and number of processors making those landings. Landings by time of year are discussed below in the section on Action Alternatives.

Table 4-13. Key to port abbreviations.

Port Abbreviation	Port
BLL	Bellingham, Washington
WPT	Westport, Washington
ILW	Ilwaco, Washington
AST	Astoria, Oregon

Port Abbreviation	Port
NWPT	Newport, Oregon
COS	Coos Bay, Oregon
BRK	Brookings, Oregon
CC	Crescent City, California
ERK	Eureka, California
FB	Fort Bragg, California
SF	San Francisco, California
HLF MN	Half Moon Bay, California
MNT	Monterey, California
MOS	Moss Landing, California
MOR	Morro Bay, California
AVL	Avila, California

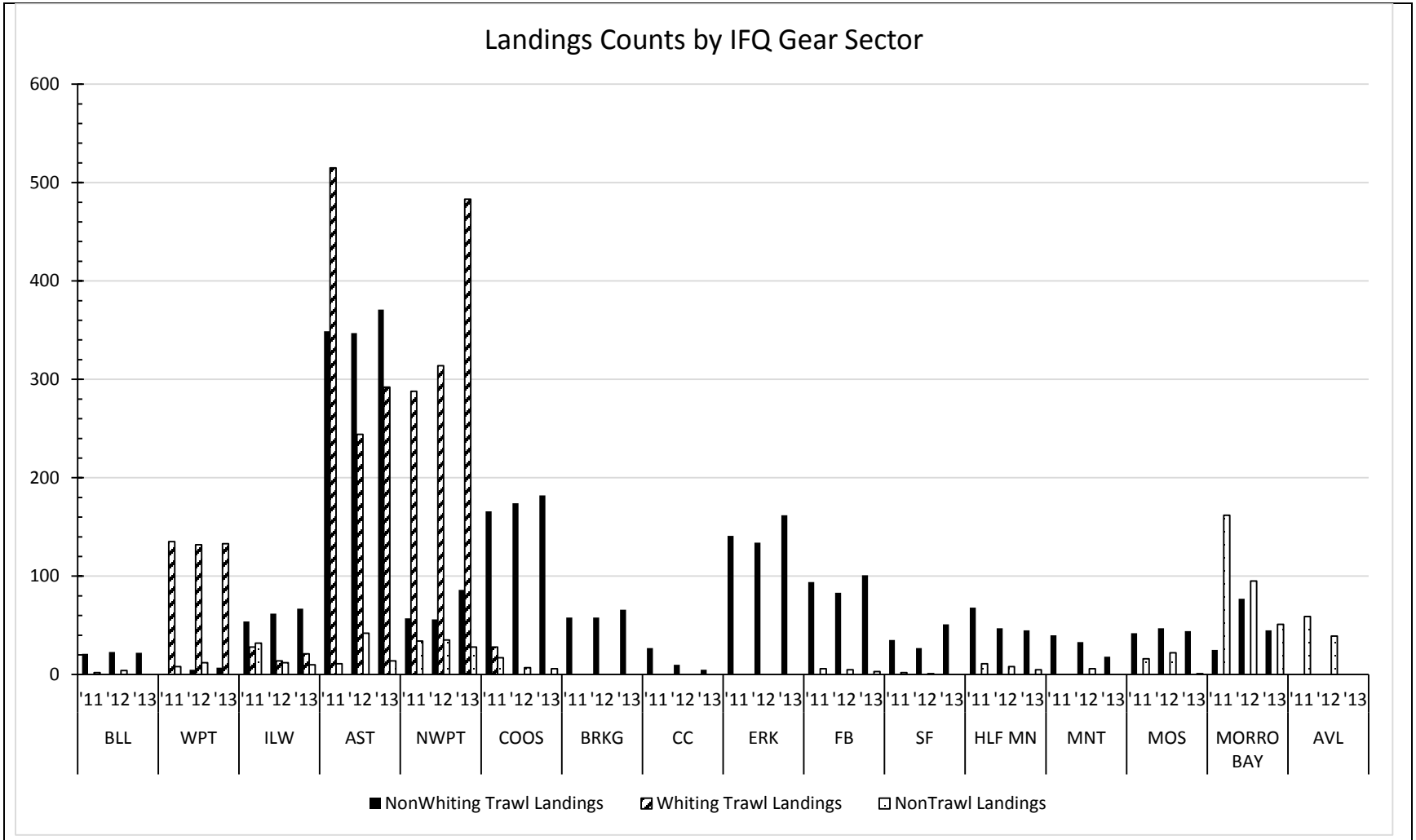


Figure 4-2. Number of nonwhiting trawl, whiting trawl, and nontrawl IFQ landings by port for 2011, 2012, and 2013 (see Table 4-13 for key to port names).

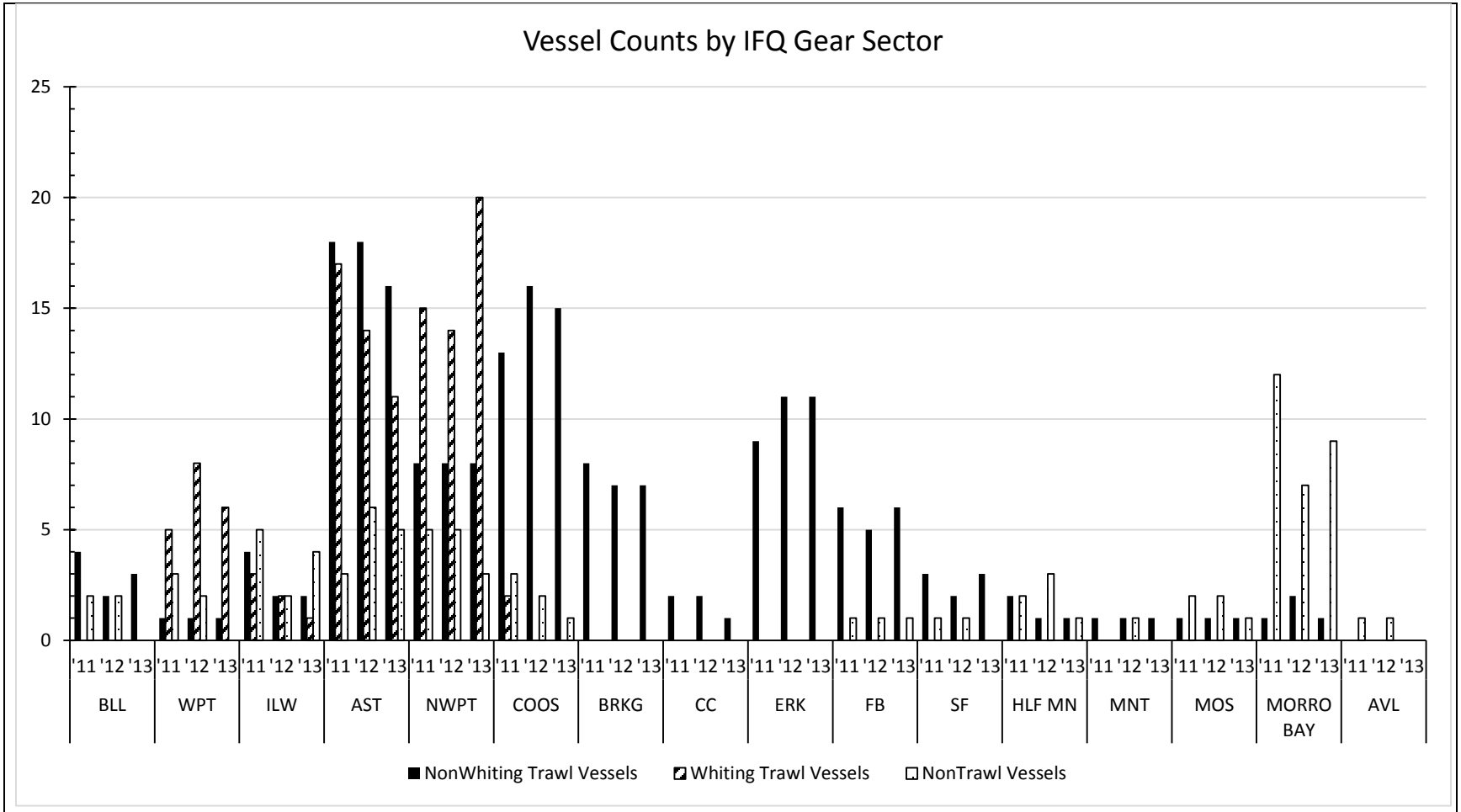


Figure 4-3 Number of nonwhiting trawl, whiting trawl, and nontrawl IFQ vessels by port for 2011, 2012, and 2013 (vessels participating in more than one IFQ gear sector or landing in more than one port are counted more than once, see Table 4-13 for key to port names).

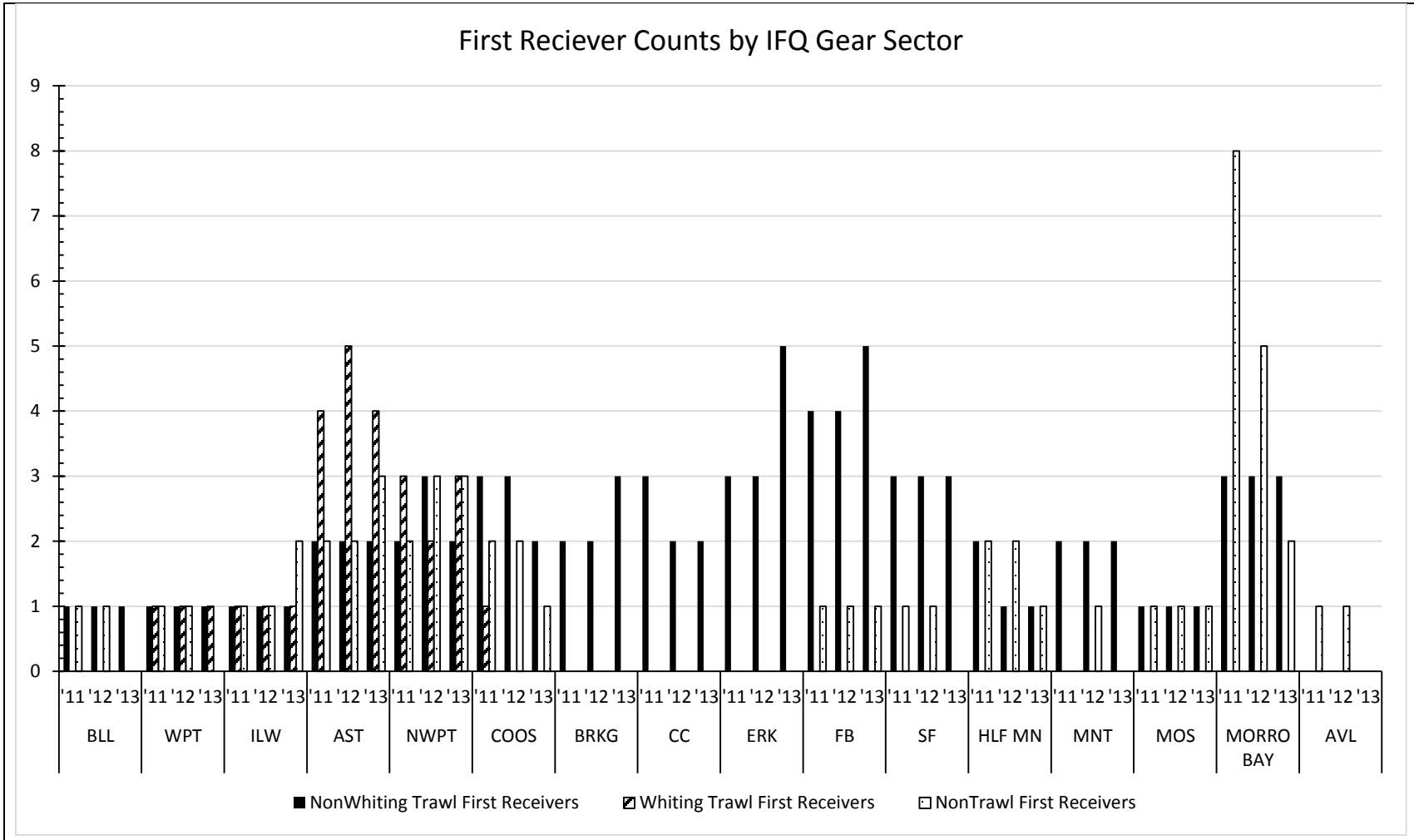


Figure 4-4 Number of nonwhiting trawl, whiting trawl, and nontrawl IFQ first receivers by port for 2011, 2012, and 2013 (first receivers receiving from more than one gear group are counted more than once, see Table 4-13 for key to port names).

Action Alternatives

Under the action alternatives, to the degree that vessels opt into the EM Program, observers would not be available to fulfill the shoreside catch monitoring function and other arrangements would have to be made. This reorganization of the shoreside monitoring task is expected to impact costs for catch monitors in a number of ways. The following is the list of cost impact categories identified for analysis and a preliminary assessment of their relative importance (on a scale of 1-5 with a 1 being most important). The weights given are relatively low because the costs involved are smaller relative to the at-sea observation and EM costs. Comment is sought on these rankings.

1) Training costs (4)
2) Debrifing costs (5)
3) Catch monitoring equipment costs (4)
4) Catch monitoring fees (3)

The first three of these costs would be incurred by government and the last by private industry.

The impacts of the action alternatives (AS-1, AS-2, AS-3, AS-4) would depend on the degree to which vessels participate in the EM program. That degree of participation may vary among the alternatives but we do not have enough information to develop models to assess under which of the action alternatives participation would be greater. Because AS-2 and AS-3 were selected to provide EM at the least cost to industry, they may have higher participation rates. However, total participation under AS-2 would likely to be lower because only the whiting fleet would be able to participate. There is no basis for projecting whether participation would be higher under AS-1 or AS-4, however total participation under both is expected to be higher than under AS-2 because under AS-1 and AS-4 all vessels can participate. Other factors affecting impacts include how industry decides to organize itself to fulfill this function (including harvesters, processors, and providers).

Government Costs

Catch monitoring training and debriefing costs are likely to be impacted under the action alternatives. Since the catch monitoring task alone takes much less time than the observer task, it is likely that one catch monitor would cover more landings than a single observer fulfilling the catch monitoring role. On the one hand, this means that there would be fewer catch monitors to train and debrief under the Action Alternatives, potentially reducing the estimated costs provided in Table 4-10 and Table 4-11 and related equipment costs. On the other hand, to the degree that catch monitors have not already been trained as observers, additional training would be required. As indicated in footnote a to Table 4-10, for the one individual trained only as a catch monitor and not as an observer, a seven day training was required, as compared to the three days required for individuals already trained in species identification and sampling techniques by the observer program. While the number of individual catch monitors to debrief may diminish (reducing the number of periodic debriefings and related costs), the total number of landings for which data must be reviewed is not expected to change as a result of the action alternatives. Table 4-10 and Table 4-11 cover administrative costs only and do not include costs for the catch monitor time

during training and debriefing. These costs (compensation for the catch monitor's time) are covered by providers and eventually recovered through fees they charge for providing observer and catch monitoring services.

As discussed in the section on observers, if EM replaces onboard observers there would be a reduction in the amount of equipment required for observers. Because observers generally fulfill the shoreside monitoring role this equipment is shared between the two tasks. Shoreside monitors would continue to require some of this equipment but because a single shoreside monitor can cover more trips than observers, there is likely to be some reduction in the total number of sets of equipment required. The approximate total cost for a full set of gear for observers is about $10,000. The cost of gear for catch monitoring, including laptop, camera, species ID materials, forms, and miscellaneous gear is about $1,500. All of these expenses have been incurred and over the next 5 years only maintenance cost of less than $1,000 per observer would be required (a high side estimate).

Private Costs

The fees providers currently charge for catch monitoring services are influenced by the efficiencies related to having an observer fulfill the shoreside catch monitoring function. Fees are generally charged on a time basis (hourly or fraction of a day) plus charges for travel. There are fixed costs associated with positioning and maintaining a person in the field. If the duration of billable work time diminishes, per hour/day fees may increase so that fixed costs can be recovered across fewer hours of work. With the loss of the observer task, the amount of observer/catch monitor time required to cover a particular trip would go down substantially. In ports where there are many landings occurring at regular intervals, it may be possible that a few individuals dedicated to the shoreside monitoring task would be able to efficiently cover the landings. Astoria might be the prime example of such a port. The main challenge in such a port may be mediating landing schedules if there are timing conflicts among first receiver sites (buyers/processors). For other ports, where the number of landings may not be enough to justify maintaining a dedicated shoreside monitor in a port, there may be a number of factors which exert an upward pressure on fees for catch monitoring services. First, increased field coordination would be required to position monitors in ports when landings are occurring; second, there may be travel time and expense involved in that positioning; and third, once they arrive the duration of the work available may be substantially less (as compared to the time involved when an individual travels to a port to go out on a trip as an observer and then tags the catch monitoring function on at the end of the trip) reducing the hours across which fixed costs of positioning the catch monitor must be defrayed. [5]

Variable EM participation rates in the fleet would create further logistical challenges in organizing this task and add to the need for advance planning, particularly if there are only a few catch monitors covering a region. First receiver cooperation in timing of offloads and sharing of catch monitors could reduce the number of monitors that need to be available and related costs.

[5] Analyst's conclusion based on personal communications with Alaska Observers Inc and Saltwater Inc on May 27, 2014.

The current practice is for first receivers to pay the costs for the catch monitor. Increases in cost could impact the first receiver's profits. However, an increase in cost might also be passed on as a fee to the vessel or in lower prices paid for fish delivered. Ability to pass increase costs to consumers is limited to some extent by costs of competing foods. Current rates for catch monitors charged by providers are discussed under the no action alternative.

Another approach to meeting the need for catch monitors might be to retain part time employees in a port for intermittent work. Observer/monitor providers indicate that it is very difficult to retain individuals for such part time work over the long term, and that in a part time/intermittent work situation, when a catch monitor is needed other life circumstances often conflict such that the catch monitor is not available.

Unless there are a large number of landings in a particular port or port area, or catch monitors are able to fulfill some other program functions when not monitoring offloads, it seems likely that the average catch monitoring fees (labor and transportation) are likely to be higher under an action alternative than under the current system where the at-sea observer fulfills the shoreside monitoring function.

Port Demand for Catch Monitoring Services

Catch monitoring costs will be influenced by the demand for services in a port or port region. The by-port demand for catch monitoring services will be a function of the number of vessels in a port participating and not participating in the EM program; the number of first receivers in a port and their ability to coordinate landings with vessels and with one another; and the total number and seasonality of landings. Additionally, geographic proximity to other ports and related travel time and costs will determine the opportunity first receivers have to pool together with other ports to generate greater demand and potentially lower prices.

To help assess the challenges for covering the catch monitoring task in each port, and consequently the impacts on costs, this section provides monthly landing information on the trawl IFQ program distribution of landings, vessels, and first receivers across ports from 2011 through 2013 (Figure 4-5 though Figure 4-20). The reader should be aware that the scale of the axis for landing counts for Oregon ports is larger (going to a maximum of 250) than for Washington and California (going to a maximum of 50). Other than that, the same scales are maintained between graphs to facilitate comparisons between ports. In Westport, in one month the number of landings exceeded the scale provide (a total of 51 landings were made, as noted on the graph). Table 4-13 provides a key to the port abbreviations used in the annual tables.

The following summary is based on the 2011 to 2013 annual and monthly landings by port in Figure 4-5 through Figure 4-20. Bellingham is geographically isolated from other ports and has very low levels of landings spread through most of the year. Westport has high levels of landings but they are seasonal and dominated by whiting. Covering off–season landings might be problematic and it could become much more difficult to cover Westport with catch monitors if vessels in the whiting fishery were able to participate in EM but not vessels in other IFQ gear sectors. Ilwaco has a lower level of demand for catch monitors but may benefit by its proximity to the high demand port of Astoria. Astoria has the highest demand for catch monitoring along the coast and has high demand for coverage of both whiting and nonwhiting landings. Newport

also has high demand for coverage of whiting landings but much lower for nonwhiting landings (comparable to Ilwaco and Brookings). Other than Astoria, Coos Bay, Eureka, and Fort Bragg have the highest annual demands for coverage of nonwhiting landings. If the 2011 to 2013 trend in Crescent City continues, it will likely fade out as an IFQ port. The other active ports from San Francisco south (San Francisco, Half Moon Bay, Monterey, Moss Landing, and Morro Bay) have generally lower numbers of nonwhiting landings than ports to the north with the exceptions of Crescent City, Westport, and Bellingham. Landings for 2011 in Half Moon Bay and 2012 in Morro Bay might be the exceptions. At this time, Avila appears to have phased out as an IFQ port.

There is some degree of seasonal variations in the landings of most every port. In six of the fifteen ports in which there were landings in 2013,[6] there were at least some months in which there were no landings (Bellingham, Westport, Brookings, Crescent City, Half Moon Bay, and Monterey, Table 4-14). For months in which fishing occurred, there were fewer than an average of five landings a month in 2013 in Bellingham, Crescent City, San Francisco, Monterey, and Moss Landing. There was an average of between six and ten landings a month for months fished in 2013 in Ilwaco, Brookings, Eureka, Fort Bragg, Half Moon Bay and Morro Bay. There were an average of 16 per month in Westport and Coos Bay, but seasonality was much heavier in Westport than Coos Bay. The greatest averages were in Astoria (56 per month) and Newport (50 per month). Demand and seasonality in Westport and Newport are heavily influenced by the whiting fishery. Footnotes in Table 4-14 provide information on the travel time between ports, pertinent to the challenges of a single catch monitor working more than one port.

[6] Of the 16 ports in Table 4-15 only Avila had no 2013 landings.

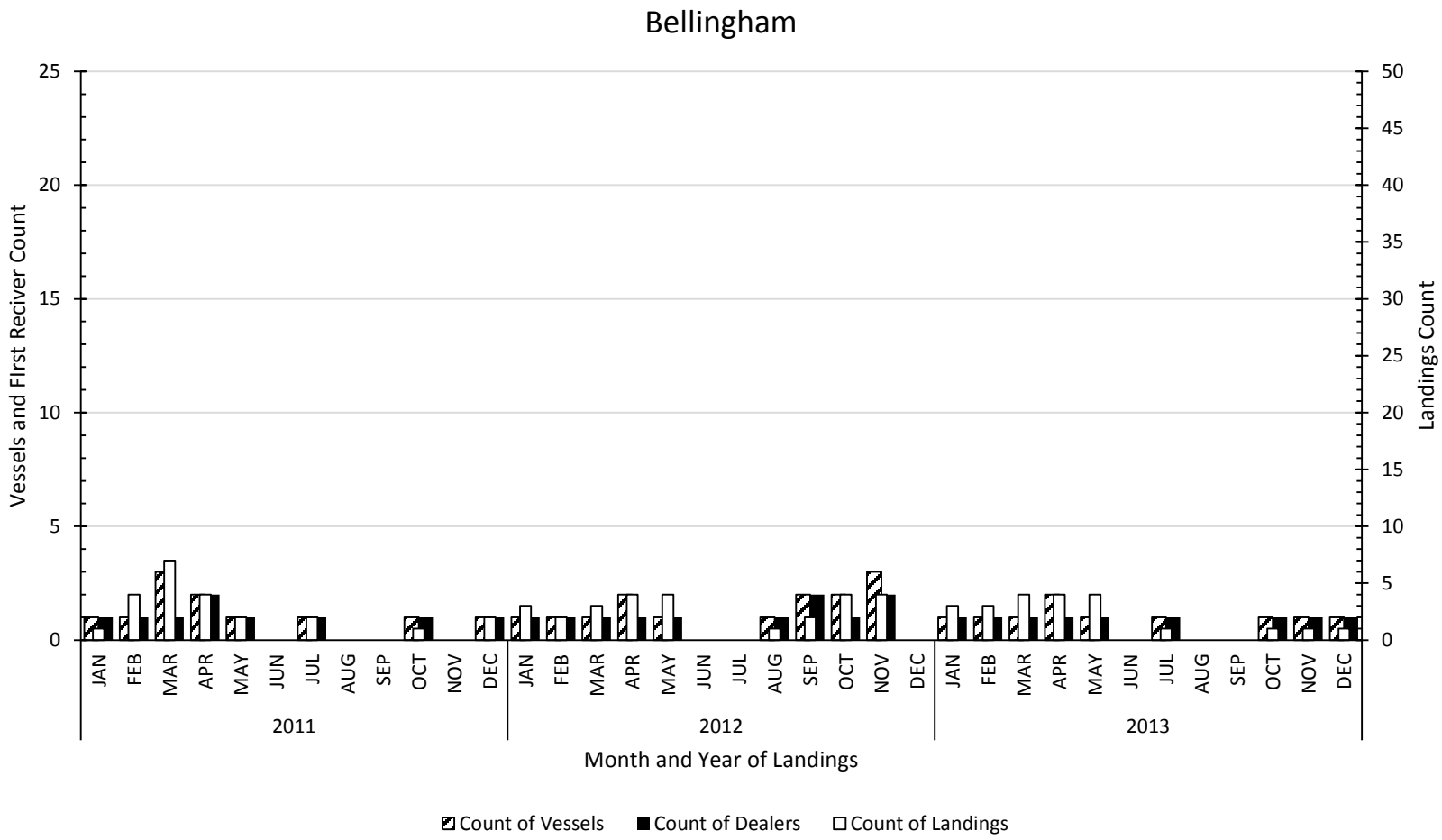


Figure 4-5 Bellingham, Washington, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings – no whiting landings were made to this port).

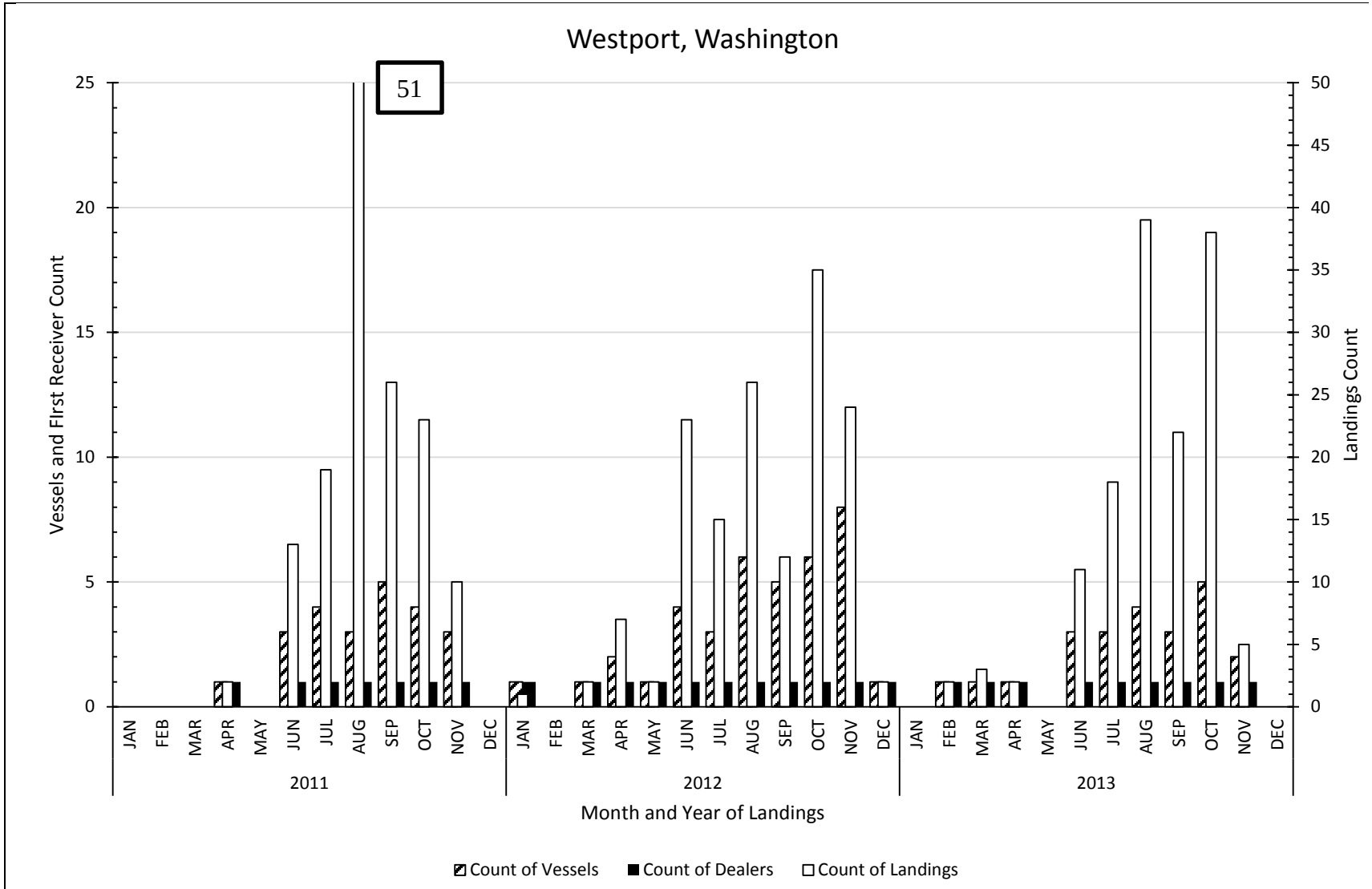


Figure 4-6 Westport, Washington, counts f vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting and whiting landings).

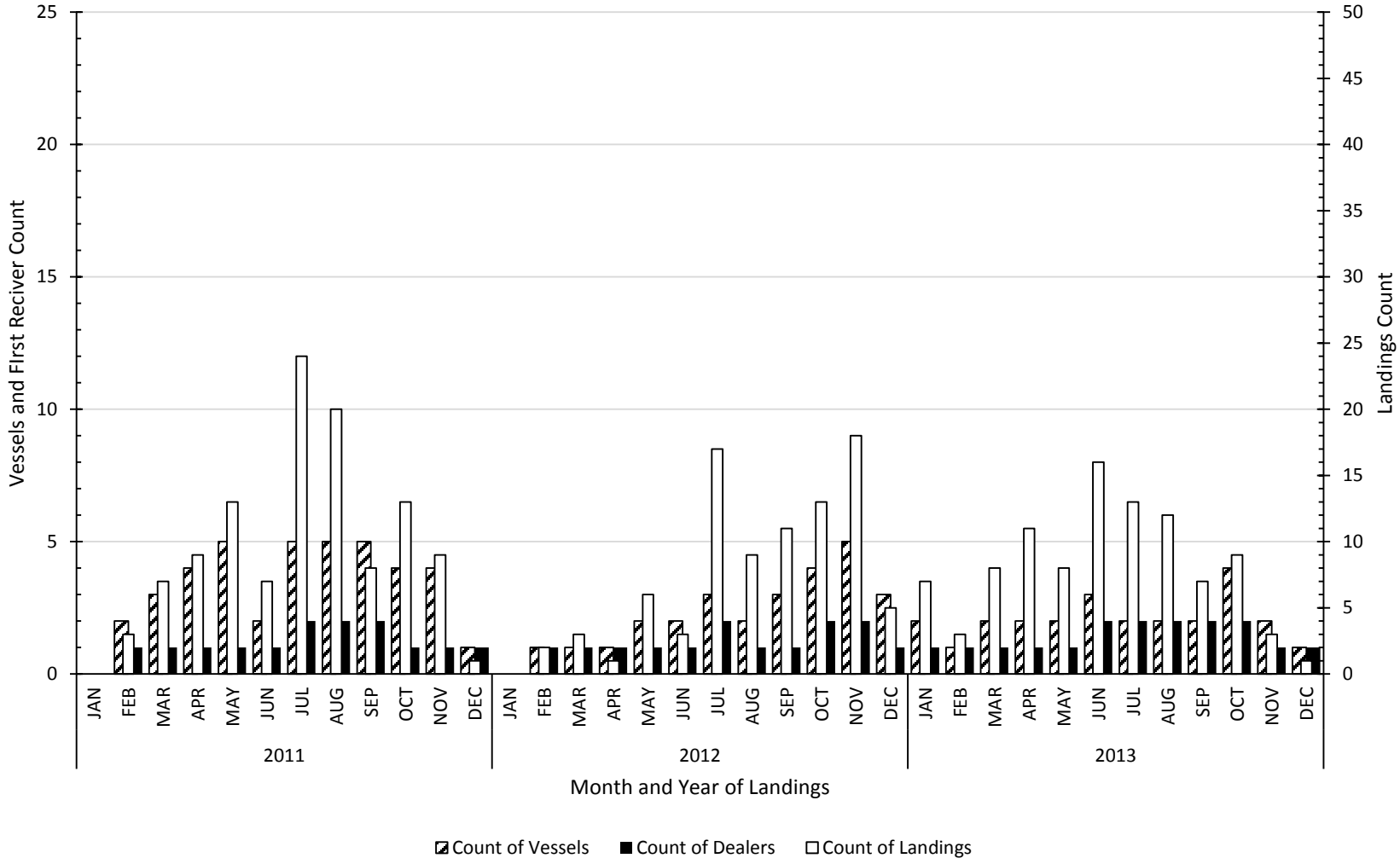


Figure 4-7 Ilwaco, Washington, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting and whiting landings).

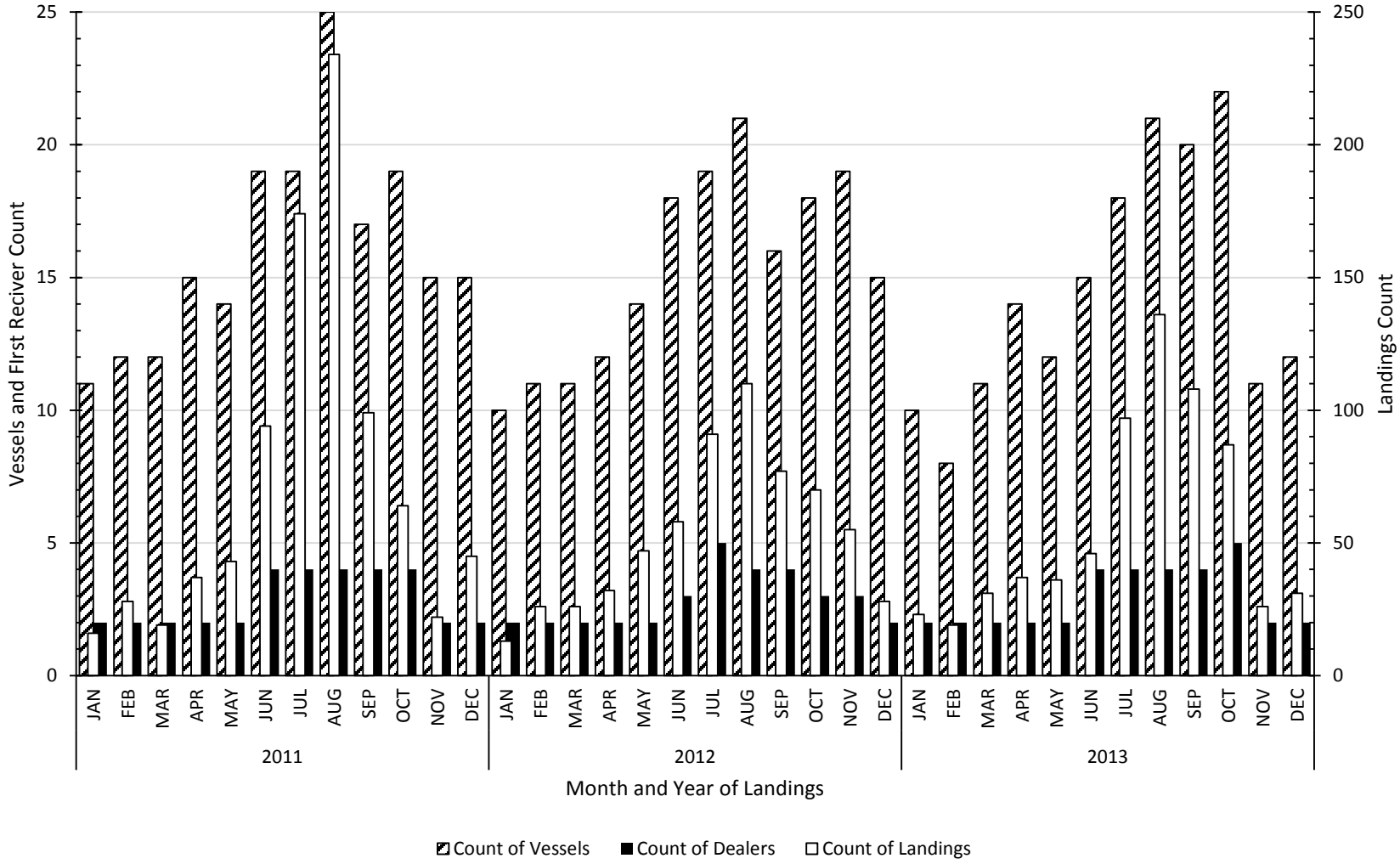


Figure 4-8 Astoria, Oregon, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting and whiting landings).

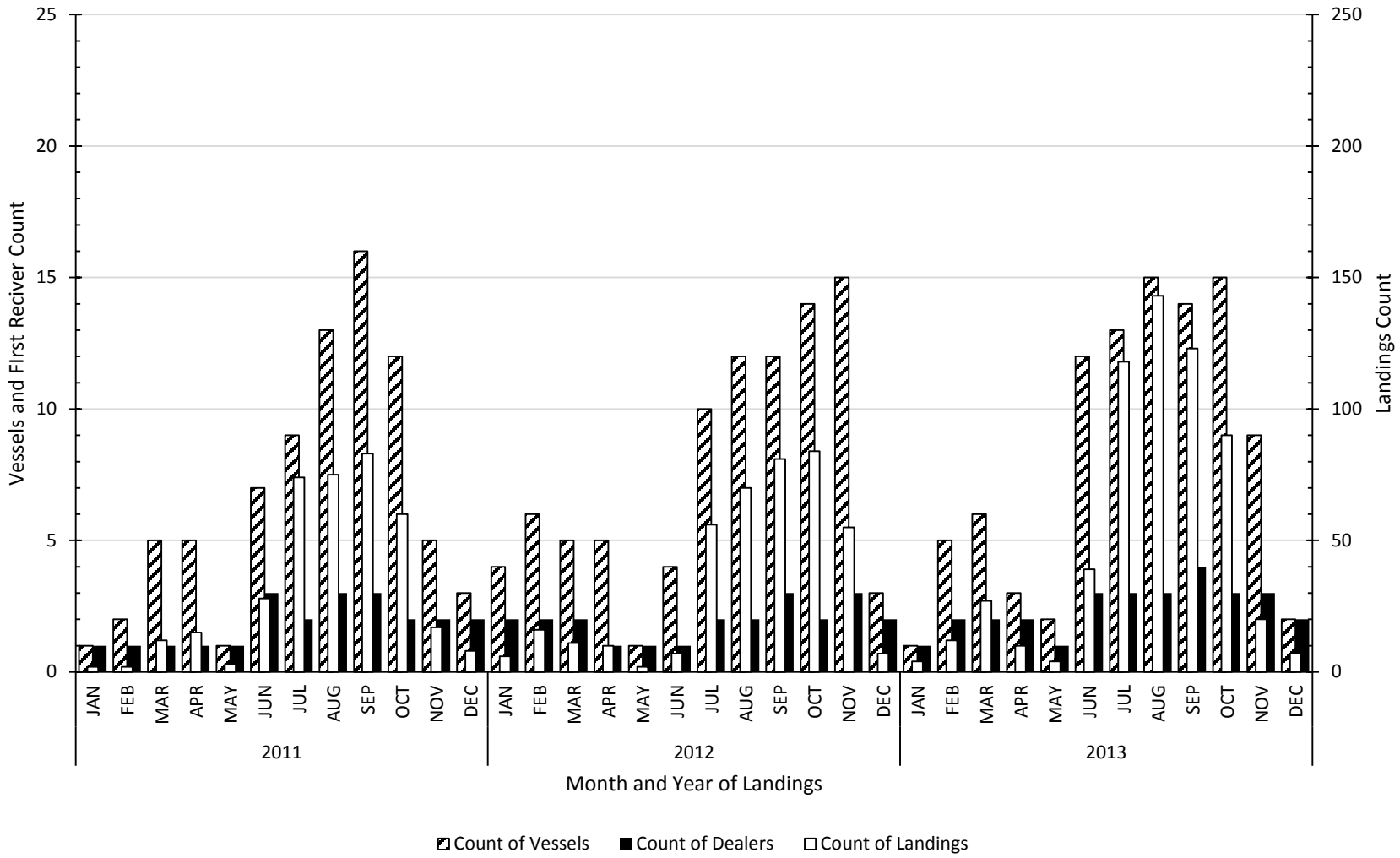


Figure 4-9 Newport, Oregon, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting and whiting landings).

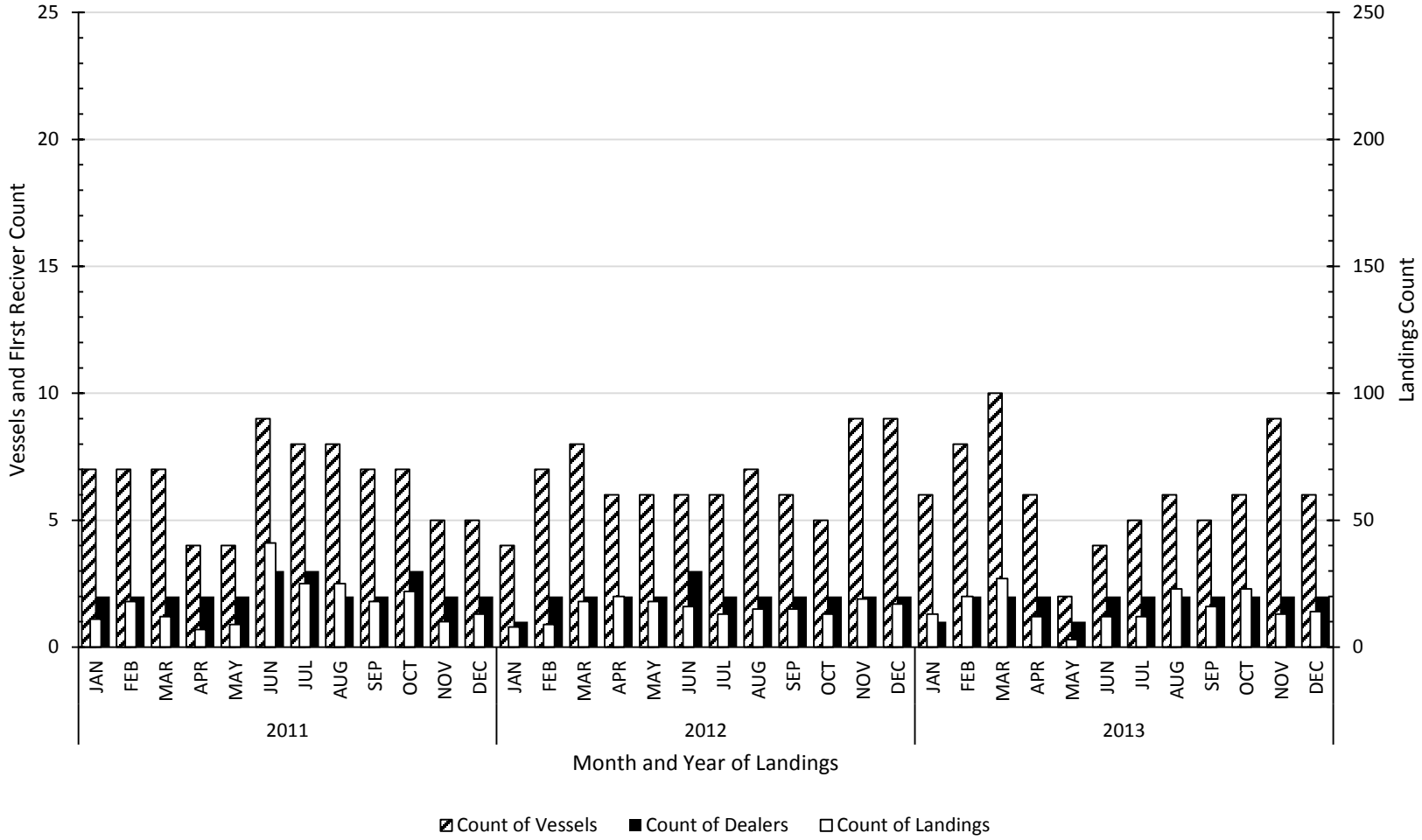


Figure 4-10 Coos Bay, Oregon, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting and whiting landings – there were whiting landings only in 2011).

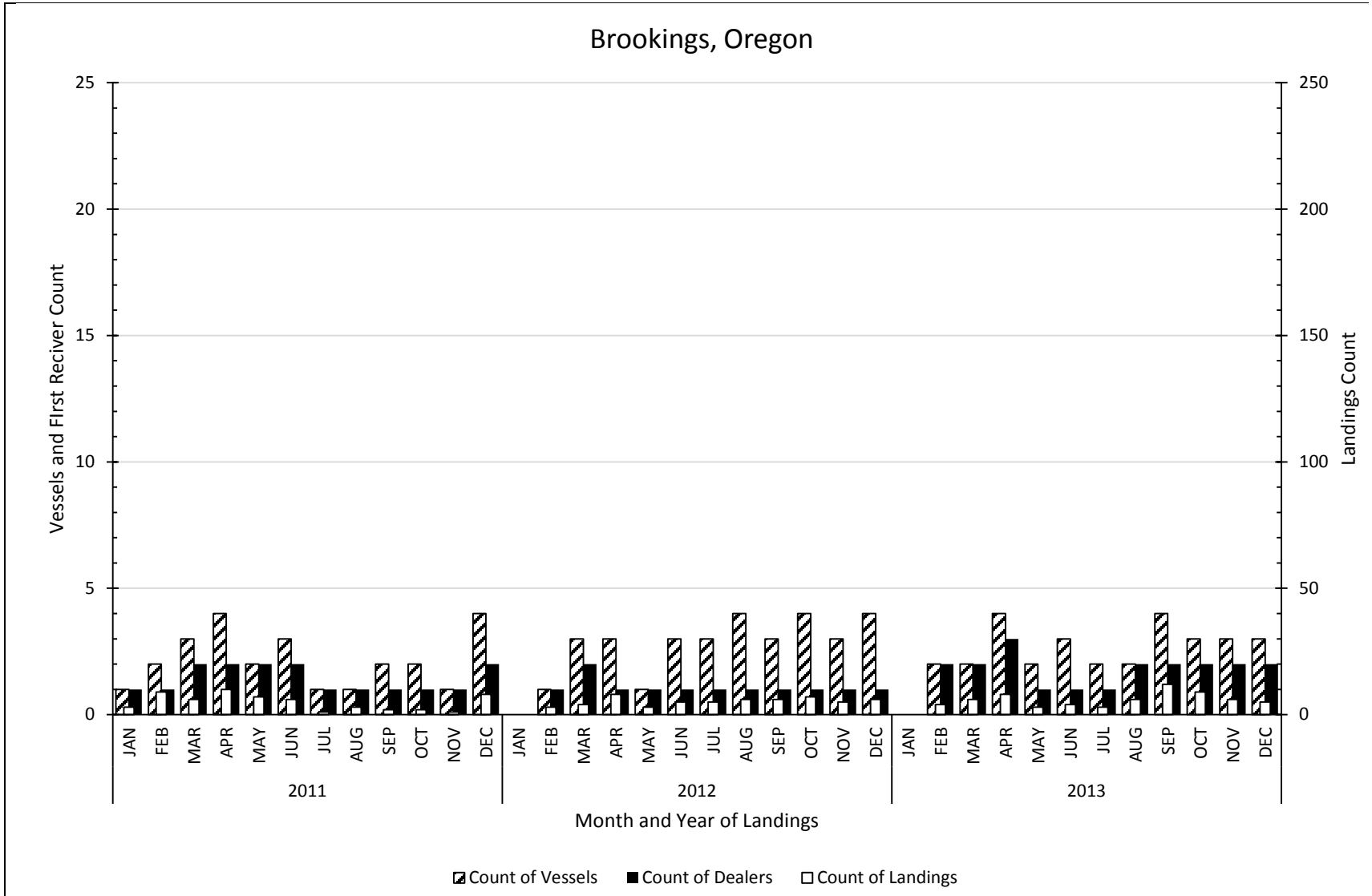


Figure 4-11 Brookings, Oregon, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting and whiting landings).

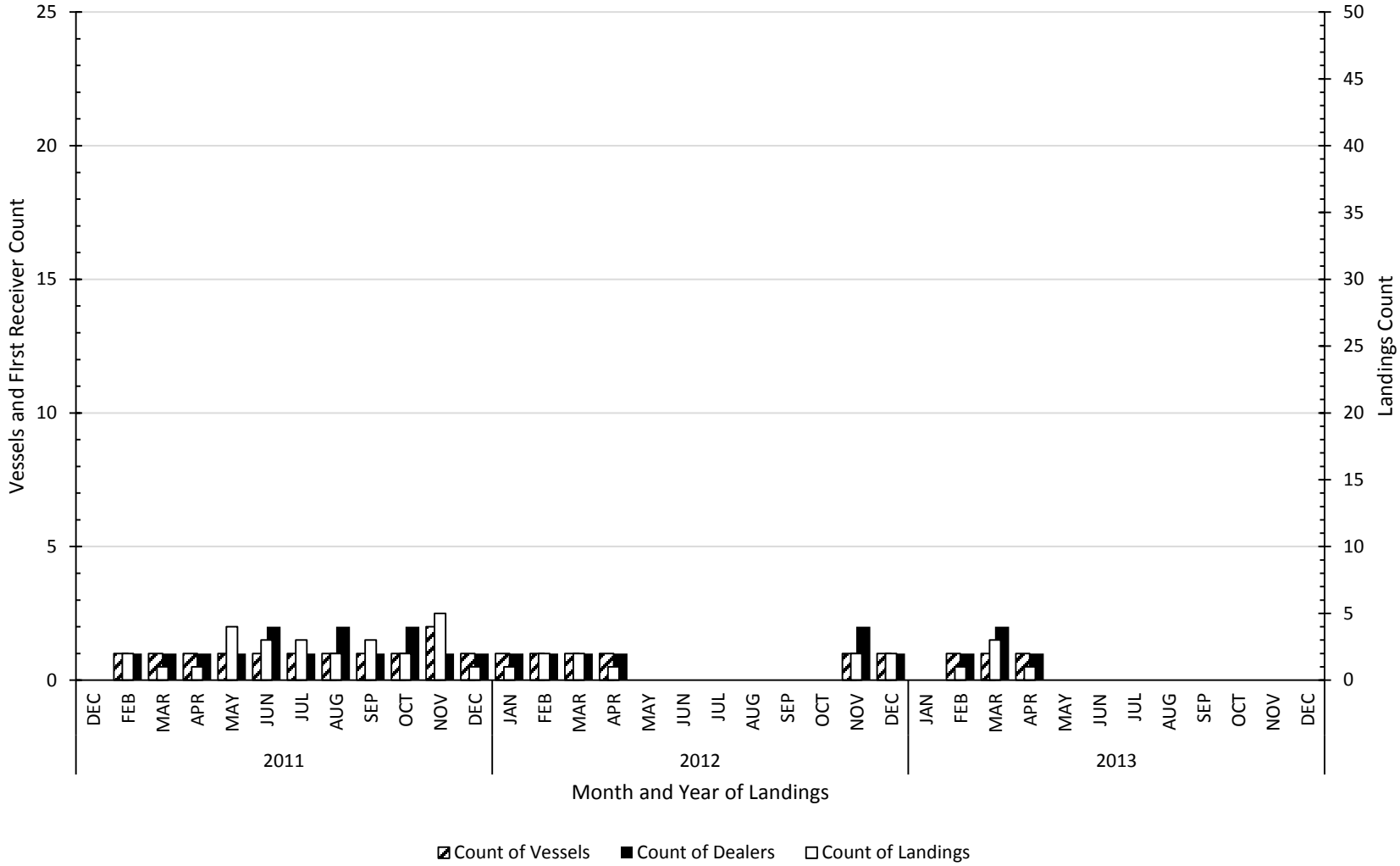


Figure 4-12 Crescent City, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

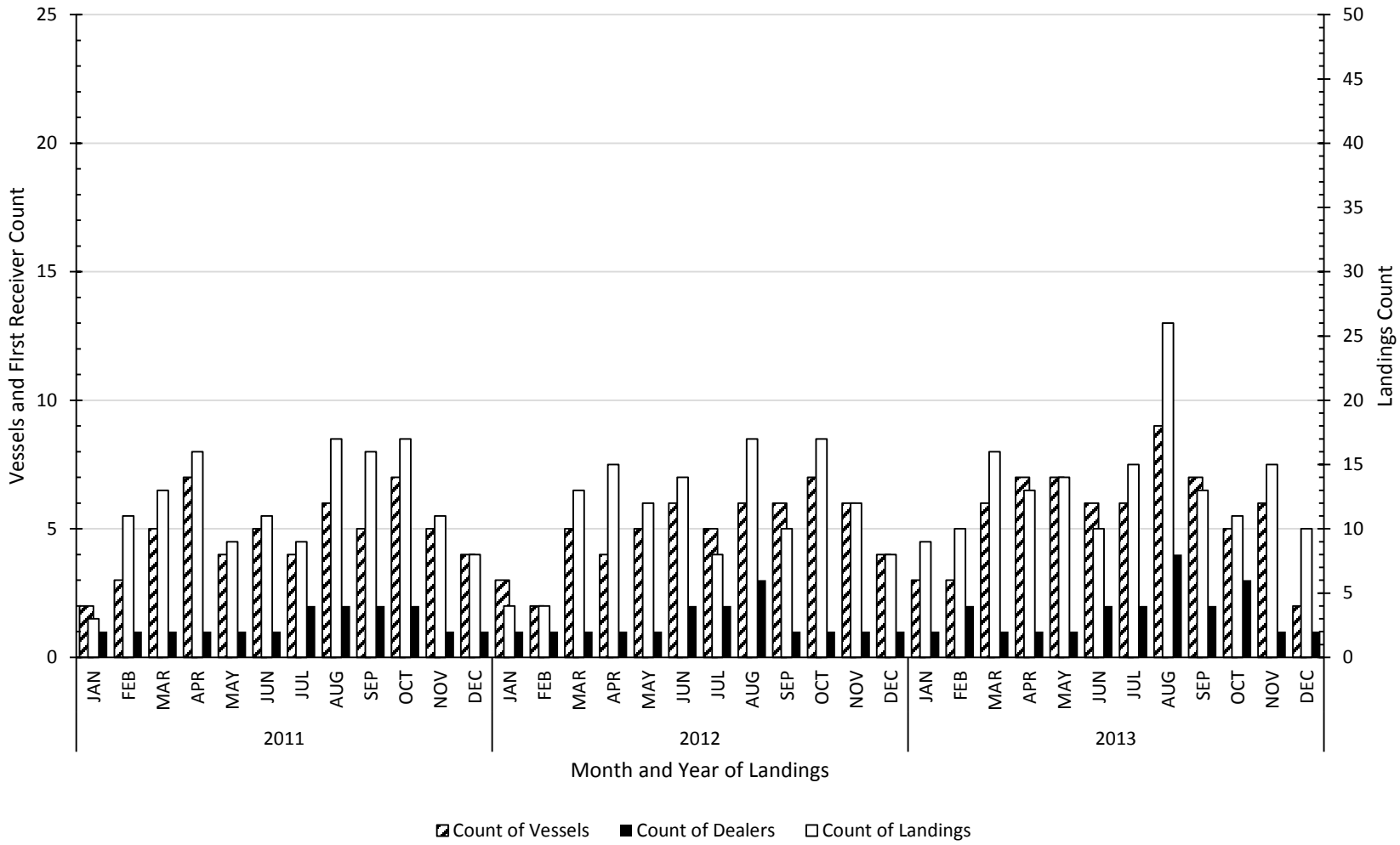


Figure 4-13 Eureka, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

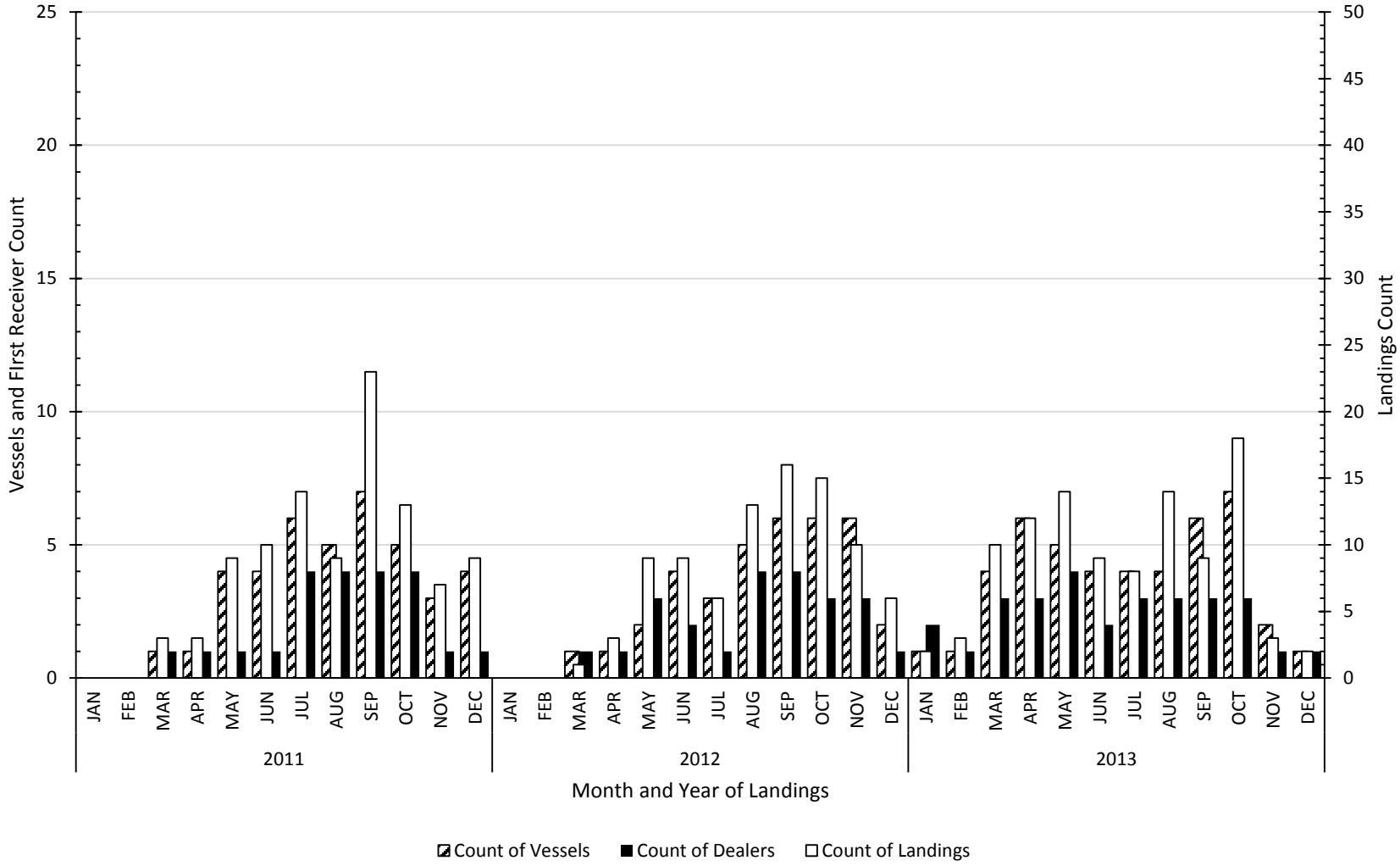


Figure 4-14 Fort Bragg, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

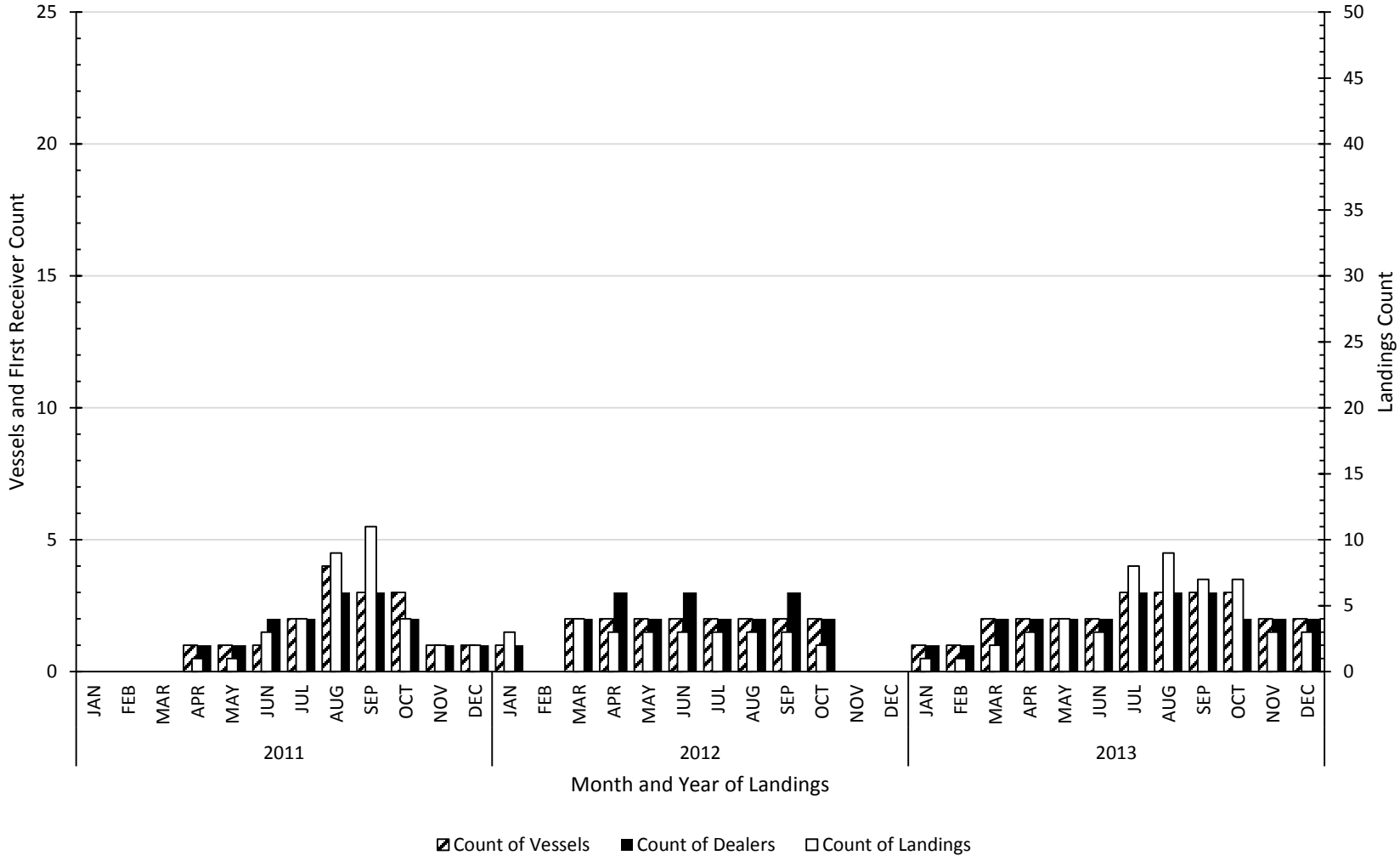


Figure 4-15 San Francisco, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

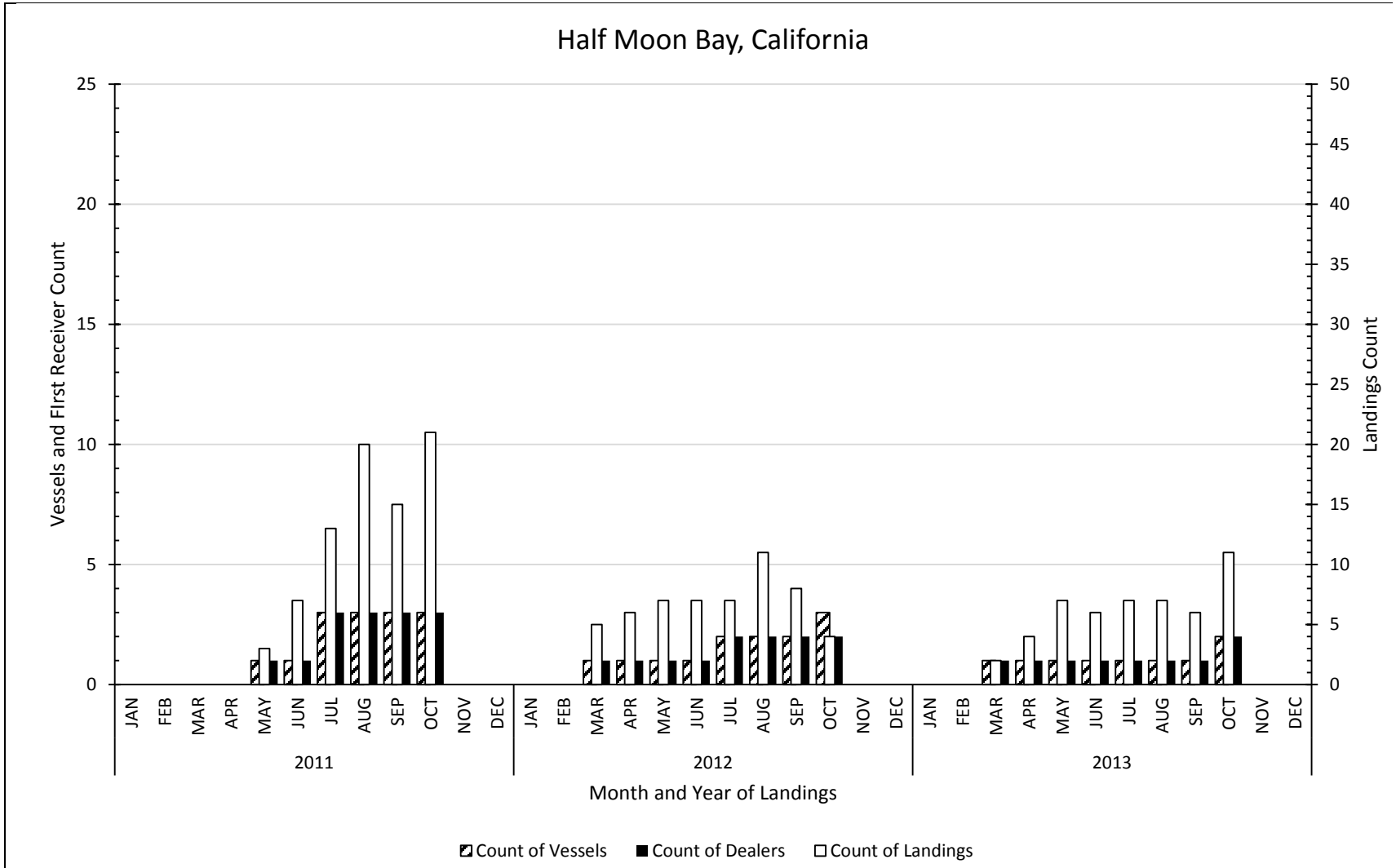


Figure 4-16 Half Moon Bay, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

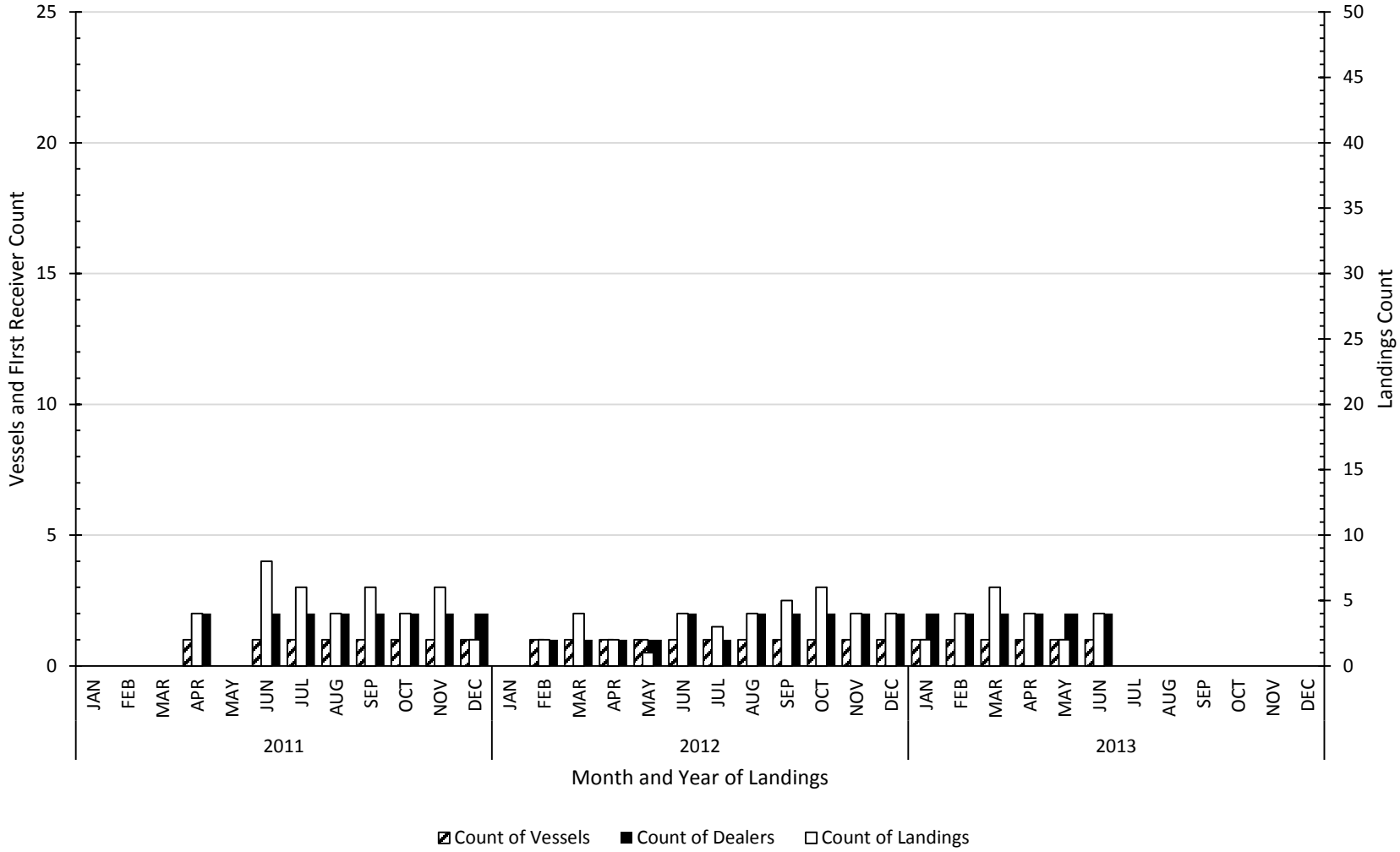


Figure 4-17 Monterey, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

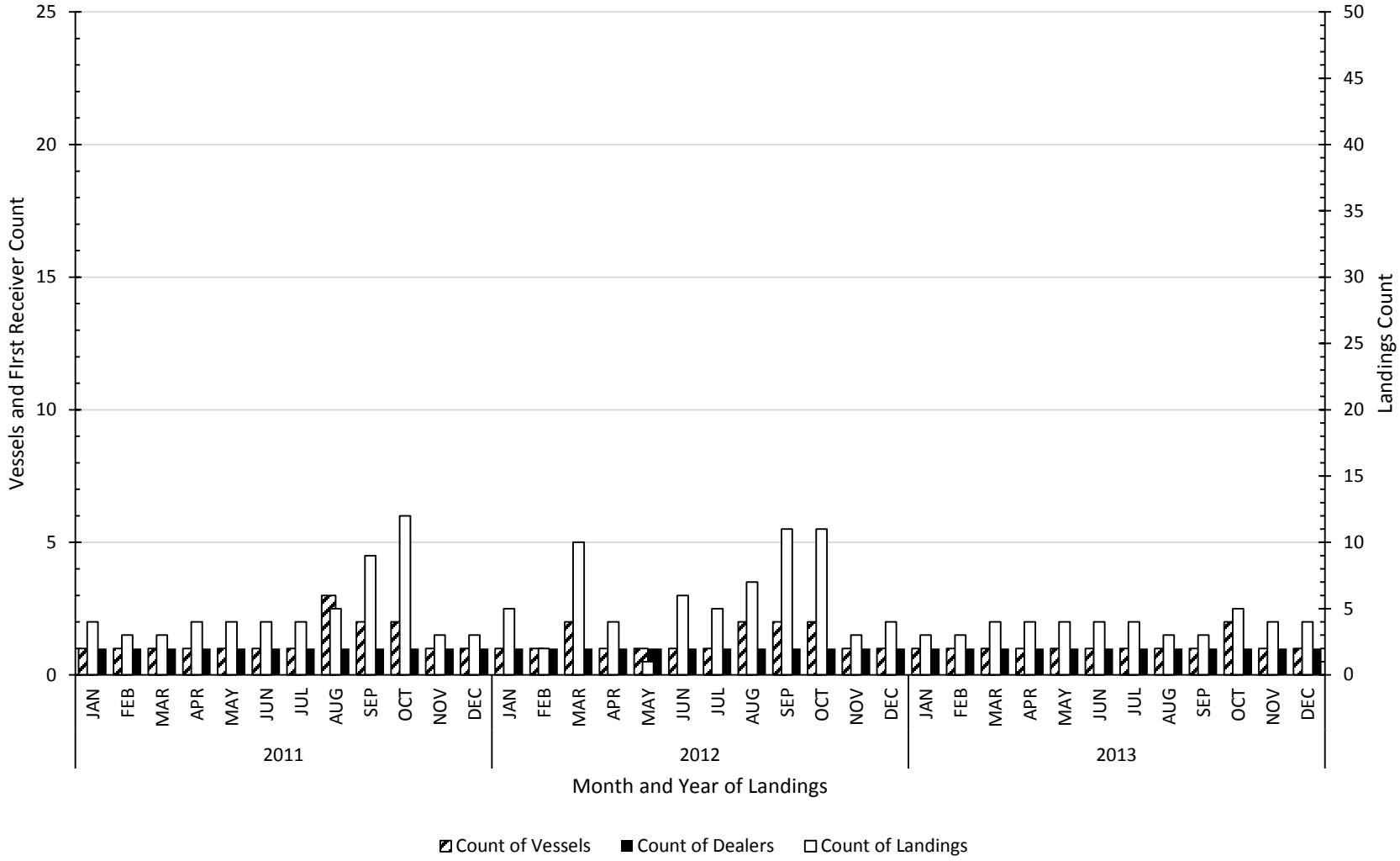


Figure 4-18 Moss Landing, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

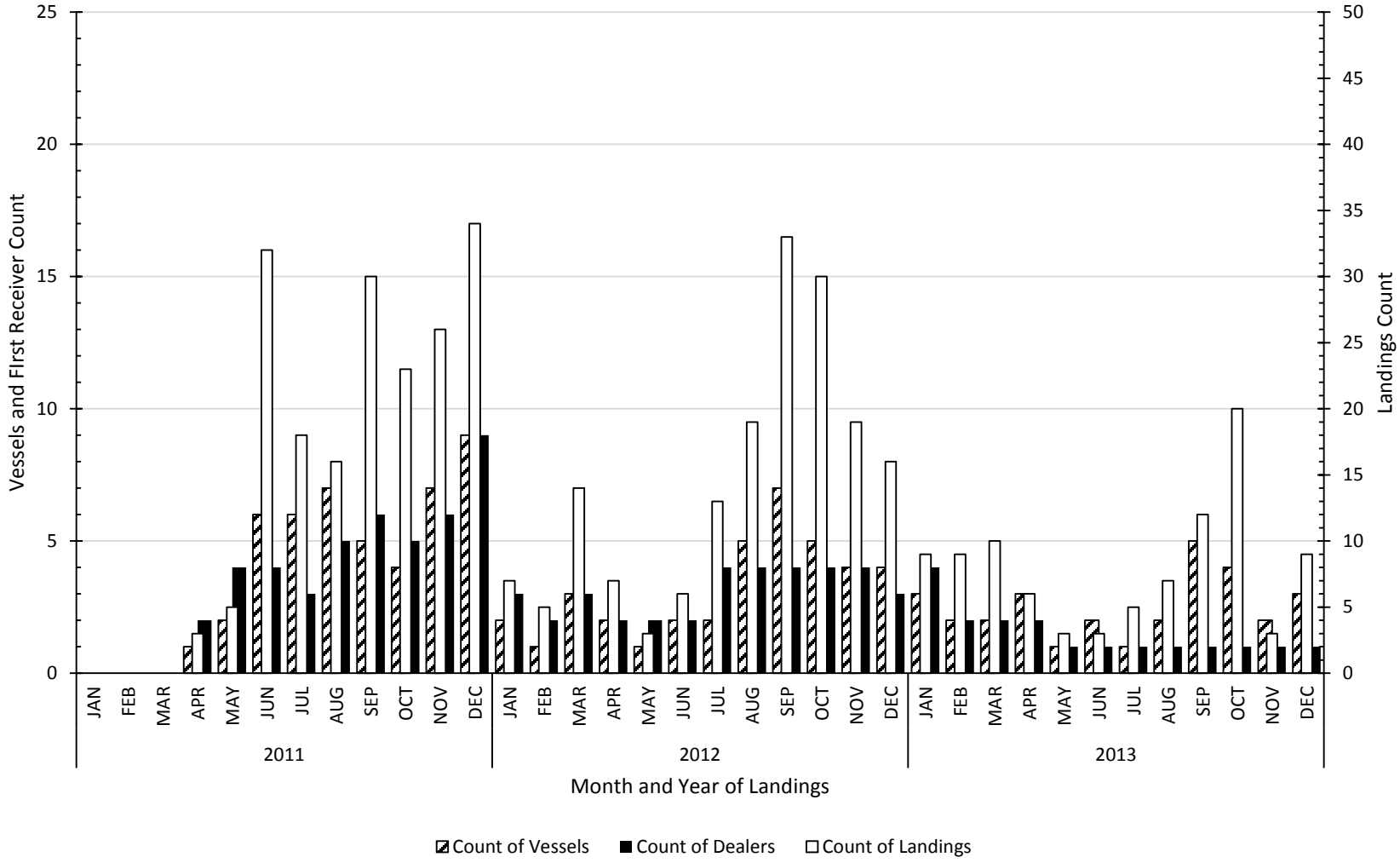


Figure 4-19 Morro Bay, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

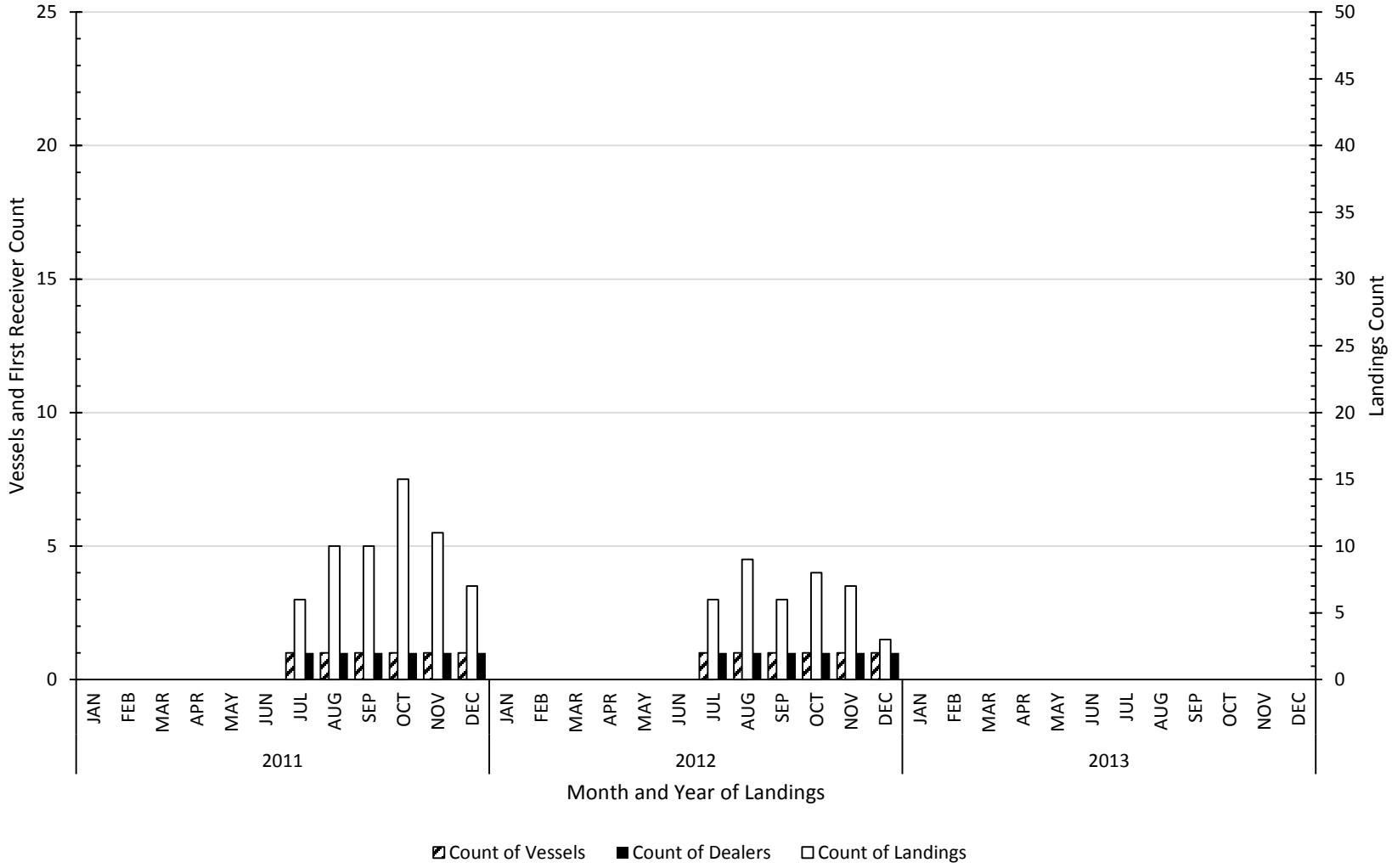


Figure 4-20 Avila, California, counts of vessels, dealers and landings by month for 2011 through 2013 (includes nonwhiting landings only – no whiting landings were made to this port).

Table 4-14. PREIMINARY assessment of challenges with providing catch monitoring in each port based on seasonal landing patterns (summary of data in Figure 4-5 through Figure 4-20).

Port	Assessment of CM Needs Based on Number of Landings (averages are for months with landings – zero months excluded)	PRELIMINARY Assessment of Feasibility of Dedicated Shoreside Monitoring With Current Practices
Port	Assessment of CM Needs Based on Number of Landings (averages are for months with landings – zero months excluded)	PRELIMINARY Assessment of Feasibility of Dedicated Shoreside Monitoring With Current Practices
Bellingham, Washington	Occasional seasonal (Oct-May). In 2013, an average of 2 per month, max of 4 and minimum of 1 (3 zero months).	[i]
Westport, Washington	Regular seasonal (June through November). In 2013, an average of 16 per month, max of 39 and minimum of 2 (3 zero months).. The whiting fishery is the source of the vast majority of the landings see Figure 4-2	[ii]
Ilwaco, Washington	Year round part time with seasonal peaks. In 2013, an average of 8 per month, max of 16 and minimum of 1 (no zero months).	[iii]
Astoria, Oregon	Year round full time (possibly), with season peaks. In 2013, an average of 56 per month, max of 136 and minimum of 19 (no zero months).	
Newport, Oregon	Seasonal full time and year round part time. In 2013, an average of 50 per month, max of 153 and minimum of 4 (no zero months).	[iv]
Coos Bay, Oregon	Consistent, year round part time. In 2013, an average of 16 per month, max of 27 and minimum of 3 (no zero months).	[v]
Brookings, Oregon	Consistent, year round part time – very low. In 2013, an average of 6 per month, max of 12 and minimum of 3 (1 zero months).	[vi]
Crescent City, California	Very low brief seasonal. In 2013, an average of 2 per month, max of 3 and minimum of 1 (9 zero months).	[vii]
Eureka, California	Consistent, year round part time with seasonal peak. In 2013, an average of 9 per month, max of 26 and minimum of 14 (no zero months).	[viii]
Fort Bragg, California	Year round but very low demand in winter months. In 2013, an average of 9 per month, max of 18 and minimum of 2 (no zero months).	[ix]
San Francisco, California	Year round low level, small seasonal increase in the summer In 2013, an average of 4 per month, max of 9 and minimum of 1 (no zero months).	[x]
Half Moon Bay, California	Low level seasonal demand May through October In 2013, an average of 6 per month, max of 11 and minimum of 2 (4 zero months).	[xi]
Monterey, California	Relatively consistent low level demand, ending June 2013. In 2013, an average of 4 per month, max of 6 and minimum of 2 (6 zero months).	[xii]
Moss Landing, California	Relatively consistent low level demand. In 2013, an average of 4 per month, max of 6 and minimum of 3 (no zero months).	[xiii]
Morro Bay, California	Year round variable demand. In 2013, an average of 8 per month, max of 20 and minimum of 3 (no zero months).	[xiv]

[i] Problematic because of seasonality, low demand and isolated relative to other fishing ports.
[ii] Some low demand in shoulder seasons, might be met with catch monitors from the Columbia River area. There might be enough demand from June through October to support a catch monitor and requirements for a second person during peak months, particularly if offloading is continuing for more than 8 to 12 hours a day.
[iii] Proximity to Astoria might make fulfilling the catch monitoring function more feasiable.
[iv] During seasonal peaks there would not appear to be a problem, assuming vessels and first recievers are able to coordinate the timing of deliveries. Off season would require part time only.
[v] Might be possible with a year round part time catch monitor.
[vi] Might be possible with a year round part time catch monitor.
[vii] Possible with coverage travelling in from Eureka. Travel time 1 hr 34 minutes. Appears to be disappearing as a trawl port.
[viii] Would require part time coverage year round. Seasonal peak might be covered with only part time coverage.
[ix] Very part time work in the winter.
[x] Possible if same part-time catch monitor could cover other bay area ports, including Half Moon Bay.
[xi] Possible if same part-time catch monitor could cover other bay area ports.
[xii] Possibly a part time individual might cover both Monterey and Half Moon Bay – driving time 27 minutes.
[xiii] Twenty minute driving time from Moss Landing to Monterey.
xiv Two hour 20 minute driving time from Moss Landing to Morro Bay.

Summary

A summary of the effects of the EM action alternatives on catch monitoring related costs is provided in Table 4-15. The impacts on catch monitoring costs are likely substantially lower than costs related to the observer program or EM program, therefore lower weights have been assigned to the importance of these impacts. As discussed previously, AS-3 is expected to result in the greatest overall participation in the EM program because it is designed to minimize industry costs, and AS-2 a comparable participation rate but applied over a much smaller portion of the fleet. Under AS-2, EM would be available only for the shoreside and at-sea whiting fleet and the vessels delivering at-sea do not require catch monitors. AS-1 and AS-4 cover the entire fleet operating in the trawl sector, and, while the rate of participation may be lower than for AS-2 or AS-3, because the total number of vessels would be more than double that in the whiting fleet alone the total participation would likely be greater than for AS-2 (the whiting-fleet-only EM alternative).

Table 4-15. Comparison of expected impacts to the shoreside catch monitor between no action and action alternatives (first column) and relative impacts among alternatives as indicated with an icon (the interpretation of which is provided in the first column) -- icons in the "wt" column indicate approximate relative importance of the impacts relative to no action, with more bars indicating higher relative importance.

Impact Relative to No Action	Wt[a/]	AS-1	AS-2	AS-3	AS-4
Total Training Cost Decreases (greatest decrease = 1)[b/]					
Total Debriefing Cost Decrease (greatest decrease = 1) [b/]					
Total Equipment Cost Decrease (greatest decrease = 1)[b/]					
Catch Monitor Fee Increases (per day/hour) (greatest increase = 1)					

a/ The weights given in this table are relatively low because the costs involved are smaller relative to the at-sea observation and EM costs.

b/ Under AS-2 only the whiting fleet can move to EM therefore training cost decreases would be least. Under AS-3 the most industry participation is expected therefore training, debriefing, and equipment cost decreases would be the most. There is not basis for differentiating between AS-1 and AS-4 therefore they were given the same intermediate rankings.

4.3.2 Trawl IFQ Program Fishing Operations (Harvesters)

This section considers the impact of no action and the action alternatives on fishing operations/harvesting businesses. These entities are defined by their operation of a vessel, whether access to the vessel is acquired through vessel ownership or lease. Separate discussion is provided with respect to potential impacts on other types of fishery participation: quota share ownership, vessel ownership for purposes of leasing, crew and vessel operators, etc.

With respect to fishing operations, the main impacts that will be considered are:

1 Changes in Operating Costs
2 Changes in Operational Flexibility
3 Changes in Privacy
4 Changes in Skill Requirements

4.3.2.1 No Action Alternative

Under the no action alternative, the current Federal subsidy for observers is likely to run out in the next year or two. Daily observer costs tend to be a small part of total vessel variable costs (compare Table 4-9 observer rates with variable costs in Figure 4-21). However, when multiplied over the number of days of fishing the impact on vessel revenues can be more substantial. For example, bottom trawl vessels averaged 64 fishing days per year in 2013 (Table 4-16), which implies that on average in 2013 vessels would have generated $6,400 more profit per $100 saved in at-sea monitoring costs.

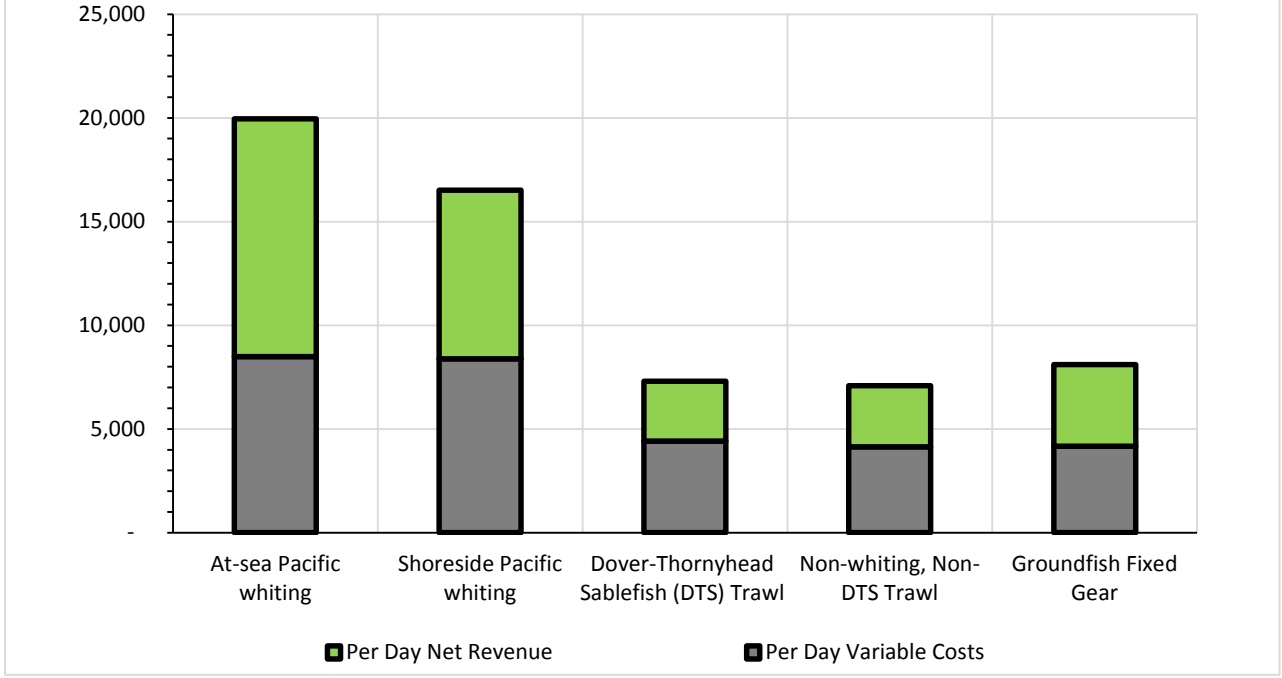


Figure 4-21. Cumulative per day variable costs and per day net revenue, per vessel in 2011 (data from Steiner, 2014).

Table 4-16. Days at sea, number of vessels and average days at se per vessel in 2013.

	Days At Sea	Vessels	Average Days/Vessel
Shoreside Whiting	2,053	24	86
Bottom Trawl	4,340	68	64
Fixed Gear	465	20	23

The impacts of any cost increase may be greater for vessels which have lower net revenue per day of fishing than vessels with higher net revenue per day. Observer costs for each day of fishing will erode a greater proportion of the profits of lower net revenue per day vessels than higher net revenue per day vessels. With the end of this subsidy, the increased financial costs may lead to an increase in consolidation within the fleet, resulting in fewer fishing vessels. Depending on cost structures this could change the nature of the fleet. Net vessel revenues, excluding daily at-sea monitoring costs, are provided in Table 4-17 though Table 4-19. These values are based on 2011 gross revenues and variable costs and 2009-2011 fixed costs (Steiner, 2014). The rows of these tables show the effects of various levels of per-day at-sea monitoring costs on vessel revenue taking into account total costs. It can be seen, for example, that in

general smaller vessels, and vessels along the southern coast tend to have lower net revenue per day such that one might expect the number of these vessels in the fleet to diminish. There are exceptions, for example, smaller vessels operating in the non-DTS fishery tend to have slightly higher revenues than larger vessels operating in that fishery (Table 4-18) and vessels operating in the most southern part of California have higher average revenues than those operating further north within California (Table 4-19).

Table 4-17. By length class and home port for mothership sector and shoreside whiting vessels in the groundfish limited entry fishery: average annual total cost net revenue per vessel for a range of assumed daily at-sea monitoring costs (electronic or observers)--excludes annual fixed costs associated with at-sea monitoring.

Monitoring variable costs per day	Small vessel (< 90 ft)	Medium vessel (> 90 ft, <= 110 ft)	Large vessel (> 110 ft)	Seattle	Newport	Fished in AK	Only West Coast
			Mothership Sector				
$0	$215,637	$303,905	$153,481	$212,280	$209,726	Withheld to preserver	
$150	$210,668	$298,720	$149,341	$207,066	$205,285	Confidentiality	
$300	$205,699	$293,536	$145,201	$201,851	$200,844		
$450	$200,730	$288,352	$141,061	$196,637	$196,404		
$600	$195,761	$283,168	$136,921	$191,423	$191,963		
$750	$190,792	$277,983	$132,781	$186,209	$187,523		
	Small vessel (< 80 ft)	Medium vessel (> 80 ft, ≤ 90 ft)	Large vessel (> 90 ft)	Washing-ton	Oregon	Fished in AK	Only West Coast
			Shorebased Whiting Sector				
$0	$159,967	$151,961	$214,227	$64,317	$214,902	$251,836	$82,401
$150	$151,643	$143,420	$207,116	$57,250	$206,771	$243,830	$74,680
$300	$143,319	$134,879	$200,006	$50,183	$198,640	$235,824	$66,958
$450	$134,995	$126,339	$192,896	$43,116	$190,509	$227,817	$59,237
$600	$126,671	$117,798	$185,785	$36,050	$182,377	$219,811	$51,516
$750	$118,347	$109,257	$178,675	$28,983	$174,246	$211,805	$43,795

Excerpted and adapted from Steiner, 2014, Tables 14, 15, 21, 22, and 23.

Table 4-18. By length class and Alaska participation for five groundfish limited entry trawl sector fisheries combined and separately for non-whiting fisheries: average annual total cost net revenue per vessel for a range of assumed daily at-sea monitoring costs (electronic or observers)--excludes annual fixed costs associated with at-sea monitoring.

Monitoring variable costs per day	Small vessel (< 60 ft)	Medium vessel (> 60 ft, <= 75 ft)	Large vessel (> 80 ft)	Fished in AK	Only West Coast
Mothership and shoreside whiting, DTS bottom trawl, non-DTS bottom trawl, and fixed gear					
$0	$76,386	$87,042	$255,831	$314,632	$79,162
$150	$69,989	$77,821	$246,159	$305,862	$70,650
$300	$63,593	$68,600	$236,486	$297,091	$62,138
$450	$57,196	$59,378	$226,814	$288,320	$53,625
$600	$50,800	$50,157	$217,142	$279,550	$45,113
$750	$44,403	$40,936	$207,469	$270,779	$36,601
	Small vessel (< 65 ft)	Medium vessel (> 65 ft, <= 75 ft)	Large vessel (> 75 ft)	Fished in AK	Only West Coast
DTS Bottom Trawl					
$0	$26,452	$46,117	$83,888	$-34,103	$56,864
$150	$20,486	$38,956	$76,635	$-35,378	$49,847
$300	$14,519	$31,794	$69,382	$-36,653	$42,830
$450	$8,552	$24,633	$62,128	$-37,928	$35,813
$600	$2,586	$17,472	$54,875	$-39,203	$28,796
$750	$-3,381	$10,310	$47,622	$-40,478	$21,779
Non-DTS Bottom Trawl					
$0	$21,163	$19,510	$19,582	$-8,099	$22,691
$150	$18,156	$17,182	$17,224	$-8,993	$19,957
$300	$15,148	$14,855	$14,865	$-9,887	$17,222
$450	$12,141	$12,528	$12,507	$-10,782	$14,488
$600	$9,133	$10,200	$10,149	$-11,676	$11,753
$750	$6,125	$7,873	$7,791	$-12,570	$9,019
	Small vessel (< 50 ft)	Medium vessel (> 50 ft, ≤ 60 ft)	Large vessel (> 60 ft)	Fished in AK	Only West Coast
Fixed Gear Operating in the Trawl Sector					
$0	$55,803	$148,142	$41,304	$186,083	$60,883
$150	$50,789	$143,616	$36,384	$179,732	$56,369
$300	$45,775	$139,090	$31,465	$173,381	$51,856
$450	$40,762	$134,564	$26,545	$167,029	$47,343
$600	$35,748	$130,038	$21,626	$160,678	$42,829
$750	$30,735	$125,512	$16,706	$154,327	$38,316

Excerpted and adapted from Steiner, 2014, Tables 7, 8, 28, 29, 35, 36, 43, and 44.

Table 4-19. By port group for five groundfish limited entry trawl sector fisheries combined and separately for non-whiting fisheries: average annual total cost net revenue per vessel for a range of assumed daily at-sea monitoring costs (electronic or observers)--excludes annual fixed costs associated with at-sea monitoring.

Monitoring variable costs per day	Washington	Astoria	Newport	Southern Oregon	Crescent City/Eureka	Fort Bragg	Other California
Mothership and shoreside whiting, DTS bottom trawl, non-DTS bottom trawl, and fixed gear							
$0	$164,611	$122,961	$256,072	$95,657	$46,545	$31,968	$73,169
$150	$154,834	$111,826	$246,742	$87,979	$39,930	$25,883	$67,524
$300	$145,057	$100,691	$237,413	$80,300	$33,315	$19,797	$61,879
$450	$135,279	$89,556	$228,084	$72,622	$26,700	$13,711	$56,234
$600	$125,502	$78,421	$218,755	$64,943	$20,085	$7,625	$50,589
$750	$115,725	$67,286	$209,425	$57,265	$13,470	$1,540	$44,944
DTS Bottom Trawl							
$0	$90,443	$95,370	$13,731	$50,082	$44,516	$10,596	$36,975
$150	$80,135	$86,710	$9,726	$43,470	$38,079	$5,287	$31,551
$300	$69,827	$78,050	$5,721	$36,858	$31,642	$-23	$26,127
$450	$59,519	$69,390	$1,716	$30,246	$25,205	$-5,332	$20,703
$600	$49,212	$60,730	$-2,289	$23,634	$18,768	$-10,642	$15,279
$750	$38,904	$52,070	$-6,295	$17,022	$12,331	$-15,951	$9,855
Non-DTS Bottom Trawl							
$0	$25,208	$41,446	$13,231	$7,381	$5,072	$14,125	$2,667
$150	$20,786	$37,717	$11,472	$5,803	$4,627	$12,151	$-242
$300	$16,363	$33,989	$9,713	$4,225	$4,183	$10,178	$-3,150
$450	$11,941	$30,260	$7,954	$2,647	$3,738	$8,204	$-6,058
$600	$7,519	$26,532	$6,195	$1,069	$3,294	$6,231	$-8,966
$750	$3,097	$22,803	$4,436	$-509	$2,849	$4,257	$-11,874

	Washington	Northern Oregon	Southern Oregon	Northern California	Southern California
Fixed Gear Operating in the Trawl Sector					
$0	$102,577	$-21,150	$175,104	$91,880	$34,177
$150	$97,889	$-26,937	$171,031	$88,148	$28,196
$300	$93,201	$-32,724	$166,957	$84,415	$22,214
$450	$88,514	$-38,512	$162,884	$80,683	$16,232
$600	$83,826	$-44,299	$158,810	$76,950	$10,251
$750	$79,138	$-50,086	$154,737	$73,217	$4,269

Excerpted and adapted from Steiner, 2014, Tables 9, 30, 37, and 45.

Table 4-17 though Table 4-19 show averages for vessels with different characteristics with respect to how and where they land fish. In those tables there are at least three vessels in each category (the minimum necessary to preserver confidentiality. In the following figure, vessels are ordered by total cost net

revenue in groups of five in order to provide another sense of relative profitability within the fleet. For example, the first group of five vessels averaged over negative $250,000 in total cost net revenue and the last group of five (number 23) averaged close to a half million in total cost net revenue. The large negative values would not be economically sustainable and may represent the occurrence of significant capital investments during the study period.

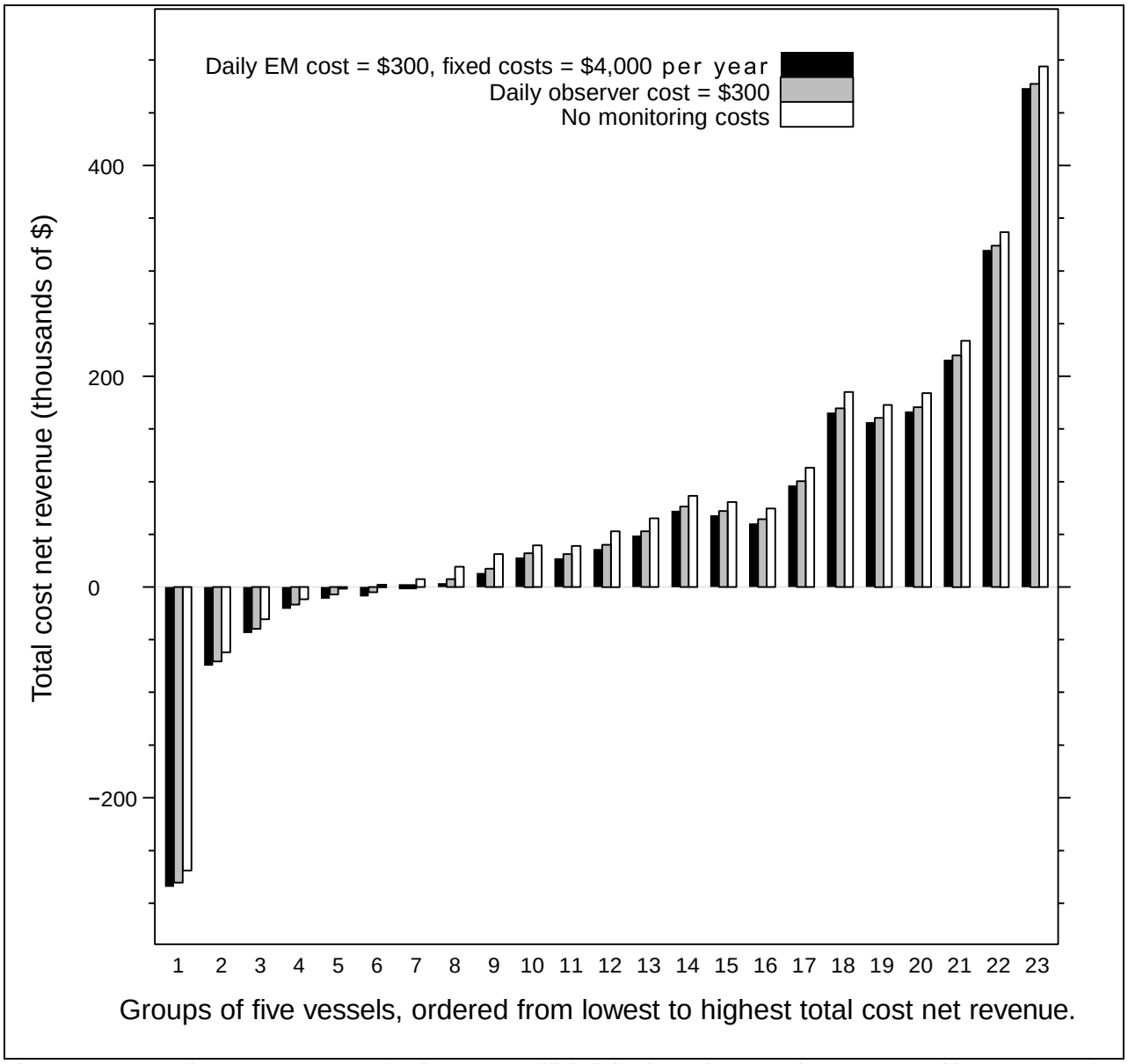


Figure 4-22. Total cost net revenue for the 5 groundfish fisheries. The vessels are grouped into groups of 5 to protect confidential data. Total cost net revenue is shown for three levels of monitoring costs, no costs (white), observer costs set to $300 (grey), and a daily electronic monitoring cost of $300 and an annual fixed cost of $4,000 (black) (from Steiner, 2014).

For the other potential impact categories, no impact mechanisms have been identified that would be operative under the No Action Alternative. Impacts for these categories are anticipated under the action alternatives discussed in the following section.

Summary of No Action: Impacts relative to current conditions (including categories of impacts that are affected by the action alternatives).

1) Operating costs - Increase as subsidies for observers end
   a) Fleet consolidation may result
      i) Vessels with lower per day profits will likely be more affected
      ii) Such vessel may be smaller or located along particular areas of the coast (southern ports).
2) Change in Operational Flexibility – None
3) Change in Privacy – None
4) Change in Skill Requirements – None

4.3.2.2 Action Alternatives

Impacts will vary depending on whether or not vessels choose to and are able to participate in the EM program. For those who participate in the EM program, costs are likely to be higher if some sectors of the fleet are covered by EM while others are not (as compared to a system where all sectors are covered at the same time). The lower the participation rate in the EM program the higher the likely per fishing day costs of the program; and similarly the lower the participation rate in the at-sea observer program, the higher the likely per day fishing costs for those carrying compliance observers.

Effects on Participants in the EM Program

This section contains a description of the impacts relative to No Action and of the action alternatives relative to one another for EM program participants. A following section covers non-participants. Following here is the list of impact categories and then a more detailed discussion of each category. The different impacts categories have different relative importance, however, absent a quantitative assessment the designation of the relative importance is largely a judgment call. A preliminary assessment of relative importance is provided using icons, with  representing the least impact and  representing the most). The reader should evaluate for his or her self which types of impacts are most important.

1) Operating Costs
   a) Elimination of observer costs 
   b) New costs for electronic equipment (acquisition and maintenance) 
   c) New costs for data reporting (retrieving and transmitting/transferring data) (responsible party still to be determined) 
   d) New costs for video review (responsible party still to be determined) 
   e) Time required to fill out logbooks 
   f) New costs for handling for retention and shoreside disposal of unwanted retained fish 
   g) More constraints on fish handling on the vessel, potentially reducing efficiency (to ensure good camera images, including a possible requirement for the use of discard chutes). 
   h) IVMP filing burden: time to file and related fees associated with the IVMPs that vessels would be required to have. 

i) Time required to declare whether a vessel will be using observers or EM. 

j) Increased cost recovery fees (MS Sector only) 

2) Operational flexibility (flexibility increases generally improve economic efficiency)
   a) Increased operational flexibility with respect to departure and duration of fishing trip 
   b) Increased operational flexibility with respect to certainty of quota pound account status. 
3) Privacy Impacts 
4) New Skills Required 

The EM program is not expected to change the quantity or quality of the fish landed and therefore is not expected to have an impact on gross revenues. With respect to the quantity of fish landed, the trawl fishery is underharvesting its total allocation of most species, except Petrale sole, sablefish, and whiting. If this underharvesting were due to certain strategies not being sufficiently lucrative, then if the EM program reduces observer costs an increase in landings and revenue might follow. However, other factors appear to be constraining harvest. Whiting is taken in tows that are generally 99 percent or more whiting. Since virtually all the whiting quota is caught there is no opportunity to increase harvest of whiting. For the multispecies fishery, only the QP for Petrale and sablefish come close to being fully harvested each year. This means the availability of QP for these species is constraining the use of any strategy in which these two species are taken. Figure 4-23 shows that virtually all groundfish harvest from nonwhiting trips is taken on trips with either Petrale or sablefish. There appears to be very little fishing in strategies that are not constrained by these species. This could be because the net revenues available in those strategies are not sufficiently lucrative but the more likely constraints are hesitancy to risk taking overfished species (for which QP is hard to come by) and area and gear restrictions.

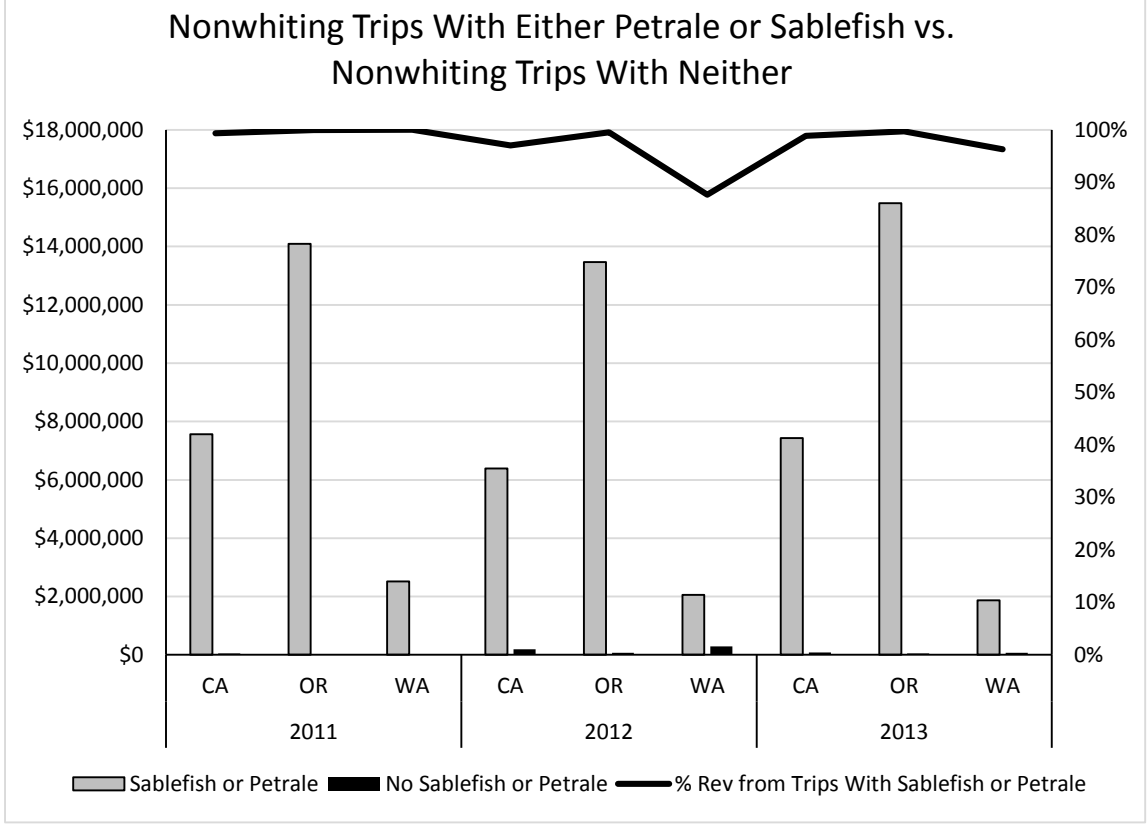


Figure 4-23. Exvessel revenue from nonwhiting trips with either Petrale or sablefish compared to trips that have neither Petrale nor sablefish for the three West Coast states, 2011-2013.

The Council has been considering recommendation of a number of liberalizations of area and gear restrictions. Committee reports on possible changes have cited the presence of observers as a factor making those liberalizations feasible. If EM goes into place, in considering those other regulatory modifications the Council will have to evaluate the degree to which camera monitoring is comparable to observers with respect to providing a basis for other regulatory liberalizations.

The following is a detailed discussion of each of these categories of impact listed above.

1) Operating Costs

a) Elimination of observer costs (see Table 4-9 for current costs)

Relative to No Action, the action alternatives would reduce vessel expenses for observers for EM participants. AS-1 would result in the least reduction in per vessel observer costs for bottom trawl vessels because it includes a provision that would require vessels to continue to carry observers in high bycatch areas (Section 2.2.10). The other action alternatives do not include the high bycatch area provision. Table 4-17 through Table 4-19 provide an assessment of net revenue taking into account total costs with separate rows for different per day costs for at-sea monitoring. Current observer fees run about 400 to $475 per day (Table 4-9). So, for example, the average a less 65 foot than DTS bottom trawler expends about $17,900 a year on observer expenses (the $26,452 in

the row for no per day expenditures on monitoring minus the $8,552 in the row for $450 per day expenditures on monitoring in Table 4-18). The amount of observer savings would vary by vessel size, geographic area, fishery, and other factors but these tables provide an indicator of the order of magnitude of the savings. Savings will be offset to some degree by expenses related to acquisition and operation of the EM system. If total per day EM costs run $300 for the less than 65 foot DTS bottom trawl vessels, then the annual additional net revenue would be about $6,000 ((the $14,519 in the row for $300 per day expenditures on monitoring minus the $8,552 in the row for $450 per day expenditures on monitoring in Table 4-18).

b) New costs for electronic equipment (acquisition and maintenance)

Relative to No Action, under the action alternatives there will be new costs associated with acquiring equipment for the EM system. The level of these potential costs are discussed in more detail in Section 4.3.1. There would be no difference among action alternatives, except the cost would only apply for whiting vessels under AS-2. In using Table 4-17 through Table 4-19 to assess impacts on vessel net revenue, annual equipment acquisition and maintenance costs should be subtracted from the net revenue estimates. The per vessel equipment costs for the 2010 West Coast shoreside whiting fishery EFP was reported to run an average of $52 per day for those that purchased their equipment and $132 per day for those that leased. Field service and travel expenses were reported as $123 per day (Lowman et. al., 2013).

c) New costs for data reporting (retrieving and transmitting/transferring data) (responsible party still to be determined)

Relative to No Action, under the action alternatives there will be new costs associated with data transfers related to the EM system. Under No Action, all discard data recorded during the trip is transmitted by observers. Under the action alternatives, camera images would have to be transferred as well as logbook information (Section 2.2.8.2). Data transfer processes would likely entail swapping out a hard drives and mailing the hard drive to the video reviewer.

The costs associated with the task will vary depending on who carries it out. AS-2 and AS-3 (Section 2.2.8.2, Option D), the vessel operator would carry out this task. The vessel operator may have a relatively low opportunity cost for the labor that would be used to make the swap. Under AS-1 and AS-4 (Section 2.2.8.2, Option A), the shoreside monitor would carry out this task and vessels would likely have to pay for the additional work. However, transfers by catch monitors already on site could make this a very low cost. While under Alternatives AS-2, AS-3, and AS-4 there would be both camera and logbook records to transmit the additional burden on the vessel from transmitting the logbooks is expected to be minimal. The level of these potential costs are discussed in more detail in Section 4.3.1. For the 2010 shoreside whiting EFPs, per vessel data reporting cost was reported as $13 per day (Lowman et. al., 2013).

d) New costs for video review (responsible party still to be determined)

Relative to No Action, under the action alternatives there will be new costs associated with video review. Vessel costs for video review will vary depending on the level of video review required (Section 2.2.1.1 Options) and whether the government or the vessels pay for review (Section 2.9.4 options). Additionally, the types of discard that have to be estimated with video (Section 2.2.2 options), the amount of discard allowed/required (Section 2.5 options), and the method for estimating halibut mortality (Section 2.6 options) will also impact video review costs. PSMFC has evaluated the video review costs for speciating and quantifingboth retained and discarded catch. For 100% review those costs were approximately as follows.

- Whiting - Trawl $25/day
- NonWhiting Trawl– $320/day
- Longline $123/day
- Fish Pot - $60/day
-

For 20% review (as might occur under AS-3 or AS-4, those costs were as follows.

- Whiting - Trawl $12/day
- NonWhiting Trawl– $82/day
- Longline $38/day
- Fish Pot - $20/day

Since the video review required under this program would only be for discard events, these video review costs are likely an upper bound. Further details on cost estimates for video review are provided in Section 4.3.1.2.

For Section 2.2.1.1, AS-1 requires 100% video review to develop discard estimates based on a census of the video and would have the highest costs. AS-2 also requires 100% review but since AS-2 covers only one sector, the average video review costs may be slightly higher than AS-1 because fixed costs would be spread across fewer trips and vessels. AS-3 and AS-4 would have the lowest video review costs because video review would be used to validate logbooks and only a portion of the discard events would need to be monitored. AS-4 includes 100% video review for whiting because it would be easier and cheaper to make estimates using video review of whiting hauls than to cross-check and audit logbooks.

For Section 2.2.2, AS-3 includes Option B (deduct Category 2 discards from sector allocations or ACLs), which would have a downward influence on video review costs because review of certain events that are difficult and time consuming to evaluate would not be required (e.g. fish in the water.

At the same time, for Section 2.2.4, AS-3 includes Option B, optimize discards, which may tend to increase video review costs because of a greater number of discard events which would need to be audited. Section 2.2.4, Option B is included in the lower cost alternative because it is believed that by allowing more discards, the reduced handling costs under Option B would compensate for the increased video review time.

The halibut mortality estimation methodology (Section 2.2.5) may also influence video review costs. All the action alternatives (AS-1 through AS-4) use either an exemption or a default rate. Such methods would not entail video review time, unless the vessel specific default rate were developed based on data from cameras. If information from the video will be used to develop or validate halibut mortality estimates, then video review costs may be higher. The use of EM data to make the halibut mortality estimate (Section 2.2.5, Option D) is not included in the analytical alternatives because it did not meet the criteria on which the alternatives were structured and specifies use of a method which has not yet been developed.

e) Time required to fill out logbooks

Under no action, on groundfish trawl vessels all discards are recorded by observers and retained catch is recorded in state required logbooks on trawl vessels. Additionally, Oregon requires logbooks for vessels using fixed gear. Under AS-2, AS-3 and AS-4, the task of recording discards for catch share species would be transferred to the vessel personnel, increasing the demands on vessel labor (Section 2.2.1.1). Under AS-2, recording discards in logbooks would be a new task for whiting vessels and under AS-3 and AS-4 it would be a new task for all catch share fishery participants, plus the use of logbooks in the IFQ fishery would be a new requirement for fixed gear vessels operating in Washington and California. For the 2009-2010 BC hook-and-line fishery, all per vessel logbook costs, including data entry, were reported as five Canadian dollars per day (Lowman et. al., 2013). None of the Action Scenarios include the option of not requiring a logbook.

f) New costs for handling for retention and shoreside disposal of unwanted retained fish (see Table 6-1 for estimates of previous discards which may become retained)

Relative to No Action, all action alternatives would entail new costs related to handling, storage, and disposal of fish for which retention would be required. Under no action, any fish can be discarded, with appropriate documentation by the observer. AS-1, AS-2, and AS-4 would require maximized retention (Section 2.2.4, Option A) which will tend to increase costs related to retention of fish for shoreside disposal. The vessel costs associated with retaining fish include additional labor for sorting and moving, reduced hold space for marketable fish, Hold space reduction may be more than proportional to the increase in discards because of the need to segregate certain species in a separate hold or bin certain. For example, storing unmarketable dogfish in contact with other fish may reduce the quality of those other fish. There may also be additional expenses related to storing species for disposal if the fish must be kept cooled until they can be disposed of. For nonwhiting vessels, AS-1 and AS-4 would result in the highest per vessel impacts on fish handling costs and AS-2 does not apply to nonwhiting vessels. AS-3 would provide the vessel with some additional opportunity for discards, and while fish being discarded may require special handling in order to assure adequate camera images, once discarded there would be no additional handling and disposal costs. If for some reason it were easier to retain than discard the fish, AS-3 would allow for that (required discards are the same for both maximum and optimized retention options). For whiting vessels there is likely to be little difference between maximized and optimized retention and therefore little difference among the alternatives. For MS whiting vessels, the fish generally do not come on board the catcher vessels. For shorebased whiting vessels, the preferred handling technique is to dump the entire codend into the hold because sorting fish on board is logistically difficult, requiring extra steps and slower emptying of the net into the hold.

g) More constraints on fish handling on the vessel, potentially reducing efficiency (to ensure good camera images, including a possible requirement for the use of discard chutes).

Under the No Action Alternative, crew members must allow observers to document catch before it is discarded, but any fish may be discarded. Under the action alternatives, crew may be required to complete more specific tasks before discarding. When fish are discarded, they may have to be placed on a special board, passed down a special shoot or otherwise receive special handling to ensure adequate camera images prior to discard. Fish handling costs for camera images will also depend on retention requirements. AS-3 would provide for optimized discarding (Section 2.2.4, Option B) thereby allowing more discards and potentially increasing costs associated with ensuring adequate camera images of discards. AS-1, AS-2, AS-3 require maximized retention. Since discards would not be required, the optimize discards option (Option B) is not likely to have a net negative effect on vessels relative to maximized discards (Option A), i.e. vessel can choose to behave as if Option A is in place, if on the whole that better serves them. Because of logistical challenges, whiting vessels are unlikely to increase their discarding, even if allowed to do so.

h) IVMP filing burden: time to file and related fees associated with the IVMPs that vessels would be required to have.

Under No Action, IVMPs or their equivalent are not required. Under AS-1 and AS-4, IVMPs would have to be filed on an annual basis (Section 2.2.7.5, Option B). The first filing is expected to be most labor intensive. NMFS will have to determine whether application fees will be charged

for the filing. Under AS-2 and AS-3, the IVMPs would be valid until something changes about the vessel situation (Section 2.2.7.5, Option A); this may reduce the vessel paper work burden. For the 2010 shoreside whiting EFPs, total industry paid per vessel project management costs were $11/ per day (Lowman et. al., 2013).

i) Time required to declare whether a vessel will be using observers or EM.

Under No Action, vessels are not required to make any declarations relative to their intent to use observers. AS-1 and AS-4 require that a vessel make selections that apply for an entire year (Section 2.2.7.6, Option A). AS-2 and AS-3 allow vessels to change their selection much more frequently (Section 2.2.7.6Option A). While there may be some minor inconvenience related to additional declaration filings during the year, AS-2 and AS-3 have a more important effect on vessel flexibility which will be discussed below. The differences between 2.2.7.6 Option A and Option B are discussed in more detail in Section A-2.2.7.6.

j) Increased cost recovery fees (MS Sector only).

If there is an increase in administrative costs for the trawl catch share program as a result of electronic monitoring, those cost increases may be passed on to industry as part of the cost recovery program. Those costs will depend in part on which activities are government funded and which are paid for by industry. One of the most significant questions in this regard is whether the government or industry will pay for video review. Another significant cost will related to observer coverage. If observer coverage is reduced from the current 100 percent coverage down to 25 percent, to meet needs for biological data, there may be some reduction in administrative costs. However, if government starts paying the costs of observers, which are currently paid for by industry, then overall there is likely to be a cost increase (see Section 2.2.8.5 regarding the issue of who will pay for biological observers). Since the shoreside IFQ portion of the catch share program is already at the MSA mandated cost recovery limit of three percent of exvessel value, there would be no opportunity to pass on cost recovery for that sector. For the MS sector cost recovery is only at about two percent and therefore there is a possibility that, if Federal EM costs are high enough, fees may increase by an additional. Some of the increase in EM related expenses may be offset by a reduction in observer coverage related expenses. If the costs of the EM program take the MS fishery to the three percent limit, then there would be no difference in fees among the alternatives, the fee would be three percent under all alternatives. If below those limits then the fees for AS-1 and AS-4 might be slightly lower than AS-2 and AS-3, because the options selected for AS-4 were selected to minimize government administrative burden and the AS-1 options are generally similar.

2) Operational flexibility (flexibility increases generally improve economic efficiency)

a) Increased operational flexibility with respect to departure and duration of fishing trip

Relative to the no action alternative, the action alternatives are expected to increase operational flexibility in that while using EM the exact timing of a vessel's trip will not be dependent on observer availability and, if a vessel finds reason to delay a planned departure it will not incur costs for standby time in the form of additional observer expenses. For AS-1 and AS-4, the flexibility to use EM would be limited in that each vessel would be required to declare at the start of the year whether it would use EM in lieu of observers for the entirety of the coming year (Section 2.2.7.6,

Option A). If during the year the catch monitoring method the vessel chose was not available (e.g. the camera system were down or an observer not available) then they would have no option to use the alternative monitoring method, unless emergency provisions were included. For AS-2 and AS-3, vessels more flexibility would be provided in that vessels would be allowed to switch between EM and observer methods by simply changing a declaration (Section 2.2.7.6, Option D). Other options provide intermediate levels of flexibility. Option B, requires that each vessel declare for the coming year the periods in which it would use EM and those in which it would use observers. Option C allows vessels to change between methods by changing their declarations but limits the frequency of those declaration changes.

Operation flexibility associated with retention requirements is discussed above with respect to costs.

b) Increased operational flexibility with respect to certainty of quota pound account status.

When a vessel is more certain about the balances of QP in its vessel account it is able to operate with more flexibility than when constrained by uncertainty about those balances. Under the No Action alternative, there is a substantial lag time between when a vessel makes its landing and the time its discards are applied to QP in its vessel account. During this time, the vessel is in a period of uncertainty around the exact balance of unused QP remaining in the account. During the course of the catch share program the duration of this lag has been shortening but still remains. Fish landed are recorded on electronic fish tickets and are relatively quickly debited against the vessel account. Under all of the action alternatives, there would be some reduction in uncertainty regarding account balances because of a reduction in the species for which discard is allowed (i.e. for most species all account debits would occur through the electronic fish ticket system, which is relatively quick). AS-1, AS-2, and AS-4 allow the least discarding (Section 2.2.4, Option A, maximized retention). AS-3 specifies Section 2.2.4, Option B, optimized retention, which allows somewhat more discarding than maximized retention. For those species for which discarding is allowed (or event types such as net bleed for safety), under AS-1 and AS-2 there would be a lag while estimates are developed from video review. Under AS-2, it has been suggested that logbook records might be used to provide a preliminary debiting of discards against the vessel accounts and that these might be processed rapidly, relative to the video review. Under AS-3 and AS-4, the vessel's own logbook records would be the primary data source for documenting discards and could also be processed relatively rapidly. Logbooks would be audited using the video records and changes might be made if there were errors in the logbook entries; but if the vessel ensures that the logbook entries are made accurately the vessel should be in a relatively certain position regarding the balances of the QP in its accounts.

3) Privacy

Observers and cameras impact privacy differently. Under No Action, the current observer coverage will be maintained. Observers are considered by some an intrusion on privacy. Observers can show up most anywhere throughout the ship and be privy to many types of personal information (visual behavior, visual observation of personal objects, conversations, etc.). Under all of the action alternatives, observers would not be present but there would be a privacy intrusion factors associated with the cameras. Cameras are a more restricted intrusion with respect to the scope of what is recorded but within the scope there are a number of qualities of camera monitoring

that might be considered more intrusive of privacy: constancy of the intrusion (once fish are on board some cameras will always be on); relative permanency, veracity, and verifiability of the images recorded; and anonymity and multiplicity of those who will have access to the images (those whose images are being recorded don't know and have little control over who will be looking at the images or how many people will be viewing them). The action alternatives do not vary with respect to the degree and type of privacy intrusion.

4) Skills

Under the No Action alternative, observers are available to help with species identification where required. Under the action alternatives, to the degree that discards are allowed, crew members may need to become more proficient in species identification and quantification, including juveniles and rockfish species for which species identification can be more problematic. AS-1, AS-2, and AS-4 require maximum retention (Section 2.2.4, Option A) and so entail the least need for species identification, while AS-3 allows optimal retention (Section 2.2.4, Option B), presenting more choice in what must be retained. For AS-3 and AS-4, in addition to accurately applying the retention rules, information on discards, including species and weights, would have to be noted and recorded in logbooks. This measurement and clerical chore is not one that is currently a requisite of the back deck work of crew members.

Table 4-20 summarizes this discussion: the first column indicates the direction of the impact of an action alternative relative to the No Action alternative. The second column provides a rough indicator of the relative importance of a particular impact using bar icons. The remaining columns indicate the performance of the action alternatives relative to one another within the row. Assessments were made on a per vessel basis, such that comparable per vessel impacts between AS-1 (which covered all fleets) and AS-2 (which covers only the whiting fleet) would be scored the same even though AS-2 involves fewer vessels.

Table 4-20. Comparison of impacts on participating harvesters (on a per vessel basis) between no action and the action alternatives (first column) and relative impacts among alternatives as indicated with a square icon (the interpretation of which is provided in the first column) – icons in the "wt" column indicate approximate relative importance of the impacts in comparison to no action, with more bars indicating higher relative importance.a/

Impact Relative to No Action	Wt	AS-1	AS-2	AS-3	AS-4
Elimination of Observer Expense (greatest reduction =)		Observers required in high bycatch areas			
New costs for electronic equipment (highest cost =)					
New costs for data reporting (highest cost =)					

Impact Relative to No Action	Wt	AS-1	AS-2	AS-3	AS-4
New Video Review Costs (rank – average cost per trip, highest cost =)			For whiting vessels, slightly higher than AS-1 due to higher average fixed costs.	Relative to AS-4: **Additional downward influence:** certain categories of discards would not have to be estimated. **Additional upward influence:** opportunity to discard more species.	
New Logbook Related Costs (highest cost =)		All sectors: Labor for observing and recording discards	Whiting: Labor for observing and recording discards	All sectors: Labor for observing and recording discards	All sectors: Labor for observing and recording discards
New Fish Handling for Retention and Shoreside Disposal (highest cost =)		Whiting: Nonwhiting:	Whiting: Nonwhiting: N/A	Whiting: Nonwhiting:	Whiting: Nonwhiting:
New Fish Handling to Get Camera Images (highest cost =)		Whiting: Nonwhiting:	Whiting: Nonwhiting: N/A	Whiting: Nonwhiting:	Whiting: Nonwhiting:
New IVMP Filing Burden (highest =)					
New Declaration Burden (most =)					
Increased cost recovery fees (MS Sector Only – No Shoreside Impact) (most =)		MS Whiting: Shoreside:	MS Whiting: Shoreside Whtg:	MS Whiting: Shoreside:	MS Whiting: Shoreside:
Increased Flexibility on Departure and Trip Duration (most =)					

Impact Relative to No Action	Wt	AS-1	AS-2	AS-3	AS-4
Increased Flexibility from Greater Certainty About QP Balances (most =)					
Privacy (privacy issues different with cameras) (most privacy =)					
New Skills Required (most =)					

a/ All rankings in this table are ordinal and not intended to reflect magnitude, e.g. a rank of 5 relative to 1 does not mean 5 times or one fifth of the impacts – the impact levels might be very close to one another.

In addition to these factors, the consistency of EM programs between fisheries (especially between the West Coast and Alaska) will have an impact on costs (e.g. if each fishery has different camera and logbook requirements then costs would be higher than they might otherwise be).

Effects on Non-EM Participants

Non-participants may include those who do not choose to participate in the EM program, those who are restricted from participating because of past violations, or those whose fishery sectors are outside the program (for example, if AS-2 is selected only vessels in the whiting sector would be eligible to participate in the program).

Relative to the No Action alternative, the action alternatives main impacts on those who do not participate would be indirect and occur through possible changes in the costs structures for observer providers as a result reductions in the economies of scale. With EM in place, fewer vessels would be using observers and this might cause an increase in observer fees as discussed in Section 4.3.1.2, in the subsection*: Observers - Biological and Compliance Observers*. Travel costs are another factor that may impact what vessels pay for observers. Even if per day fees remain unchanged, with a small observer corps it may become more likely that a vessel will have to pay observer travel related expenses to bring an observer in from another part of the coast if there is not one available when needed by the vessel.

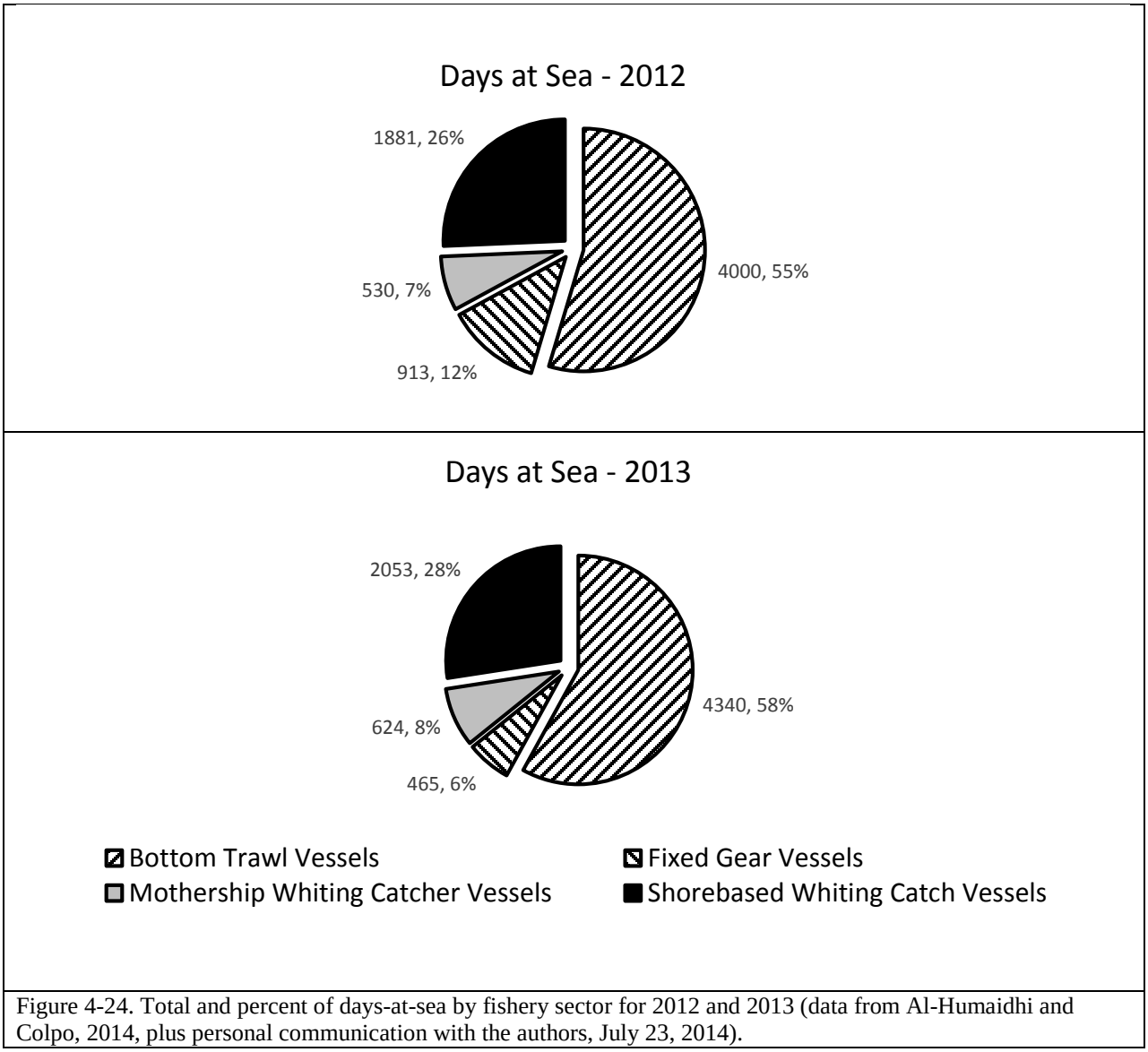


Figure 4-24. Total and percent of days-at-sea by fishery sector for 2012 and 2013 (data from Al-Humaidhi and Colpo, 2014, plus personal communication with the authors, July 23, 2014).

Among the action alternatives AS-2 would probably have the least impact on observer fees since only the whiting vessels are involved. Whiting days-at-sea comprised 33% of all West Coast trawl program days-at-sea in 2012 and 36% in 2013. AS-3 might have more participation by non-whiting bottom trawlers because it offers greater flexibility for discarding fish. The Council has received testimony that the need to retain unmarketable fish may have a significant adverse impact on participation by bottom trawlers.

AS-1 and AS-4 require that harvesters make declarations at the start of the year stating whether they will use EM or observers (Section 2.2.7.6, Option A). This advance planning opportunity could help limit the increased average operational costs for observer companies and keep observer fees lower than they might be with no requirement for advance declaration (Section 2.2.7.6, Option D).

Table 4-21. Comparison of impacts on non-participating harvesters (on a per vessel basis) among action alternatives (approximate relative importance based on size of impact is on a scale of 1-5 with 1 being the highest relative importance).

Impact Relative to Status Quo	Wt	AS-1	AS-2	AS-3	AS-4
Possible Increase in Observer Costs (most increase for remaining observer users =)			Only whiting vessels participate	More bottom trawl participation because of optimized retention provision	

4.3.3 Quota Share Owners (and MS History Endorsement Owners)

Under an IFQ program, on average over the long-term, the fishing operations are expected to make zero economic profit, which is a technical way of saying that the industry is achieving normal profit levels. Under a normal profit situation, QS owners (and MS history endorsement owners) will capture any unexpected economic profits (above normal profits) which occur from unexpected improvements in conditions in the fishery. For example, an unexpected increase in exvessel prices would increase profits and therefore increase QS value. Similarly, an unexpected increase in fuel costs would decrease profits and decrease QS value. QS trading for all species except widow rockfish began at the start of 2014 and market prices for QS should reflect current expectations of future profitability in the fishery.

4.3.3.1 No Action Alternative

Under the no Action Alternative, there are a number of factors in transition affecting vessel profitability and hence quota and MS history prices. The degree to which these factors are being taken into account in current transactions is uncertain.

Among the factors on the horizon that may negatively affect quota and MS history prices are decreases in profitability related to:

- an end to the observer cost reimbursements.

Among factors on the horizon that may positively impact quota and MS history prices are increases in profitability related to:

- increases in the OY for 2015-2016 (gross revenue for trawl vessels is projected to increase by roughly 13 million dollars (about 45 percent) PFMC, 2014, Tables 4-58, 4-124 and 4-125), and
- possible reductions in regulatory restrictions on the use of trawl gear, pursuant to trawl trailing actions.

It is possible that quota and MS history sellers and buyers may also be building into their selling and offering prices anticipated changes in profitability expected to result from a move to electronic monitoring, Any anticipated changes in profitability related to EM would likely be heavily discounted because of substantial uncertainty as to whether or not the policy change will occur, uncertainty about the costs of

electronic monitoring versus observer costs, and uncertainty about the degree to which related costs will be paid for by industry.

Under the no action alternative, it is expected that the fishery will operate at normal profit levels on average over the long term with lower quota share prices than would occur under EM (assuming the analysis shows that EM is less than expensive than observer coverage).

4.3.3.2 Action Alternatives

Under the action alternatives, if the EM program reduces operational costs a portion of that reduction will be capitalized in the value of the quota and MS history. Absent other changes in the market place, those holding the quota or MS history at the time of the change will experience increased revenue up until they sell the quota or permit and then a higher revenue from the sale of the quota or MS history. As a result, those buying the quota or MS history will have a higher cost as profits reduce toward normal levels. Thus, as under the No Action alternative, under the action alternatives it is expected that the fishery will operate at normal profit levels on average over the long term, but with higher share prices than would otherwise be present under No Action.

Among the action alternatives, AS-2 would result in a price increase primarily for whiting QS and MS history with a potential very minor indirect impact on nonwhiting QS for species taken as bycatch in the shoreside whiting fishery. AS-1, AS-3, and AS-4 would affect prices for QS for all species and MS history. The options for AS-2 and AS-3 have been selected to minimize costs for industry. Therefore AS-2 and AS-3 would result in the lowest operational costs and highest related quota prices for the segments of the fishery covered by the alternative (AS-2 does not apply to nonwhiting vessels). AS-2 and AS-3 are expected to perform similarly for the shoreside whiting fishery because, for whiting, 100 percent video review (AS-2) is expected to entail costs similar to logbooks with 10% video review (AS-3). This is due to the minimal amount of fish handling which occurs on whiting vessels. In contrast, options in AS-1 were selected to maximize conservation while options in AS-4 were selected to generate the lowest administrative burden and consequently both entail higher industry costs. Therefore these action alternatives would lead to lesser increases in QS prices than AS-2 or AS-3. As compared to AS-1, AS-4 may result in lower industry costs for the nonwhiting due to the use of logbooks as the primary data source, with video review for purposes of auditing the logs (AS-1 relies on 100% review of video as the primary data source). This assessment of impacts on costs and hence QS and MS permit values assumes that industry will pay some of the video review costs.

Table 4-22. Comparison of impacts on QS and MS Catcher Vessel permit owners (on a per vessel basis) among action alternatives.

Impact Relative to Status Quo	Wt	AS-1	AS-2	AS-3	AS-4
QS and MS Permit Values (greatest increase in QS/permit value)		Whiting =  Nonwhiting = 	Whiting =  Nonwhiting =  (incidental increase related to bycatch species in the shoreside whiting fishery)	Whiting =  Nonwhiting = 	Whiting =  Nonwhiting = 

4.3.4 **Vessel Owners**

In this analysis, impacts on harvesting operations are covered in Section 4.3.2. Owners of the harvesting operations may be the same as the owners of the vessels or harvesting operations may lease their vessels from vessel owners. Here, vessel ownership is treated as a separate activity, distinct from the harvesting operation.

Assuming competitive conditions, the change in profits from any change in monitoring costs would most likely accrue to quota owners but may be spread between the harvesting operation, quota owners, vessels and potentially crew, depending on how the change affects the value of the contribution made by each.

4.3.4.1 No Action

The asset value of vessels for which efficient harvest of a given catch requires more days of fishing may be more adversely affected by fixed per-day monitoring costs (e.g. observer fees) than owners of vessels which can generate similar in fewer days of fishing.[7] Therefore, under the No Action alternative, as subsidies for observer fees expire there may be some diminishment in the value of vessels that generate lower profits on a per day basis.

4.3.4.2 Action Alternatives

Under the action alternatives, per-day costs for at-sea monitoring are expected to decrease for vessels participating in the EM program, relative to the unsubsized costs of observers. On this basis, under an action alternative, the asset value for vessels which are less efficient than others on a per-day basis (but competitive on an annual basis) may increase under the action alternatives relative to the no action alternative. Differences in the degree of increase among the alternatives will be proportional to differences in changes in the degree of profitability between the alternatives. These differences are discussed in Section 4.3.3.

Some smaller vessels may have been challenged in providing space to accommodate an observer. In contrast, for the action alternatives there is no reason to expect that a vessel, because of its physical configuration, would be unable to participate in the EM program if its operator so desired.

4.3.5 **Crew Members**

Crew members may be directly affected by

- Changes in privacy and social circumstances (cameras compared to observers)
- Changes in fish handling task

There may be an indirect effect on

- crew income, depending on the structure of crew share contracts,

[7] A complete explanation of overall efficiency and profit generation would need to take into account factors such as the amount of fish caught, whether vessels which can generate similar profits in fewer days have alternative fisheries in which they would then participate, and income to crew for lesser and greater numbers of hours of work. However, it is not necessary to go into this detail to discuss the general point.

- geographic distributions of jobs

4.3.5.1 No Action Alternative

Under the no action alternative no impact mechanism has been identified that would cause a change privacy conditions or crew skill requirements relative to current conditions. If crew shares include a deduction for observer costs, crew income may decline as observer cost reimbursements end. Otherwise, it is assumed that the labor market is competitive and on that basis changes in observer costs would not have a noticeable effect on crew income.

Crew members may also be affected by consolidation in the fleet or a geographic redistribution of job opportunities. Currently, the cost of getting observers to some ports have been higher than others, particularly for ports in the southern part of California. Over the long-term, such differential could result in quota trading away from those ports. Under No Action, the end of observer subsidies may increases the importance of this geographic differential.

4.3.5.2 Action Alternatives

The impacts of the action alternatives on privacy and the fish handling are described in Section 4.3.2.2, paragraphs 3) and 4) respectively. . If crew shares include a deduction for observer costs, crew income may increase as observer cost reimbursements end. Under such circumstances, the options in AS-2 and AS-3 were selected to provide the lowest industry costs and would therefore likely entail greater increases in vessel and crew income than AS-1 and AS-4. Otherwise, it is assumed that the labor market is competitive and on that basis changes in observer costs would not have a noticeable effect on crew income.

EM might be a lower alternative to achieving at-sea monitoring in isolated, low demand ports. On the other hand, the shoreside catch monitoring function may become more expensive to fulfill in those ports, as discussed in Section 4.3.1.2. However, currently the cost burden of the shoreside monitoring is paid directly by first receivers, not vessels.

4.3.6 **Other Fisheries**

Inconsistency in requirements for EM monitoring among different fisheries could make it more expensive for vessels moving between fisheries. Creating a greater cost barrier for movement between fisheries could change the competition within fisheries.

4.3.6.1 No Action

Under the No Action Alternative observers are carried to cover the catch monitoring function. In general a vessel does not need to make adjustments to carry an observer in one fishery than are different than would be required to carry an observer in another fishery. This is not expected to change under the No Action Alternative.

4.3.6.2 Action Alternatives

AS-1 through AS4 would likely require similar camera and software requirements, though AS-3 and AS-4 might also require some logbook related software. If the camera requirements for participating in the trawl catch share program are different from camera requirements in any other fishery in which the vessel might appropriately participate, then differential electronic monitoring requirements may begin to create a barrier in the movement of vessels between fisheries (increase the costs of participating in multiple fishery). Currently this might be most relevant for Alaska vessels but the challenges for moving between fisheries with different EM requirements may increase as more fisheries begin using EM.

If maximized retention requirements increase the mortality of non-groundfish taken in the groundfish fishery, fishing opportunities in other fisheries could be reduced. The current overall volumes of discards in the fishery that would potentially become retained are provided in Appendix A.

4.3.7 **Processors (First Receivers)**

4.3.7.1 No Action Alternative

Under No Action current practices would likely continue unchanged: when a vessel lands the vessel observer comes on shore and fulfills the shoreside catch monitoring function. First receivers are generally charged $50 per hour or charged the observer daily rate (Table 4-9) in partial day increments for shoreside monitoring services with fee structures varying by provider company. Fees are generally higher in the area south of San Francisco. These fee levels are contingent on the observer coming to shore to fulfill the catch monitoring function.

4.3.7.2 Action Alternatives

The most likely direct effect of EM on first receivers will relate to possible increases in the costs of shoreside catch monitoring services (since vessel observers previously on hand at time of landing would no longer be available to fill this function) and unmarketable or less valuable fish brought to shore that would have otherwise been discarded.

With the move to EM, first receivers in high landing ports (higher number of landings) may experience either no change or a lesser increase in catch monitoring costs than first receivers in low landing ports (see discussion of shoreside catch monitoring in Section 4.3.1.2 for reasons that the EM program might impact shoreside catch monitoring costs). Additional travel related costs may be charged to processors in lower landing frequency ports that are far enough from larger ports to results in notable travel expense. Such cost differentials could contribute to an advantage for processors in high landings ports. While first receivers in low landing ports could try to pass costs on by reducing exvessel prices, the expected long-term result of such a practice would be the transfer of QS out of those ports to the higher landing ports, unless there were other cost or lifestyle advantages to harvesters in the smaller ports. The need to control catch monitoring costs could encourage vessels and first receivers to coordinate the shoreside monitoring tasks with one another.

Under AS-1, AS-2, and AS-4, all gear sectors in the trawl catch share program would have the option of using EM in place of compliance observers, and to the degree the EM option is exercised, the shoreside monitoring tasks would be handled by shoreside monitors dedicated to that task alone. As discussed in

more detail in the subsection on shoreside catch monitoring in Section 4.3.1.2, there may be higher shoreside monitoring costs in ports that have low activity levels and are geographically distant from higher activity ports.

AS-2 would implement EM for whiting fisheries only, primarily affecting shoreside monitoring tasks in Westport, Ilwaco, Astoria, and Newport (Coos Bay has not had a delivery since 2011, Figure 4-2 and Figure 4-6 through Figure 4-10). The monthly volume of whiting landings in those ports, other than Ilwaco, may be enough to maintain a catch monitor in the ports during the peaks of the active periods of the whiting season. Ilwaco would benefit from its proximity to Astoria and on that basis would likely be able to meet its shoreside monitoring needs at little if any additional expense--the main challenge might be coordination of offload times between processors. Other ports do not have whiting landings and the processors in those ports would likely be minimally affected under AS-2.

AS-1, AS-2, and AS-4 all include provisions for maximized retention. This could result in a substantial volume of retained unmarketable fish coming to shore. However, the whiting deliveries covered by AS-2 are already made under maximum retention rules so under either action alternative there would be no expected change in retention with respect to the whiting fishery, relative to the no action alternative. Overall volumes of discards in the fishery are provided in Appendix A. AS-3 provides for optimized retention and therefore may entail a somewhat lesser amount of retained unmarketable fish. The volume of fish brought to shore would impose fish handling costs that would likely impact first receivers. Some of the costs might be offset if the fish can be turned to fish meal. How vessels and first receivers would arrange for the disposition of the unwanted landings and the distribution of the costs between affected parties, is uncertain. For example, would processors charge vessels to handle and dispose of the unmarketable fish?

4.3.8 Observer/Catch Monitor Provider Companies and Observers/Monitors

4.3.8.1 No Action Alternative

Under the no action alternative, provider companies will likely continue to provide as-sea observers and shoreside monitors to the fishery and demand the services of individuals who fill those positions. As the Federal reimbursement program phases out, observer providers may experience some greater uncertainties with respect to on time payments for services rendered.

4.3.8.2 Action Alternatives

A transition to EM would likely inject considerable uncertainty into the business planning for provider companies during the adjustment period. The logistical challenges of providing shoreside catch monitors may also increase (see discussion of shoreside monitoring costs in Section 4.3.1.2 and 4.3.7). Uncertainty and challenges will be greater under AS-1, AS-3,[8] or AS-4, which provide and EM option for all gear sectors in the catch share program, than under AS-2 which covers only the whiting fishery in a restricted number of ports. However, the whiting fishery's demands for observer and catch monitoring services are substantial and the greater number of personnel required to meet those needs may provide some efficiencies and flexibilities that will be reduced if EM is used by the whiting sector. Nevertheless, over

[8] AS-3 is expected to result in slightly more participation in the EM program than AS-1 or AS-4 because the options for AS-3 were selected to provide an EM program with lower industry costs.

the long run, assuming the fishery remains economically viable, providers should be able to maintain at least a normal profit level. Economic viability of the fishery includes the industry's ability to pay observer companies a rate which keeps them in the business of supplying compliance observers and catch monitors to the West Coast fishery. The demand for observer and catch monitor services will depend both on the amount of participation in the program and the at-sea biological observations contracted for by the WCGOP. The provision of shoreside catch monitoring services might present some particular logistical challenges (see Section 4.3.1.2). For ports with relatively low levels of demand for catch monitoring it may be difficult for more than one provider to service the port, affecting competition and fees. The possibility of increases in provider fees is covered in Section 4.3.1.2 .in the subsection*: Observers - Biological and Compliance Observers*.

Under the action alternatives, jobs for observers will decline and would likely be partially replaced by jobs for technicians maintaining video equipment, reviewing video, and maintaining data systems. The characteristic and many of the required skills for these shoreside jobs is likely to be very different than those of at-sea observers. Some of the previous at-sea observer positions will likely convert to dedicated shoreside compliance monitor positions. As for the providers, the transitions will likely be greater under AS-1, AS-3, and AS-4 than AS-2, because of the broader scope of the former alternatives.

4.3.9 EM Providers and Video Review/Reviewers

4.3.9.1 No Action Alternative

Under the No Action Alternative, EM providers and video reviewers are working on pilot projects to develop and explore EM programs for the West Coast. Additionally, potential providers for the West Coast system are providing EM and other fishery monitoring services in other fisheries.

4.3.9.2 Action Alternatives

Under AS-1 through AS-4, new business opportunities would be created for EM providers and new jobs for video reviewers. Lesser opportunities would be created under AS-2, which covers only the whiting fishery

Depending on businesses' strategies, the EM provider companies could be those that already exist, observer/catch monitor provider companies could become EM providers or new companies could develop. There are a number of different tasks that could be handled by either EM providers, observer/catch monitor providers, other third party providers, or the government.

- EM equipment, installation, and maintenance
- EM software development and maintenance
- Data retrieval (hard drive retrieval)
- Video review

Some of these tasks may be taken on as a government service (carried out by government employees or funded through government contracts) or they could be wholly privately funded activities. For example, video review might be conducted by NMFS or an agent (such as PSMFC), or by a 3rd party (EM provider or observer/catch monitor provider). Costs of review and who pays for the review may vary depending on the entity providing the services (see the discussion of video review costs in Section 4.3.1.2). Functions, such as hard drive retrieval, might be handled by government personnel, catch monitors, or crew members.

4.3.10 **Communities**

4.3.10.1 No Action Alternative

Under the no action alternative, harvesters in communities such as some of those south of San Francisco may continue to have challenges in acquiring observers and pay somewhat higher fees and travel costs than other areas (Table 4-9). Unless there are other advantages in these ports, over time, lower profit margins could cause quota to trade out of these ports to other areas of the coast. The geographic distribution of landings among ports is provided in Section4.3.1.2 in the subsection entitled *Port Demand for Catch Monitoring Services* Section 4.3.2.1 includes information on geographic differences in vessel net revenues.

4.3.10.2 Action Alternatives

Under the EM action alternatives, factors most likely to affect communities include

- geographic differentials in the costs of observer and catch monitor services, and
- disposal of landings of unwanted catch.

Neither of these factors may be influential under AS-2, which involves only the whiting fishery. The whiting fishery is in northern active ports for which providing services is not expected to be a challenge (see discussion in Section 4.3.7.2) and the whiting fishery is already a full retention fishery, so implementation of AS-2 would not entail an increase in retention.

Under AS-1, AS-3, and AS-4, EM might resolve some of the challenges to providing observers in isolated and low volume ports, but new challenges may arise with respect to fulfilling the shoreside catch monitoring function. These challenges may affect processor and/or vessel profits and the additional costs could result in the transfer of landings out of the port over time, if they contribute toward an overall competitive disadvantage in the port. These issues are discussed in Section4.3.1.2 in the subsection entitled *Port Demand for Catch Monitoring Services* and in Section 4.3.7.2 on the impacts of the action alternatives on processors.

Communities may also be impacted depending on how the disposal of unwanted retained catch is handled. Impacts might include odor, water usage, and truck noise. If a meal plant is installed to handle unwanted retained catch, the retained catch may benefit the community. AS-1 and AS-4 would entail maximized retention and so the most unwanted retained catch. AS-3 is the optimized retention option and so might have somewhat less unwanted retained catch than AS-1 or AS-4. The issue of unwanted retained catch is discussed further in Section 4.3.7.2 on the impacts of the action alternatives on processors. Table 6-1 provides an annual accounting of recent fishery discards, discards which might be converted to unwanted retained catch under the action alternatives.

4.3.11 **Government**

4.3.11.1 Federal

Under the action alternatives, in addition to the direct costs of the EM program and adjustments to the program for biological observers (see Section 4.3.1.2 for a complete discussion), there may be additional burden associated with maintaining a regulatory framework and administrative support for two separate but linked monitoring programs – one for vessels choosing to use EM and one for vessels choosing to carry observers.

4.3.11.2 States

Under the action alternatives, states might be called on for biological sampling in the ports (to replace the retained catch sampling currently conducted by at sea observers). There is a question as to whether the states could become providers for shoreside catch monitoring services to address potential challenges in isolated ports.

There may be a need for discard logbooks for trawl vessels and for vessels participating in the trawl fishery with fixed gear. All three states have requirements for retained catch logbooks for the groundfish trawl fishery and Oregon has a requirement for discard logbooks for vessels participating in the trawl catch share fishery with fixed gear. If a Federal requirement for recording discards is met with state logbooks there may be some additional changes required for both existing state logbooks and the computer reporting system. See Section 4.3.1.2 for further discussion.

4.3.11.3 Pacific States Marine Fisheries Commission

PSMFC currently receives Federal money for training, debriefing and data quality checks for shoreside catch monitors. This contract could change based on changes to the way the catch monitoring task is organized. PSMFC could take on other roles in the EM system, including the role of video reviewer. PSMFC may need to make changes to the PacFIN data system to incorporate a new discard logbook (AS-3 or AS-4).

CHAPTER 5 **LIST OF PREPARERS**

The document was prepared by Pacific Fishery Management Council staff:

This document was prepared by (in alphabetical order, by organization):
Pacific Regional Fishery Management Council
Brett Wiedoff, Staff Officer
Jim Seger, Staff Officer

APPENDIX A. **ANALYSIS OF EM PROGRAM PROVISIONS**

A-2.1 Discard Documentation Technology and Documentation Coverage

Component	Alt 1 No Action	Alt 2 Camera Recordings Used to Estimate Discard	Alt 3 Logbooks Used to Estimate Discard, with Camera Audits
Discard Documentation Technology and Coverage	Observers (100%)	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program Individual vessel choice to use cameras in lieu of human observer; 100% of all IFQ trips must either have observer or cameras	

Rationale

The trawl rationalization program requires 100% at sea monitoring, as described in Section 1.4. This central component of the EM programs would allow that monitoring need to be met with cameras, rather than observers, as described in Section 2.2.1. Analysis of this component is covered in the general analysis of the alternatives in Chapter 4.

A-2.2 Video Reading Protocols

Component	Alt 1 No Action	Alt 2 Camera Recordings Used to Estimate Discard	Alt 3 Logbooks Used to Estimate Discard, with Camera Audits
Video Reading Protocols	None	**Option A**: 100% (census all video footage and estimate discard). **Option B**: Subsample Video and expand discard estimate to whole trip (% review must be developed) **Option C**: Subsample Video with a mandatory logbook requirement to document discard (% to review must be developed)	Audit logbook Random review of fishing events documented in logbook at some predetermined level (e.g., 10%). Intensity of additional random review may increase based on vessel's compliance history.

Rationale

Source of discard data. Camera estimates or logbook audit.

Physical and Biological Impacts

Risk summary
Alternative 2 Option A: 100% - census all video footage and estimate discard.
Least amount of risk compared to other alternatives and No Action.

Alternative 2 Option B: Subsample Video and expand discard estimate to whole trip; % subsample for the review must be developed.
Most amount of risk to either miss fish or under/overestimate discards

Alternative 2 Option C: Same as Alternative B but includes a mandatory logbook requirement to document discard.
Similar risk to Option B however in the event that video image cannot be used to estimate discard logbooks would be used to provide an estimate.

Alternative 3: Logbook with Video Audit
More risk than Alternative 2 Option A but less risk than Alternative 2 Option B and C. Compliance with accurate reporting rest on percent level of video audit and the ramifications for not reporting discards.

Risk Compared to Observers (No Action)

Risk - inaccurate discards (compared observer risk)
expansion - too big or too small (at the extreme a total miss of a discard)
IFQ, Sector, and ACL overages

Data source is the logbook - that goes to QP accounting, then validation of logbook.

Alt 1 (No Action) - Observers Used to Estimate Discards - (no limit on vessel discards)
Observer tasks

1. Detect and measure discards during active gear retrieval and sorting
2. For overfished species count number of individual fish retained
3. Maintain awareness of whether any discarding is occurring at other times (continuous monitoring not possible)

Alt 2 - Camera Recordings Used to Estimate Discard
Camera tasks

1. Detect discard events
2. Discern between discards (species) that are allowed and those that are not allowed
3. For those discards that are allowed, if IFQ species are discarded, generate estimates of discards for quota share accounting system - through census (Option A) or expansions (Options B or C)

Results from WCGOP biological observers would be used to estimate discards of all non-IFQ species

Alt 3 - Logbooks Used to Estimate Discard, with Camera Audit
Camera tasks

1. Detect discard events
2. Discern between discards (species) that are allowed and those that are not allowed
3. For those discards that are allowed, if IFQ species are discarded,
    a. for a subsample of gear retrievals and associated catch sorting compare discards recorded in logbooks to discards detected by camera
    b. after fish are on board, for a subsample of the non-retrieval/sorting time detect discard events.

To control video review costs, implementing regulations might include provisions to prohibit discard of any materials outside of initial catch handling times, unless the time of such activity is specifically recorded in a logobook.
Results from WCGOP biological observers would be used to estimate discards of all non-IFQ species

Risk and Rare Events

PSMFC study on rare catch events - discard events would likely be even more rare.

Alt 2 - if overfished species (OFS) discards are allowed - need to detect rare OFS discard event
Considerations - For Alternative 2, Options B and C, missed events and expansions valid at the fleet level may be overly burdensome on the individual vessel. For Option A there would be no rare event issues, since all video would be reviewed (assuming videos adequately capture all discard events).

Alt 2 - if OFS discards are NOT allowed - need to detect rare and illegal OFS discard event
Considerations - For Alternative 2, Options B and C, the event will be more rare than if discards are allowed (rare catch event x rare illegal event)? Would the event be expanded to the remainder of the vessel's catch, if so, for that day, week, month? For Option A there would be no rare event issues, since all video would be reviewed (assuming videos adequately capture all discard events).

Alt 3 - Whether or not discards are allowed, all rare event discards would be recorded in a discard log. The only rare events to be detected would be the confluence of a rare catch event, rare discard event (decision to discard the OFQ), and rare illegal discard (discard not reported in a logbook). Since cameras would not be used for expansions, there might be limited impact on the estimation of total catch unless fishery managers make a decision to add in a factor for illegal discarding. (Note, such illegal discarding could occur under the current system and no explicit adjustments are being made for such possibilities under the catch share program (such factors may be taken into account in the uncertainty factors used to establish the ACLs).)

Risk of Missing Discard Events

The PSMFC field studies compared observer estimations with EM estimation of discard (PSMFC 2014, F2b_PSMFC_Rpt_JUNE2014BB). Both data sources miss discards. Sometimes the camera captures the data but the observer did not. This can happen when, due to safety reasons, the observer cannot go to the rear of the vessel to observe unintentional discard or it's difficult to see and quantify discards that are in the water from the low angle of standing on the deck of the boat. It is important to note that the EM system has cameras mounted on the aft gantry that provide a long field of view behind the vessel that the observer cannot get. Also, the EM system has multiple views of the vessel and the water at once and can be reviewed multiple times if needed to get an accurate estimate of total discards. At times the observer has documented discards yet the video did not. This was due to poor image quality, crew blocking camera, or the EM system not being turned on. These issue were minor in number and can be easily avoided or corrected.

Of critical importance, is the level of risk that managers are willing to take to capture rare events such as yelloweye rockfish discard if a fisher was allowed to discard them, log it, and then use video review to not only review the logbook discard event but also to randomly sample the video to see if discard events are not logged. Fishery managers will need to examine what level of risk is appropriate and the cost implications for trying to capture all events to balance management of overfished species and the economics of fishing activity. Cost for video review can increase dramatically for a fishermen if all video is reviewed (census) versus only 10 or 25 percent.

Confidence in the data is directly related to risk. Figure 6-30 provides a the level of confidence in the data collected in the PSFMC field study and provides an analysis for the reasons for low confidence in the data. Much of the low confidence was related poor image quality, especially at night during shoreside hake (whiting) hauls in 2012 or if the crew handled the fish out of direct view of the camera. However, most of these issues were resolved in 2013. There will always be some image quality issues due to glare, night lighting or water on the camera lens however confidence levels in the shoreside and fixed gear data are generally higher (above 80%).

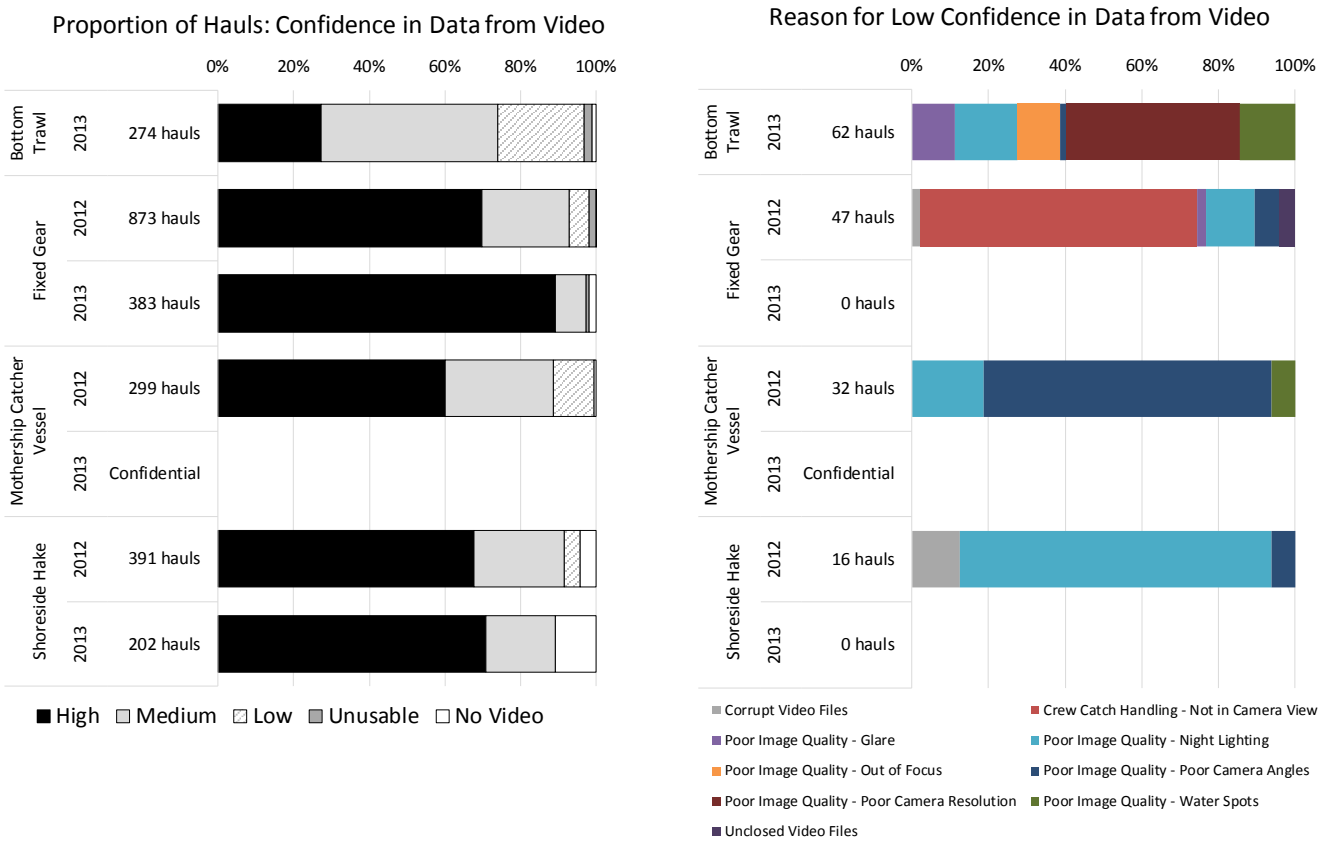


Figure 6-1. Distribution of confidence in data from video in all fisheries in all years (left). For hauls labeled low confidence, distribution of reason for low confidence in video (right).

PSMFC also looked at the risk of missing certain species when sampling the logbooks for rare events. This relates to the question of what level of video review (and potentially logbooks) is appropriate to capture the data needed for IFQ and ACL management. Following text and figures are from an EM workshop paper by PSMFC (http://www.pcouncil.org/wp-content/uploads/EM_AttE1_Att1_PSMFC_RareEvents.pdf) that simulated subsampling logbook at 10, 25, and 50% to detect rebuilding species on a fleetwide level (Figure 6-31) and on an individual vessel level (Figure 6-32).

> For each simulated sampling of the observer data, the number of trips where rebuilding rockfish species were detected was summarized (Figure 6-31). For yelloweye rockfish, discards occurred on two trips. Of the 1,000 samples (simulation trials) taken at a nominal 10% sample rate, close to 80% (close to 800 of the samples) detected no yelloweye discards. In other words, for approximately 800 of the 1,000 times we sampled, the hauls from 2 trips with yelloweye rockfish discards were not included in the sample and those discards were not detected. In the case of Boccacio, there were 5 trips with discards, all five hauls with discard were never detected within a single simulation trial under the nominal 10% sample rate.

While Figure 1 addresses the probability of detecting discards at a fleet-wide level, this does not assess the potential for discards to be detected on any individual trip. In other words, what are the chances that a sample of a specific trip will detect discards of a specific rebuilding or rare species that occurred on that trip? Figure 2 presents the proportion of the 1000 simulation trials where the discards were detected from trips that were known to have had an occurrence of a discard of the specific species. The box contains the center 50% of the trips with the vertical line representing the median value.

As a result of the sampling routine (e.g., at least one haul per trip), the median probability of a sample including at least one of the hauls where discards occurred was above the nominal sample rate (Figure 2). The range of detection is wide with some trips having a 100% probability of discard detection even at a 10% sample rate (e.g. darkblotched rockfish in Figure 2). The probability of sampling a trip and having one or more hauls with detected discard events in the sample is a function of the trip length as well as the rarity of discarding. In the extreme, a trip with only two hauls will always have one haul sampled, and hence will always have a 50% probability of detecting the discard event. There are a few trips where the probability of detecting the discard event is less than the nominal sample rate.

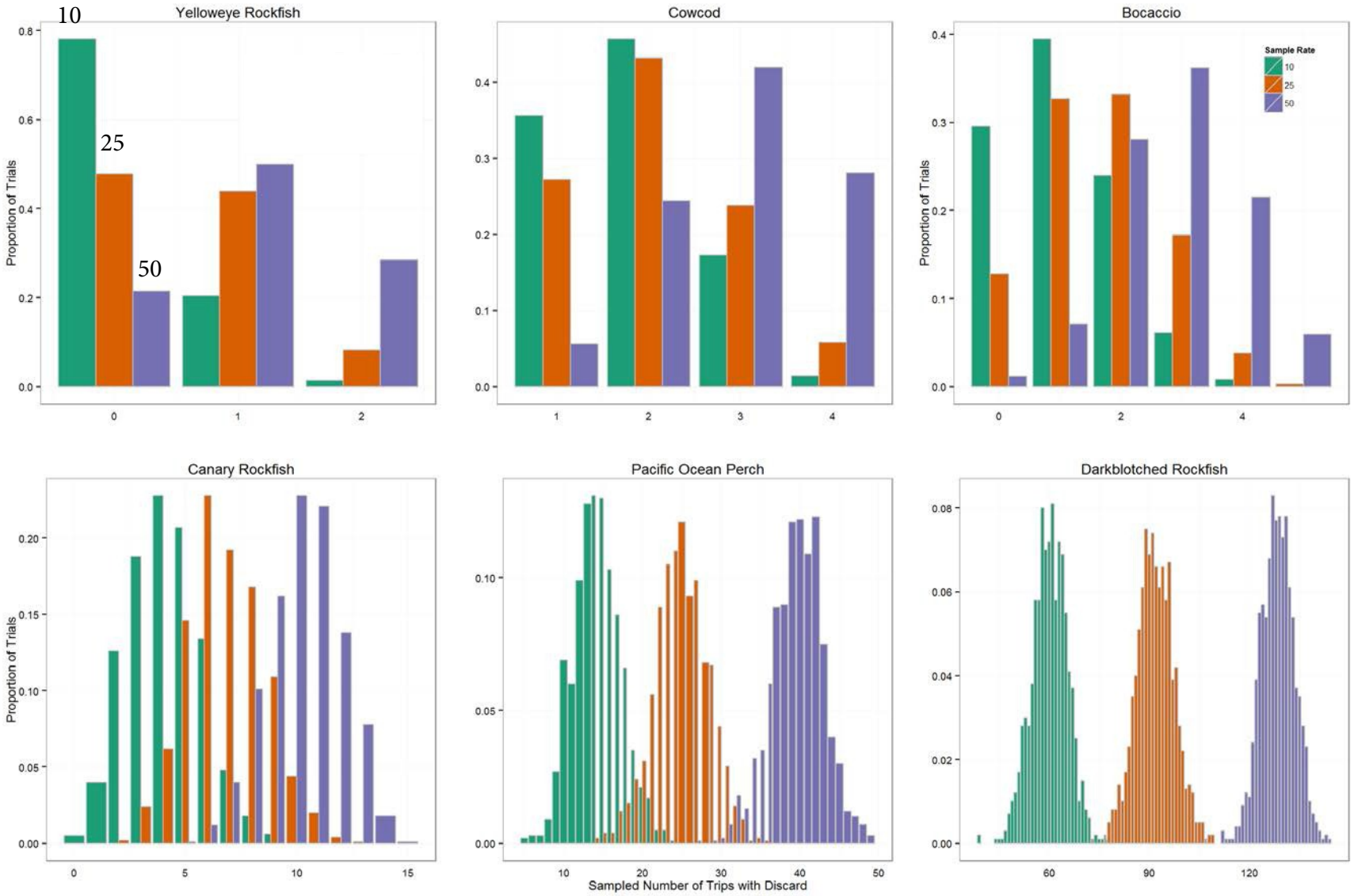


Figure 6-2. Probability of detecting discard events for 6 species of rockfish. Probability of detection is computed as the proportion of simulation trials where discard of the species was detected on a trip where rockfish were discarded. Inset table depicts the actual number of trips where each species was discarded. Note changes in y-axis scaling.

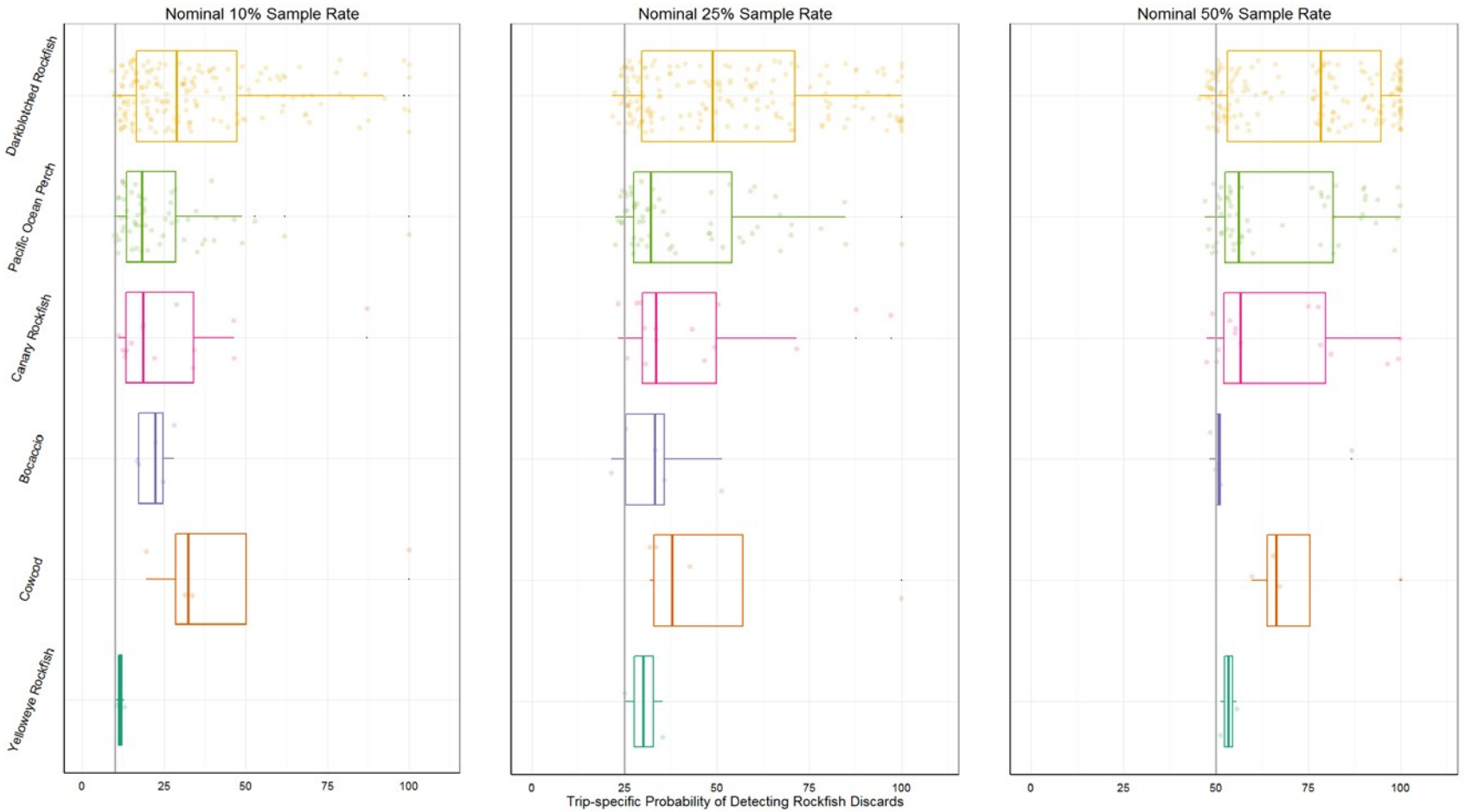


Figure 6-3. The trip-specific proportion of simulation trial (samples) that included hauls with rockfish discard. Each data point represents the probability of detecting rockfish discards for a single trip where rockfish were discarded. The box outlines the center 50% of the data points while the vertical line inside the box represents the median proportion over all trips.

Percent Sampling Rate - Comparison of Alt 2 to Alt 3

Catch handling time - all discard events reported -
Between catch handling time - zero discarding

Look at every discard event and confirm.
Subsample events (a haul is an event) - PSMFC approach 10% of all events across all trips
10% of a trip. Less bias. and higher sampling rate.
10% of a time period - more potential for bias if results are being used in an expansion (Alt 2, Opt B or C).

Subsample or census - time when fish are onboard but not being retrieved or sorted.

Verification and enforcement.

Verifications -
-weight discrepancies
- species discrepancies
What is threshold for increasing intensity of review or taking enforcement action.

Socio-Economic Impacts

Equity issues

Expansion - Equity issues related to expansions are mainly a concern under Alternative 2 Option B and C and for species for which discarding is allowed (expansions are not required under No Action, Alternative 2 Option A, and Alternative 3). Statistical averages are more likely to be accurate across a fleet than across individuals. Higher sampling rates are required to develop an average that is accurate for the individual. E.g. if 25% observer coverage was adequate to develop a sufficiently unbiased and accurate estimate for the fleet as a whole, a higher rate would likely be required to develop a sufficiently unbiased and accurate estimate for a particular vessel. Therefore, lower sampling rates are likely to result in overestimates for some vessels and under estimates for others, increasing individual risk and decreasing individual incentives.

Compliance - when enforcement and monitoring is inadequate, cheating in the program can spread to the point that complying with the program feels unfair and economically disadvantageous. Summarize and cite Randall, 2004. The opportunities for non-compliance vary among the options.

Risk and Cost - differential for alternative review rates - vary by method - review of discard events vs. review of all time fish are on board. Assuming adequate images, 100% review is least risk of action alternatives. Logbook review may be very accurate if it can maintain a compliance ethic in the fishery. If that compliance ethic deteriorates, logbook review rates might have to increase.

A-2.3 Discard Accounting – Individual or Fleetwide

Component	Alt 1 No Action	Alt 2 Camera Recordings Used to Estimate Discard	Alt 3 Logbooks Used to Estimate Discard, with Camera Audits
Discard Accounting - Individual or Fleet-wide	Observers/IFQ	**Accounting of discards are either accounted against IFQ, accounted against sector-wide, annual catch limit (ACL), or not accounted. Estimation of discard may be done through EM, WCGOP observer program, or not estimated.** **Option A**: One discard category and all discards are estimated using EM (or another data source when necessary) and counted against IFQ: • Dumped off deck (e.g., shoveled, picked out of net) • Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.). • Dropped off gear • Floating fish • Lost gear (not captured by EM, estimate using WCGOP protocol) • Consumed/used as bait (not captured by EM) • Unobserved sets/hauls (not captured by EM, maybe apply discard rate using EM estimates from previous sets/hauls) **Option B**: Split into two discard categories; Category 1 count against IFQ, Category 2 count against sector or ACL; for some discard the estimate is based on trips with observer coverage: Discard 1 IFQ Accounting: • Dumped off deck (e.g., shoveled, picked out of net) • Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.). • Unobserved sets/hauls (not captured by EM, apply discard rate using WCGOP Discard 2 Sector or ACL accounting: • Dropped off gear (use WCGOP estimates) • Floating fish (use WCGOP estimates) • Estimated from lost gear (estimate using WCGOP protocol) • Consumed/used as bait (not captured by EM, use WCGOP estimates) **Option C:** Split into two discard categories; Category 1 count against IFQ, no accounting for discard 2 category: Discard 1 IFQ Accounting: • Dumped off deck (e.g., shoveled, picked out of net) • Dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.). • Unobserved sets/hauls (not captured by EM, apply discard rate using WCGOP Discard 2 No accounting: • Dropped off gear • Floating fish • Lost gear • Consumed/used as bait **Option D**: For the Mothership midwater trawl whiting fishery. No category is used; unintentional discards of whiting would be deducted preseason from the MS coo-op allocation of whiting. A proxy of the average percentage of discard from 2011, 2012, 2013, 2014, and any additional averaging from future years would be used for the deduction. Discard of bycatch species would be determined by pro-rating the observer data from the MS processor. **Council staff note: In order for Option C to be valid it would have to comply with MSA national standards. All catch and discard must be accounted to estimate total mortality estimates and ensure annual catch limits are not exceeded.**	

Rationale

By not counting some types of discard against individual quota (Options B or C), the video review task would be reduced. WCGOP observers coverage would be used to estimate discards for the fleet, which would be deducted from the overall allocations, rather than from the allocations to individual vessels. Option C is based on the premise that some discards may be of such minor amounts that they are not worth measuring.

Physical and Biological Impacts

Option A - like no action - differences are related to use of cameras instead of observers - these differences are addressed in Section 2.2.1 and Chapter 4.

Option B - all catch is still accounted for so no change in risk of exceeding ACLs. Fleet has been underharvesting its OFS allocations. Reduced individual incentive to avoid certain types of discards. Could increase mortality relative to no action but not to degree that trawl allocations are exceeded.

Option C - likely not compliant with MSA. Amounts small under status quo behavior but behavior changes would be likely - unzipping red nets, eating yelloweye rockfish. For OFS, amounts could be significant relative to allocations.

Socio-Economic Impacts

Options B and C, reduced individual accountability - whole fleet pays based on estimates from observer coverage.

Options B and C, unusual effect - increased incentive to eat or use as bait highly constraining OFS catch yelloweye catch so that deductions would come from entire fleet. This creates an opportunity for individual vessels to reduce risk and may enable them to access. If discards are prohibited there would have to be an exception for the first three bullets of category 2 but not for the last bullet. This increases regulatory complexity.

A-2.4 Definitions for Total Catch Accounting - Total Catch, Discard, Retained

Component	Alt 1 No Action	Alt 2 Camera Recordings Used to Estimate Discard	Alt 3 Logbooks Used to Estimate Discard, with Camera Audits
Definitions for Total Catch Accounting - Total Catch, Discard, Retained	Use WCGOP definitions	These requirements would apply to both alternatives 2 and 3. There are no options to choose under this component of the EM program **NOTE: Under the IFQ and catch allocation system all catch must be accounted for to debit individual QS accounts and fishery allocations, regardless if it categorized as retained catch or discard.** **Total catch for trawl:** Total catch is defined as the sum, or estimated weight, of all organic and inorganic material caught by the gear, to include any organic or inorganic material confined within a trawl net as the net is being landed, lost gear, as well as any visually discernible catch lost during the retrieval process that can be reasonably attributed to the vessel. **Total catch for fixed gear:** Total catch is defined as the sum, or estimated weight, of all organic and inorganic material caught by the gear to include any fish hooked or in a pot as the gear is being landed, lost gear, as well as any visually discernible catch lost during the retrieval process that can be reasonably attributed to the vessel. **Discard for fixed and trawl gear:** Discard is any portion of the total catch that is not delivered to a buyer. Fish caught for bait or onboard consumption are considered discard. For gear that is lost, or sets and hauls that are unobserved, discard rates will be applied based on similar sets and hauls. **Retained catch for fixed gear and trawl:** Retained catch is any portion of the total catch that is delivered to a buyer or processor.	

Rationale

A definition of total catch is being provided as part of the program specification in order to provide context for policies on discard accounting (Section 2.4) and and retention requirements. The total catch definitions are consistent with the WCGOP definitions of total catch - definitions which are currently in use to ensure that ACLs are not exceeded. The definitions would not be changed as part of this action and therefore they are not directly analyzed but are implicitly covered in the analysis of discard accounting and retention requirements.

Physical and Biological Impacts

Socio-Economic Impacts

A-2.5 Discard Requirements

Component	Alt 1 No Action	Alt 2 Camera Recordings Used to Estimate Discard	Alt 3 Logbooks Used to Estimate Discard, with Camera Audits
Discard Requirements	Discard at will unless required to retain. • May discard any species unless regulations require you to retain them. • May discard catch share species, non-catch share species. • May discard non-groundfish • Allow discard of trash, mud coral, etc. • Require discards of prohibited species. • Require discards of ESA and MMPA species (protected species).	**Option A**: **Maximized Retention** - A vessel is generally required to retain all catch share species, non-catch share groundfish species, non-groundfish species (Non-FMP and not prohibited species) • No selective discard for catch share species, non-catch share groundfish species • No selective discard for non-groundfish species • Allow selective discard of trash, mud coral, etc. • Require selective discards of prohibited species (except whiting trips); • Require selective discards of ESA and MMPA species (i.e., protected species). • Non-selective discard for e.g., safety, "bleeding net", zipper accidentally opened, fish came off hook, gilled in net **Option B**: **Optimize Retention of Catch Share Species with Limited discards** - A vessel is generally required to retain all catch share species. • Allow selective discard of trash, mud coral, etc. • Require selective discards of prohibited species (except whiting trips); • Require selective discards of ESA and MMPA species (i.e., protected species). • Non-selective discard for e.g., safety, "bleeding net", zipper accidentally opened, fish came off hook, gilled in net **Potential Gear Specific Sub-options under Optimized Retention (must be verifiable under EM)**: Allowable Discards Midwater trawl non-whiting trips, bottomtrawl, and fixed gear trips may discard the following species if verifiable under the EM program: **1) For catch share species** SubOption 1.a – Allow discard if species that are verifiable with EM SubOption 1.b – Allow discard of all non-rockfish groundfish (full retention of rockfish only) SubOption 1.c – Allow discard of lingcod and sablefish SubOption 1.d – Allow discard of flatfish **2) For non-catch share groundfish species** SubOption 2.a – Allow discard if species that are verifiable with EM SubOption 2.b – Allow discard of all non-rockfish groundfish (full retention of rockfish only) **3) For non-groundfish (Non-FMP and not prohibited species)** SubOption 3.a – Allow discard if species that are verifiable with EM SubOption 3.b – Allow discard of all non-groundfish species	

Rationale

Under the no action alternatives, observers are present to document discards therefore there is no limit on what may be discarded and discard of certain species is required (retention prohibited).

The impacts of the different retention/discard requirements depend on whether review of video can differentiate something that is discarded (whether it be marine life or inogranic material) from a catch share species.

A number of different approaches to specifying the retention/discard requirements are provided by the options. A full retention option was rejected as impractical. Full retention would have

required that everything be brought to shore, including trash and mud. Maximized retention tries to allow for the minimum level of discarding necessary to make the system practical. Optimized discard attempts to expand the permissible discards beyond the minimum in order to take full advantage of whatever flexibility that cameras can provide. That flexibility will depend on the readability of the video - whether the discarded fish can be distinguished from those for which retention is required. Suboptions are provided for catch share groundfish species, non-catch share groundfish species, and non-groundfish species. The key to the success of the program will be the ability of the video to distinguish between catch share and noncatch share species, and, if discard of a catch share species is allowed, the ability of the video to speciate and measure the amount of the catch share species discarded.

Suboptions 1.a, 2.a, and 3.a, allow for future specification of the list of species for which discard will be allowed, and it therefore interact with Section 2.2.6 which specifies the process by which the list of discard species is determined.

Physical and Biological Impacts

Cameras will perform no worse than observers, to the degree that cameras capture the images of anything that is discarded and video reviewers are able to determine that the discard is permissible and, if it is an IFQ species that is discarded, adequately measure the discard. Risk to the resource increases as the likelihood that the camera images are inadequate for these tasks increases. Camera images will vary not only based on the equipment but based on a variety of situational environmental conditions (glare, lighting, water on the lens, etc.)

For the maximized retention option, a smaller scope of materials may be discarded and therefore, it will be easier for the video reviewer to determine whether or not an object is within the permissible discard category. For the optimized retention option, more types of fish might be discarded and therefore more effort will be required to determine whether the discards are permissible. Difficulties in discerning categories will depend on the charactertics of the categories which must be retained and those which must or may be discarded. For example, the following categories may be easier to discern under a variety of environmental conditions: finfish vs. nonfinfish; flatfish vs. roundfish (including salmon, rockfish, sablefish, and dogfish). More difficult might be sablefish and lingcod vs. other roundfish, or rockfish vs. other roundfish, and perhaps most difficult would be some species of rockfish vs. others.

Total mortality under maximized retention would be similar to what is currently retained and discarded however for those species that have discard mortality rates applied (i.e. lingcod, sablefish, halibut, dogfish, and skates) the mortality rate may increase if those species are retained and landed. Table 2-1through Table 6-5 are provided from the 2013 WCGOP fishery bycatch report for the 2012 fisheries to show estimated discard and landed weights of all species for IFQ fisheries and whiting (hake). None of the ACLs were exceeded in 2012 and none are expected to be exceeded under the proposed action.

Table 6-1. Non-hake IFQ sectors and LE California halibut. Landings (mt), estimated discard (mt), and fishing mortality estimate (mt) of groundfish species from non-hake IFQ and limited entry California halibut fisheries in 2012. Discard ratios (Table 2) were multiplied by expansion factors to generate estimated discard, sampled discard was expanded to the haul level and summed by sector, and landings were summarized from PacFIN.

	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
Weight (mt)	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Rebuilding species																
Bocaccio rockfish (South of 40°10' N. lat.)	0.01	0.00	8.83	8.84	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Canary Rockfish	0.04	0.00	4.47	4.51	--	--	0.49	0.49	--	--	--	--	--	--	0.00	0.00
Cowcod rockfish (South of 40°10' N. lat.)	0.01	0.00	0.08	0.09	--	--	--	--	--	--	--	--	--	--	--	--
Darkblotched Rockfish	2.22	0.09	78.72	81.04	--	--	0.07	0.07	0.16	--	0.06	0.22	0.00	--	0.03	0.03
Pacific Ocean Perch (North of 40°10' N. lat.)	1.08	0.05	35.00	36.13	--	--	0.03	0.03	0.02	--	0.06	0.08	0.00	--	0.00	0.01
Petrale Sole	11.18	0.33	1018.98	1030.50	--	--	1.69	1.69	0.19	--	0.13	0.32	0.03	--	0.05	0.08
Yelloweye Rockfish	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Other groundfish species																
Arrowtooth Flounder	193.36	7.92	2155.87	2357.15	--	--	1.90	1.90	4.29	--	0.09	4.38	1.15	--	0.07	1.22
Black Rockfish (North of 46°16' N. lat.)	0.01	0.00	0.71	0.72	--	--	--	--	--	--	--	--	--	--	--	--
Black Rockfish (South of 46°16' N. lat.)	--	--	0.02	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Cabezon (Oregon)	0.08	0.00	--	0.08	--	--	--	--	--	--	--	--	--	--	--	--
Chilipepper Rockfish (South of 40°10' N. lat.)	52.95	0.42	234.77	288.14	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Dover Sole	75.00	1.87	6938.37	7015.24	--	--	4.17	4.17	0.17	--	0.25	0.41	1.13	--	2.15	3.28
English Sole	31.18	0.82	114.59	146.59	0.00	--	0.12	0.12	--	--	--	--	--	--	--	--
Lingcod (North of 42° N. lat.)	22.76	0.65	317.54	329.24	0.23	--	2.38	2.61	0.04	--	0.15	0.19	0.01	--	1.81	1.83
50% discard mortality (Trawl)‡	11.38	0.32														
Lingcod (South of 42° N. lat.)	6.48	0.09	16.35	19.63	--	--	--	--	--	--	--	--	--	--	0.32	0.32
50% discard mortality (Trawl)‡	3.24	0.05														
Longnose Skate	104.99	3.85	836.37	890.79	--	--	1.56	1.56	19.51	--	5.22	14.98	0.01	0.00	--	0.00
50% discard mortality (Trawl)‡	52.49	1.93														
50% discard mortality (Fixed Gear)‡									9.76				0.00	0.00		
Longspine Thornyhead (North of 34°27' N. lat.)	36.25	1.35	854.24	891.84	--	--	0.12	0.12	0.02	--	0.18	0.20	0.02	--	0.01	0.03
Longspine Thornyhead (South of 34°27' N. lat.)	--	--	0.40	0.40	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00
Minor nearshore rockfish (North of 40°10' N. lat.)																
Brown Rockfish	0.00	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Nearshore Rockfish Unid	0.00	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Quillback Rockfish	--	--	0.10	0.10	--	--	--	--	--	--	--	--	--	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)																
Bocaccio Rockfish	0.00	0.00	1.66	1.66	--	--	0.01	0.01	--	--	0.00	0.00	--	--	--	--
Chilipepper Rockfish	0.06	0.00	0.12	0.18	--	--	0.00	0.00	--	--	0.00	0.00	--	--	--	--
Cowcod Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Greenspotted Rockfish	0.00	0.00	0.08	0.08	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Greenstriped Rockfish	3.34	0.10	24.76	28.20	--	--	0.57	0.57	--	--	--	--	0.00	--	--	0.00
Halfbanded Rockfish	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Harlequin Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Pygmy Rockfish	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Redstripe Rockfish	0.04	0.00	0.66	0.71	--	--	0.00	0.00	0.00	--	--	0.00	--	--	--	--
Rosethorn Rockfish	0.70	0.03	2.35	3.09	--	--	0.00	0.00	0.04	--	0.05	0.08	0.00	--	0.00	0.01
Rosy Rockfish	0.06	0.00	--	0.07	--	--	--	--	--	--	--	--	--	--	--	--
Shelf Rockfish Unid	0.68	0.04	0.65	1.37	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00
Silvergray Rockfish	0.00	0.00	1.28	1.28	--	--	0.09	0.09	0.00	--	0.01	0.01	--	--	--	--
Squarespot Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Starry Rockfish	0.06	0.00	--	0.06	--	--	--	--	--	--	--	--	--	--	--	--
Stripetail Rockfish	1.42	0.04	0.06	1.53	--	--	--	--	--	--	--	--	--	--	--	--

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

Table 6-1. Non-hake IFQ sectors and LE California halibut (continued).

Weight (mt)	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Minor shelf rockfish (South of 40°10' N. lat.)																
Bronzespotted Rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Flag Rockfish	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Greenblotched Rockfish	--	--	0.03	0.03	--	--	--	--	--	--	--	--	--	--	--	--
Greenspotted Rockfish	0.16	0.00	0.24	0.41	--	--	--	--	--	--	--	--	--	--	--	--
Greenstriped Rockfish	1.08	0.01	0.08	1.17	--	--	--	--	--	--	--	--	--	--	--	--
Halfbanded Rockfish	0.02	0.00	--	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Mexican Rockfish	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Pink Rockfish	0.00	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Redstripe Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Rosethorn Rockfish	0.04	0.00	0.00	0.04	--	--	--	--	--	--	--	--	--	--	--	--
Rosy Rockfish	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Shelf Rockfish Unid	0.34	0.00	0.00	0.35	--	--	--	--	--	--	--	--	--	--	0.10	0.10
Speckled Rockfish	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Squarespot Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Stripetail Rockfish	10.98	0.06	0.29	11.32	--	--	--	--	--	--	--	--	--	--	--	--
Tiger Rockfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Vermilion Rockfish	0.00	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Yellowtail Rockfish	0.00	0.00	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Minor slope rockfish (North of 40°10' N. lat.)																
Aurora Rockfish	3.59	0.19	15.09	18.87	--	--	0.01	0.01	0.00	--	0.07	0.07	0.00	--	0.03	0.04
Bank Rockfish	0.00	0.00	0.27	0.28	--	--	--	--	--	--	--	--	0.00	--	--	0.00
Blackgill Rockfish	0.03	0.00	4.70	4.73	--	--	0.00	0.00	0.22	--	0.26	0.48	--	--	0.06	0.06
Blackspotted Rockfish	--	--	0.19	0.19	--	--	--	--	--	--	0.04	0.04	--	--	--	--
Redbanded Rockfish	0.54	0.03	5.33	5.90	--	--	0.00	0.00	0.17	--	0.54	0.71	0.03	--	0.03	0.06
Rougheye Rockfish	0.06	0.00	47.29	47.35	--	--	0.07	0.07	4.39	--	14.98	19.36	0.03	--	0.06	0.09
Sharpchin Rockfish	0.61	0.02	7.92	8.55	--	--	--	--	0.00	--	--	0.00	--	--	--	--
Shortraker Rockfish	0.01	0.00	12.65	12.66	--	--	0.04	0.04	1.02	--	0.23	1.26	0.02	--	--	0.02
Shortraker/Rougheye Rockfish	--	--	--	--	--	--	--	--	2.16	--	--	2.16	--	--	--	--
Slope Rockfish Unid	0.15	0.00	1.24	1.39	0.01	--	1.15	1.16	--	--	--	--	--	--	0.02	0.02
Splitnose Rockfish	5.43	0.21	7.05	12.69	--	--	0.00	0.00	0.01	--	0.01	0.02	--	--	--	--
Yellowmouth Rockfish	0.00	0.00	6.64	6.64	--	--	--	--	0.10	--	0.08	0.18	0.00	--	0.00	0.00
Minor slope rockfish (South of 40°10' N. lat.)																
Aurora Rockfish	3.47	0.00	20.91	24.38	--	--	--	--	--	--	0.00	0.00	0.02	--	0.17	0.19
Bank Rockfish	0.04	0.00	16.55	16.58	--	--	--	--	--	--	--	--	--	--	--	--
Blackgill Rockfish	0.12	0.00	72.98	73.11	--	--	--	--	0.00	--	0.76	0.76	0.23	--	5.04	5.28
Blackspotted Rockfish	--	--	0.05	0.05	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Ocean Perch	0.00	0.00	0.08	0.08	--	--	--	--	--	--	--	--	--	--	--	--
Redbanded Rockfish	0.07	0.00	0.62	0.70	--	--	--	--	--	--	--	--	--	--	--	--
Rougheye Rockfish	--	--	0.24	0.24	--	--	--	--	--	--	--	--	--	--	--	--
Sharpchin Rockfish	0.25	0.00	--	0.25	--	--	--	--	--	--	--	--	--	--	--	--
Shortraker Rockfish	0.00	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Slope Rockfish Unid	0.01	0.00	0.98	1.64	--	--	--	--	--	--	--	--	--	--	0.04	0.04
Yellowmouth Rockfish	--	--	0.05	0.05	--	--	--	--	--	--	--	--	--	--	--	--
Mixed thornyheads																
Shortspine/Longspine Thornyhead	1.58	0.06	--	1.64	--	--	--	--	--	--	--	--	0.00	--	--	0.00

Table 6-1. Non Hake IFQ sectors and LE California halibut (continued).

	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Other flatfish Weight (mt)																
Butter Sole	1.68	0.06	0.48	2.22	--	--	--	--	--	--	--	--	--	--	--	--
Curlfin Turbot	0.50	0.00	0.43	0.94	--	--	--	--	--	--	--	--	--	--	--	--
Flatfish Unid	0.01	0.00	2.06	2.06	--	--	--	--	--	--	--	--	--	--	--	--
Flathead Sole	2.72	0.09	4.52	7.33	--	--	0.01	0.01	--	--	--	--	--	--	--	--
Pacific Sanddab	68.95	1.78	144.69	215.41	0.00	--	0.01	0.01	--	--	--	--	--	--	--	--
Rex Sole	25.44	0.80	348.17	374.40	--	--	1.15	1.15	--	--	--	--	0.01	--	0.00	0.01
Rock Sole	0.24	0.01	4.73	4.97	--	--	0.00	0.00	--	--	--	--	--	--	--	--
Roughscale Sole	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Sanddab Unid	1.32	0.01	2.14	3.47	--	--	--	--	--	--	--	--	--	--	--	--
Sand Sole	0.73	0.02	69.95	70.70	--	--	--	--	--	--	--	--	--	--	--	--
Other groundfish																
Big Skate	39.59	1.50	6.60	47.69	0.00	--	--	0.00	0.03	--	--	0.03	--	--	--	--
California Skate	0.89	0.04	1.17	2.11	--	--	--	--	--	--	--	--	--	--	--	--
Cod Unid	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Grenadier Unid	--	--	70.21	70.21	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Groundfish Unid	--	--	0.04	0.04	--	--	--	--	--	--	--	--	--	--	--	--
Kelp Greenling	0.08	0.00	0.06	0.15	--	--	--	--	--	--	--	--	--	--	--	--
Leopard Shark	0.26	0.00	--	0.26	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Flatnose	1.56	0.04	--	1.60	--	--	--	--	0.08	--	--	0.08	0.07	0.00	--	0.07
Pacific Grenadier	36.00	0.85	14.32	51.17	--	--	--	--	2.70	--	--	2.70	2.00	0.00	--	2.00
Ray Unid	0.01	0.00	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Roundfish Unid	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Skate Unid	2.10	0.07	228.69	230.85	--	--	0.12	0.12	--	--	0.02	0.02	0.00	--	--	0.00
Soupfin Shark	0.52	0.02	0.08	0.62	--	--	--	--	--	--	--	--	--	--	--	--
Spotted Ratfish	75.39	2.99	0.61	78.99	0.16	--	0.04	0.21	0.12	--	--	0.12	0.01	0.00	--	0.01
Pacific Cod	0.68	0.02	394.96	395.66	--	--	0.21	0.21	--	--	--	--	--	--	--	--
Pacific Hake	222.62	7.87	18.45	248.94	--	--	0.68	0.68	0.00	--	--	0.00	0.00	--	--	0.00
Sablefish (North of 36° N. lat.)	7.54	0.17	1402.18	1406.04	--	--	1.62	1.62	8.56	--	203.35	205.06	10.42	--	519.63	521.72
50% discard mortality (Trawl)‡	3.77	0.09														
20% discard mortality (Fixed Gear)‡									1.71				2.08			
Sablefish (South of 36° N. lat.)	0.00	--	22.67	22.68	--	--	--	--	0.04	--	1.93	1.94	1.87	--	197.65	198.02
50% discard mortality (Trawl)‡	0.00															
20% discard mortality (Fixed Gear)‡									0.01				0.37			
Shortbelly Rockfish	5.18	0.26	0.04	5.48	--	--	--	--	--	--	--	--	--	--	--	--
Shortspine Thornyhead (North of 34°27' N. lat.)	5.38	0.23	681.32	686.92	--	--	1.12	1.12	0.58	--	11.36	11.94	0.33	--	0.86	1.19
Shortspine Thornyhead (South of 34°27' N. lat.)	--	--	0.59	0.59	--	--	--	--	--	--	--	--	0.03	--	0.33	0.36
Spiny Dogfish	276.65	11.54	51.85	340.04	0.00	--	0.21	0.21	57.50	--	--	28.75	0.11	0.00	--	0.05
50% discard mortality (Fixed Gear)‡									28.75				0.05	0.00		
Splitnose rockfish (South of 40°10' N. lat.)	40.28	0.11	19.48	59.87	--	--	--	--	--	--	--	--	--	--	--	--
Starry Flounder	0.28	0.01	8.05	8.34	--	--	--	--	--	--	--	--	--	--	--	--
Widow Rockfish	0.01	0.00	34.26	34.27	--	--	10.88	10.88	--	--	--	--	--	--	--	--
Yellowtail rockfish (North of 40°10' N. lat.)	0.21	0.01	389.23	389.45	0.00	--	185.62	185.62	0.01	--	--	0.01	--	--	--	--

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

Table 6-1. Non-hake IFQ sectors and LE California halibut (continued).

Weight (mt)	IFQ - Bottom and LE CHLB Trawl				IFQ - Midwater Trawl				IFQ - Hook-and-Line				IFQ - Pot			
	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Expanded Discard	Landed	Estimate
Non-groundfish species																
California Halibut	0.01	0.00	18.78	18.78	--	--	--	--	--	--	--	--	--	--	--	--
Dungeness Crab	188.31	8.09	0.04	196.44	0.07	--	--	0.07	--	--	--	--	0.56	0.00	--	0.56
Non-FMP flatfish																
Deepsea Sole	14.24	0.35	1.70	16.29	--	--	--	--	--	--	--	--	0.02	0.00	--	0.02
Diamond Turbot	0.11	0.01	--	0.11	--	--	--	--	--	--	--	--	--	--	--	--
Hornyhead Turbot	0.02	0.00	--	0.02	--	--	--	--	--	--	--	--	--	--	--	--
Slender Sole	35.57	1.48	0.17	37.22	--	--	--	--	--	--	--	--	--	--	--	--
Speckled Sanddab	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Non-FMP skate																
Aleutian Skate	2.20	0.11	--	2.31	--	--	--	--	0.03	--	--	0.03	--	--	--	--
Bering Skate	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Black Skate	17.92	0.49	0.01	18.42	--	--	--	--	1.01	--	--	1.01	0.00	0.00	--	0.00
Deepsea Skate	0.32	0.01	--	0.33	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Electric Ray	1.07	0.03	--	1.10	--	--	--	--	--	--	--	--	--	--	--	--
Sandpaper Skate	38.13	1.54	0.04	39.71	0.01	--	--	0.01	0.18	--	--	0.18	0.00	--	--	0.00
Shovelnose Guitarfish	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
Starry Skate	0.12	0.01	--	0.12	--	--	--	--	--	--	--	--	--	--	--	--
Thornback Skate	0.00	0.00	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--
White Skate	0.42	0.01	--	0.43	--	--	--	--	--	--	--	--	--	--	--	--

Table 6-2. Hake IFQ/Coop sectors. Retained catch/landings (mt), discard (mt), and fishing mortality estimates (mt) of groundfish species from hake IFQ/Coop sectors in 2012. In shoreside hake, discard ratios (Table 2) were multiplied by expansion factors to generate estimated discard, sampled discard was expanded to the haul level and summed by sector, and landings were summarized from PacFIN. At-sea hake Coop Program data was summarized from the A-SHOP.

	IFQ - Shoreside Hake				At-sea Catcher-Processors			At-sea Mothership		
Weight (mt)	Sampled Discard	Expanded Discard	Landed	Estimate	Sampled Discard	Retained	Estimate	Sampled Discard	Retained	Estimate
Rebuilding species										
Canary Rockfish	0.00	--	2.14	2.14	0.14	0.13	0.27	0.13	0.02	0.15
Darkblotched Rockfish	0.03	--	4.30	4.33	0.43	1.01	1.44	0.70	0.56	1.26
Pacific Ocean Perch (North of 40°10' N. lat.)	0.03	--	12.33	12.36	1.85	1.30	3.16	0.34	1.03	1.37
Petrale Sole	--	--	0.00	0.00	--	--	--	--	--	--
Other groundfish species										
Arrowtooth Flounder	--	--	24.82	24.82	1.06	1.49	2.55	0.89	1.19	2.09
Dover Sole	--	--	0.60	0.60	0.09	0.20	0.29	0.02	0.01	0.03
English Sole	--	--	0.02	0.02	0.00	0.01	0.01	0.00	--	0.00
Lingcod (North of 42° N. lat.)	--	--	3.74	3.74	--	0.01	0.01	0.07	0.10	0.17
Longnose Skate	--	--	0.24	0.24	0.03	--	0.03	0.03	--	0.03
Longspine Thornyhead (North of 34°27' N. lat.)	--	--	0.05	0.05	0.00	--	0.00	--	--	--
Minor shelf rockfish (North of 40°10' N. lat.)										
Bocaccio Rockfish	--	--	0.13	0.13	0.03	0.04	0.08	0.03	0.01	0.04
Chilipepper Rockfish	--	--	0.01	0.01	--	0.01	0.01	0.00	0.00	0.01
Greenspotted Rockfish	--	--	0.00	0.00	--	--	--	--	--	--
Greenstriped Rockfish	--	--	0.05	0.05	--	--	--	--	--	--
Harlequin Rockfish	--	--	--	--	--	0.00	0.00	--	--	--
Redstripe Rockfish	--	--	0.04	0.04	0.00	0.03	0.03	0.02	0.01	0.03
Rosethorn Rockfish	--	--	0.00	0.00	--	0.00	0.00	--	--	--
Shelf Rockfish Unid	--	--	0.01	0.01	--	0.00	0.00	--	--	--
Silvergray Rockfish	--	--	0.57	0.57	0.23	0.43	0.65	0.05	0.07	0.13
Stripetail Rockfish	--	--	--	--	--	--	--	0.00	--	0.00
Minor slope rockfish (North of 40°10' N. lat.)										
Aurora Rockfish	--	--	0.46	0.46	0.00	0.00	0.01	0.01	--	0.01
Bank Rockfish	--	--	--	--	0.00	0.01	0.01	--	0.01	0.01
Blackgill Rockfish	--	--	0.23	0.23	0.01	0.01	0.03	--	0.00	0.00
Redbanded Rockfish	--	--	0.83	0.83	0.00	0.00	0.00	0.00	--	0.00
Rougheye Rockfish	0.01	--	47.07	47.08	22.85	19.59	42.44	1.30	10.29	11.59
Sharpchin Rockfish	--	--	0.66	0.66	--	--	--	0.00	0.00	0.00
Shortraker Rockfish	--	--	5.63	5.63	0.07	0.60	0.68	--	0.01	0.01
Shortraker/Rougheye Rockfish	--	--	--	--	0.00	--	0.00	--	--	--
Slope Rockfish Unid	--	--	0.09	0.09	0.00	--	0.00	--	--	--
Splitnose Rockfish	0.23	--	16.21	16.44	0.47	9.23	9.70	2.85	7.93	10.78
Yellowmouth Rockfish	--	--	0.52	0.52	0.20	0.01	0.21	--	0.04	0.04
Other flatfish										
Flatfish Unid	--	--	0.00	0.00	--	0.00	0.00	0.00	0.00	0.01
Rex Sole	--	--	4.39	4.39	0.59	2.03	2.62	0.15	0.14	0.29
Rock Sole	--	--	0.00	0.00	--	--	--	--	--	--
Other groundfish										
Big Skate	--	--	--	--	0.09	--	0.09	0.01	--	0.01
Grenadier Unid	--	--	0.01	0.01	--	0.00	0.00	0.01	--	0.01
Groundfish Unid	--	--	1.36	1.36	--	--	--	--	--	--
Pacific Electric Ray	--	--	--	--	0.03	--	0.03	0.03	--	0.03
Roundfish Unid	--	--	--	--	0.05	0.00	0.05	0.00	--	0.00
Skate Unid	--	--	0.07	0.07	0.00	--	0.00	--	--	--
Soupfin Shark	0.13	0.01	0.51	0.64	--	0.02	0.02	0.07	--	0.07
Spotted Ratfish	--	--	0.00	0.00	--	--	--	--	--	--
Pacific Cod	--	--	0.04	0.04	0.01	0.00	0.02	0.01	--	0.01
Pacific Hake	127.92	--	65288.38	65416.31	145.51	55549.05	55694.56	155.20	38060.27	38215.47
Sablefish (North of 36° N. lat.)	--	--	47.21	47.21	0.12	4.11	4.23	0.61	0.27	0.88
Shortbelly Rockfish	--	--	0.08	0.08	0.00	0.02	0.02	0.17	0.10	0.27
Shortspine Thornyhead (North of 34°27' N. lat.)	--	--	8.32	8.32	0.87	0.36	1.23	0.35	0.16	0.51
Spiny Dogfish	0.44	0.02	159.64	160.10	110.15	38.19	148.34	22.56	6.90	29.46
Widow Rockfish	0.05	--	107.36	107.41	15.05	26.94	42.00	26.20	11.14	37.34
Yellowtail rockfish (North of 40°10' N. lat.)	0.03	--	388.21	388.24	25.35	6.65	32.00	6.25	4.75	11.00
Non-groundfish species										
Dungeness Crab	0.00	0.00	0.00	0.00	--	--	--	--	--	--
Non-FMP flatfish										
Slender Sole	--	--	--	--	--	0.00	0.00	0.02	0.02	0.02

Table 6-3.Estimated fishing mortality (mt) of major west coast groundfish species in 2012 and corresponding management reference points (harvest specifications). Values which are 90% or greater relative to a management reference point are highlighted.

	Estimated fishing mortality (mt)	Management reference points (harvest specifications)					
		ACL (mt)	Estimated mortality (% of ACL)	ABC (mt)	mortality (% of ABC)	OFL (mt)	Estimated mortality (% of OFL)
Rebuilding species							
Bocaccio (South of 40°10' N. lat.)	**140**	274	51%	700	20%	732	19%
Canary rockfish	**45**	107	42%	594	8%	622	7%
Cowcod (South of 40°10' N. lat.)	**1**	3	38%	10	11%	13	9%
Darkblotched rockfish	**105**	296	35%	475	22%	497	21%
Pacific ocean perch (North of 40°10' N. lat.)	**56**	183	30%	962	6%	1007	6%
Petrale sole	**1111**	1160	96%	1222	91%	1279	87%
Yelloweye rockfish	**12**	17	68%	46	25%	48	24%
Non-rebuilding species							
Arrowtooth flounder	**2508**	12049	21%	12049	21%	14460	17%
Black rockfish (North of 46°16' N. lat.)	**249**	415	60%	415	60%	435	57%
Black rockfish (South of 46°16' N. lat.)	**563**	1000	56%	1117	50%	1169	48%
Cabezon (California)	**74**	168	44%	168	44%	176	42%
Cabezon (Oregon)	**47**	48	98%	48	98%	50	94%
California scorpionfish (South of 34°27' N. lat.)	**120**	126	95%	126	95%	132	91%
Chilipepper rockfish (South of 40°10' N. lat.)	**302**	1789	17%	1789	17%	1872	16%
Dover sole	**7175**	25000	29%	42843	17%	44826	16%
English sole	**224**	10150	2%	10150	2%	10620	2%
Lingcod (North of 42° N. lat.)	**731**	2151	34%	2151	34%	2251	32%
Lingcod (South of 42° N. lat.)	**337**	2164	16%	2164	16%	2597	13%
Longnose Skate	**991**	1349	73%	2873	34%	3006	33%
Other flatfish	**897**	4884	18%	7044	13%	10146	9%
Other groundfish[1]	**1655**	5575	30%	7742	21%	11150	15%
Minor rockfish (North of 40°10' N. lat.)	**640**	2227	29%	3414	19%	3820	17%
Nearshore	**96**	99	97%	99	97%	116	83%
Shelf	**90**	968	9%	1948	5%	2197	4%
Slope	**453**	1160	39%	1367	33%	1507	30%
Minor rockfish (South of 40°10' N. lat.)	**1104**	2341	47%	3712	30%	4291	26%
Nearshore	**445**	990	45%	990	45%	1145	39%
Shelf	**402**	714	56%	1890	21%	2243	18%
Slope	**257**	626	41%	832	31%	903	28%
Pacific cod (North of 43° N. lat.)	**634**	1600	40%	2222	29%	3200	20%
Pacific hake	**160706**	2012 US TAC = 186037 mt, % of US TAC = 86%					
Sablefish (North of 36° N. lat.)	**4701**	5347	88%	8242	66%	8623	63%
Sablefish (South of 36° N. lat.)	**705**	1258	56%				
Shortbelly rockfish	**7**	50	15%	5789	0%	6950	0%
Splitnose rockfish (South of 40°10' N. lat.)	**62**	1538	4%	1538	4%	1610	4%
Starry flounder	**17**	1360	1%	1511	1%	1813	1%
Thornyheads							
Longspine thornyhead (North of 34°27' N. lat.)	**912**	2064	44%	2902	32%	3483	27%
Longspine thornyhead (South of 34°27' N. lat.)	**18**	366	5%				
Shortspine thornyhead (North of 34°27' N. lat.)	**801**	1556	52%	2254	41%	2358	39%
Shortspine thornyhead (South of 34°27' N. lat.)	**128**	401	32%				
Mixed thornyheads	**2**						
Widow rockfish	**278**	600	46%	4705	6%	4923	6%
Yellowtail rockfish (North of 40°10' N. lat.)	**1570**	4371	36%	4371	36%	4573	34%

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

Ultimately, the quality of the camera images will determine the degree of biological risk entailed with any of the discard options.

Options Allowing the Discard of Non-catch Share Species

Under any of the options, if there is a permissible discard that video reviewers cannot distinguish from a catch share species, then the best available data would be used for the discard estimation. It may be either the logbook or an observer that is present for scientific data collection.

Socio-Economic Impacts

There are costs associated with retaining unwanted fish, therefore the more discretion that can be given to the fishermen to discard, the lower those costs will be. Some of the costs may have to do with reduced product quality. For example, some species, such as dogfish cannot be held in contact with other species without causing a decrease in produce quality for those other species but their are a limited number of sorting bins on a vessel, therefore flexibility in the use of those bins may decline.

Costs to the vessel and shoreside facilities may include:

- reduced hold capacity available for marketable fish
- cost of icing unmarketable fish
- labor to handle unmarketable fish on the vessel and dockside
- bottlenecks in offloading if plant space and materials (e.g. loading bins) become plugged with unmarketable fish waiting for disposal
- additional time for shoreside monitor to verify weights of fish before their disposal
- additional trucking costs and costs for disposal of waste

(List based on communication from Alexa Fredston-Hermann, EDF, May 30, 2014).

Allowing more discards would reduce these costs but increase video review costs and may, depending on the quality of video images, increase risk of errors in discard estimates.

A-2.6 Halibut Retention/Discard with Fishery Specific Options

Component	Alt 1 No Action	Alt 2 Camera Recordings Used to Estimate Discard	Alt 3 Logbooks Used to Estimate Discard, with Camera Audits
Halibut Retention/Discard with Fishery Specific Options	Use WCGOP and IPHC protocols	**Option A**: Apply IPHC mortality rate for specific gear type: MDWT Whiting 100% mortality; MDWT non-whiting and BTW 90% mortality if discarded; Fixed gear longline 16% mortality if discarded; Fixed gear pot 18% mortality if discarded. **Option B**: WCGOP scientific observations (assumed 20-30% coverage) is applied to fleet **Option C**: IPHC exemption to allow full retention (need to examine the feasibility of this option for fisheries other than MDWT whiting) **Option D**: Captain and crew provide assessment (training would be required) **Option E**: Use EM viability assessment (currently conducting study, need IPHC approval) **Option F**: Use vessel specific mortality rate (update rates periodically)	

Rationale

Options A, B, C, and F provide different sources for a default rate that would apply across the fleet for an entire year. Option D and E provide methods for developing a viability rate that would be specific to each event.

Physical and Biological Impacts

Table 6-4 The following tables are form the WCGOP 2002 to 2012 Pacific halibut bycatch report. This illustrates the potential total mortality that may be realized by each fishery if maximized retention and no discard was allowed under Option C. Under Option A the appropriate gear specific discard rate would be applied to the total amount of discard documented either by video review (Alternative 2) or in logbooks (Alternative 3).

Table 6-5. Estimated gross discard (mt) and discard mortality (mt) of Pacific halibut in IFQ fishery by gear type, depth, area, and year. DMR = Discard Mortality Rate. (*) Confidential data, (--) not applicable.

Bottom Trawl									
Area / Depth (fm)	**Estimate Gross Discard (mt)**				**Estimated Discard Mortality (mt)**				**DMR**
Year	Exc	Poor	Dead	Total	m(Exc)	m(Poor)	m(Dead)	m(Total)	
North of Pt. Chehalis									
0-60									
2011	4.48	1.11	2.23	7.82	0.90	0.61	2.00	3.51	45%
2012	2.20	0.97	1.62	4.80	0.44	0.54	1.46	2.44	51%
> 60									
2011	10.61	4.14	7.95	22.70	2.12	2.28	7.15	11.55	51%
2012	16.58	8.56	15.96	41.10	3.32	4.71	14.36	22.39	54%
40° 10' to Pt. Chehalis									
0-60									
2011	8.90	1.06	1.13	11.09	1.78	0.58	1.02	3.38	30%
2012	5.34	1.10	1.45	7.89	1.07	0.60	1.31	2.98	38%
> 60									
2011	8.46	4.56	9.52	22.53	1.69	2.51	8.56	12.76	57%
2012	7.33	3.54	9.47	20.34	1.47	1.95	8.52	11.94	59%
South of 40° 10' N Lat									
0-60									
2011	0.00	0.00	0.17	0.17	0.00	0.00	0.15	0.15	90%
2012	*	*	*	*	*	*	*	*	*
> 60									
2011	0.08	0.01	0.08	0.16	0.02	0.01	0.07	0.09	54%
2012	0.41	0.08	0.35	0.84	0.08	0.04	0.32	0.44	52%
LE California Halibut									
South of 40° 10' N Lat									
2011	--	--	--	0.00	--	--	--	0.00	0%
2012	*	*	*	*	*	*	*	*	*

Table 6-6 (Continued). Estimated gross discard (mt) and discard mortality (mt) of Pacific halibut in IFQ fishery by gear type, depth, area, and year. DMR = Discard Mortality Rate. (*) Confidential data, (--) not applicable.

Midwater Trawl

Area	Estimate Gross Discard (mt)				Estimated Discard Mortality (mt)				DMR
Year	Exc	Poor	Dead	Total	m(Exc)	m(Poor)	m(Dead)	m(Total)	
Non-Hake Shoreside									
North of 40° 10' N Lat									
2011	*	*	*	*	*	*	*	*	*
2012	0.04	0.00	0.01	0.05	--	--	--	0.05	100%
Shoreside Hake									
North of 40° 10' N Lat									
2011	0.00	0.01	0.01	0.03	--	--	--	0.03	100%
2012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0%

Hook-and-Line

Area	Estimate Gross Discard (mt)				Estimated Discard Mortality (mt)				DMR
Year	Exc	Poor	Dead	Total	m(Exc)	m(Poor)	m(Dead)	m(Total)	
North of Pt. Chehalis									
2011	--	--	--	6.06	--	--	--	0.97	16%
2012	--	--	--	14.66	--	--	--	2.34	16%
40° 10' to Pt. Chehalis									
2011	--	--	--	0.00	--	--	--	0.00	0%
2012	*	*	*	*	*	*	*	*	*

Pot

Area	Estimate Gross Discard (mt)				Estimated Discard Mortality (mt)				DMR
Year	Exc	Poor	Dead	Total	m(Exc)	m(Poor)	m(Dead)	m(Total)	
North of Pt. Chehalis									
2011	0.86	0.02	0.15	1.03	0.00	0.02	0.15	0.17	16%
2012	0.84	0.21	0.21	1.27	0.00	0.21	0.21	0.43	34%
40° 10' to Pt. Chehalis									
2011	1.59	0.11	0.61	2.31	0.00	0.11	0.61	0.71	31%
2012	0.54	0.05	0.03	0.62	0.00	0.05	0.03	0.08	13%
South of 40° 10' N Lat									
2011	--	--	--	0.00	--	--	--	0.00	0%
2012	--	--	--	0.00	--	--	--	0.00	0%

Socio-Economic Impacts

A-2.7 Discard Species List Adjustments

Component	Alt 1 No Action	Alt 2 Camera Recordings Used to Estimate Discard	Alt 3 Logbooks Used to Estimate Discard, with Camera Audits
Discard Species List Adjustments	None	**Options for a process to expand or change the species lists:** **Option 1**: NMFS to make determination and provide list to fishers through the NMFS EM Observer Exemption Process. **Option 2**: Use Council process for changing species list using routine management measures if initial list is fully analyzed for environmental impacts (e.g., use groundfish specification process, or some other routine management measure). **Option 3**: Set initial lists in regulation and change at some future point through Council process with proposed/final rule making.	

Rationale

Under the camera based alternatives (Alternative 2 and 3), the list of discard species is likely to depend on whether or not the camera technology can be used to measure and identify a particular catch share species if it is discarded. Technology continues to evolve rapidly. These options provide different degrees of regulatory flexibility and public participation opportunities in responding to technological changes.

Physical and Biological Impacts

Socio-Economic Impacts

A-2.8 Vessel Operation Provisions

A-2.8.1 Observer Exemption Process

Component	Alt 1 No Action	Alt 2 Camera Recordings Used to Estimate Discard	Alt 3 Logbooks Used to Estimate Discard, with Camera Audits
Observer Exemption Process	None	NMFS to Develop Application and Approval Process	

Rationale

If camera coverage for noncompliant fishermen is less effective than observer coverage for noncompliant fishermen then the catch share program will function most effectively if noncompliant fishermen can be moved out of the camera pool. There are two approaches which might be used to allow vessels to fish with cameras instead of observers. Under standard approach, the regulations would specify that a vessel must use either an observer or a camera and an approved application would be required for the use of a camera. Under an observer exemption approach, the regulations would require vessels carry observers but a vessel in good standing would be allowed to apply for an exemption. The exemption for a vessel in good standing would be granted if it agrees to use a camera and meet the related requirements. Under the standard approach, noncompliant vessels would be met with the citations and court processes but would be allowed to continue to use a camera. Under the standard approach, there would be no easy way to move a noncompliant fisherman out of the group using cameras. Under the exemption approach, risk of noncompliance would be reduced with the camera requirements, in that vessels which showed noncompliant behaviour would lose their exemption from the "carry observer" requirement. For example, to be in good standing and receive an exemption from the carry observer requirement, a vessel might be required to be in full compliance with the at-sea monitoring provisions for the last X years. Therefore, at the inception of the camera program, any vessel that had failed to carry an observer within that time period, or interfered with observer duties, would not be eligible to use cameras and receive an exemption from observer coverage.

Leaves to NMFS to develop during drafting of rules.
Council will deem.
NMFS will have to develop approval process and criteria.

Physical and Biological Impacts

Socio-Economic Impacts

Agenda Item J3 - Reference Materials

- J3a Att1: Draft Analysis of an Electronic Monitoring Program for the Pacific Coast Limited Entry Trawl Groundfish Fishery Catch Shares Program
  (***Full Version Electronic Only***).

- J3b NMFS Report: Net Revenue Analysis for Electronic Monitoring on the West Coast
  (***Electronic Only***).

- Supplemental Reports: NMFS, GEMPAC, GMT, GAP, EC

- Supplemental Public Comment

Overview

- Draft Analysis of Alternatives
- Advisory body statements
- Public Comment
- Council Action

Council Action

- **Consider Taking Final Action on Alternatives and Options for Electronic Monitoring Regulations in the:**
  - **Groundfish Whiting Fishery Sector,**
  - **Applicable Groundfish Fixed Gear Sector,**
  - **Groundfish Bottom Trawl and Non-whiting Midwater Trawl Sector.**

- **Provide Direction on Next Steps for Groundfish Sectors where Final Action is Not Taken.**

Draft EM Program Analysis J.3.a, Attachment 1

Table 2-10, GEMPAC Statement

Alternatives/Option Choices for Fixed Gear Fishery (longline and pot)

Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates)

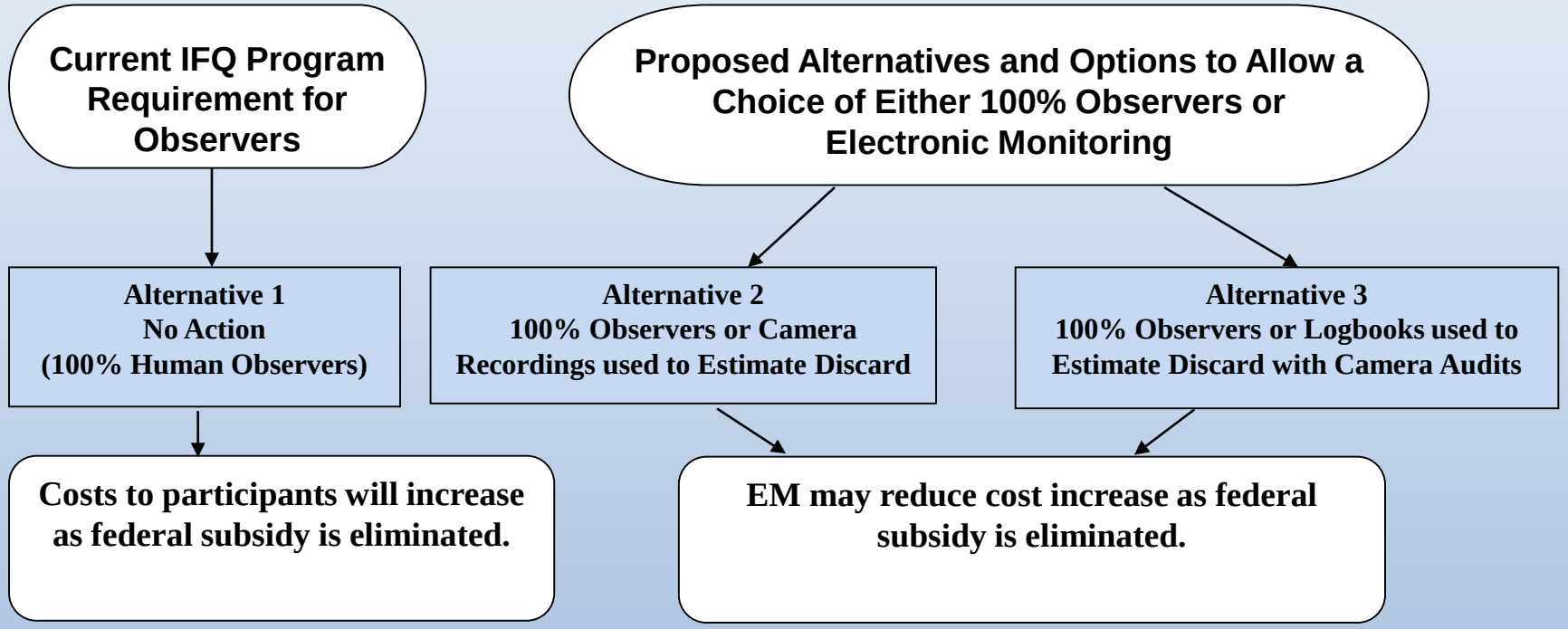
Alternative 1: No Action – Human Observers Estimate Discards

Alternative 2. Camera Recordings Use to Estimate Discards

Alternative 3. Logbooks used to Estimate Discard with Logbook Audits

Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows				
EM Component	**Options for Each EM Component Category**			
2.2.1.1 Video Reading Protocol (% review)	A. 100% (Alt 2 only)	B. X% (Alt 2 Only)	C. X% (Alt 2 Only) plus logbook review	Select % Logbook Audit (Alt 3 Only)
2.2.2 Discard Accounting - Individual or Fleetwide	A. One Discard Category, Full Accounting for All Discards a/	B. Two Discard Categories, Sector or ACL Deduction for Category 2 Discards b/	C. Two Discard Categories, No Accounting for Category 2 Discards b/	
2.2.4 Retention Requirements	A. Maximize	B. Optimize		

General Overview of Alternatives and Decision Process, pg. 5



General Overview of Alternatives and Decision Process

Alternative 1
No Action
(100% Human Observers)

No Cameras or Video Review

Alternative 2
100% Observers or Camera Recordings used to Estimate Discard

Level of video review to estimate discard:

Option A: 100%
Option B: Less than 100%, or
Option C: Less than 100% with mandatory logbook back-up review.

Alternative 3
100% Observers or Logbooks used to Estimate Discard with Camera Audits

Level of video audit to confirm logbook events:

Random review of fishing events documented in logbook at a predetermined level (e.g., 10%). Intensity of additional random review may increase based on vessel's compliance history.

General Overview of Alternatives and Decision Process

Alternative 1
No Action
(100% Human Observers)

All discard counts against IFQ

Alternative 2
100% Observers or Camera Recordings used to Estimate Discard

Alternative 3
100% Observers or Logbooks used to Estimate Discard with Camera Audits

Determine Discard Accounting—Individual or Fleetwide

Option A	**Option B**	**Option C**
All counts against IFQ	Category 1 counts against IFQ Category 2 counts against sector/ACL	Category 1 counts against IFQ Category 2 is unaccounted

OPTION B & C

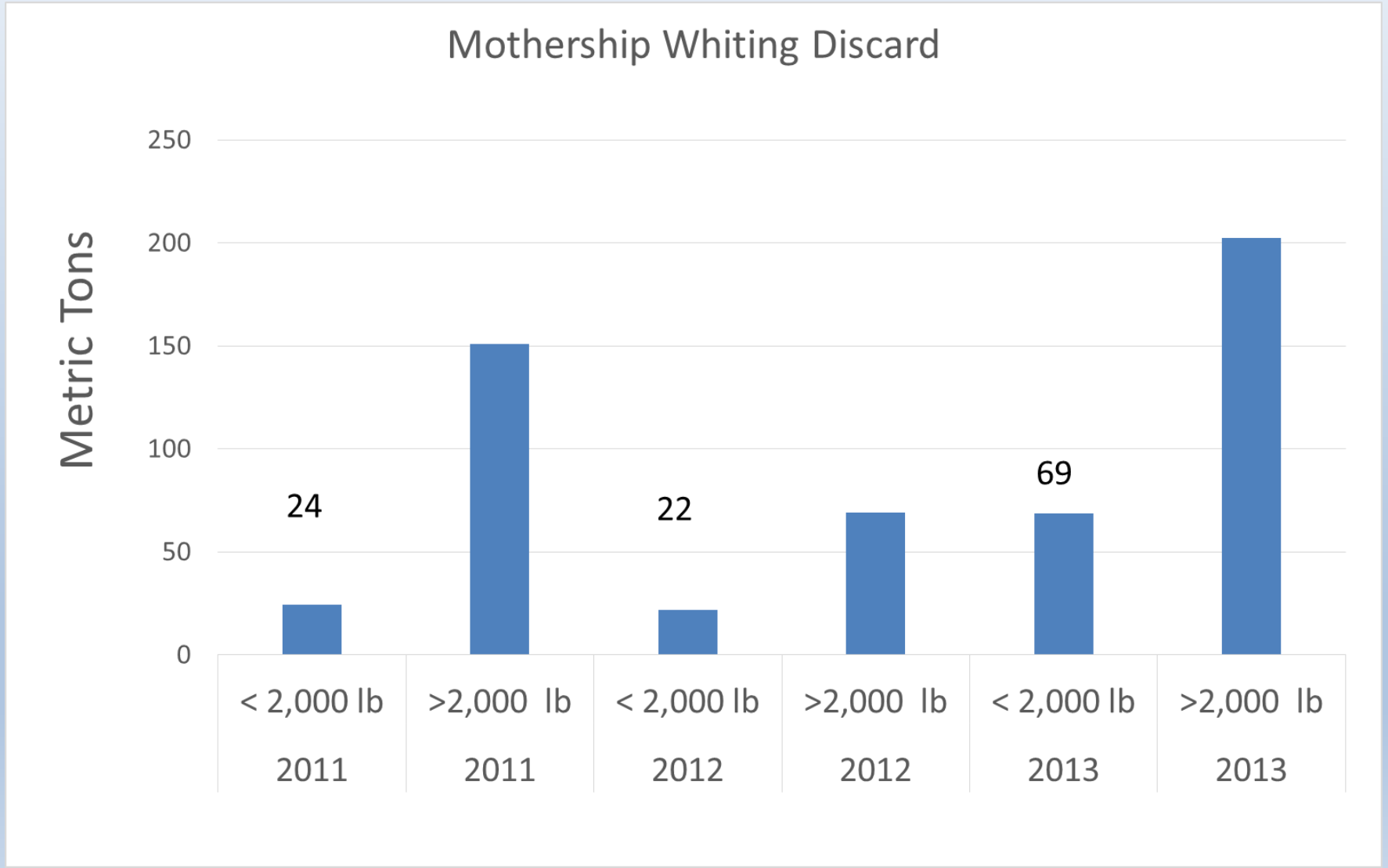
Discard Category 1 (IFQ Accounting):

- Dumped off deck (e.g., shoveled, picked out of net)
- Washed out of net/Dumped for safety reasons (bleeding, pull zipper, etc.).
- Unobserved sets/hauls

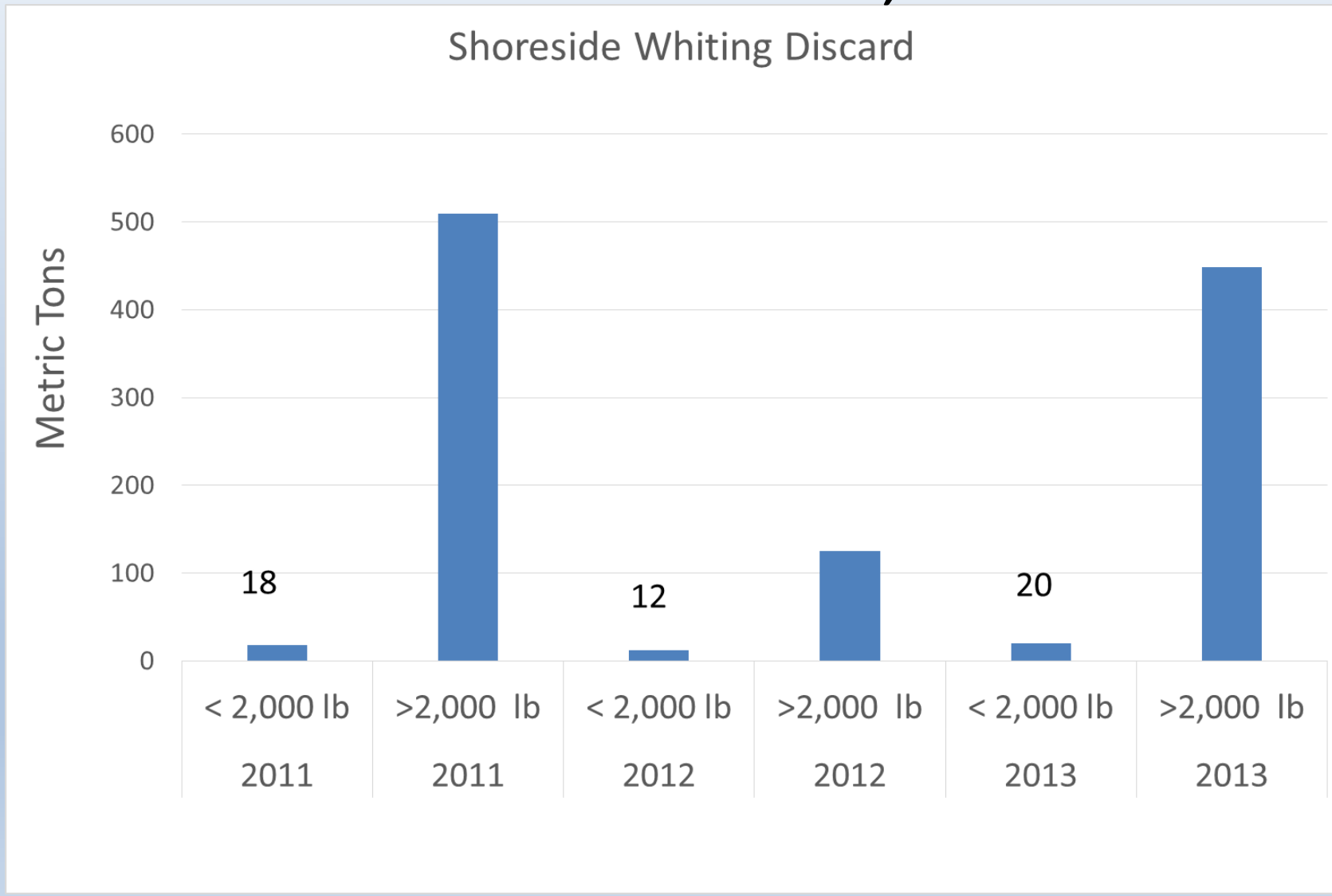
Discard Category 2 :

- Dropped off gear
- Floating fish
- Lost gear
- Consumed/used as bait

Total Mothership Discards Events Below and Above 2,000 lb



Shoreside Discards Events Above and Below 2,000 lb



General Overview of Alternatives and Decision Process

SUB-Options for Optimize retention (Option B)	Options				
Species Categories	a	b	c	d	e
Groundfish					
Catch Share Species					
Flatfish	Discard				
Lingcod and Sablefish		Discard			
Non-Rockfish			Discard		
Any Species Verifiable With EM				Discard	
Non Catch Share Species					
Non-Rockfish			Discard		
Any Species Verifiable With EM				Discard	
Non-groundfish					
Any Species Verifiable With EM				Discard	
All non-groundfish species					Discard

For midwater trawl whiting	***For bottom trawl and non-whiting midwater trawl gear or fixed gear***
Option A: Use IPHC mortality rate for specific gear type: 100% mortality.	**Option A:** Use IPHC mortality rate for specific gear type: BTW & Non-whiting: 90% mortality if discarded; Fixed: 16% mortality if discarded from longline; 18% mortality rate if discarded from pots.
	Option B: WCGOP scientific observations (assumed 20-30% coverage) is applied to fleet
	Option C: IPHC exemption to allow full retention
	Option D: Captain and crew provide viability assessment and length
	Option E: Use an appropriate EM viability assessment
	Option F: Use vessel specific mortality rate (update rates periodically through application of third-party observer rates on non-EM vessels or through WCGOP random observations of EM vessels)

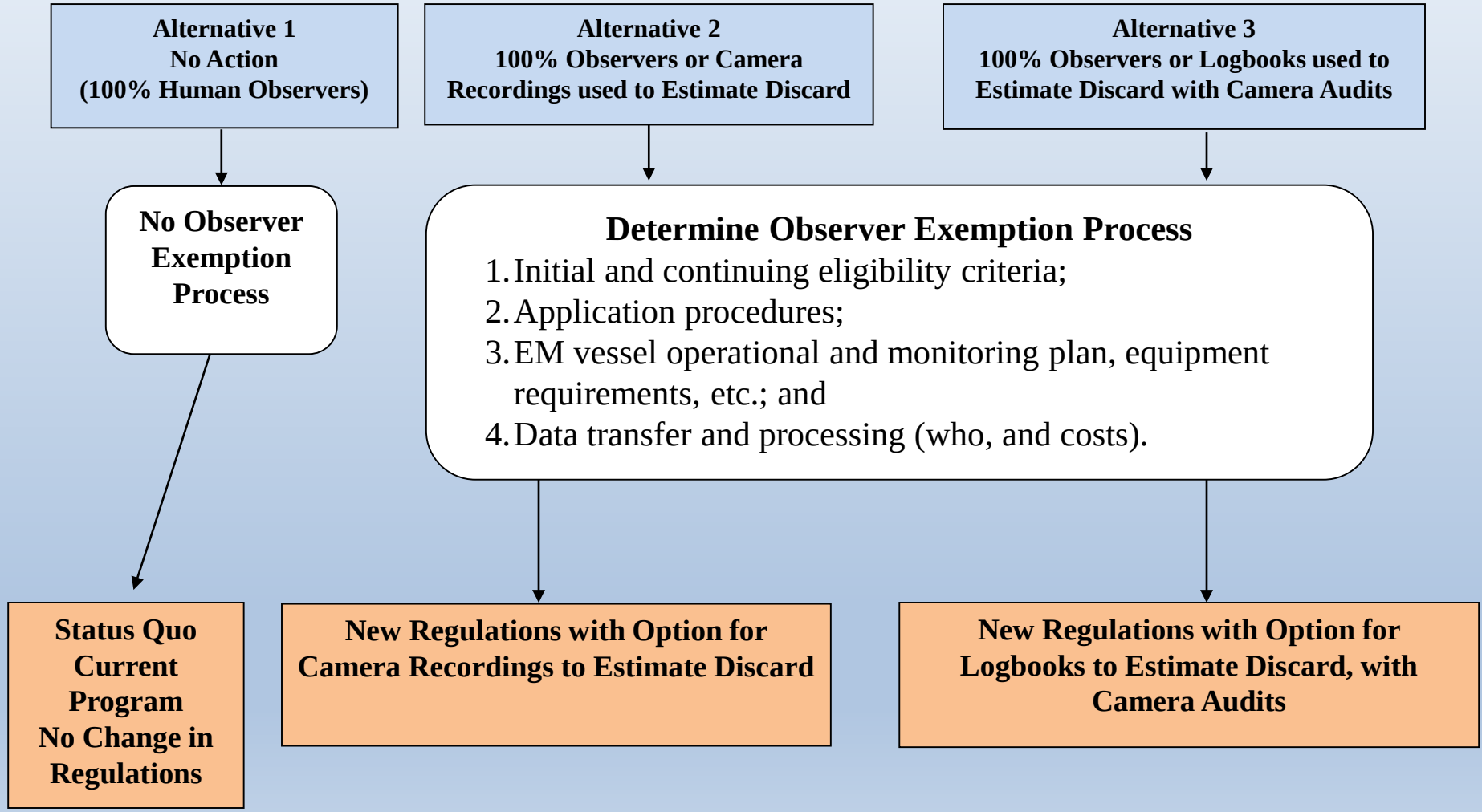
General Overview of Alternatives and Decision Process

Option A: NMFS to make determination

Option B: Use Council process for changing species list using routine management

Option C: Set initial lists in regulation and change with proposed/final rule making.

General Overview of Alternatives and Decision Process



Data Transfer and Review

EM Component	Options for Each EM Component Category				
2.2.8.2 Data Transfer Process (Not mutually Exclusive)	A. PSMFC Staff	B. EM provider	C. SS Catch Monitor	D. Vessel Operator (crew)	E. 3rd Party
2.2.8.4 Video Review	A. NMFS	B. PSMFC	C. EM Provider	D. 3rd Party	

Implementation

Option A. None, implement all fisheries at one time through regulatory implementation

Option B. Use EFPs to test final Council policy, prior to full regulatory implementation.

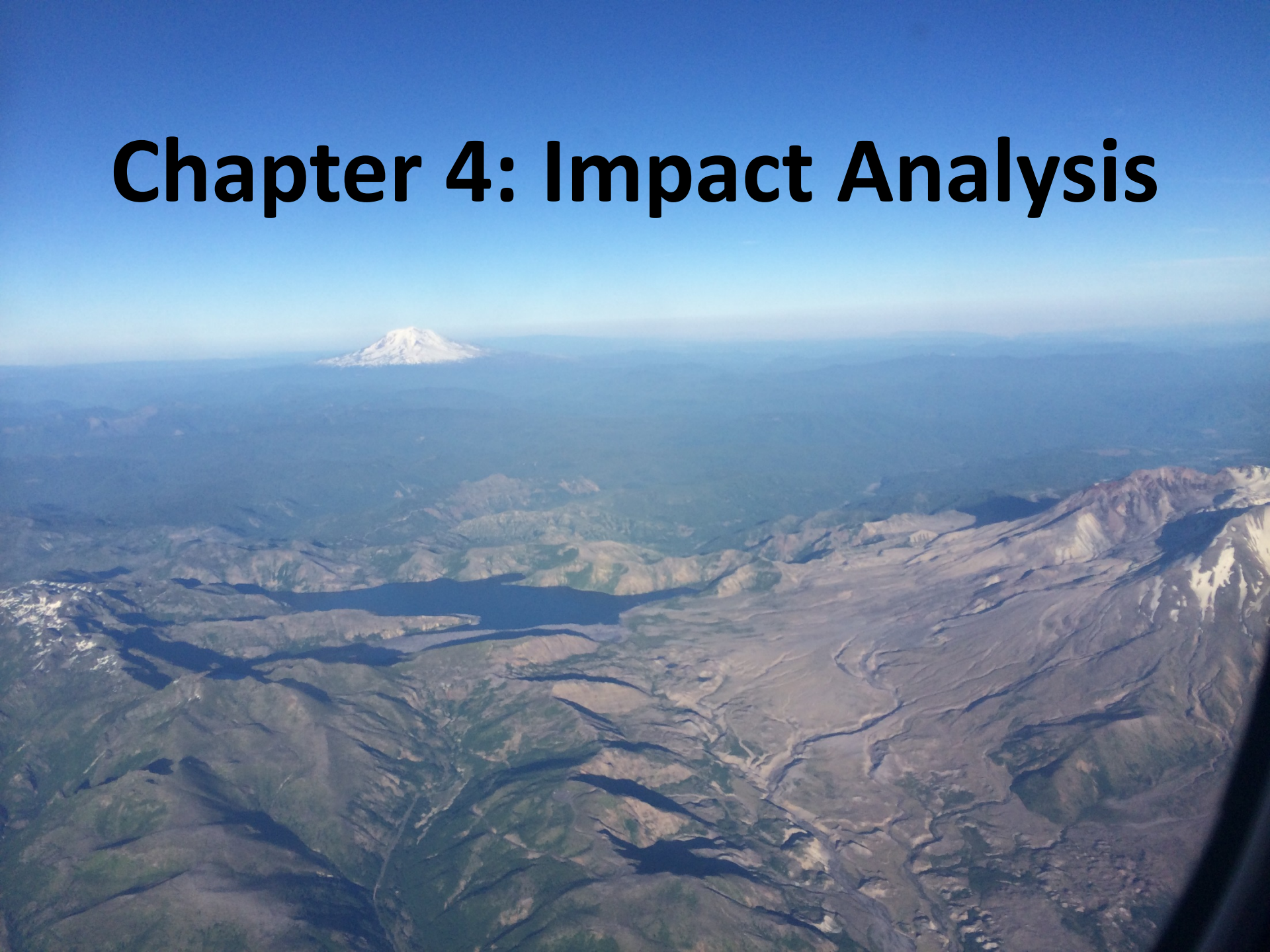
Option C. Phase in by sector/gear.

Option D. Phase in retention options over time.

Option E. Use EFPs to inform Council policy decision making prior to regulatory development

Options B-E are not mutually exclusive.

Chapter 4: Impact Analysis



Physical and Biological Environment Impact Considerations

- Likely no change to habitats or biological systems
- Likely no change to total mortality estimates unless fish are missed (Alt 2) or not reported/reviewed (Alt 3)
- Higher level of video review (>50%) may not capture rare events such as overfished species
- ACL/Sector discard accounting could erode IFQ accountability for non-whiting fisheries
- A change in halibut viability methods must be researched; limited choices at this time

General Cost Estimates

- Partial costs are in the analysis
- Whiting EFPs- $270-$350 per day at sea
- Current observer - $450-$500/billed per day
- Annual equipment cost $2,000 to $5,000

Overall EM Administrative Costs
(Supplemental NMFS Report 2)

Tasks	Rough FTE Estimates
Regulation Development/Modification	1 @ NMFS
Regulatory Process Support (NEPA/Economics/Legal Review)	1 @ NMFS
EM Permit Qualification	.5 @ NMFS
Logistics Support-IVMP/issue reconciliation/travel	1 @ PSMFC
Logbook Program/compliance and data reconciliation	0.5 @ PSMFC
Programming support (logbook and vessel accounting)	1 @ PSMFC
Video Review	2 @ PSMFC
Data Analysis/Statistician	1 @ PSMFC
Data Management and Storage	0.5 @ PSMFC
Council Staff	1 @ PFMC
Total FTE's	**9.5**
FTEs @ $100,000	**$1,050,000**

Some Potential Next Steps

Regulatory Process

- Regulatory development
- Solving technical issues
- Continue to analyze alternatives and options

EFP Process

- Assist NMFS in EFP analysis
- Updates to Council

Council Action

- **Consider Taking Final Action on Alternatives and Options for Electronic Monitoring Regulations in the:**
  - **Groundfish Whiting Fishery Sector,**
  - **Applicable Groundfish Fixed Gear Sector,**
  - **Groundfish Bottom Trawl and Non-whiting Midwater Trawl Sector.**

- **Provide Direction on Next Steps for Groundfish Sectors where Final Action is Not Taken.**


Questions?

Supplemental GEMPAC Report

J.3.b

Net Revenue Analysis for Electronic Monitoring on the West Coast

Erin Steiner
Economics and Social Science Research Program
Northwest Fisheries Science Center

August 19, 2014

Contents

1 Introduction

The vessels that participate on the West Coast Groundfish Trawl Catch Share Program are very diverse. Target species in the fishery range from $0.10 per pound to upwards of $3.00 per pound, different species are targeted by different vessels, participation ranges from Southern California to Northern Washington, and vessel length ranges from less than 60 feet to more than 100 feet. These characteristics and others result in different profit margins. It therefore follows that changing the cost structure for monitoring fisheries could have varying effects on different sectors of the fisheries.

We have divided the catch share program into five fisheries: At-sea Pacific whiting, Shoreside Pacific whiting, DTS trawl with trawl endorsement, Non-whiting, non-DTS trawl with trawl endorsement, and Groundfish fixed gear with trawl endorsement. The first section provides summaries for all fisheries, then there is a separate fishery specific section. In the fishery specific sections, we first summarize the data by home port, vessel length, and whether the vessel fished in Alaska. In many cases, some of these "breakouts" are not shown in order to prevent displaying confidential information.

After the summaries, we then calculate the variable cost net revenue and total cost net revenue at various levels of daily electronic monitoring costs and annual electronic monitoring costs. For our purposes, we consider the daily monitoring costs to include the cost of maintaining the equipment and reviewing the data collection by the equipment on-board. The annual cost would include either the cost of renting the equipment or purchasing the equipment (amortized over several years), depending on how the final program is implemented. For all statistics shown, observer costs are not included, however, the variable cost net revenue and total cost net revenue with observer coverage can be found by looking at the variable EM costs where the fixed EM costs are zero.

1.1 Data

Estimating the net revenue earned by operating a commercial fishing vessel requires data on vessel revenues and costs. Since the same entity that owns a commercial fishing vessel may also be engaged in any number of other fishing related or non-related activities, it is important to define which revenues and costs are included in the measurement of net revenue.

The NWFSC Economic Data Collection (EDC) program focuses on collecting revenue and cost information directly related to the operation of a commercial fishing vessel. 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 data collection 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 aggregated measures of costs (variable costs, fixed costs, and total costs) underestimate the true costs of operating a business. Therefore, the measures of net revenue overstate actual net revenue.

Throughout this report, two types of net revenue are calculated.

- **Variable cost net revenue**: Total ex-vessel revenue minus variable costs (see Section 2.2 for the costs included in variable costs).
- **Total cost net revenue**: Total ex-vessel revenue minus variable costs and fixed costs (see Section 2.2 for the costs included in fixed costs).

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. For these analyses, we focus on total cost net revenue.

Since most vessels operate in multiple fisheries, much of the available cost data pertain to multiple fisheries. While some of the costs, such as vessel repairs and maintenance, are joint costs, other costs, such as fuel, are not necessarily joint costs but are not reported separately by fishery in the survey. While it is not necessary to disaggregate costs in order to analyze net revenue for all vessel operations, it is necessary in order to analyze net revenue associated with operations in the West Coast groundfish fishery (or any other individual fishery). The methods used for disaggregation can be found in the Economic Data Collection Program Catcher Vessel Report 2009-11.[1]

1.2 Data Sources

For the shoreside sector, landings and ex-vessel revenue were obtained from state fish tickets. The at-sea sector deliveries to motherships were obtained from the NORPAC database and the ex-vessel revenues were obtained from the NWFSC Economic Data Collection (EDC) Program. All cost data were obtained from the EDC Program.

The costs were categorized into variable costs and fixed costs. Note that costs related to obtaining a limited entry trawl permit and quota are not included.

[1] Steiner, E., A. Harley, and T.Lee. 2014. Economic Data Collection Program Catcher Vessel Report 2009-11, Northwest Fisheries Science Center. Available at `www.nwfsc.noaa.gov/research/divisions/fram/economic/economic_data.cfm`.

Variable Costs

- Bait
- Captain
- Communications
- Crew
- Fishing association dues
- Food
- Freight
- Fuel and lubrication
- Ice
- License fees
- Observer costs
- Offloading
- Supplies
- Travel
- Trucking

Fixed Costs

- Fishing gear
- Processing equipment
- Vessel and on-board equipment
- Insurance premium payments
- Moorage

1.3 Simulating Costs for Electronic Monitoring

In order to analyze the potential effects of the costs of electronic monitoring on the annual profitability of vessels by fishery, we first calculate the total cost net revenue including all fishing revenue and all fishing costs as described above. **Each statistic reported represents the average vessel while participating**

in that fishery. The costs and earnings associated with that vessel are be apportioned to each of the fisheries in which it participates.

For each fishery, the average total cost net revenue is first reported in the fishery summary tables, and includes the cost of observers. In the electronic monitoring cost tables, the cost of observer coverage was not included and therefore the first row in each of these tables where EM variable costs per day and EM fixed costs per year shows the total cost net revenue assuming that the vessel paid $0 for monitoring, whether the monitoring was observer coverage or electronic monitoring. We chose a set of variable costs per day, $0, $150, $300, $450, $600, $750, and annual fixed costs $0, $2,000, $4,000, $6,000. This assumes that the fixed costs paid are only for the vessels' operation in that fishery.

2 West Coast Groundfish Catch Share fisheries

We use data from PacFIN and the Economic Data Collection (EDC) program to calculate 2011 revenue and 2011 variable costs. Due to the patchiness of fixed costs, an average of 2009-2011 was used.

2.1 West Coast Groundfish Catch Share fisheries summary

Table 1: Number of vessels per fishery in 2011. A vessel will be counted in all fisheries in which they participated.

	Number of vessels
At-sea Pacific whiting	18
Shoreside Pacific whiting	26
DTS trawl with trawl endorsement	64
Non-whiting, non-DTS trawl with trawl endorsement	48
Groundfish fixed gear with trawl endorsement	26

Table 2: Number of vessels by home port in 2011.

	Number of vessels
Astoria	14
Brookings	7
Coos Bay	14
Crescent City	3
Eureka	7
Fort Bragg	7
Morro Bay	7
Newport	20
Other Puget Sound	5
San Francisco	7
Seattle	10
South and central WA coast	4
Warrenton	10

Table 3: Number of vessels by length class in 2011.

	Number of vessels
Small vessel ($<$ 60 ft)	33
Medium vessel ($>$ 60 ft, $\leq$ 80 ft)	48
Large vessel ($>$ 80 ft)	33

Table 4: who either only fished on the West Coast or also fished in Alaska in 2011.

	Number of vessels
Fished in AK and West Coast	26
Only West Coast	88

Table 5: Average revenue, variable costs, fixed costs, variable cost net revenue, and total cost net revenue ($). Revenues and variable costs are 2011 values, fixed costs are the average of 2009-2011 fixed costs.

	Revenue	Variable costs	Fixed costs	Variable cost net revenue	Total cost net revenue
At-sea Pacific whiting	$624,685	$258,240	$145,557	$365,198	$219,641
Shoreside Pacific whiting	$823,096	$412,466	$230,478	$406,509	$176,031
DTS trawl with trawl endorsement	$310,979	$184,240	$72,763	$124,849	$52,086
Non-whiting, non-DTS trawl with trawl endorsement	$97,853	$61,022	$16,705	$36,107	$19,402
Groundfish fixed gear with trawl endorsement	$288,449	$141,976	$64,724	$144,919	$80,196

Table 6: Average variable cost and variable cost net revenue per day and per pound.

	Variable cost per day	Variable cost per 1,000 lbs	Variable cost net revenue per day	Variable cost net revenue per 1,000 lbs
At-sea Pacific whiting	$8,530	$43	$11,435	$58
Shoreside Pacific whiting	$8,331	$57	$7,794	$51
DTS trawl with trawl endorsement	$4,532	$442	$2,850	$257
Non-whiting, non-DTS trawl with trawl endorsement	$4,246	$441	$2,511	$233
Groundfish fixed gear with trawl endorsement	$4,211	$1,609	$3,931	$1,315

2.2 West Coast Groundfish Catch Share fisheries EM costs

The total cost net revenue for the vessels that participated in the catch share program in 2011 ranged from less than -$200 thousand to more than $400 thousand (Figure 1). There are many factors that could contribute to a very low total cost net revenue. A purchase of a vessel would result in the appearance of a really large negative net revenue, even when amortized over the life of the our data collection. Another driver behind negative total cost net revenue would be certain years where a vessel spent the majority of its time in the ship yard, incurring large costs, and not earning anything from catching fish. We attempt to display the finest resolution possible with relation to ports, vessel sizes, and fisheries, but due to small number of vessels in each port/fishery, it is not always possible to drill down to the finest level.

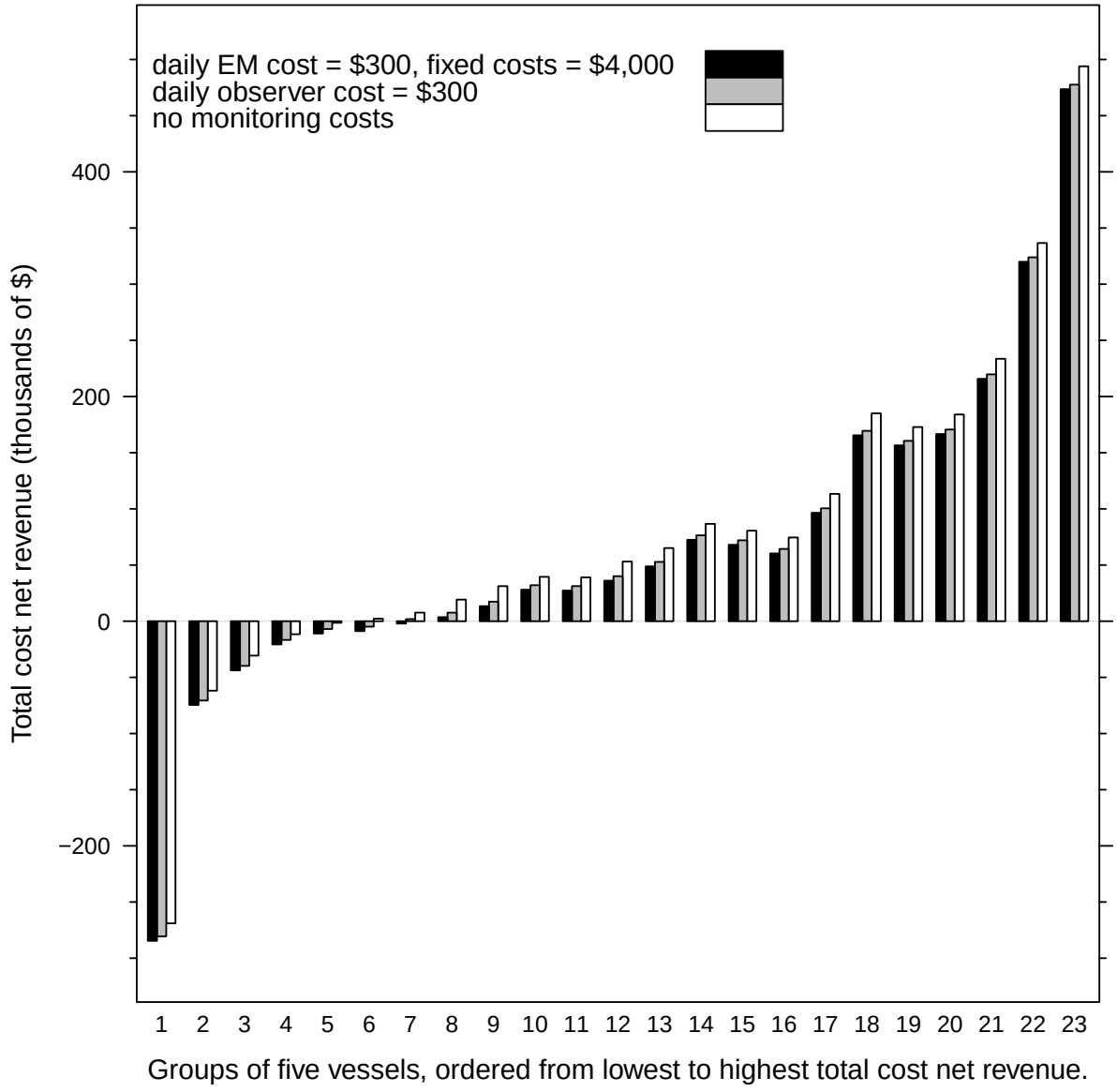


Figure 1: Total cost net revenue for the 5 groundfish fisheries. The vessels are grouped into groups of 5 to protect confidential data. Total cost net revenue is shown for three levels of monitoring costs, no costs (white), observer costs set to $300 (grey), and a daily electronic monitoring cost of $300 and an annual fixed cost of $4,000 (black).

Table 7: Total cost net revenue in all groundfish fisheries by length class. Average total cost net revenue per vessel in the 5 groundfish fisheries by vessel length class. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel ($<$ 60 ft)	Medium vessel ($>$ 60 ft, $\leq$ 80 ft)	Large vessel ($>$ 80 ft)
$0	$0	$76,386	$87,042	$255,831
$0	$150	$69,989	$77,821	$246,159
$0	$300	$63,593	$68,600	$236,486
$0	$450	$57,196	$59,378	$226,814
$0	$600	$50,800	$50,157	$217,142
$0	$750	$44,403	$40,936	$207,469
$2,000	$0	$74,386	$85,042	$253,831
$2,000	$150	$67,989	$75,821	$244,159
$2,000	$300	$61,593	$66,600	$234,486
$2,000	$450	$55,196	$57,378	$224,814
$2,000	$600	$48,800	$48,157	$215,142
$2,000	$750	$42,403	$38,936	$205,469
$4,000	$0	$72,386	$83,042	$251,831
$4,000	$150	$65,989	$73,821	$242,159
$4,000	$300	$59,593	$64,600	$232,486
$4,000	$450	$53,196	$55,378	$222,814
$4,000	$600	$46,800	$46,157	$213,142
$4,000	$750	$40,403	$36,936	$203,469
$6,000	$0	$70,386	$81,042	$249,831
$6,000	$150	$63,989	$71,821	$240,159
$6,000	$300	$57,593	$62,600	$230,486
$6,000	$450	$51,196	$53,378	$220,814
$6,000	$600	$44,800	$44,157	$211,142
$6,000	$750	$38,403	$34,936	$201,469

Table 8: Total cost net revenue in all groundfish fisheries grouped by whether the vessel fished in Alaska. Average total cost net revenue per vessel in the 5 groundfish fisheries by whether a vessel fished in Alaska and on the West Coast or only on the West Coast. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
$0	$0	$314,632	$79,162
$0	$150	$305,862	$70,650
$0	$300	$297,091	$62,138
$0	$450	$288,320	$53,625
$0	$600	$279,550	$45,113
$0	$750	$270,779	$36,601
$2,000	$0	$312,632	$77,162
$2,000	$150	$303,862	$68,650
$2,000	$300	$295,091	$60,138
$2,000	$450	$286,320	$51,625
$2,000	$600	$277,550	$43,113
$2,000	$750	$268,779	$34,601
$4,000	$0	$310,632	$75,162
$4,000	$150	$301,862	$66,650
$4,000	$300	$293,091	$58,138
$4,000	$450	$284,320	$49,625
$4,000	$600	$275,550	$41,113
$4,000	$750	$266,779	$32,601
$6,000	$0	$308,632	$73,162
$6,000	$150	$299,862	$64,650
$6,000	$300	$291,091	$56,138
$6,000	$450	$282,320	$47,625
$6,000	$600	$273,550	$39,113
$6,000	$750	$264,779	$30,601

Table 9: Total cost net revenue in all groundfish fisheries by home port region. Average total cost net revenue for all vessels in the 5 groundfish fisheries, the EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped by home port. Some ports were grouped together to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington	Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California
$0	$0	$164,611	$122,961	$256,072	$95,657	$46,545	$31,968	$73,169
$0	$150	$154,834	$111,826	$246,742	$87,979	$39,930	$25,883	$67,524
$0	$300	$145,057	$100,691	$237,413	$80,300	$33,315	$19,797	$61,879
$0	$450	$135,279	$89,556	$228,084	$72,622	$26,700	$13,711	$56,234
$0	$600	$125,502	$78,421	$218,755	$64,943	$20,085	$7,625	$50,589
$0	$750	$115,725	$67,286	$209,425	$57,265	$13,470	$1,540	$44,944
$2,000	$0	$162,611	$120,961	$254,072	$93,657	$44,545	$29,968	$71,169
$2,000	$150	$152,834	$109,826	$244,742	$85,979	$37,930	$23,883	$65,524
$2,000	$300	$143,057	$98,691	$235,413	$78,300	$31,315	$17,797	$59,879
$2,000	$450	$133,279	$87,556	$226,084	$70,622	$24,700	$11,711	$54,234
$2,000	$600	$123,502	$76,421	$216,755	$62,943	$18,085	$5,625	$48,589
$2,000	$750	$113,725	$65,286	$207,425	$55,265	$11,470	$-460	$42,944
$4,000	$0	$160,611	$118,961	$252,072	$91,657	$42,545	$27,968	$69,169
$4,000	$150	$150,834	$107,826	$242,742	$83,979	$35,930	$21,883	$63,524
$4,000	$300	$141,057	$96,691	$233,413	$76,300	$29,315	$15,797	$57,879
$4,000	$450	$131,279	$85,556	$224,084	$68,622	$22,700	$9,711	$52,234
$4,000	$600	$121,502	$74,421	$214,755	$60,943	$16,085	$3,625	$46,589
$4,000	$750	$111,725	$63,286	$205,425	$53,265	$9,470	$-2,460	$40,944
$6,000	$0	$158,611	$116,961	$250,072	$89,657	$40,545	$25,968	$67,169
$6,000	$150	$148,834	$105,826	$240,742	$81,979	$33,930	$19,883	$61,524
$6,000	$300	$139,057	$94,691	$231,413	$74,300	$27,315	$13,797	$55,879
$6,000	$450	$129,279	$83,556	$222,084	$66,622	$20,700	$7,711	$50,234
$6,000	$600	$119,502	$72,421	$212,755	$58,943	$14,085	$1,625	$44,589
$6,000	$750	$109,725	$61,286	$203,425	$51,265	$7,470	$-4,460	$38,944

3 At-sea whiting

In 2011, there were 18 vessels that participated in the At-sea Pacific whiting fishery. Most of those vessels also fished in Alaska and had home ports in either Newport or Seattle, other ports cannot be shown to protect confidential information.

3.1 At-sea whiting summary

Table 10: Number of vessels per length category in the At-sea Pacific whiting fishery

	Number of vessels
Small vessel ($<$ 90 ft)	5
Medium vessel ($>$ 90 ft, $\leq$ 110 ft)	6
Large vessel ($>$ 110 ft)	7

Table 11: Number of vessels per port in the At-sea Pacific whiting fishery, some ports are not shown to protect confidential data.

	Number of vessels
Seattle	7
Newport	9

Table 12: Average At-sea Pacific whiting vessels by vessel length class.

	Small vessel ($<$ 90 ft)	Medium vessel ($>$ 90 ft, $\leq$ 110 ft)	Large vessel ($>$ 110 ft)
Revenue ($)	590,768	680,806	600,807
Variable costs ($)	261,487	268,887	246,794
Fixed costs ($)	113,644	108,015	200,532
Variable cost net revenue ($)	326,778	411,182	353,228
Total cost net revenue ($)	213,134	303,167	152,696
Variable cost ($) per day	8,053	7,965	9,354
Variable cost ($) per 1,000 lbs	47	40	43
Variable cost net revenue ($) per day	8,344	11,931	13,216
Variable cost net revenue ($) per 1,000 lbs	50	64	59
Landings (lbs)	6,012,428	6,597,562	5,866,860
Days at sea	33	35	28

Table 13: Average At-sea whiting vessels by home port. Some ports are not shown to protect confidential information.

	Newport	Seattle
Revenue ($)	556,898	635,071
Variable costs ($)	230,606	250,522
Fixed costs ($)	116,567	172,270
Variable cost net revenue ($)	324,691	383,403
Total cost net revenue ($)	208,124	211,134
Variable cost ($) per day	8,153	7,316
Variable cost ($) per 1,000 lbs	43	40
Variable cost net revenue ($) per day	10,466	10,963
Variable cost net revenue ($) per 1,000 lbs	57	60
Landings (lbs)	5,522,191	6,310,637
Days at sea	30	35

3.2 At-sea whiting EM costs

Table 14: Total cost net revenue in the At-sea Pacific whiting fishery by vessel length. Average total cost net revenue for At-sea whiting vessels by vessel length. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel ($<$ 90 ft)	Medium vessel ($>$ 90 ft, $\leq$ 110 ft)	Large vessel ($>$ 110 ft)
\$0	\$0	\$215,637	\$303,905	\$153,481
\$0	\$150	\$210,668	\$298,720	\$149,341
\$0	\$300	\$205,699	\$293,536	\$145,201
\$0	\$450	\$200,730	\$288,352	\$141,061
\$0	\$600	\$195,761	\$283,168	\$136,921
\$0	\$750	\$190,792	\$277,983	\$132,781
\$2,000	\$0	\$213,637	\$301,905	\$151,481
\$2,000	\$150	\$208,668	\$296,720	\$147,341
\$2,000	\$300	\$203,699	\$291,536	\$143,201
\$2,000	\$450	\$198,730	\$286,352	\$139,061
\$2,000	\$600	\$193,761	\$281,168	\$134,921
\$2,000	\$750	\$188,792	\$275,983	\$130,781
\$4,000	\$0	\$211,637	\$299,905	\$149,481
\$4,000	\$150	\$206,668	\$294,720	\$145,341
\$4,000	\$300	\$201,699	\$289,536	\$141,201
\$4,000	\$450	\$196,730	\$284,352	\$137,061
\$4,000	\$600	\$191,761	\$279,168	\$132,921
\$4,000	\$750	\$186,792	\$273,983	\$128,781
\$6,000	\$0	\$209,637	\$297,905	\$147,481
\$6,000	\$150	\$204,668	\$292,720	\$143,341
\$6,000	\$300	\$199,699	\$287,536	\$139,201
\$6,000	\$450	\$194,730	\$282,352	\$135,061
\$6,000	\$600	\$189,761	\$277,168	\$130,921
\$6,000	\$750	\$184,792	\$271,983	\$126,781

Table 15: Total cost net revenue in the At-sea Pacific whiting fishery by home port region. Average total cost net revenue for at-sea whiting vessels by home port. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Some ports are not shown to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Seattle	Newport
$0	$0	$212,280	$209,726
$0	$150	$207,066	$205,285
$0	$300	$201,851	$200,844
$0	$450	$196,637	$196,404
$0	$600	$191,423	$191,963
$0	$750	$186,209	$187,523
$2,000	$0	$210,280	$207,726
$2,000	$150	$205,066	$203,285
$2,000	$300	$199,851	$198,844
$2,000	$450	$194,637	$194,404
$2,000	$600	$189,423	$189,963
$2,000	$750	$184,209	$185,523
$4,000	$0	$208,280	$205,726
$4,000	$150	$203,066	$201,285
$4,000	$300	$197,851	$196,844
$4,000	$450	$192,637	$192,404
$4,000	$600	$187,423	$187,963
$4,000	$750	$182,209	$183,523
$6,000	$0	$206,280	$203,726
$6,000	$150	$201,066	$199,285
$6,000	$300	$195,851	$194,844
$6,000	$450	$190,637	$190,404
$6,000	$600	$185,423	$185,963
$6,000	$750	$180,209	$181,523

4 Shoreside Pacific whiting

In 2011, there were 26 vessels that participated in the Shoreside Pacific whiting fishery. About half of those vessels also fished in Alaska and none had home ports in California.

4.1 Shoreside Pacific Whiting summary

Table 16: Number of vessels per length category in the Shoreside Pacific whiting fishery

	Number of vessels
Small vessel ($<$ 80 ft)	6
Medium vessel ($>$ 80 ft, $\leq$ 90 ft)	9
Large vessel ($>$ 90 ft)	11

Table 17: Number of vessels by state in the Shoreside Pacific whiting fishery.

	Number of vessels
Oregon	20
Washington	6
California	0

Table 18: Number of vessels in the Shoreside Pacific whiting fishery who either only fished on the West Coast or also fished in Alaska.

	Number of vessels
Fished in AK and West Coast	15
Only West Coast	11

Table 19: Average Shoreside Pacific whiting vessels by vessel length class.

	Small vessel (< 80 ft)	Medium vessel (> 80 ft, ≤ 90 ft)	Large vessel (> 90 ft)
Revenue ($)	602,289	783,931	975,579
Variable costs ($)	308,750	428,629	455,814
Fixed costs ($)	133,571	203,341	305,538
Variable cost net revenue ($)	291,336	348,528	516,768
Total cost net revenue ($)	157,765	145,187	211,230
Variable cost ($) per day	5,396	8,263	9,987
Variable cost ($) per 1,000 lbs	58	63	51
Variable cost net revenue ($) per day	4,957	7,034	9,963
Variable cost net revenue ($) per 1,000 lbs	54	48	51
Landings (lbs)	5,334,104	6,890,747	9,064,569
Days at sea	55	57	47

Table 20: Average Shoreside Pacific Whiting vessels by home port.

	Oregon	Washington
Revenue ($)	821,537	828,293
Variable costs ($)	411,415	415,970
Fixed costs ($)	195,219	348,006
Variable cost net revenue ($)	406,894	405,225
Total cost net revenue ($)	211,674	57,219
Variable cost ($) per day	8,089	9,137
Variable cost ($) per 1,000 lbs	57	54
Variable cost net revenue ($) per day	7,766	7,887
Variable cost net revenue ($) per 1,000 lbs	52	45
Landings (lbs)	7,352,264	7,781,053
Days at sea	54	47

4.2 Shoreside Pacific whiting EM costs

Table 21: Total cost net revenue in the Shoreside Pacific whiting fishery by vessel length. Average total cost net revenue for Shoreside Pacific whiting vessels by vessel length The EM variable costs represent the per day cost to the vessel. The EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel ($<$ 80 ft)	Medium vessel ($>$ 80 ft, $\leq$ 90 ft)	Large vessel ($>$ 90 ft)
\$0	\$0	\$159,967	\$151,961	\$214,227
\$0	\$150	\$151,643	\$143,420	\$207,116
\$0	\$300	\$143,319	\$134,879	\$200,006
\$0	\$450	\$134,995	\$126,339	\$192,896
\$0	\$600	\$126,671	\$117,798	\$185,785
\$0	\$750	\$118,347	\$109,257	\$178,675
\$2,000	\$0	\$157,967	\$149,961	\$212,227
\$2,000	\$150	\$149,643	\$141,420	\$205,116
\$2,000	\$300	\$141,319	\$132,879	\$198,006
\$2,000	\$450	\$132,995	\$124,339	\$190,896
\$2,000	\$600	\$124,671	\$115,798	\$183,785
\$2,000	\$750	\$116,347	\$107,257	\$176,675
\$4,000	\$0	\$155,967	\$147,961	\$210,227
\$4,000	\$150	\$147,643	\$139,420	\$203,116
\$4,000	\$300	\$139,319	\$130,879	\$196,006
\$4,000	\$450	\$130,995	\$122,339	\$188,896
\$4,000	\$600	\$122,671	\$113,798	\$181,785
\$4,000	\$750	\$114,347	\$105,257	\$174,675
\$6,000	\$0	\$153,967	\$145,961	\$208,227
\$6,000	\$150	\$145,643	\$137,420	\$201,116
\$6,000	\$300	\$137,319	\$128,879	\$194,006
\$6,000	\$450	\$128,995	\$120,339	\$186,896
\$6,000	\$600	\$120,671	\$111,798	\$179,785
\$6,000	\$750	\$112,347	\$103,257	\$172,675

Table 22: Total cost net revenue in the Shoreside Pacific whiting fishery by state. Average total cost net revenue for Shoreside Pacific whiting vessels by home port state. The EM variable costs represent the per day cost to the vessel. The EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington	Oregon
$0	$0	$64,317	$214,902
$0	$150	$57,250	$206,771
$0	$300	$50,183	$198,640
$0	$450	$43,116	$190,509
$0	$600	$36,050	$182,377
$0	$750	$28,983	$174,246
$2,000	$0	$62,317	$212,902
$2,000	$150	$55,250	$204,771
$2,000	$300	$48,183	$196,640
$2,000	$450	$41,116	$188,509
$2,000	$600	$34,050	$180,377
$2,000	$750	$26,983	$172,246
$4,000	$0	$60,317	$210,902
$4,000	$150	$53,250	$202,771
$4,000	$300	$46,183	$194,640
$4,000	$450	$39,116	$186,509
$4,000	$600	$32,050	$178,377
$4,000	$750	$24,983	$170,246
$6,000	$0	$58,317	$208,902
$6,000	$150	$51,250	$200,771
$6,000	$300	$44,183	$192,640
$6,000	$450	$37,116	$184,509
$6,000	$600	$30,050	$176,377
$6,000	$750	$22,983	$168,246

Table 23: Total cost net revenue in the Shoreside Pacific whiting fishery by whether the vessel fished in Alaska. Average total cost net revenue for Shoreside Pacific whiting vessels grouped by whether the vessel fished only on the West Coast or in Alaska and the West Coast. The EM variable costs represent the per day cost to the vessel. The EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
$0	$0	$251,836	$82,401
$0	$150	$243,830	$74,680
$0	$300	$235,824	$66,958
$0	$450	$227,817	$59,237
$0	$600	$219,811	$51,516
$0	$750	$211,805	$43,795
$2,000	$0	$249,836	$80,401
$2,000	$150	$241,830	$72,680
$2,000	$300	$233,824	$64,958
$2,000	$450	$225,817	$57,237
$2,000	$600	$217,811	$49,516
$2,000	$750	$209,805	$41,795
$4,000	$0	$247,836	$78,401
$4,000	$150	$239,830	$70,680
$4,000	$300	$231,824	$62,958
$4,000	$450	$223,817	$55,237
$4,000	$600	$215,811	$47,516
$4,000	$750	$207,805	$39,795
$6,000	$0	$245,836	$76,401
$6,000	$150	$237,830	$68,680
$6,000	$300	$229,824	$60,958
$6,000	$450	$221,817	$53,237
$6,000	$600	$213,811	$45,516
$6,000	$750	$205,805	$37,795

5 DTS trawl with trawl endorsement

In 2011, there were 63 vessels that participated in the DTS trawl with trawl endorsement fishery. Home ports were located throughout the entire West Coast. Whether the vessel fished in Alaska and the West Coast or just on the West Coast cannot be displayed to protect confidential information.

5.1 DTS trawl with trawl endorsement summary

Table 24: Number of vessels by port/state in the DTS trawl with trawl endorsement fishery.

	Number of vessels
Washington	5
Astoria	15
Newport	8
Southern Oregon	15
Crescent City or Eureka	10
Fort Bragg	6
Other California	4

Table 25: Average DTS trawl with trawl endorsement vessels split by whether the vessels fished only on the West Coast or who also fished in Alaska.

	Fished in AK and West Coast	Only West Coast
Revenue ($)	87,466	318,307
Variable costs ($)	70,620	187,965
Fixed costs ($)	50,949	73,478
Variable cost net revenue ($)	15,047	128,449
Total cost net revenue ($)	-35,902	54,970
Variable cost ($) per day	9,219	4,378
Variable cost ($) per 1,000 lbs	1,037	422
Variable cost net revenue ($) per day	1,486	2,895
Variable cost net revenue ($) per 1,000 lbs	170	260
Landings (lbs)	73,170	498,956
Days at sea	8	47

Table 26: Average DTS trawl with trawl endorsement vessels by vessel length class.

	Small vessel ($<$ 65 ft)	Medium vessel ($>$ 65 ft, $\leq$ 75 ft)	Large vessel ($>$ 75 ft)
Revenue ($)	224,608	310,464	382,799
Variable costs ($)	131,048	179,682	232,341
Fixed costs ($)	67,107	84,664	66,570
Variable cost net revenue ($)	91,827	128,909	148,421
Total cost net revenue ($)	24,720	44,245	81,851
Variable cost ($) per day	3,460	3,978	5,922
Variable cost ($) per 1,000 lbs	393	380	539
Variable cost net revenue ($) per day	2,432	2,835	3,210
Variable cost net revenue ($) per 1,000 lbs	267	263	243
Landings (lbs)	341,986	519,892	572,487
Days at sea	40	48	48

Table 27: Average DTS trawl with trawl endorsement vessels by home port. Some ports are not shown to protect confidential information.

	Washington	Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California
Revenue ($)	364,917	391,704	188,297	329,650	288,142	315,185	166,966
Variable costs ($)	219,796	224,646	107,399	202,319	168,055	200,470	90,264
Fixed costs ($)	54,678	71,688	67,167	77,248	75,571	104,118	39,727
Variable cost net revenue ($)	143,611	164,215	79,893	125,480	118,236	113,286	75,189
Total cost net revenue ($)	88,933	92,528	12,726	48,233	42,666	9,168	35,462
Variable cost ($) per day	3,340	3,940	4,844	5,097	4,181	6,342	3,659
Variable cost ($) per 1,000 lbs	583	336	475	444	441	545	433
Variable cost net revenue ($) per day	1,268	2,798	2,834	3,121	3,254	3,178	2,539
Variable cost net revenue ($) per 1,000 lbs	96	234	257	251	326	322	295
Landings (lbs)	499,720	733,296	290,953	483,567	423,671	374,996	254,202
Days at sea	69	58	27	44	43	35	36

5.2 DTS trawl with trawl endorsement EM costs

Table 28: Total cost net revenue in the DTS trawl with trawl endorsement fishery by vessel length. Average total cost net revenue for DTS trawl with trawl endorsement vessels by vessel length. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel ($<$ 65 ft)	Medium vessel ($>$ 65 ft, $\leq$ 75 ft)	Large vessel ($>$ 75 ft)
\$0	\$0	\$26,452	\$46,117	\$83,888
\$0	\$150	\$20,486	\$38,956	\$76,635
\$0	\$300	\$14,519	\$31,794	\$69,382
\$0	\$450	\$8,552	\$24,633	\$62,128
\$0	\$600	\$2,586	\$17,472	\$54,875
\$0	\$750	\$-3,381	\$10,310	\$47,622
\$2,000	\$0	\$24,452	\$44,117	\$81,888
\$2,000	\$150	\$18,486	\$36,956	\$74,635
\$2,000	\$300	\$12,519	\$29,794	\$67,382
\$2,000	\$450	\$6,552	\$22,633	\$60,128
\$2,000	\$600	\$586	\$15,472	\$52,875
\$2,000	\$750	\$-5,381	\$8,310	\$45,622
\$4,000	\$0	\$22,452	\$42,117	\$79,888
\$4,000	\$150	\$16,486	\$34,956	\$72,635
\$4,000	\$300	\$10,519	\$27,794	\$65,382
\$4,000	\$450	\$4,552	\$20,633	\$58,128
\$4,000	\$600	\$-1,414	\$13,472	\$50,875
\$4,000	\$750	\$-7,381	\$6,310	\$43,622
\$6,000	\$0	\$20,452	\$40,117	\$77,888
\$6,000	\$150	\$14,486	\$32,956	\$70,635
\$6,000	\$300	\$8,519	\$25,794	\$63,382
\$6,000	\$450	\$2,552	\$18,633	\$56,128
\$6,000	\$600	\$-3,414	\$11,472	\$48,875
\$6,000	\$750	\$-9,381	\$4,310	\$41,622

Table 29: Total cost net revenue in the DTS trawl with trawl endorsement fishery by whether the vessel fished in Alaska. Average total cost net revenue for DTS trawl with trawl endorsement vessels grouped by whether the vessel fished in Alaska and the West Coast or only on the West Coast. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
$0	$0	$-34,103	$56,864
$0	$150	$-35,378	$49,847
$0	$300	$-36,653	$42,830
$0	$450	$-37,928	$35,813
$0	$600	$-39,203	$28,796
$0	$750	$-40,478	$21,779
$2,000	$0	$-36,103	$54,864
$2,000	$150	$-37,378	$47,847
$2,000	$300	$-38,653	$40,830
$2,000	$450	$-39,928	$33,813
$2,000	$600	$-41,203	$26,796
$2,000	$750	$-42,478	$19,779
$4,000	$0	$-38,103	$52,864
$4,000	$150	$-39,378	$45,847
$4,000	$300	$-40,653	$38,830
$4,000	$450	$-41,928	$31,813
$4,000	$600	$-43,203	$24,796
$4,000	$750	$-44,478	$17,779
$6,000	$0	$-40,103	$50,864
$6,000	$150	$-41,378	$43,847
$6,000	$300	$-42,653	$36,830
$6,000	$450	$-43,928	$29,813
$6,000	$600	$-45,203	$22,796
$6,000	$750	$-46,478	$15,779

Table 30: Total cost net revenue in the DTS trawl with trawl endorsement fishery by home port region. Average total cost net revenue for DTS trawl with trawl endorsement vessels, the EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped by home port. Some ports were grouped together to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington	Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California
$0	$0	$90,443	$95,370	$13,731	$50,082	$44,516	$10,596	$36,975
$0	$150	$80,135	$86,710	$9,726	$43,470	$38,079	$5,287	$31,551
$0	$300	$69,827	$78,050	$5,721	$36,858	$31,642	$-23	$26,127
$0	$450	$59,519	$69,390	$1,716	$30,246	$25,205	$-5,332	$20,703
$0	$600	$49,212	$60,730	$-2,289	$23,634	$18,768	$-10,642	$15,279
$0	$750	$38,904	$52,070	$-6,295	$17,022	$12,331	$-15,951	$9,855
$2,000	$0	$88,443	$93,370	$11,731	$48,082	$42,516	$8,596	$34,975
$2,000	$150	$78,135	$84,710	$7,726	$41,470	$36,079	$3,287	$29,551
$2,000	$300	$67,827	$76,050	$3,721	$34,858	$29,642	$-2,023	$24,127
$2,000	$450	$57,519	$67,390	$-284	$28,246	$23,205	$-7,332	$18,703
$2,000	$600	$47,212	$58,730	$-4,289	$21,634	$16,768	$-12,642	$13,279
$2,000	$750	$36,904	$50,070	$-8,295	$15,022	$10,331	$-17,951	$7,855
$4,000	$0	$86,443	$91,370	$9,731	$46,082	$40,516	$6,596	$32,975
$4,000	$150	$76,135	$82,710	$5,726	$39,470	$34,079	$1,287	$27,551
$4,000	$300	$65,827	$74,050	$1,721	$32,858	$27,642	$-4,023	$22,127
$4,000	$450	$55,519	$65,390	$-2,284	$26,246	$21,205	$-9,332	$16,703
$4,000	$600	$45,212	$56,730	$-6,289	$19,634	$14,768	$-14,642	$11,279
$4,000	$750	$34,904	$48,070	$-10,295	$13,022	$8,331	$-19,951	$5,855
$6,000	$0	$84,443	$89,370	$7,731	$44,082	$38,516	$4,596	$30,975
$6,000	$150	$74,135	$80,710	$3,726	$37,470	$32,079	$-713	$25,551
$6,000	$300	$63,827	$72,050	$-279	$30,858	$25,642	$-6,023	$20,127
$6,000	$450	$53,519	$63,390	$-4,284	$24,246	$19,205	$-11,332	$14,703
$6,000	$600	$43,212	$54,730	$-8,289	$17,634	$12,768	$-16,642	$9,279
$6,000	$750	$32,904	$46,070	$-12,295	$11,022	$6,331	$-21,951	$3,855

6 Non-whiting, non-DTS trawl with trawl endorsement

In 2011, there were 48 vessels that participated in the Non-whiting, non-DTS trawl with trawl endorsement fishery. Of those, only four fished in Alaska. Home ports were located throughout the entire West Coast.

6.1 Non-whiting, non-DTS trawl with trawl endorsement summary

Table 31: Number of vessels per length category in the Non-whiting, non-DTS trawl with trawl endorsement and whether the vessels also fished in Alaska

	Fished in AK and West Coast	Only West Coast
Small vessel ($<$ 65 ft)	0	17
Medium vessel ($>$ 65 ft, $\leq$ 75 ft)	0	11
Large vessel ($>$ 75 ft)	4	16

Table 32: Number of vessels by port/state in the Non-whiting, non-DTS trawl with trawl endorsement fishery.

	Number of vessels
Washington	5
Astoria	14
Newport	8
Southern Oregon	9
Crescent City or Eureka	4
Fort Bragg	4
Other California	4

Table 33: Average Non-whiting, non-DTS trawl with trawl endorsement vessels by vessel length class.

	Small vessel ($<$ 65 ft)	Medium vessel ($>$ 65 ft, $\leq$ 75 ft)	Large vessel ($>$ 75 ft)
Revenue ($)	89,098	91,115	109,000
Variable costs ($)	50,931	52,247	74,426
Fixed costs ($)	17,004	19,358	14,992
Variable cost net revenue ($)	37,256	38,180	33,990
Total cost net revenue ($)	20,252	18,822	18,998
Variable cost ($) per day	3,240	3,868	5,310
Variable cost ($) per 1,000 lbs	439	418	456
Variable cost net revenue ($) per day	2,745	2,838	2,131
Variable cost net revenue ($) per 1,000 lbs	304	283	144
Landings (lbs)	140,912	154,682	183,170
Days at sea	20	16	16

Table 34: Non-whiting, non-DTS trawl with trawl endorsement vessels by home port. Some ports are not shown to protect confidential information.

	Washington	Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California
Revenue ($)	161,739	158,892	60,266	42,093	23,843	118,038	58,815
Variable costs ($)	112,257	93,917	34,927	24,608	15,670	86,269	36,075
Fixed costs ($)	24,274	23,530	12,108	10,104	3,101	17,645	20,074
Variable cost net revenue ($)	48,673	63,801	24,917	17,001	8,044	31,260	21,749
Total cost net revenue ($)	24,400	40,272	12,809	6,897	4,943	13,615	1,675
Variable cost ($) per day	4,463	3,650	3,468	4,651	5,280	5,938	3,983
Variable cost ($) per 1,000 lbs	428	328	421	443	590	465	720
Variable cost net revenue ($) per day	1,522	2,465	1,211	3,440	3,219	2,378	3,836
Variable cost net revenue ($) per 1,000 lbs	189	218	90	312	337	231	341
Landings (lbs)	259,225	290,001	114,566	53,005	26,412	173,644	52,619
Days at sea	29	25	12	11	3	13	19

6.2 Non-whiting, non-DTS trawl with trawl endorsement EM costs

Table 35: Total cost net revenue in the Non-whiting, non-DTS trawl with trawl endorsement fishery by vessel length. Average total cost net revenue for Non-whiting, non-DTS trawl with trawl endorsement vessels by vessel length. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel ($<$ 65 ft)	Medium vessel ($>$ 65 ft, $\leq$ 75 ft)	Large vessel ($>$ 75 ft)
\$0	\$0	\$21,163	\$19,510	\$19,582
\$0	\$150	\$18,156	\$17,182	\$17,224
\$0	\$300	\$15,148	\$14,855	\$14,865
\$0	\$450	\$12,141	\$12,528	\$12,507
\$0	\$600	\$9,133	\$10,200	\$10,149
\$0	\$750	\$6,125	\$7,873	\$7,791
\$2,000	\$0	\$19,163	\$17,510	\$17,582
\$2,000	\$150	\$16,156	\$15,182	\$15,224
\$2,000	\$300	\$13,148	\$12,855	\$12,865
\$2,000	\$450	\$10,141	\$10,528	\$10,507
\$2,000	\$600	\$7,133	\$8,200	\$8,149
\$2,000	\$750	\$4,125	\$5,873	\$5,791
\$4,000	\$0	\$17,163	\$15,510	\$15,582
\$4,000	\$150	\$14,156	\$13,182	\$13,224
\$4,000	\$300	\$11,148	\$10,855	\$10,865
\$4,000	\$450	\$8,141	\$8,528	\$8,507
\$4,000	\$600	\$5,133	\$6,200	\$6,149
\$4,000	\$750	\$2,125	\$3,873	\$3,791
\$6,000	\$0	\$15,163	\$13,510	\$13,582
\$6,000	\$150	\$12,156	\$11,182	\$11,224
\$6,000	\$300	\$9,148	\$8,855	\$8,865
\$6,000	\$450	\$6,141	\$6,528	\$6,507
\$6,000	\$600	\$3,133	\$4,200	\$4,149
\$6,000	\$750	\$125	\$1,873	\$1,791

Table 36: Total cost net revenue in the Non-whiting, non-DTS trawl with trawl endorsement fishery by whether the vessel fished in Alaska. Average total cost net revenue for Non-whiting, non-DTS trawl with trawl endorsement vessels grouped by whether the vessel fished in Alaska and the West Coast or just the West Coast. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
$0	$0	$-8,099	$22,691
$0	$150	$-8,993	$19,957
$0	$300	$-9,887	$17,222
$0	$450	$-10,782	$14,488
$0	$600	$-11,676	$11,753
$0	$750	$-12,570	$9,019
$2,000	$0	$-10,099	$20,691
$2,000	$150	$-10,993	$17,957
$2,000	$300	$-11,887	$15,222
$2,000	$450	$-12,782	$12,488
$2,000	$600	$-13,676	$9,753
$2,000	$750	$-14,570	$7,019
$4,000	$0	$-12,099	$18,691
$4,000	$150	$-12,993	$15,957
$4,000	$300	$-13,887	$13,222
$4,000	$450	$-14,782	$10,488
$4,000	$600	$-15,676	$7,753
$4,000	$750	$-16,570	$5,019
$6,000	$0	$-14,099	$16,691
$6,000	$150	$-14,993	$13,957
$6,000	$300	$-15,887	$11,222
$6,000	$450	$-16,782	$8,488
$6,000	$600	$-17,676	$5,753
$6,000	$750	$-18,570	$3,019

Table 37: Total cost net revenue in the Non-whiting, non-DTS trawl with trawl endorsement fishery by home port region. Average total cost net revenue for Non-whiting, non-DTS trawl with trawl endorsement by home port. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Some ports were grouped together to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington	Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California
$0	$0	$25,208	$41,446	$13,231	$7,381	$5,072	$14,125	$2,667
$0	$150	$20,786	$37,717	$11,472	$5,803	$4,627	$12,151	$-242
$0	$300	$16,363	$33,989	$9,713	$4,225	$4,183	$10,178	$-3,150
$0	$450	$11,941	$30,260	$7,954	$2,647	$3,738	$8,204	$-6,058
$0	$600	$7,519	$26,532	$6,195	$1,069	$3,294	$6,231	$-8,966
$0	$750	$3,097	$22,803	$4,436	$-509	$2,849	$4,257	$-11,874
$2,000	$0	$23,208	$39,446	$11,231	$5,381	$3,072	$12,125	$667
$2,000	$150	$18,786	$35,717	$9,472	$3,803	$2,627	$10,151	$-2,242
$2,000	$300	$14,363	$31,989	$7,713	$2,225	$2,183	$8,178	$-5,150
$2,000	$450	$9,941	$28,260	$5,954	$647	$1,738	$6,204	$-8,058
$2,000	$600	$5,519	$24,532	$4,195	$-931	$1,294	$4,231	$-10,966
$2,000	$750	$1,097	$20,803	$2,436	$-2,509	$849	$2,257	$-13,874
$4,000	$0	$21,208	$37,446	$9,231	$3,381	$1,072	$10,125	$-1,333
$4,000	$150	$16,786	$33,717	$7,472	$1,803	$627	$8,151	$-4,242
$4,000	$300	$12,363	$29,989	$5,713	$225	$183	$6,178	$-7,150
$4,000	$450	$7,941	$26,260	$3,954	$-1,353	$-262	$4,204	$-10,058
$4,000	$600	$3,519	$22,532	$2,195	$-2,931	$-706	$2,231	$-12,966
$4,000	$750	$-903	$18,803	$436	$-4,509	$-1,151	$257	$-15,874
$6,000	$0	$19,208	$35,446	$7,231	$1,381	$-928	$8,125	$-3,333
$6,000	$150	$14,786	$31,717	$5,472	$-197	$-1,373	$6,151	$-6,242
$6,000	$300	$10,363	$27,989	$3,713	$-1,775	$-1,817	$4,178	$-9,150
$6,000	$450	$5,941	$24,260	$1,954	$-3,353	$-2,262	$2,204	$-12,058
$6,000	$600	$1,519	$20,532	$195	$-4,931	$-2,706	$231	$-14,966
$6,000	$750	$-2,903	$16,803	$-1,564	$-6,509	$-3,151	$-1,743	$-17,874

7 Groundfish fixed gear with trawl endorsement

In 2011, there were 24 vessels that participated in the Groundfish fixed gear with trawl endorsement fishery. Of those, only four fished in Alaska. Home ports were located throughout the entire West Coast. Using 2011 revenues, costs, and days at sea, the average vessel fishing in Northern Oregon had negative net revenue, all other vessels had positive total cost net revenue, ranging, on average, from $33 thousand to $75 thousand. Taking into account the potential costs of electronic monitoring, small and medium sized vessels ($\leq$ 60 feet) maintained positive total cost net revenue, while, large vessels when electronic monitoring costs reached $800/day and annual fixed costs were at least $15 thousand. Aside from Northern Oregon vessels which had negative total cost net revenue before electronic monitoring costs were taken into account, Southern California was the only other group by vessels that experienced negative total cost net revenue once electronic monitoring costs were taken into account.

7.1 Groundfish fixed gear with trawl endorsement summary

Table 38: Number of vessels per length category in the Groundfish fixed gear with trawl endorsement.

	Number of vessels
Small vessel ($<$ 50 ft)	8
Medium vessel ($>$ 50 ft, $\leq$ 60 ft)	8
Large vessel ($>$ 60 ft)	8

Table 39: Number of Groundfish fixed gear with trawl endorsement vessels that fished in Alaska or only on the West Coast.

	Number of vessels
Fished in AK and West Coast	4
Only West Coast	20

Table 40: Number of vessels by port/state in the Groundfish fixed gear with trawl endorsement fishery.

	Number of vessels
Washington	5
Northern Oregon	5
Southern Oregon	6
Northern California	4
Southern California	4

Table 41: Average Groundfish fixed gear with trawl endorsement vessels by vessel length class.

	Small vessel ($<$ 50 ft)	Medium vessel ($>$ 50 ft, $\leq$ 60 ft)	Large vessel ($>$ 60 ft)
Revenue ($)	163,820	360,959	340,568
Variable costs ($)	79,952	165,980	179,996
Fixed costs ($)	28,066	46,837	119,268
Variable cost net revenue ($)	82,660	192,421	159,678
Total cost net revenue ($)	54,594	145,584	40,410
Variable cost ($) per day	2,379	5,292	4,963
Variable cost ($) per 1,000 lbs	1,647	1,592	1,589
Variable cost net revenue ($) per day	2,029	6,012	3,752
Variable cost net revenue ($) per 1,000 lbs	1,178	1,577	1,189
Landings (lbs)	62,029	117,743	110,257
Days at sea	33	30	33

Table 42: Groundfish fixed gear with trawl endorsement vessels by home port.

	Washington	Northern Oregon	Southern Oregon	Northern California	Southern California
Revenue ($)	293,922	353,793	364,083	182,748	192,178
Variable costs ($)	121,892	223,805	154,406	67,055	121,071
Fixed costs ($)	69,453	151,138	34,572	23,813	36,930
Variable cost net revenue ($)	170,168	128,408	208,908	113,213	69,721
Total cost net revenue ($)	100,715	-22,730	174,336	89,400	32,791
Variable cost ($) per day	4,064	4,304	5,542	3,155	3,339
Variable cost ($) per 1,000 lbs	1,443	1,804	1,734	1,221	1,774
Variable cost net revenue ($) per day	4,319	2,457	6,933	3,129	1,587
Variable cost net revenue ($) per 1,000 lbs	1,562	981	1,899	1,055	805
Landings (lbs)	82,170	153,163	94,455	65,107	79,103
Days at sea	31	39	27	25	40

7.2 Groundfish fixed gear with trawl endorsement EM costs

Table 43: Total cost net revenue in the Groundfish fixed gear with trawl endorsement fishery by vessel length. Average total cost net revenue for Groundfish fixed gear with trawl endorsement vessels by vessel length. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel ($<$ 50 ft)	Medium vessel ($>$ 50 ft, $\leq$ 60 ft)	Large vessel ($>$ 60 ft)
\$0	\$0	\$55,803	\$148,142	\$41,304
\$0	\$150	\$50,789	\$143,616	\$36,384
\$0	\$300	\$45,775	\$139,090	\$31,465
\$0	\$450	\$40,762	\$134,564	\$26,545
\$0	\$600	\$35,748	\$130,038	\$21,626
\$0	\$750	\$30,735	\$125,512	\$16,706
\$2,000	\$0	\$53,803	\$146,142	\$39,304
\$2,000	\$150	\$48,789	\$141,616	\$34,384
\$2,000	\$300	\$43,775	\$137,090	\$29,465
\$2,000	\$450	\$38,762	\$132,564	\$24,545
\$2,000	\$600	\$33,748	\$128,038	\$19,626
\$2,000	\$750	\$28,735	\$123,512	\$14,706
\$4,000	\$0	\$51,803	\$144,142	\$37,304
\$4,000	\$150	\$46,789	\$139,616	\$32,384
\$4,000	\$300	\$41,775	\$135,090	\$27,465
\$4,000	\$450	\$36,762	\$130,564	\$22,545
\$4,000	\$600	\$31,748	\$126,038	\$17,626
\$4,000	\$750	\$26,735	\$121,512	\$12,706
\$6,000	\$0	\$49,803	\$142,142	\$35,304
\$6,000	\$150	\$44,789	\$137,616	\$30,384
\$6,000	\$300	\$39,775	\$133,090	\$25,465
\$6,000	\$450	\$34,762	\$128,564	\$20,545
\$6,000	\$600	\$29,748	\$124,038	\$15,626
\$6,000	\$750	\$24,735	\$119,512	\$10,706

Table 44: Total cost net revenue in the Groundfish fixed gear with trawl endorsement fishery by whether the vessel fished in Alaska. Average total cost net revenue for Groundfish fixed gear with trawl endorsement vessels group by whether the fished in Alaska and on the West Coast or the West Coast only. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
$0	$0	$186,083	$60,883
$0	$150	$179,732	$56,369
$0	$300	$173,381	$51,856
$0	$450	$167,029	$47,343
$0	$600	$160,678	$42,829
$0	$750	$154,327	$38,316
$2,000	$0	$184,083	$58,883
$2,000	$150	$177,732	$54,369
$2,000	$300	$171,381	$49,856
$2,000	$450	$165,029	$45,343
$2,000	$600	$158,678	$40,829
$2,000	$750	$152,327	$36,316
$4,000	$0	$182,083	$56,883
$4,000	$150	$175,732	$52,369
$4,000	$300	$169,381	$47,856
$4,000	$450	$163,029	$43,343
$4,000	$600	$156,678	$38,829
$4,000	$750	$150,327	$34,316
$6,000	$0	$180,083	$54,883
$6,000	$150	$173,732	$50,369
$6,000	$300	$167,381	$45,856
$6,000	$450	$161,029	$41,343
$6,000	$600	$154,678	$36,829
$6,000	$750	$148,327	$32,316

Table 45: Total cost net revenue in the Groundfish fixed gear with trawl endorsement fishery by home port region. Average total cost net revenue for Groundfish fixed gear with trawl endorsement, the EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped by home port. Some ports were grouped together to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington	Northern Oregon	Southern Oregon	Northern California	Southern California
$0	$0	$102,577	$-21,150	$175,104	$91,880	$34,177
$0	$150	$97,889	$-26,937	$171,031	$88,148	$28,196
$0	$300	$93,201	$-32,724	$166,957	$84,415	$22,214
$0	$450	$88,514	$-38,512	$162,884	$80,683	$16,232
$0	$600	$83,826	$-44,299	$158,810	$76,950	$10,251
$0	$750	$79,138	$-50,086	$154,737	$73,217	$4,269
$2,000	$0	$100,577	$-23,150	$173,104	$89,880	$32,177
$2,000	$150	$95,889	$-28,937	$169,031	$86,148	$26,196
$2,000	$300	$91,201	$-34,724	$164,957	$82,415	$20,214
$2,000	$450	$86,514	$-40,512	$160,884	$78,683	$14,232
$2,000	$600	$81,826	$-46,299	$156,810	$74,950	$8,251
$2,000	$750	$77,138	$-52,086	$152,737	$71,217	$2,269
$4,000	$0	$98,577	$-25,150	$171,104	$87,880	$30,177
$4,000	$150	$93,889	$-30,937	$167,031	$84,148	$24,196
$4,000	$300	$89,201	$-36,724	$162,957	$80,415	$18,214
$4,000	$450	$84,514	$-42,512	$158,884	$76,683	$12,232
$4,000	$600	$79,826	$-48,299	$154,810	$72,950	$6,251
$4,000	$750	$75,138	$-54,086	$150,737	$69,217	$269
$6,000	$0	$96,577	$-27,150	$169,104	$85,880	$28,177
$6,000	$150	$91,889	$-32,937	$165,031	$82,148	$22,196
$6,000	$300	$87,201	$-38,724	$160,957	$78,415	$16,214
$6,000	$450	$82,514	$-44,512	$156,884	$74,683	$10,232
$6,000	$600	$77,826	$-50,299	$152,810	$70,950	$4,251
$6,000	$750	$73,138	$-56,086	$148,737	$67,217	$-1,731

ENFORCEMENT CONSULTANTS REPORT ON ELECTRONIC MONITORING REGULATORY PROCESS FINAL PREFERRED ALTERNATIVES AND NEXT STEPS

The Enforcement Consultants (EC) have reviewed the documents associated with Agenda Item J.3 and has the following comments.

2.2.2.1 Video Reading Protocols: As a point of clarification, the EC would like to suggest that the audit of the logbook be understood and represented as a three-step process.

Step 1 would be a comparison of the log book entries with the fishing events recorded by the electronic monitoring (EM) system. There needs to be a one to one correlation; for every fishing event there is a logbook entry. If a one to one correlation is not presented, 100 percent review of the video would ensue. If the one-to-one correlation is presented you proceed to step 2.

Step 2 is a percentage comparison of what is documented in the log book with what is seen on the video to determine, for example, if the discard amounts are documented properly.

Step 3 would then be a random review of the "fishing event" inclusive of the haul back, catch sorting, and transiting before and after deployment of the gear.

The percentage review of step 2 and 3 would not necessarily be the same. The EC would recommend a more conservative (larger) percentage review for step 2 over step 3.

Under Alternative 2, the percent video review required should be that necessary to develop an adequate estimate of discards. Under Alternative 3, the percent video review required should be that necessary to ensure fishermen are complying with logbook data entry requirements. Alternative 3 is different from Alternative 2, in that it is more about human behavior - balancing risk and trust. As such, determining the percentage of review should be evaluated accordingly.

2.2.7.5 EM Vessel Operational Plan – Individual Vessel Monitoring Plan (IVMP) Expiration: **The EC endorses Option B (Annual Expiration, or if modifications are made) for all sectors.** This option is consistent with general West Coast permitting processes, either Federal or state. Although not a permit, the IVMP is a component of a privilege. We believe the status of that privilege should expire, be reviewed, and potentially renewed on an annual basis. An annual declaration of the status of the vessel (i.e. whether modifications have been made) will provide assurances for management and enforcement that the existing IVMP is in fact adequate in providing the EM systems data needed to effectively monitor the fishing activity of the vessel. We do not envision a complicated multipage document and therefore do not believe establishing this annual renewal requirement to be burdensome on the industry or an increased workload for National Marine Fisheries Service (NMFS). Our position demonstrates a conservative approach in implementation of the EM Program. As the program matures and all participating affected parties become familiar with the program components and requirement, this annual requirement may potentially become a candidate for modification. This has been our experience in the First Receiver Site License Program, which has similar elements.

2.2.8.4 Video Review: **The EC recommends Options A & B for all sectors**. **NMFS or its agent Pacific States Marine Fisheries Commission assume the video analysis responsibility, with one reviewing entity doing the data analysis for the entire coast.**

The EC is concerned there may be a conflict of interest with an EM provider reviewing their own data or another EM provider's data. EM providers want to promote the capabilities and reliability of their product as a basic element of their business plan, which may influence their review of the data generated by their systems, i.e. their analysis may be biased because of their interest in demonstrating the advertised capability or reliability of their system, which in turn may be exaggerated or overstated. Conversely, this bias may lead them to manifest doubt on the capabilities or reliability of their competition's system.

The EC is also concerned about the consistency of the data analysis fleet-wide. Even with one reviewing entity doing all data analysis coast-wide, there will be some level of subjectivity in that analysis. The inconsistency of that subjectivity could expand exponentially if, for example, there are three or four system providers all doing their own data analysis. Having EM providers doing the video analysis will complicate transfer, access, and storage of the data, potentially compromising the evidentiary integrity of the data.

Some have suggested having EM providers reviewing the data is analogous to observer providers contracting the services of observers. The EC disagrees. In this analogy, the human observer is the equivalent of the EM system collecting data. Observer data is evaluated by the Science Center, not the observer provider. EM data will be collected by an EM system obtained from an EM provider. The analysis of the data collected by the EM system should be done, not by the EM system provider, but by NMFS or its agent.

2.2.10 Spatial Variation for High Bycatch Areas:
The EC supports the GEMPAC recommendation to remove Options A for spatial management options for the bottom trawl sector. Spatial management will add complexity to the management of the IFQ fishery and will require identifying additional management areas, which in turn will be more difficult and more costly to manage and enforce.

2.2.11 Adaptive or Phased Implementation:
The EC endorses the GEMPAC recommendation of Implementation of B and E for all sectors. The EFPs will be used to either further develop the policy or test the policy. If final action is taken, then the choice would be to test the policy (Option B).

PFMC
09/15/14

GROUNDFISH ADVISORY SUBPANEL REPORT ON ELECTRONIC MONITORING REGULATORY PROCESS FINAL PREFERRED ALTERNATIVES AND NEXT STEPS

The Groundfish Advisory Subpanel (GAP) heard a report from Mr. Brett Wiedoff describing the draft electronic monitoring analysis and the Groundfish Electronic Monitoring Policy Advisory Committee (GEMPAC) report. The GAP offers the following comments and recommendations.

Overall, development of electronic monitoring (EM) regulations remains a high priority for the GAP. We continue to believe that it holds significant potential to reduce monitoring costs and increase operational flexibility. With that in mind, we recommend that the Council select final preferred alternatives for EM regulations in the whiting, fixed gear, and bottom trawl sectors.

Specifically, the GAP supports the entire suite of GEMPAC recommendations with one modification.

The whiting representatives on the GEMPAC were unable to determine whether to use a video census (alternative 2) or logbooks and video audit (alternative 3) as the primary data source for discard accounting (Step 1, Table 2-9, pg. 91, Draft Analysis of an Electronic Monitoring Program for the Pacific Coast Limited Entry Trawl Groundfish Fishery Catch Shares Program). This was in large part because the whiting exempted fishing permit (EFP) approved in June 2014 is designed to answer which of these options will be most cost effective and least burdensome for the fleet. Without that information, and with an approved EFP soon to test that question, the GEMPAC did not feel comfortable recommending a final preferred alternative for this step. Further, the understanding of the GEMPAC was that an overall final preferred alternative for the whiting fishery could not be selected without making a decision on this question.

In our GAP discussions, we heard from Dr. Steve Freese that we likely could take final action on whiting EM by either 1) taking final action on all other EM items as recommended by the GEMPAC but leaving this question open until EFP data is available that suggests a specific course, or 2) picking the most likely of the alternatives and validating or modifying that selection based on EFP data. Further discussions with Dr. Freese suggested that by not taking final action now, we would delay EM regulations significantly. Because of that potential delay, and based on the new understanding of how we could move forward, the GAP believes we should take final action now on whiting leaving the question in Step 1 open and validate our choices or modify as needed based on the results of the EFPs.

Finally, the GAP notes that EM for the bottom trawl sector is likely to be slowest to come on line. The GAP believes that the bottom trawl sector is also most in need of economic relief as well as the increased operational flexibility EM could provide. The GAP believes it is important to consider how to create a financial bridge for the bottom trawl sector until EM becomes available. The GAP discussed four potential ways to do this: 1) maintain the observer subsidy until EM is available, 2) transfer the subsidy from those vessels transitioning to EM to those vessels that don't yet have EM, 3) move as expeditiously as possible with development of EM regulations, 4) allow additional participants in the second year of the EFP if the first year proves successful.

The GAP urges the Council to use its authority to help create this bridge, and specifically recommends moving forward with final action for all three sectors.

PFMC
09/16/14

GROUNDFISH ELECTRONIC MONITORING POLICY ADVISORY COMMITTEE (GEMPAC)
RECOMMENDATIONS FOR ELECTRONIC MONITORING FOR THE PACIFIC COAST LIMITED ENTRY TRAWL GROUNDFISH FISHERY CATCH SHARES PROGRAM

Recommendations and Rationale for Preferred Alternatives and Options for an Electronic Monitoring Program:

1. **Midwater Trawl Whiting (Table 2-9)**

   The GEMPAC does not recommend a final alternative for Step 1 at this time. Uncertainties still exist regarding overall costs for Alternative 2 (Camera Recordings Use to Estimate Discards) or 3 (Logbooks with Video Audits). We are also uncertain which alternative better meets the goals of the program and what their effect is on operational efficiencies for both the vessels and for video review. The GEMPAC believes the EFP will provide this information.

   The GEMPAC recommends under 2.2.1.1 Video Reading Protocol,

   - For Alternative 2, use Option A (100% Video Review) because of the problems of expanding rare events for a single vessel and because the expense is probably not significantly different from lower sampling rates.
   - For Alternative 3, the percent review should be a minimum of 10 percent review across all trips with an escalation clause for non-compliance.

   The GEMPAC does not recommend any option under 2.2.2, Discard Accounting, and would like more information on costs and logistics to make a decision. The GEMPAC believes the EFP will provide this information.

   The GEMPAC recommends, under 2.2.4, Option A (Maximized Retention). This is the only option available for the whiting fishery.

   The GEMPAC recommends, under 2.2.5, Option D (Discard Exemption to Retain Halibut). This is the only option available for the whiting fishery.

   The GEMPAC recommends, under 2.2.6 Discard Species List Adjustment, Option B (Routine Process). This would include stakeholders and the GEMPAC assumes this would be the most expedient and transparent process.

The GEMPAC recommends, under 2.2.7.2 Eligibility Requirements, Option A (Initial and Continued Eligibility Requirements). This is the only option available for the whiting fishery.

The GEMPAC recommends, under 2.2.7.5 EM Vessel Operation Plan - IVMP Expiration, Option A (No Expiration) and notes that the option includes caveats to review plans when changes are made. Option A would likely be more cost effective for the government; NMFS would not need to annually review IVMPs.

The GEMPAC recommends, under 2.2.7.6 Declaration of EM Use, Option C (Declare until Changed with some limit of frequency within the sector). This incorporates some flexibility for vessels.

The GEMPAC does not recommend any option at this time under 2.2.8.2, Data Transfer Process, and would like more cost and logistic information to make a decision. The GEMPAC believes the EFP will provide this information.

The GEMPAC recommends, under 2.2.8.4 Video Review, Option C (EM Provider) for ease of adaptability and integration of changes in technology.

The GEMPAC recommends, under 2.2.8.5 Payment for Scientific Data Collection/Observers, Option A (Government Pays) because it's a government mandated function and previously funded by NMFS.

The GEMPAC recommends, under 2.2.11 Implementation, B and E. The EFPs will be used to either Test the Policy (Option B) or Further Develop the Policy (Option E). For example, if final action is taken, then the choice would be to test the policy.

Table 2-9. Shoreside and mothership whiting fishery decision making template of alternatives and options.

Alternatives/Option Choices for Shoreside and Mothership Whiting Fishery				
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits				
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows				
EM Component	**Options for Each EM Component Category**			
2.2.1.1 Video Reading Protocol (% review)	A. 100% (Alt 2 only)	B. X% (Alt 2 Only)	C. X% (Alt 2 Only) plus logbook review	Select % Logbook Audit (Alt 3 Only)
2.2.2 Discard Accounting - Individual or Fleetwide	A. One Discard Category, Full Accounting for All Discards a/	B. Two Discard Categories, Sector or ACL Deduction for Category 2 Discards b/	C. Two Discard Categories, No Accounting for Category 2 Discards b/	D. For MS Whiting, Deduct "unintentional minor" Discards Preseason, For SS Whiting Deduct Category 2 from ACL.
2.2.4 Retention Requirements	A. Maximize			
2.2.5 Halibut Retention/ Discard with Fishery Specific Options	D. Discard Exemption (100% retained, 100% mortality)			
2.2.6 Discard Species List Adjustment	A. NMFS Rulemaking Process	B. Routine Process c/	C. Full Council Rulemaking Process	
2.2.7.2 Eligibility for Camera Use	A. Initial and Continued Eligibility Requirements			
2.2.7.5 EM Vessel Operation Plan - IVMP Expiration	A. No Expiration	B. Annual		
2.2.7.6 Declaration of EM Use	A. Annual - choose for entire year	B. Annual - project for year (monthly/quarterly)	C. Declare Until Changed (some limit on frequency of change)	D. Declare Until Changed (no limit on frequency)

Alternatives/Option Choices for Shoreside and Mothership Whiting Fishery					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
2.2.8.2 Data Transfer Process (Not Mutually Exclusive)	A. PSMFC Staff	B. EM provider	C. SS Catch Monitor	D. Vessel Operator (crew)	E. 3rd Party
2.2.8.4 Video Review	A. NMFS	B. PSMFC	C. EM Provider	D. 3rd Party	
2.2.8.5 Payment for Scientific Data Collection/Observers	A. Government	B. Industry	C. Combination		
2.2.11 Implementation	A. None	B. Use EFPs to Test Policy	C. Phase in By Sector - Whiting; BTW/Mid-nonwhiting, Fixed Gear	D. Loosen Species Retention Over Time	E. Use EFPs to Develop Policy

a/ Category 1 discards include fish dumped off deck (e.g., shoveled, picked out of net), dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.), unobserved sets/hauls, fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.
b/ Category 2 discards include fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.
c/ "Routine process" would establish a list of species for which discard requirements can be changed through routine inseason action as specified in Section 6.2.1 of the groundfish FMP.

2. **Fixed Gear (Longline and Pot) (Table 2-10)**

The GEMPAC recommends under Step 1, Alternative 3 (Logbook with Video Audit). It may be suitable for this fishery since this type of system is currently used and successful in British Columbia.

The GEMPAC recommends, under 2.2.1.1 Video Reading Protocol, the percent review under Alternative 3 should be a minimum of 10 percent review of fishing events in each trip with an escalation clause for non-compliance.

The GEMPAC recommends, under 2.2.2 Discard Accounting, Option A since there is no fixed gear specific allocation of sablefish within the trawl allocation.

The GEMPAC recommends, under 2.2.4 Option B (Optimized Retention), and sub-option d (allow discard of species that are verifiable with EM). This would provide the opportunity to discard, potentially, unmarketable and immature fish. The discard priorities are skates, sharks and immature sablefish.

The GEMPAC recommends, under 2.2.5 Halibut Retention, Option A (IPHC Gear Rate) and F (Use EM Data with Approval from IPHC). Option A may be the method that can be applied at this time. The GEMPAC prefers Option F if the method is approved by IPHC.

The GEMPAC recommends, under 2.2.6 Discard Species List Adjustment, Option B (Routine Process). This would include stakeholders and assumes this would be the most expedient process.

The GEMPAC recommends, under 2.2.7.2 Option A (Initial and Continued Eligibility Requirements). This is the only option available to the fixed gear fishery.

The GEMPAC recommends, under 2.2.7.5 EM Vessel Operation Plan - IVMP Expiration, Option A (No Expiration) and notes that the option includes caveats to review plans when changes are made. Option A would likely be more cost effective for the government; NMFS would not need to annually review IVMPs.

The GEMPAC recommends, under 2.2.7.6 Declaration of EM Use, Option A (Annual - choose for entire year) because vessels fish for sablefish under trawl IFQ for only a limited period each year.

The GEMPAC recommends, under 2.2.8.2 Data Transfer Process, Option C (catch monitors) and D (vessel operators). These options may be the most cost effective. In addition, these individuals would be immediately available to transfer the data.

The GEMPAC recommends, under 2.2.8.4 Video Review, Option C (EM Provider) for ease of integration and adaptability to changes in technology.

The GEMPAC recommends, under 2.2.8.5 Payment for Scientific Data Collection/Observers, Option A (Government Pays) because it's a government mandated function and previously funded by NMFS.

The GEMPAC recommends, under 2.2.11 Implementation, B and E. The EFPs will be used to either Test the Policy (Option B) or Further Develop the Policy (Option E). For example, if final action is taken, then the choice would be to test the policy.

Table 2-10. Fixed gear fishery (longline and pot) EM decision making template of alternatives and options.

Alternatives/Option Choices for Fixed Gear Fishery (longline and pot)					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
EM Component	**Options for Each EM Component Category**				
2.2.1.1 Video Reading Protocol (% review)	A. 100% (Alt 2 only)	B. X% (Alt 2 Only)	C. X% (Alt 2 Only) plus logbook review	Select % Logbook Audit (Alt 3 Only)	
2.2.2 Discard Accounting - Individual or Fleetwide	A. One Discard Category, Full Accounting for All Discards a/	B. Two Discard Categories, Sector or ACL Deduction for Category 2 Discards b/	C. Two Discard Categories, No Accounting for Category 2 Discards b/		
2.2.4 Retention Requirements	A. Maximize	B. Optimize			
2.2.5 Halibut Retention/ Discard with Fishery Specific Options	Default Rates A. IPHC Gear Rate longline 16%; pot 18% mortality	Default Rates B. WCGOP Rate C. Vessel Specific Rate	D. Discard Exemption (100% retained)	E. Captain/Crew Evaluation	F. With EM Data - Via IPHC Approved Method
2.2.6 Discard Species List Adjustment	A. NMFS Rulemaking Process	B. Routine Process c/	C. Full Council Rulemaking Process		

Alternatives/Option Choices for Fixed Gear Fishery (longline and pot)					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
2.2.7.2 Eligibility for Camera Use	A. Initial and Continued Eligibility Requirements				
2.2.7.5 EM Vessel Operation Plan - IVMP Expiration	A. No Expiration	B. Annual			
2.2.7.6 Declaration of EM Use	A. Annual - choose for entire year	B. Annual - project for year (monthly/quarterly)	C. Declare Until Changed (some limit on frequency of change)	D. Declare Until Changed (no limit on frequency)	
2.2.8.2 Data Transfer Process (Not Mutually Exclusive)	A. PSMFC Staff	B. EM provider	C. SS Catch Monitor	D. Vessel Operator (crew)	E. 3rd Party
2.2.8.4 Video Review	A. NMFS	B. PSMFC	C. EM Provider	D. 3rd Party	
2.2.8.5 Payment for Scientific Data Collection/Observers	A. Government	B. Industry	C. Combination		
2.2.11 Implementation	A. None	B. Use EFPs to Test Policy	C. Phase in By Sector - Whiting; BTW/Mid-nonwhiting, Fixed Gear	D. Loosen Species Retention Over Time	E. Use EFPs to Develop Policy;

a/ Category 1 discards include fish dumped off deck (e.g., shoveled, picked out of net), dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.), unobserved sets/hauls, fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.
b/ Category 2 discards include fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.
c/ "Routine process" would establish a list of species for which discard requirements can be changed through routine inseason action as specified in Section 6.2.1 of the groundfish FMP.

3. Bottomtrawl Groundfish/Non-whiting midwater Trawl (Table 2-11)

The GEMPAC recommends, under Step 1, Alternative 3 (Logbook with Video Audit) because it may be the most cost effective alternative.

The GEMPAC recommends, under 2.2.1.1, Video Reading Protocol, the percent review under Alternative 3 should be a minimum of 10 percent review of fishing events in each trip with an escalation clause for non-compliance.

The GEMPAC recommends, under 2.2.2 Discard Accounting, Option A (One Discard Category, Full Accounting under IFQ) since it maintains accountability in the IFQ program.

The GEMPAC recommends, under 2.2.4 Option B (Optimized Retention) and sub-option d, (Allow discard if species that are verifiable with EM). This would provide the opportunity to discard, potentially, unmarketable and immature fish. The discard priorities are skates, sharks, immature sablefish, and unmarketable, sublegal fish.

The GEMPAC recommends, under 2.2.5 Halibut Retention, Option A (IPHC Gear Rate) and F (Use EM Data with Approval from IPHC). Option A may be the method that can be applied at this time. The GEMPAC prefers Option F if the method is approved by IPHC.

The GEMPAC recommends, under 2.2.6 Discard Species List Adjustment, Option B (Routine Process). This would include stakeholders and assumes this would be the most expedient process.

The GEMPAC recommends, under 2.2.7.2 Option A (Initial and Continued Eligibility Requirements) since bottomtrawl trawl fishery participants operate in different areas (shoreward and seaward of the RCA). Participants in cooperative agreement may not want to pool their allocations or cover an individual that has exceeded their IFQ. It also adds another layer of complexity and cost.

The GEMPAC recommends, under 2.2.7.5 EM Vessel Operation Plan - IVMP, Option A (No Expiration) and notes that the option includes caveats to review plans when changes are made. Option A would likely be more cost effective for the government; NMFS would not need to annually review IVMPs.

The GEMPAC recommends, under 2.2.7.6 Declaration of EM Use, Option C (Declare Until Changed with some limit of frequency within the sector). This incorporates some flexibility for vessels.

The GEMPAC recommends, under 2.2.8.2 Data Transfer Process, Option C (Catch Monitors) and D (Vessel Operators). These options may be the most cost effective. In addition, these individuals would be immediately available to transfer the data.

The GEMPAC recommends, under 2.2.8.4, Video Review, Option C (EM Provider) for ease of integration and adaptability to changes in technology.

The GEMPAC recommends, under 2.2.8.5 Payment for Scientific Data Collection/Observers, Option A (Government Pays) because it's a government mandated function and previously funded by NMFS.

The GEMPAC recommends, under 2.2.10 Option A (None). Spatial management may add too much complexity to the management of the IFQ fishery and would require identifying additional management areas which in turn may be difficult and costly to manage.

The GEMPAC recommends, under 2.2.11 Implementation, B and E. The EFPs will be used to either Test the Policy (Option B) or Further Develop the Policy (Option E). For example, if final action is taken, then the choice would be to test the policy.

Table 2-11. Bottomtrawl and non-whiting midwater trawl fisheries EM decision making template of alternatives and options.

Alternatives/Option Choices for Bottomtrawl and Non-Whiting Midwater Trawl Fisheries					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
EM Component	**Options for Each EM Component Category**				
2.2.1.1 Video Reading Protocol (% review)	A. 100% (Alt 2 only)	B. X% (Alt 2 Only)	C. X% (Alt 2 Only) plus logbook review	Select % Logbook Audit (Alt 3 Only)	
2.2.2 Discard Accounting - Individual or Fleetwide	A. One Discard Category, Full Accounting for All Discards a/	B. Two Discard Categories, Sector or ACL Deduction for Category 2 Discards b/	C. Two Discard Categories, No Accounting for Category 2 Discards b/		
2.2.4 Retention Requirements	A. Maximize	B. Optimize			
2.2.5 Halibut Retention/ Discard with Fishery Specific Options	Default Rates A. IPHC Gear Rate MDWT non-whiting and BTW 90% mortality if discarded	Default Rates B. WCGOP Rate C. Vessel Specific Rate	D. Discard Exemption (100% retained)	E. Captain/Crew Evaluation	F. With EM Data - Via IPHC Approved Method
2.2.6 Discard Species List Adjustment	A. NMFS Rulemaking Process	B. Routine Process c/	C. Full Council Rulemaking Process		

Alternatives/Option Choices for Bottomtrawl and Non-Whiting Midwater Trawl Fisheries					
Step 1. Choose Overall Alternative (this will be the primary data source for discard estimates) Alternative 1: No Action – Human Observers Estimate Discards Alternative 2. Camera Recordings Use to Estimate Discards Alternative 3. Logbooks used to Estimate Discard with Logbook Audits					
Step 2. For Alternative 2 or 3, Choose an Option from Each of the Following Rows					
2.2.7.2 Eligibility for Camera Use	A. Initial and Continued Eligibility	B: Initial and Continued Eligibility with BTW Vessel Must be in Co-op to use EM			
2.2.7.5 EM Vessel Operation Plan - IVMP Expiration	A. No Expiration	B. Annual			
2.2.7.6 Declaration of EM Use	A. Annual - choose for entire year	B. Annual - project for year (monthly/quarterly)	C. Declare Until Changed (some limit on frequency of change)	D. Declare Until Changed (no limit on frequency)	
2.2.8.2 Data Transfer Process (Not Mutually Exclusive)	A. PSMFC Staff	B. EM provider	C. SS Catch Monitor	D. Vessel Operator (crew)	E. 3rd Party
2.2.8.4 Video Review	A. NMFS	B. PSMFC	C. EM Provider	D. 3rd Party	
2.2.8.5 Payment for Scientific Data Collection/Observers	A. Government	B. Industry	C. Combination		
2.2.10 Spatial Variation for High Bycatch Areas (BTW Only)	A. None	B. In High Bycatch Areas Use Observers	C. In High Bycatch Areas Review more Video		
2.2.11 Implementation	A. None	B. Use EFPs to Test Policy	C. Phase in By Sector - Whiting; BTW/Mid-nonwhiting, Fixed Gear	D. Loosen Species Retention Over Time	E. Use EFPs to Develop Policy;

a/ Category 1 discards include fish dumped off deck (e.g., shoveled, picked out of net), dumped/washed out of net for safety reasons (bleeding, pull zipper, etc.), unobserved sets/hauls, fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.
b/ Category 2 discards include fish that drop off gear, are left floating in water, are consumed or used as bait and estimates for entanglement or catch by lost gear.
c/ "Routine process" would establish a list of species for which discard requirements can be changed through routine inseason action as specified in Section 6.2.1 of the groundfish FMP.

GROUNDFISH MANAGEMENT TEAM REPORT ON THE ELECTRONIC MONITORING REGULATORY PROCESS FINAL PREFERRED ALTERNATIVES AND NEXT STEPS

The Groundfish Management Team (GMT) reviewed the materials under this agenda item and received a thorough overview from Council Staff Officer Mr. Brett Wiedoff. Following the discussion, the GMT developed some general thoughts, specific points that may need more clarification, and additional analyses that may inform the alternatives. We also provide comment on some of the alternatives and analytical scenarios. The GMT felt that some of the detailed alternatives were more technical in nature and therefore beyond the purview of our role (e.g., selection between camera systems).

Overarching Comments

Prior to final action, the Council should evaluate whether the electronic monitoring (EM) program design, outlined in the alternatives and analysis, are sufficient to meet the stated program objectives (Agenda Item J.3.a, Attachment 1). The GMT supports the Purpose and Needs Statement for developing an EM program as described in Attachment 1. Not only should the EM regulations meet the goals and objectives of national policies and standards, the Pacific Coast Groundfish Fishery Management Plan (FMP), the trawl rationalization program, and all applicable laws (e.g. Magnuson-Stevens Fishery Conservation and Management Act), any developed EM program should adequately monitor the individual fishing quota (IFQ) program for compliance while allowing for increased flexibility. However, the GMT wants to ensure that the regulations are able to at least maintain the quality of the individual accountability and catch monitoring currently produced by the observer program.

In June 2013, twelve additional objectives specific to EM regulations were adopted after a public scoping process. Those objectives included maintaining the current level of catch accountability for the fleet, having an equitable distribution of monitoring coverage, supporting the collection of biological information, and maintaining capabilities for annual catch limit (ACL) management, including those non-quota species. As EM regulations move forward, we recommend that the Council take into careful consideration that current levels of compliance monitoring for both targeted and discarded species are not lost. Such losses would degrade the integrity of the IFQ program and could reverse the progress that has been made in improving individual accountability, catch accounting, and rebuilding of overfished species. Therefore, the GMT suggests that by using the information that can be learned from exempted fishing permits (EFPs), the Council can develop an EM program that adequately monitors the IFQ program for accounting.

Typically, when the Council recommends and the National Marine Fisheries Service (NMFS) issues an EFP, it is with the intention of understanding how a new gear, fishery, or monitoring program can be translated into regulations. The Council and NMFS wait for the results of the EFP and then analyze how it might be expanded to the fleet(s) more broadly. For EM, the Council has taken an alternative approach, attempting to develop EFPs and regulations simultaneously.

The GMT notes that if issuance of the EFPs and preparation or publication of the proposed rule occur at the same time, there would be no information from the EM EFPs to inform the proposed EM regulations. Depending on the timeliness of early EM EFP data, there may not even be much information gained from the EFPs before the end of the proposed rule public comment period or before NMFS is positioned to craft the EM regulations final rule.

The GMT recommends that the Council should wait for the results of the EFPs to better understand what species can be distinguished with the available equipment and camera configurations, how discarding behavior might be expected to change with EM compared to the current observer program, the difference between logbook and camera estimates of discards, costs of EM compared to the current observer program, etc., prior to EM rulemaking. This recommendation would dovetail with the recommendation of the Enforcement Consultants (EC) made in its June 2014 report (Agenda Item F.2.b, Supplemental EC Report, June 2014). The GMT has noted in previous statements that collection of additional information, perhaps through EFPs or other field testing efforts, is essential to development of EM regulations that meet the purpose, need, and objectives of the Council and industry (Agenda Item H.8.b, Supplemental GMT Report, November 2013). In April 2014 the Groundfish Advisory Subpanel (GAP) noted that some of the EFPs will help inform the regulatory process and they proposed delaying regulations if workload conflicts arose (Agenda Item C.7.b, Supplemental GAP Report, April 2014). Concerns outlined above are further supported by comments from at least two industry sector representatives (Agenda Item J.3.c Public Comment, September 2014).

Alternatively, if the Council desires to maintain momentum by taking action as soon as possible, the GMT suggests that the analysis and action be reworked and described as a framework approach. With a framework in place, program details and implementation plans could be developed later in a separate action and rulemaking. This should be done after the results of the EFPs are available and a more complete and informative analysis can be developed. Such an analysis would include data on species that can be verified for different sectors or fisheries, optimal camera configurations, comparability to logbook estimates, costs of operations, etc., that we expect to collect from the EFPs. The GMT understands that the action contemplated here is intended as a framework approach; however, it may be more transparent to the public and industry, as well as improving the analyses, to be explicit on that point.

Comments Regarding Alternatives

Tables 2-9, 2-10, and 2-11; 2.2.1.1 Video Reading Protocol: Regarding Alternative 2, Option A, of the Video Reading Protocol (also see page 45 of the Agenda Item J.3.a, Attachment 1), it would be beneficial to add a 100 percent logbook requirement with 100 percent video census. It is likely that the camera system or some other component of EM will malfunction or be unclear from time to time (Agenda Item F.2.b, PSMFC Report, June 2013). Adding this logbook requirement to the 100 percent video census alternative would provide back up for electronics and cameras that record catch, location, discard, etc. This information would otherwise be lost in the event of a malfunction. This information is required not only for individual accountability and IFQ-species tracking, but also for stock assessments and inseason management. Additionally, providing both tools early in the program would provide a clear comparison of logbooks versus electronics for estimating discard quantities. We note that that adding a logbook requirement to the 100 percent video census was discussed on page 109 of Agenda Item J.3.a,

Attachment 1. The team also recognizes that as data are analyzed, the 100 percent logbook level could be adjusted.

Tables 2-9, 2-10, and 2-11; Video Reading Protocol: Regarding Alternative 3 (logbook Audit), Agenda Item J.3.a, Attachment 1 shows that "there may be discrepancies in weight estimations between the logbook and the video image. The policy could be that the larger weight estimate would be used to debit the IFQ account." It is uncertain, however, what the discrepancy may trigger for the remaining sets/hauls during the trip. Would the remaining sets/hauls be audited or would some multiplication factor be applied to the remaining logbook entries? For example, if the video audit resulted in a value that was 1.2 times higher than the logbook, then would the remaining logbook entries be increased by 1.2 times?

This led the GMT to further discuss the complications of Alternative 3 under Video Reading Protocol. There will certainly be some variance in weight estimates for both cameras and logbooks. Neither is expected to provide precise weight estimates at all times. Understanding that both methods will have an associated variance, how much of a difference between the two estimates is acceptable before triggering a penalty?

Additional Analyses

Discard of selected species per trip

The GMT was curious about the distribution of discard rates and amounts among trips within the IFQ fishery. In order to understand this better, we analyzed West Coast Groundfish Observer Program (WCGOP) data for IFQ trips during the 2011 and 2012 on discards and retained fish for a subset of species drawn from tables in Agenda Item J.3.a Attachment 1 September 2014. This may provide information about the trade-offs between "maximized retention" or "optimized retention" alternatives. This initial analysis is intended as an example and is not intended to be comprehensive. For simplicity, this analysis made no distinction between regional management groups (e.g. sablefish north or south of 36° N. latitude). Rockfish were not included in this exploratory analysis under the belief that EM systems for identifying rockfish by species are less likely to be available in the short term. Additional species or finer scale management divisions could be included in any future analysis if that would be useful.

The results of this analysis are shown in Figure 1, Figure 2, Figure 3, and Figure 4. In general, the IFQ trawl trips had a higher number of encounters and higher amounts of discards for the species considered in this analysis (Figure 1 and Figure 2) than the IFQ fixed gear trips (Figure 3 and Figure 4). The species can generally be categorized as either primarily discarded or primarily retained (as indicated by the majority of trips associated with each species falling into a single bin—either the 0-20 percent or the 80-100 percent). An exception was the "Assorted Skates" category (which included all skates other than longnose skate), where trips were divided almost equally between high and low discard of this group.

In the IFQ trawl trips, the amount of discards most commonly fell into the 1–200 lb bin for all species except sablefish, where the majority of trips that encountered sablefish had 0 discards. The species with the highest average discard amounts on trawl trips was arrowtooth flounder, with an average discard of 436 lb per trip with 214 trips discarding more than 1,000 lb of

arrowtooth followed by Pacific whiting with an average discard of 413 lb with 227 trips discarding more than 1,000 lb of whiting.

Sablefish were encountered in all 600 IFQ fixed gear trips in the analysis. The discard rate for sablefish in these fixed gear trips was typically low, with 592 of 600 trips falling in the 0–20 percent bin. The average amount of sablefish discarded in the fixed gear trips was 149 lbs, with the majority of trips discarding 1–200 lb of sablefish. Ninety-three trips discarded 200–1,000 lb of sablefish and 20 trips had 1,000 lb or more of sablefish discarded.

EM Impact on the Reduction of Observers for Biological Sampling

There have been concerns raised by some that biological sampling opportunities that are necessary to inform stock assessments may be lost by replacing human observers with EM (Agenda Item F.2.b, Supplemental GMT Report, June 2014). This section provides one tool that may provide some indication of the relative number of vessels that may continue to carry observers if EM is adopted under various assumptions.

The first task is to estimate the number of vessels that may carry observers under status quo. The projected number shown in the following paragraph includes only vessels participating in the IFQ program. The GMT would like to note that biological sampling will continue to occur on non-IFQ vessels regardless of the EM decisions made for the IFQ fishery.

We accessed data provided in Agenda Item J.3.b NMFS Report to initiate our rough estimate of the number of catch share vessels that may carry observers under status quo. During 2011, 114 vessels participated in the IFQ fishery, with 18 vessels fishing in the at-sea whiting fishery and 26 vessels fishing in the shoreside whiting fishery. For illustrative purposes, we assumed that the remaining vessels fished in the IFQ shoreside non-whiting trawl and fixed gear fisheries (i.e., 70 vessels).

Under status quo, where 100 percent of the trips are observed, we assume a total of 114 vessels would be observed, 100 percent of the time (Figure 5). If at-sea catcher vessels opt for EM, biological data could still be collected for each catcher vessel onboard the motherships as long as fishing locations etc. were recorded for individual hauls delivered to motherships. Hence, in this case, we assume that we will obtain biological data for the 18 vessels that deliver their catches to motherships, regardless of whether these catcher vessels carry an observer or carry EM. For the shoreside vessels that use EM, we assumed 25 percent observer coverage, based on the range of potential coverage shown in Agenda Item J.3.a, Attachment 1. It therefore takes 4 vessels at 25 percent observer coverage to reach 1 "vessel" in Figure 5. Here, "vessels" are in quotes because a single vessel would be equal to 25 percent of a vessel. Hence, if all 96 shoreside vessels opted for EM, then the minimum number of "vessels" that would carry observers in the shoreside fleet would be 24 "vessels". In total, under these assumptions, we would maintain 42 complete "vessels" (18 at-sea vessels for which catches would be sampled onboard motherships + 24 shoreside "vessels" = 42 total "vessels").

Figure 5 shows that some level of scientific observer coverage would be maintained relative to different levels of EM. This information is useful to note. However, other questions still remain such as: how many biological samples would be taken across vessels types within the IFQ

fishery; and what level of biological sampling may be "enough" for the purposes of stock assessments for different species, discard mortality reports, etc. These questions were posed to Jon McVeigh (NMFS, WCGOP) during his presentation to the Scientific and Statistical Committee (SSC) at this meeting. Mr. McVeigh indicated that estimating how many biological samples or observed discards would be obtained under an EM program would depend heavily on the specific alternatives and the program details associated with those alternatives. When developing the EM program, one of the main questions would be what effect would a reduction in the rate of biological sampling have on the uncertainty in the stock assessments and other analyses that depend on these samples. For some species, reductions in sampling coverage may be adequate to understand population trends. For some rare species, even the current 100 percent observer coverage on IFQ vessels has not generated enough samples to produce the scientific information necessary to provide the best level of analysis. The GMT asked similar questions and noted that levels of precision and accuracy that might be required depends on the "end-user", whether a fishermen, stock assessor, fishery manager, or enforcement officer (Agenda Item F.2.b, Supplemental GMT Report, June 2014). Thus, there is no simple answer to the question of how much coverage is "enough".

Corrections/Clarifications

The GMT notes that there appears to be some items in the report that may be incorrect or, as stated, may be misleading and in need of correction and/or clarification. The team does not feel it is productive to try to identify all such items at this time, but would like to point out that there are a few that caught our attention. The following is a list of those items:

- *Pg 52. The text shows that discard of lingcod less than 22 or 24 inches is required, but the information would need to be verifiable under the EM system.*
    - This is a retention and landing restriction that is typically verified at the dock (e.g., by enforcement) and not on the vessel, under current circumstances. With that said, it is unclear why electronic monitoring would be needed to verify the minimum length requirement of lingcod at sea.

- *Pg 57. Table 2-4, Data collected from Pacific halibut caught on IFQ vessels.*
    - This table shows that all halibut caught by bottom trawl are counted in the haul under current conditions. The GMT understands, however, that in some sets/hauls, Pacific halibut may be sampled (Informational Report 3, September 2014).

- *Page 41. Bulleted section that describes the fisheries*
    - The definition of one of the fisheries is stated as: "The fixed gear fishery (includes longline with hook-and-line and longline with pots)." The terminology is not clear.

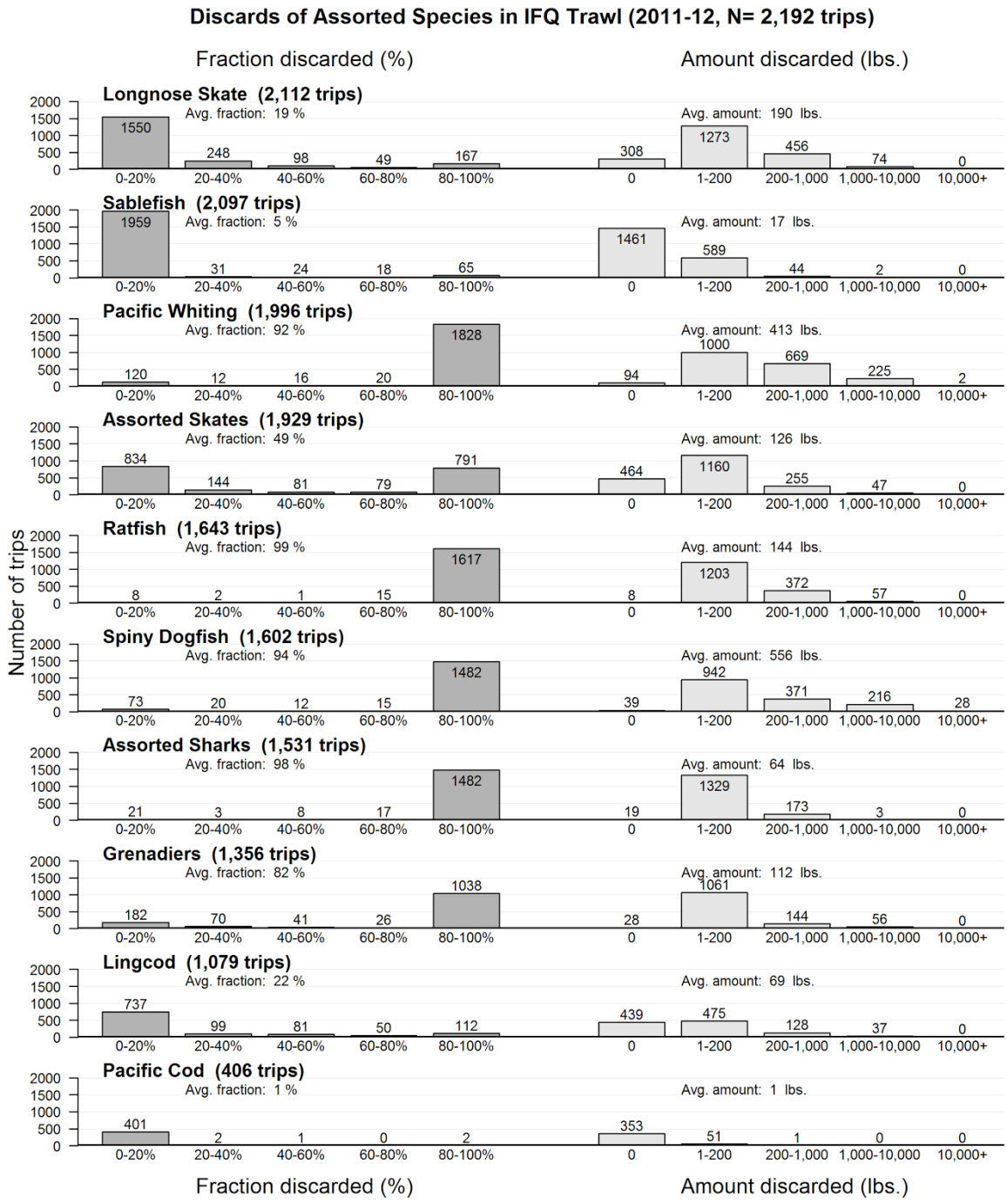


Figure 1. Fraction discarded (percent, left side) and amount discarded (lbs., right side) for various species, on a per trip basis for IFQ trips using Trawl gear. Bars show number of trips within the bins for each quantity with average values noted above each set of bars. The number of trips in which each species was encountered (whether retained or discarded) is shown next to each species name and the species are sorted by these values.

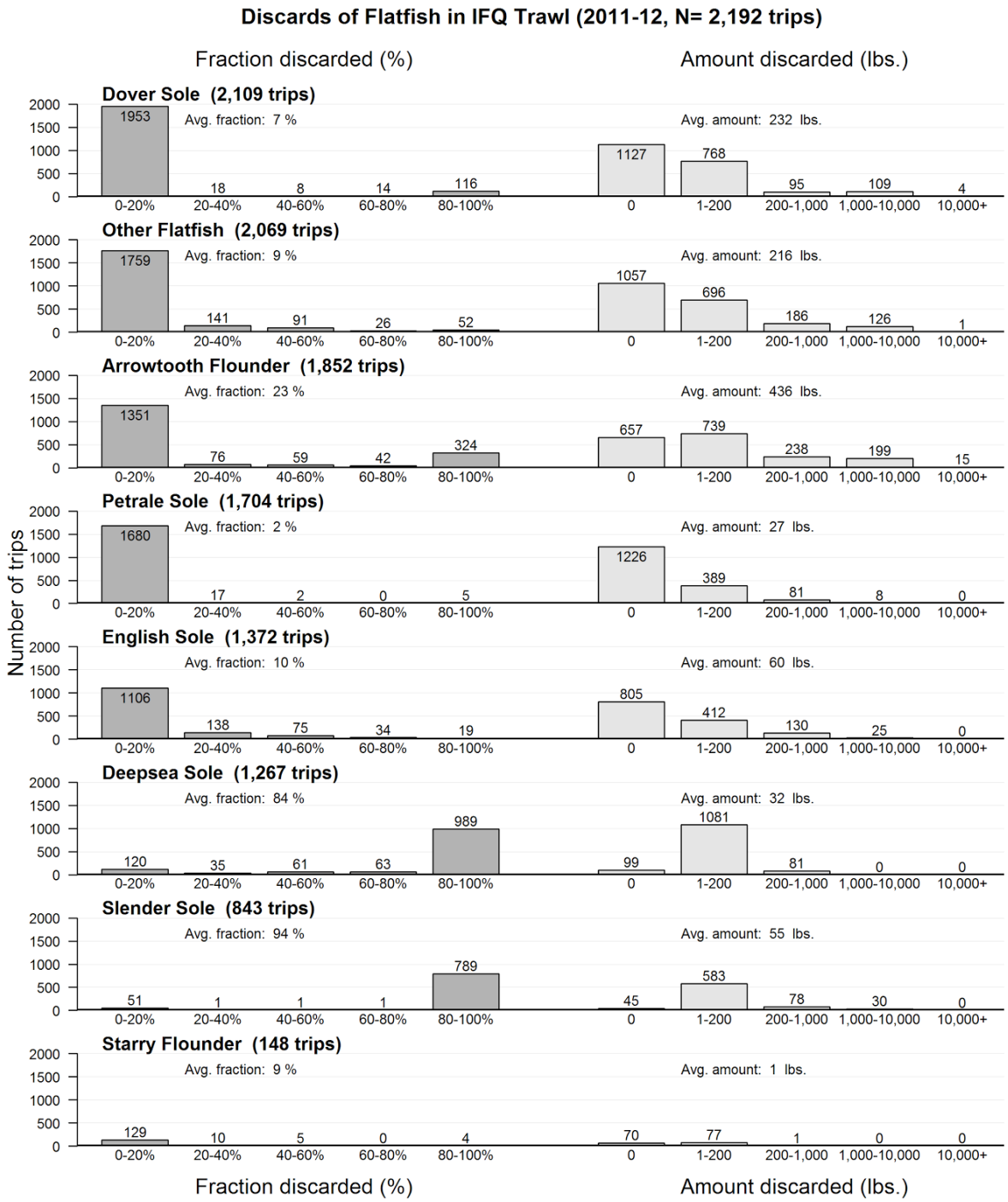


Figure 2. Fraction discarded (percent, left side) and amount discarded (lbs., right side) for flatfish species, on a per trip basis for IFQ trips using Trawl gear. Bars show number of trips within the bins for each quantity with average values noted above each set of bars. The number of trips in which each species was encountered (whether retained or discarded) is shown next to each species name and the species are sorted by these values.

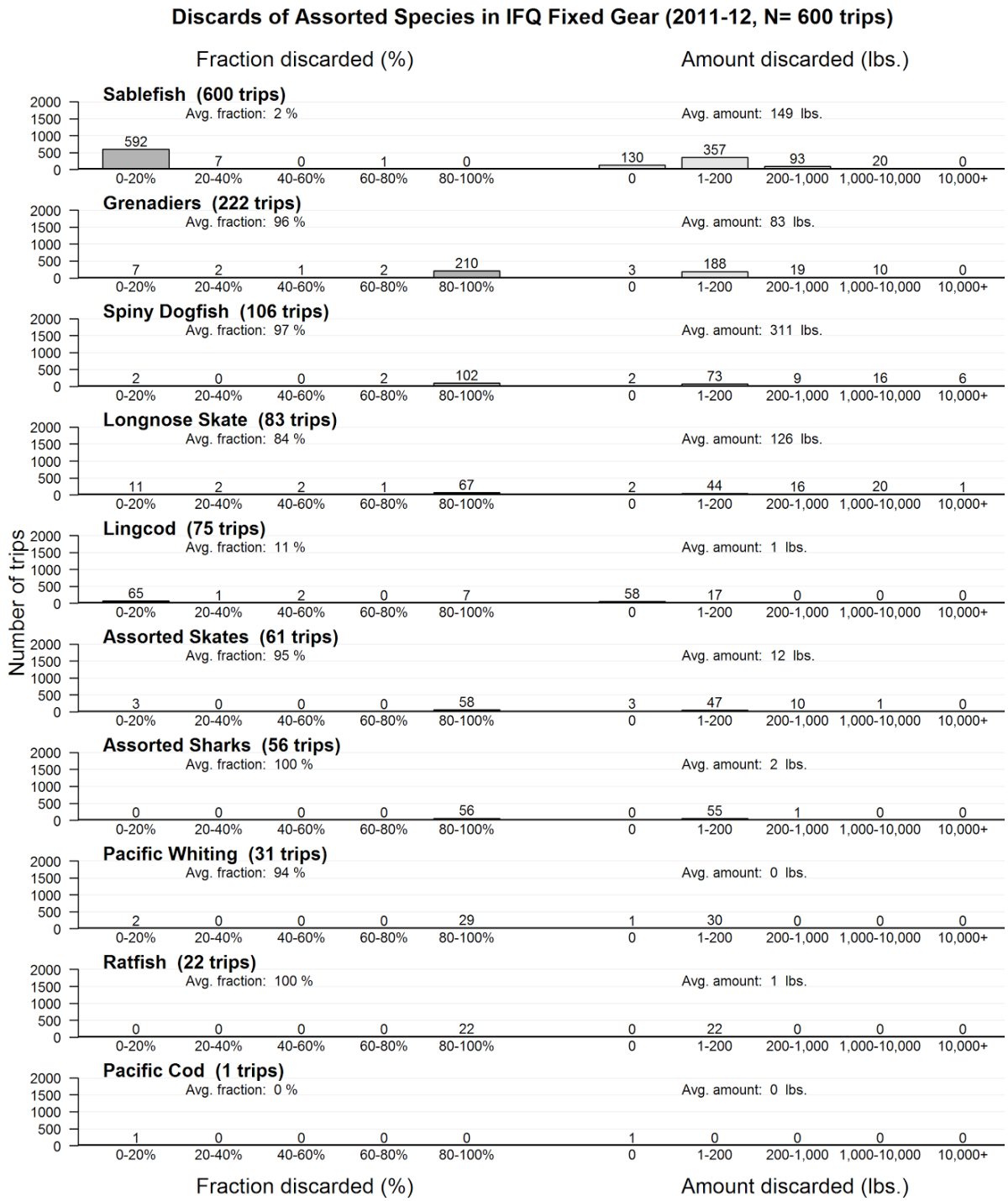


Figure 3. Fraction discarded (percent, left side) and amount discarded (lbs., right side) for various species, on a per trip basis for IFQ trips using fixed gear. Bars show number of trips within the bins for each quantity with average values noted above each set of bars. The number of trips in which each species was encountered (whether retained or discarded) is shown next to each species name and the species are sorted by these values.

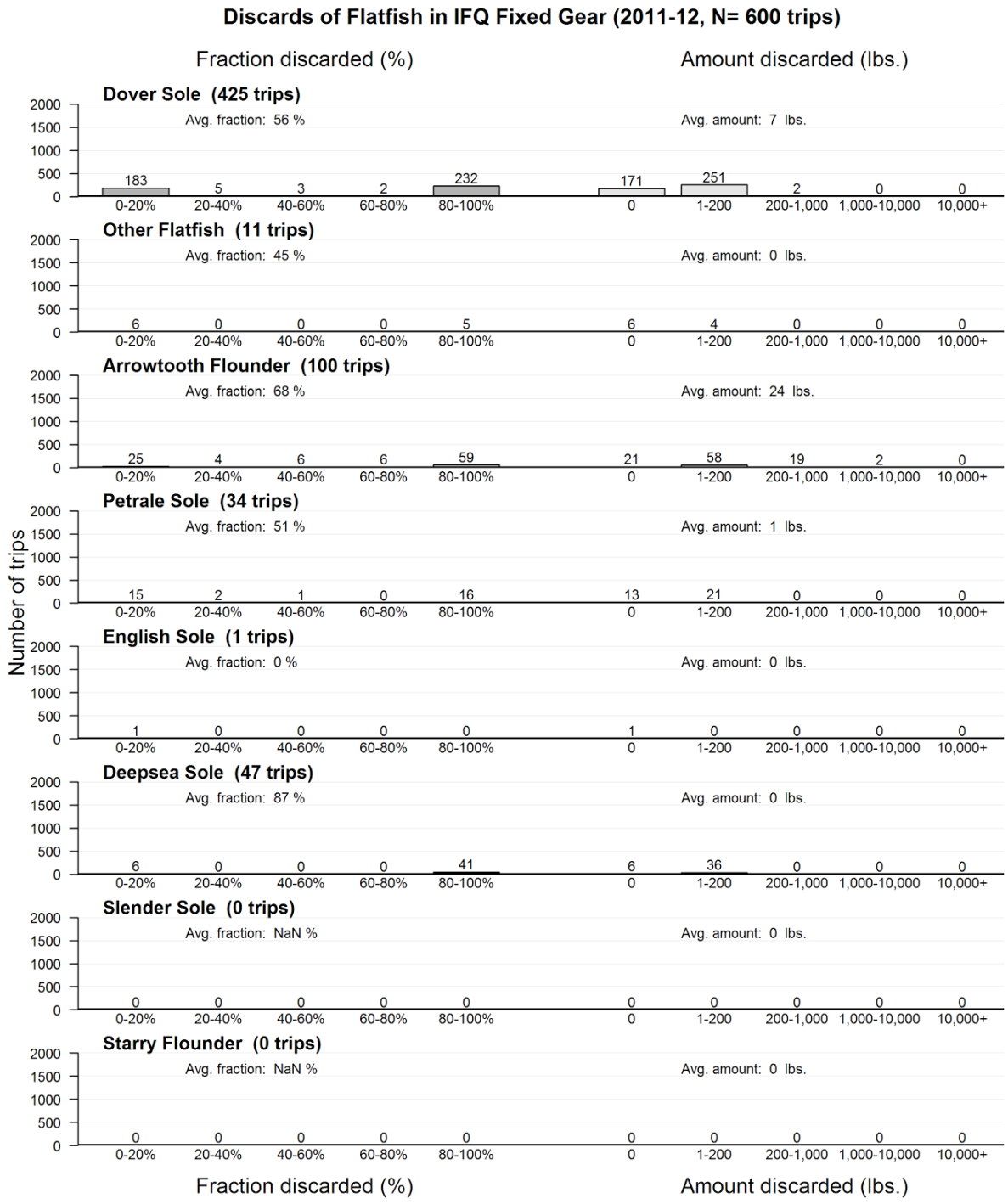


Figure 4. Fraction discarded (percent, left side) and amount discarded (lbs., right side) for flatfish species, on a per trip basis for IFQ trips using fixed gear. Bars show number of trips within the bins for each quantity with average values noted above each set of bars. The number of trips in which each species was encountered (whether retained or discarded) is shown next to each species name.

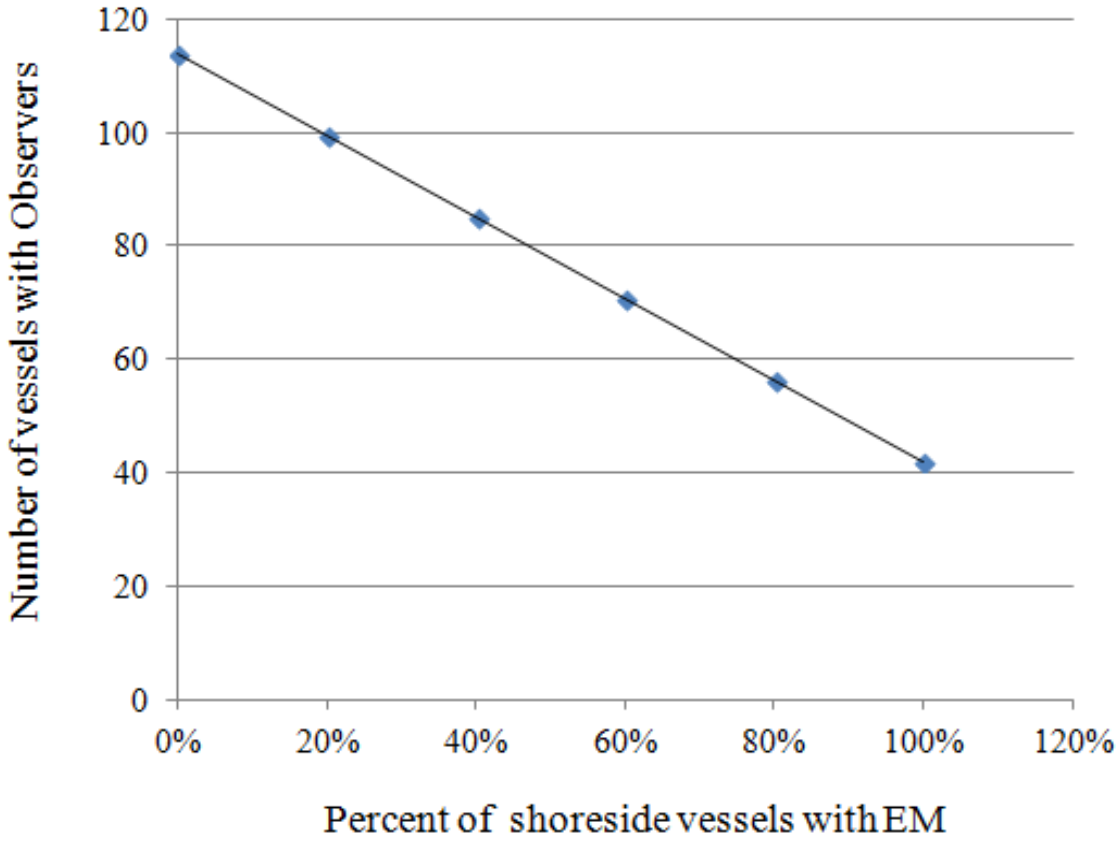


Figure 5. Hypothetical relationship between the percent of vessels opting for electronic monitoring and the number of "vessels" that would carry observers. Note that the number of "vessels" is a sum of proportions. For example, if 4 vessels opted for EM, those vessels would be required to carry observers 25 percent of the time, and the number of "vessels" on the y-axis would equal 1 (not 4), under the assumptions used for this illustrative analysis.

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

On September 4, Ms. Heather Mann raised *via* e-mail a series of questions that NMFS believes captured the concerns of many about NMFS' approach and capabilities relative to electronic monitoring EFP and regulatory initiatives. NMFS appreciates the questions and the opportunity to provide its responses to the Council.

How can the Council take final action on a package that is supposed to be informed by EFPs that haven't been implemented yet?

The Council has been weighing for some time the merits of both EFPs and a regulatory approach to electronic monitoring. NMFS has no issue with the notion that the Council may have been initially uncertain about whether sufficient information existed to pursue regulations, but that its confidence in the approach could grow over time to a point at which a regulatory approach was viewed as appropriate. At the same time (and without commenting on whether NMFS agrees), NMFS is comfortable with the potential that the Council could recommend regulations but also want to "test" its decisions against alternatives investigated in EFPs.

If final action is taken, where does the workload fall to complete the regulations? Is this with Council staff or NMFS staff or a combination of both?

NMFS anticipates its partnership with the Council will be fully utilized to complete the related tasks.

Will work on the regulatory EM package compete with the resources being used to implement the EFP?

NMFS is confident the Council, industry and the interested public is fully aware of the fact that its resources are finite. NMFS also acknowledges that frustrations are widespread about NMFS raising workload as an obstacle to desired outcomes. Within that context, NMFS has presented a workload plan that includes all workload through or in the "pipeline" which includes 15 rulemaking federal register publications that have occurred to-date in 2014, progress on at least 15 other actions heading toward rulemaking (See Agenda *Item J.1.b (NMFS Report 1), four EM EFPs by 2015, one (and perhaps two) EM regulatory packages by 2016, and the pursuit of two important items within the "omnibus." NMFS welcomes a robust discussion with the Council on whether this workload plan should be adjusted, but assumes the Council appreciates that insertion of a different priority into the workload plan will come at the expense of one currently included.*

Does the regulatory track then displace the EFP track? And if yes, can the regs be in place for the start of the 2015 whiting season?

As mentioned above, the workload plan currently includes both EFPs in 2015 and regulations in 2016. While abandoning one or more of the EFPs would free up some resources within the workload plan, NMFS does not believe at this point that additional resources could advance regulations to 2015. NMFS believes that the resolution of policy, financial and operational issues together with required timeframes within the regulatory process makes 2016 the appropriate target date for regulations.

If the regs don't supersede the EFP process will the Sept. PFMC meeting final action need to be revisited again in two years after the EFPs have been in place after new information becomes available? Is making the effort now and following the Council meeting on the regulatory side a waste of time, money and resources?

The short answer is "perhaps." The Council may or may not decide to adjust the regulations based on what is learned from EFPs. NMFS would point out, however, that this is always the case with EFPs, regardless of whether the underlying regulation is new or old. The fact that these EFPs relate to a potential and new regulation does not trouble NMFS.

Could these resources be better spent working on trawl trailing amendments that are desperately needed?

As mentioned above, NMFS has outlined its workload plan that includes EFPs, regulations and several items within the so-called "omnibus" and NMFS welcomes a robust discussion with the Council about whether adjustments within the resources available are appropriate.

Who is paying for all of this? And where is the money coming from - is this cost recovery dollars or new money or reprogrammed money? What is the industry's responsibility?

NMFS has had internal discussions about costs and sources of funds – none of which sheds much light on answers in the coming fiscal year. It is likely that NMFS will begin the fiscal year on a "continuing resolution" and be uncertain of its appropriations for some time. That likelihood is the primary obstacle to clarity on the federal government's role in funding related activities.

NMFS recently has convened a national, internal workgroup to vet questions of national consistency related to electronic monitoring, including questions related to funding and confidentiality of data. Steve Freese of the West Coast Region participates in this new group.

Illustrative Schedules Draft 9/14

EFPS

	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
NEPA	Review Docs	Scoping	Analysis		ROD FONSI											
Halibut	IPHC Consult	IPHC Review	IPHC Industry PSMC Discussions		IPHC Letter											
Performance Standards		NMFS Develop	IPHC Industry PSMC OLE Discussions													
IFQ/MSCV Accounting		Concepts for PRA	NMFS OLE PSMFC IND Discussions		Computer Program Database			Beta Test								
PRA	PRA Consult	Submit Package	FR Notice	Public Comment		OMB Clearance										
NMFS Approval				**Final Decision FR Notice***		**Draft Terms & Conditions Consult w IND**		**Issue EFPS**								

Regulations

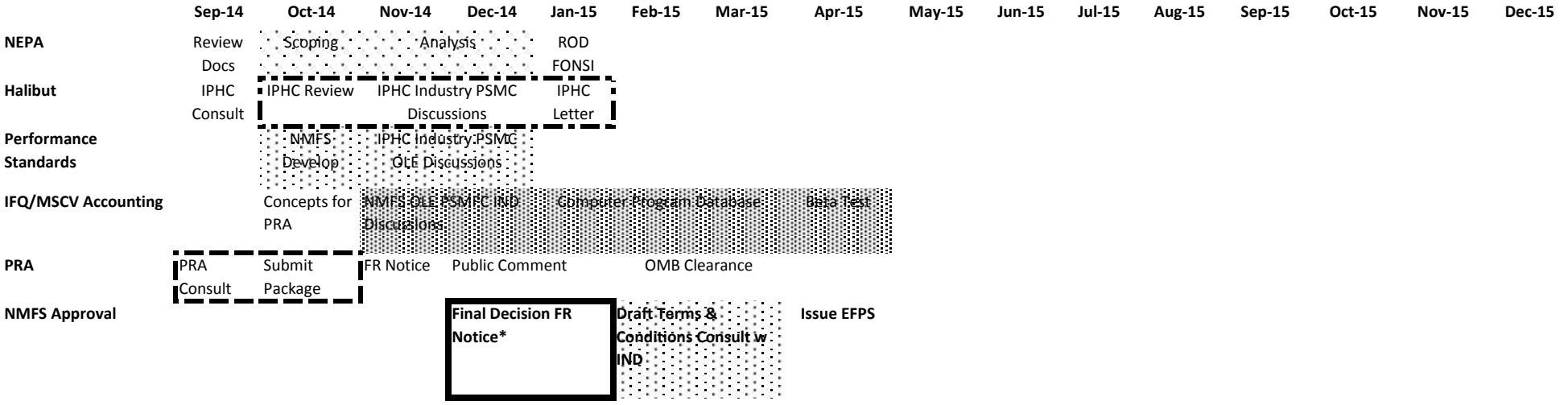
Council	FPAs	Transmit to NMFS						Deeming								
NEPA		Scoping	Develop NEPA Document		NEPA Review								ROD FONSI			
Halibut		IPHC Consult	IPHC Review	IPHC Industry PSMC PFMC staff Discussions									IPHC Letter			
Standards & Admin Processes			Scoping	Development-IND PSMFC OLE PFMC Staff											Admin Processes Initiated	
PRA						Develop Package	Submit Package									
RIR/RFA							Develop Analysis RIR IRFA						FRFA	Compliance Guides & Outreach		
IFQ/MSCV Accounting										Scope	Programming Database		Beta Testing			

Rule Making	**Draft***	**Legal and HQs Review**	**Publish Proposed Rule**	**Public Comment**	**Respond to Comments**	**Legal and HQs Review**	**Publish Final Rule**	**Effective**

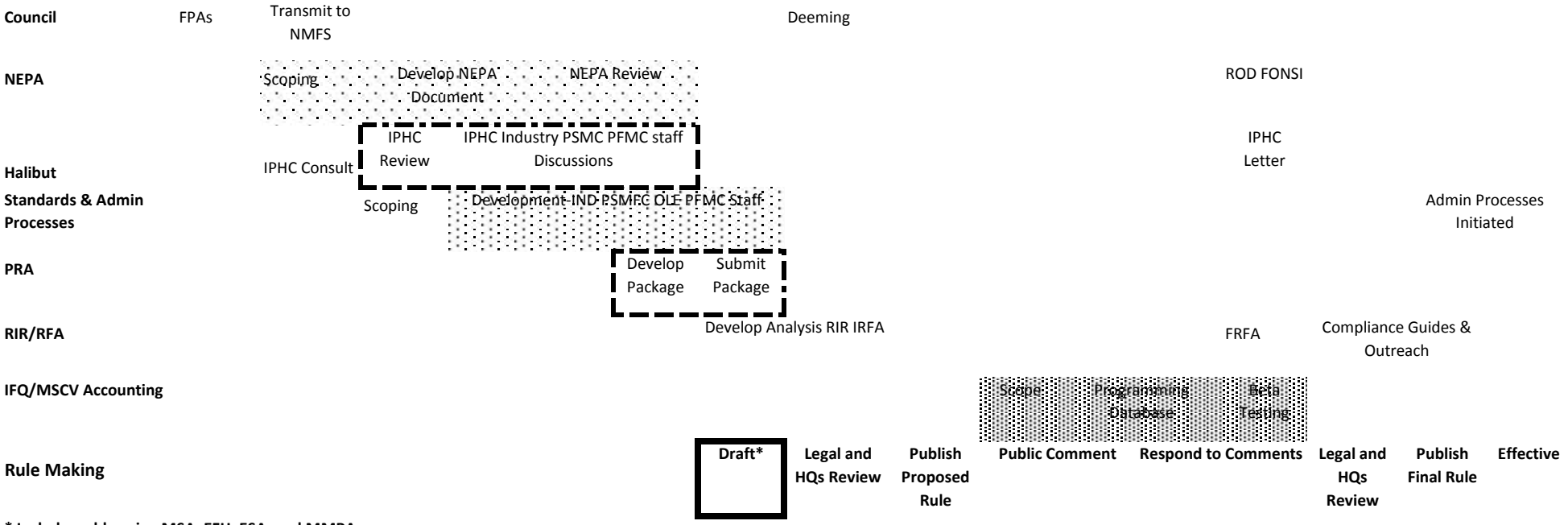
*** Includes addressing MSA, EFH, ESA, and MMPA**

Illustrative Schedules Draft 9/14

EFPS



Regulations



*** Includes addressing MSA, EFH, ESA, and MMPA**

Broad Project Tasks and Estimated Workload For the Addition[1] of Electronic Monitoring EFPs *and* Regulations[2]

Tasks	Rough FTE Estimates
Regulation Development/Modification	1 @ NMFS
Regulatory Process Support (NEPA/Economics/Legal Review)	1 @ NMFS
EM Permit Qualification	.5 @ NMFS
Logistics Support-IVMP/issue reconciliation/travel	1 @ PSMFC
Logbook Program/compliance and data reconciliation	0.5 @ PSMFC
Programming support (logbook and vessel accounting)	1 @ PSMFC
Video Review[3]	2 @ PSMFC[4]
Data Analysis/Statistician	1 @ PSMFC
Data Management and Storage	0.5 @ PSMFC
Council Staff	1 @ PFMC
Total FTE's	**9.5**
FTEs @ $100,000	**$1,050,000**

[1] As currently envisioned, the EM program reduces slightly (de-briefers), but does not replace, existing data gathering and analysis infrastructure within NMFS. It largely is *in addition* to existing responsibilities.

[2] Does not include Science or Enforcement Costs.

[3] If video review was to be conducted by a third party, these 2 FTEs would be replaced by 0.5 FTE for a Video Auditor.

[4] There is uncertainty about whether two video reviewers are sufficient to provide catch data to the fleet within two weeks, the current objective.

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

RE: Agenda Item J.3.c.

September 3, 2014

Dear Ms. Lowman & Council Members

Please accept these comments on behalf of the Midwater Trawlers Cooperative (MTC) and United Catcher Boats (UCB). MTC & UCB represent midwater trawl catcher vessels that participate in both the at-sea and shoreside whiting fisheries on the west coast and pollock, cod, and other groundfish fisheries in the Bering Sea and Gulf of Alaska. Both organizations have been very involved in the pursuit of electronic monitoring (EM) in lieu of human observers in the west coast trawl ITQ fishery and the executive directors of both organizations serve on the Council's Groundfish Electronic Monitoring Policy Advisory Committee and Groundfish Advisory Panel as representatives for the whiting trawl catcher vessel fleet.

We appreciate the work thus far that has gone into moving forward with electronic monitoring for the west coast whiting fleet. We believe that Council staff has done an excellent job putting together the draft regulatory analysis with the information that is currently available. Unfortunately, not all the information is available to make an informed final decision at this time. At the same time, we have significant concerns regarding the current Exempted Fishing Permit (EFP) process and the likelihood of having cameras on whiting boats for the 2015 season. While NMFS and the Council have tried to bifurcate these two processes, they are intrinsically related and separation is just not possible.

While the 2015 whiting season officially starts on May 15th, we will need to know well in advance of that time the parameters of the EFP EM program. The two possible EM providers have contacted us vying for our business. Unfortunately, without knowing the program specifications it is impossible to determine the next steps for us to work with the providers. Additionally, vessel owners/managers are contemplating their fishing plans and strategies for 2015 now but they cannot make

decisions about whether to use EM and be included in the Whiting EM EFP program if they do not know how much it will cost and what the requirements for participation will be. Lastly, we know that the observer providers themselves and the Observer Program at NMFS are anxious to know details on who is participating so that they can adjust their strategies accordingly to address the remaining needs of the trawl catcher vessel fleet. While we would ideally already have the details worked out now, we certainly need to know answers to key questions prior to the end of 2014 and certainly no later than January 1, 2015 to make the EM EFP a reality for the 2015 season.

As we consider these issues related to the EM EFP we are also faced with the Council making a final decision on a regulatory package for EM at your meeting in Spokane this week. With this in mind, some of our additional concerns and questions are as follows:

- How can the Council take final action on a package that is supposed to be informed by EFPs that have not yet been implemented?
- If final action is taken, where does the workload fall to complete the regulations? Is this with Council staff or NMFS staff or a combination of both? Are there dedicated staff resources for this activity?
- Will work on the regulatory EM package compete with the resources being used to implement the EFPs? Will work on a regulatory package displace resources working on trawl trailing amendments?
- If final action is taken on the regulatory package, does the regulatory track then supersede the EFP track? And if yes, can the regulations realistically be in place for the start of the 2015 whiting season?
- If the regulatory package does not supersede the EFP process will the September PFMC meeting final action need to be revisited again in two years after the EFPs have been in place when new operational information becomes available? Is making the effort now and the associated work load following the Council meeting on the regulatory side a waste of extremely limited time, money and resources that could be better used?
- Could these resources be better spent working on trawl trailing amendments that are desperately needed?
- Who is paying for all of this? And where is the money coming from- is this cost recovery dollars or new money or reprogrammed money? What is the industry's responsibility in terms of funding? What falls off the table so this effort can be funded?
- How does the effort in the Pacific Council fit into the national effort from NMFS – will we be in a holding pattern until a national policy is developed?

Our two groups had agreed to support the 2-pronged approach for EM: regulatory

and EFP with the assumption that it would become apparent which approach made the best sense for our fishery and which approach would have the most likely chance of making cameras an option for catcher vessels in 2015. At that point the appropriate approach would seem to be the EFPs, which will eventually inform the regulatory process. However, it appears that both approaches are moving forward and potentially competing with each other for resources.

At this point we face a lot of confusion and unanswered questions and are uncertain that an EM camera system will be available for our fleet in 2015 regardless of whether through an EFP or a regulation. We would like some assurances that the EFP process is on track as NMFS previously indicated it was. We continue to believe that opportunities for cameras in lieu of human observers are an important component to a successful trawl ITQ program.

At this point, MTC and UCB recommend delaying final action on the regulatory process for whiting until the EFPs have had an opportunity to actually inform that process. While it is true that the whiting fleet is certainly the closest in terms of information to inform a final regulatory decision, there are still some issues that we hope to learn through the EFP including:

1. Whether total review of the data is more efficient, meets the goals of Amendment 20 and is a least cost option relative to having a discard logbook and follow-up audit option.
2. We want to get a good understanding of the costs associated with using EM versus human observers. While we have good information from Archipelago on the costs of the original shoreside whiting EM program, technology has advanced and compliance requirements are greater which may lead to different cost scenarios now.
3. In June of 2014 during the regulatory discussion Council member Dale Myer introduced a new concept for the at-sea whiting fleet that includes taking incidental discard amounts of whiting off the top of a TAC and we would like to potentially explore that approach as well.

We are committed to a functional and cost-effective EM program that meets the goals and objectives of Amendment 20. We are not interested in duplicative and/or redundant efforts that tax limited resources and we believe that the EFP process has the most chance for success in the near term while it also will produce information that is essential for the longer-term regulatory process.

Thank you for your consideration.

Sincerely,

Heather Mann
Midwater Trawlers Cooperative

Brent Paine
United Catcher Boats

Agenda Item J.4
Situation Summary
September 2014

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. This agenda item will consider inseason adjustments to ongoing 2014 fisheries. Potential inseason adjustments include adjustments to Rockfish Conservation Area 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.

The National Marine Fisheries Service (NMFS) provided a report on the catch to date and related metrics for the 2014 Shorebased Individual Fishing Quota (IFQ) Program (Agenda Item J.4.b, NMFS Report). Public comment received by the public comment deadline is also included in the reference materials.

Council Action:

Consider information on the status of 2014 fisheries and adopt inseason adjustments, as necessary.

Reference Materials:

1. Agenda Item J.4.b, NMFS Report: West Coast Groundfish, Shorebased IFQ Program September 2014 Catch Report.
2. Agenda Item J.4.c, Public Comment.

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 Inseason Adjustments to 2014 Groundfish Fisheries

PFMC
08/18/14

Agenda Item J.4.b
NMFS Report
September 2014

West Coast Groundfish, Shorebased IFQ Program

September 2014 Catch Report

Sean E. Matson, Ph.D.

National Marine Fisheries Service

West Coast Region, Sustainable Fisheries Division

August 13, 2014

Contents

A. Figures

B. Tables

1. Summary

This report covers select topics in the West Coast Groundfish, Shorebased Individual Fishing Quota (IFQ) Program, for catch and related metrics, during 2013 and previous years for comparison. It should be considered along with the other reports published during 2014 (Agenda Item F.1. June 2014 PFMC, http://www.pcouncil.org/wp-content/uploads/F4b_SUP_NMFS_Rpt_WC_GF_ShorebasedIFQProgram_JUNE2014BB.pdf; Agenda Item D.4.b. March Pacific Fishery Management Council meeting (PFMC), included in the Groundfish Management Team (GMT) inseason statement, http://www.pcouncil.org/wp-content/uploads/D4b_SUP_GMT_RPT_MAR2014BB.pdf). Another report may be released for the November PFMC meeting, which would cover quota pound (QP) and quota share (QS) transfer activity, and potentially other topics.

In June, we reported that non-whiting IFQ landings, revenue, and numbers of trips with mid-water gear have been increasing rapidly since 2011 through 2013, with targets of yellowtail and widow rockfish. In contrast, non-trawl IFQ landings and revenue have been consistently dropping over the same period, coinciding with a declining trend in sablefish prices, the primary non-trawl target. Bottom trawl metrics varied little over this period by comparison. Retention rates have remained high, varied little from 2011 to 2013, and continued to be similar early in 2014. Monthly non-whiting effort and catch per unit effort (CPUE) were also tracking close to historical averages, except that January values were unusually high in 2014, coinciding with unusually high Dover sole and longspine thornyhead catch in January. Catch, effort, and retention was also covered in the March report.

In this September installment, we examined IFQ landings and revenue by gear type from 2011-2013 in finer detail for non-trawl gear, dividing it into hook-and-line and pot, at the request of industry members. We found that pot gear consistently takes a larger amount of landings and revenue, and garners higher prices than hook-and-line gear in the IFQ fishery. Landings from both types of non-trawl gear within IFQ have been declining during 2012 and 2013. We also found that non-whiting landings and revenue from mid-water gear have increased from trace amounts in 2011 up to 3.4 percent of non-whiting landings in 2013, higher than non-trawl gear types combined for that year. We also looked at the frequency of non-whiting deliveries by port group, comparing years before and during IFQ management, also at the request of industry members. We found that although the average number of trips per week has been lower during IFQ management than before it, the average amount landed per trip, and the average revenue per trip were both substantially higher in the rationalized fishery, suggesting improved efficiency. We saw that annual landings and revenue have been higher for some port groups under IFQ management, but lower for others. We examined landings and revenue from sablefish by gear type, and revised the early estimates from the 2012 annual IFQ report; we found a decline in the proportion of sablefish landings and revenue from IFQ non-trawl gears in general, but especially hook-and-line gear from 2011 to 2013. IFQ landings and resultant revenue for sablefish caught with all gears have been dropping, along with prices, during 2012 and 2013. Finally, we examined catch of rebuilding groundfish stocks before and during IFQ. Catch of rebuilding stocks has been lower on average during the first three years of IFQ than the three before it, although IFQ catch of those stocks has been gradually increasing from 2011 to 2013 for potentially different reasons among species.

2. Narrative

2.1. Data used in this report

Data from the Pacific Fisheries Information Network (PacFIN) and the National Marine Fisheries Service (NMFS) Shorebased IFQ Vessel Accounts Database (VA) were used for this report. PacFIN data were used to inform landings, revenue, gear type, and corresponding counts of trips, deliveries and vessels; they were queried from the VDRFD table on June 6, 2014 (originated from paper fish tickets). Data completeness at that time was estimated as 100 percent for years 2013 and earlier. Only data from groundfish landings on IFQ trips are presented. Trip type is designated based on vessel-day. NMFS VA data were used for total catch, landings, discard and derived metrics by IFQ species category. NMFS vessel account data were queried on June 10 2014; they are final and complete for years 2013 and earlier.

2.2. Non-whiting delivery frequency, landing size and revenue (source = PacFIN)

We examined the frequency of non-whiting deliveries by port group, comparing three years before and after IFQ, at the request of industry members (Figures 1 and 2, Tables 1-3). We found that although the average number of trips per week was lower during three years of IFQ management than the three years before it (between 40 and 91 percent of pre-IFQ levels), the average amount landed per trip, and the average revenue per trip were both substantially higher (120 to 207 percent, and 149 to 304 percent of pre-IFQ levels respectively; Figure 2, Table 2). This suggests improved efficiency, if one assumes that trips are of similar duration and distance traveled before and during IFQ management; we did not examine those factors here. Note that Figure 1 shows the average trips per week with standard deviation, along with annual sums of non-whiting landings and revenue by port group, while Figure 2 shows the average number of trips per week, landings per trip and revenue per trip, expressed as percent of pre-IFQ levels. Annual sum landings and revenue are higher for some port groups under IFQ management, but lower for others (Figure 1). Within the port groupings used for Figures 1 and 2, Central Oregon ports include Newport, Tillamook, and Garibaldi, Southern Oregon ports include those from Winchester Bay to the Oregon-California border, Northern California ports include those from the border to San Francisco, and Southern California ports include those south of San Francisco.

2.3. IFQ groundfish catch by gear type (source = PacFIN)

In the June report, we saw that IFQ non-trawl landings and revenue have been consistently dropping during 2012 and 2013, and that non-whiting landings, revenue, and trips with mid-water gear have been increasing rapidly over that time. Landings and revenue from bottom trawl gear have stayed consistently high. Sablefish is overwhelmingly the main species caught with fixed gear under IFQ, and primarily north of 36 degrees N. latitude. Yellowtail rockfish has been the most obvious target species from non-whiting mid-water trips, with substantial catch of widow rockfish as well.

This time we divided non-trawl gears further, into hook-and-line and pot, at the request of industry members (Figures 3-5, Table 4). This division couldn't be made with the 2014 data included in the June report, due to data confidentiality. With the additional division within non-trawl gear, we can see that

pot gear consistently took a larger amount of landings and revenue, and garnered higher prices than hook-and-line gear. Landings from both types of non-trawl gear within IFQ have been declining during 2012 and 2013. We can see that mid-water non-whiting landings and revenue have increased from trace amounts in 2011 to 3.4 percent of non-whiting landings in 2013, higher than non-trawl gear combined for 2013.

Annual trip counts followed a very similar pattern, but less so for vessels; non-whiting mid-water landings increased without an accompanying increase in vessel count. The number of vessels fishing non-whiting mid-water gear has varied little and average ex-vessel prices for these landings increased from 2011 to 2012, then dropped slightly in 2013 (Figure 5, Table 4). The number of vessels using pot gear fell off along with landings in 2013, but a few more vessels fished hook-and-line gear but caught less with it in 2013.

2.4. IFQ sablefish catch by gear type (source = PacFIN)

Turning to IFQ sablefish in particular, the data show a decline in the proportion of sablefish landings and revenue from IFQ non-trawl gears in general, but especially hook-and-line gear from 2011 to 2013 (Figure 6, Table 5). IFQ landings and resultant revenue for sablefish caught with all gears have been dropping, along with prices, during 2012 and 2013. We revised the estimates since our 2012 IFQ report (Agenda Item D.2.c. April PFMC, http://www.pcouncil.org/wp-content/uploads/D2c_SUP_NMFS_APR2013BB.pdf). Those data were preliminary, and were from a mix of early (January) electronic tickets and paper tickets. Final data from paper fish tickets show a different picture. Data for the June and later reports written during 2014 were produced from final and complete paper ticket data in PacFIN.

2.5. Catch of rebuilding species (source = WCGOP and NMFS VA)

Three-year average catches of rebuilding groundfish stocks (a.k.a. overfished species) are still lower after IFQ than during the three years before, and for many species catch is substantially lower (Figure 7, Tables 6 and 7). Three-year average catch of cowcod, darkblotched, Pacific ocean perch and yelloweye rockfish are all at levels lower than 50 percent of pre-IFQ; while bocaccio is at 70 percent, canary is at 81, and petrale sole is at 81 percent of pre-IFQ levels.

Total catch of overfished species showed a stark decrease in 2013, when we compared two years of IFQ catch to two years of pre-IFQ catch in last year's report. However, after three years of IFQ, we see a trend of increasing annual catch of several OFS species, including cowcod, canary, and bocaccio rockfish, as well as petrale sole, for potentially different reasons. Bocaccio, canary and petrale allocations have increased substantially since 2011, and attainment rates of those allocations have increased at the same time . However, petrale sole is a target species being managed under a rebuilding program, and attainment rates have been higher than 90 percent for all years under IFQ. Catch of yelloweye rockfish has not increased since 2011, but catch of Pacific ocean perch and darkblotched rockfish have increased somewhat (Table 7, Figure 7).

Fisher familiarity with the IFQ program after more than three years, coupled with increased confidence given established quota pound trading markets and risk pools may be driving increased catch and attainment of some of these species. Under IFQ management, catch of these species is behaving less like the "bycatch" paradigm of trip limit fisheries (pre-rationalization), and more like that of IFQ target species. Although many rebuilding species are probably more valuable as QP, and insurance for enabling catch of target species, the current era of closely managed individual vessel accounts with debiting of total catch for all IFQ species treats "bycatch species" the same way as targets, just with low quotas. Given that, it's not surprising to see catch increasing a bit. It's also not concerning, given that the allocations are set to ensure stock rebuilding on schedule, even if the entire allocations were caught.

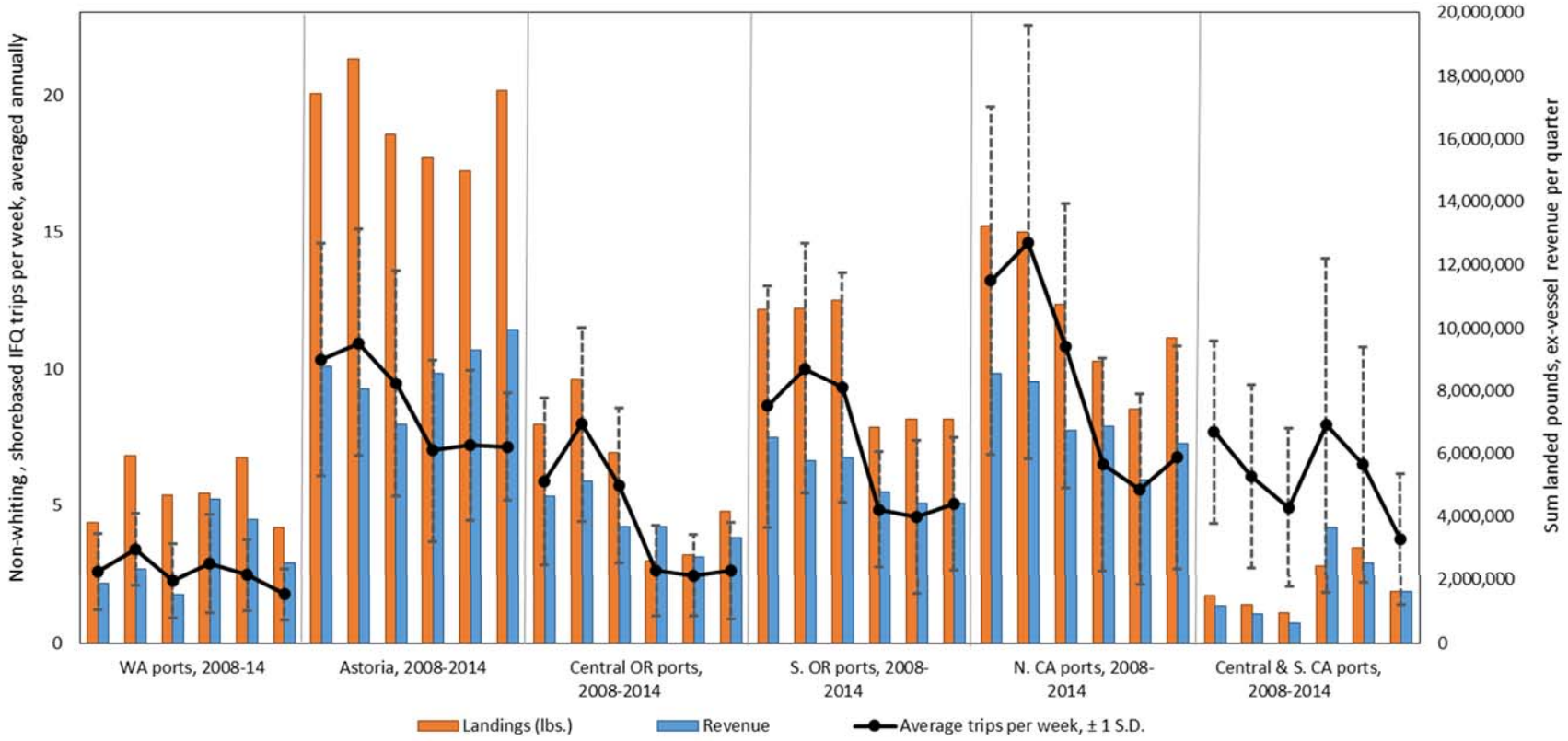


Figure 1. Average number of non-whiting IFQ trips per week (averaged annually), and annual non-whiting IFQ landings and revenue sums, among port groups for 2008 through 2013. The IFQ fishery began in 2011. Ports were grouped to preserve PacFIN data confidentiality. See text for port group details.

Table 1. Average non-whiting trips per week (averaged annually), and annual landings and revenue among port groups for 2008 through 2013, as well as distribution of annual landings and revenue sums among port groups, within each year (two right columns, "Land. dist." and "Rev. dist.". The IFQ fishery began in 2011. Ports were grouped to preserve PacFIN data confidentiality.

Year	Port group name	Ave.trips/ week	Std. dev.	Landings (lbs.)	Revenue	Land. dist.	Rev. dist.
2008	WA ports	2.59	1.38	3,807,312	1,884,507	7%	6%
2008	Astoria	10.34	4.26	17,440,948	8,785,359	33%	28%
2008	Central OR ports	5.88	3.05	6,930,055	4,654,545	13%	15%
2008	S. OR ports	8.62	4.42	10,611,562	6,508,949	20%	21%
2008	N. CA ports	13.23	6.36	13,238,977	8,563,250	25%	27%
2008	Central/S. CA ports	7.69	3.36	1,497,628	1,181,239	3%	4%
2009	WA ports	3.39	1.31	5,929,552	2,341,008	10%	8%
2009	Astoria	10.96	4.14	18,526,265	8,049,597	32%	26%
2009	Central OR ports	7.98	3.55	8,378,336	5,138,304	15%	17%
2009	S. OR ports	10.02	4.56	10,618,361	5,780,017	18%	19%
2009	N. CA ports	14.62	7.92	13,024,576	8,277,613	23%	27%
2009	Central/S. CA ports	6.08	3.34	1,206,495	910,186	2%	3%
2010	WA ports	2.26	1.35	4,687,538	1,537,406	9%	6%
2010	Astoria	9.46	4.12	16,165,609	6,917,069	33%	27%
2010	Central OR ports	5.73	2.83	6,023,878	3,676,880	12%	14%
2010	S. OR ports	9.32	4.20	10,887,617	5,882,231	22%	23%
2010	N. CA ports	10.84	5.20	10,750,683	6,738,560	22%	27%
2010	Central/S. CA ports	4.94	2.87	937,580	638,857	2%	3%
2011	WA ports	2.88	1.78	4,750,357	4,553,114	12%	14%
2011	Astoria	7.02	3.33	15,406,157	8,566,846	38%	27%
2011	Central OR ports	2.63	1.63	2,603,927	3,689,596	6%	11%
2011	S. OR ports	4.86	2.10	6,830,078	4,794,072	17%	15%
2011	N. CA ports	6.52	3.90	8,963,189	6,881,252	22%	21%
2011	Central/S. CA ports	7.94	6.09	2,436,250	3,668,140	6%	11%
2012	WA ports	2.47	1.28	5,877,453	3,902,634	14%	14%
2012	Astoria	7.22	2.76	14,983,755	9,325,606	36%	33%
2012	Central OR ports	2.46	1.48	2,793,972	2,705,143	7%	10%
2012	S. OR ports	4.58	2.79	7,098,437	4,419,603	17%	16%
2012	N. CA ports	5.60	3.47	7,410,158	5,156,652	18%	18%
2012	Central/S. CA ports	6.50	4.30	3,005,761	2,532,966	7%	9%
2013	WA ports	1.77	0.92	3,662,224	2,532,676	8%	9%
2013	Astoria	7.16	1.97	17,521,987	9,951,516	40%	35%
2013	Central OR ports	2.64	1.77	4,172,771	3,344,535	10%	12%
2013	S. OR ports	5.08	2.41	7,090,499	4,439,522	16%	16%
2013	N. CA ports	6.78	4.09	9,705,984	6,327,764	22%	22%
2013	Central/S. CA ports	3.77	2.39	1,641,214	1,612,347	4%	6%

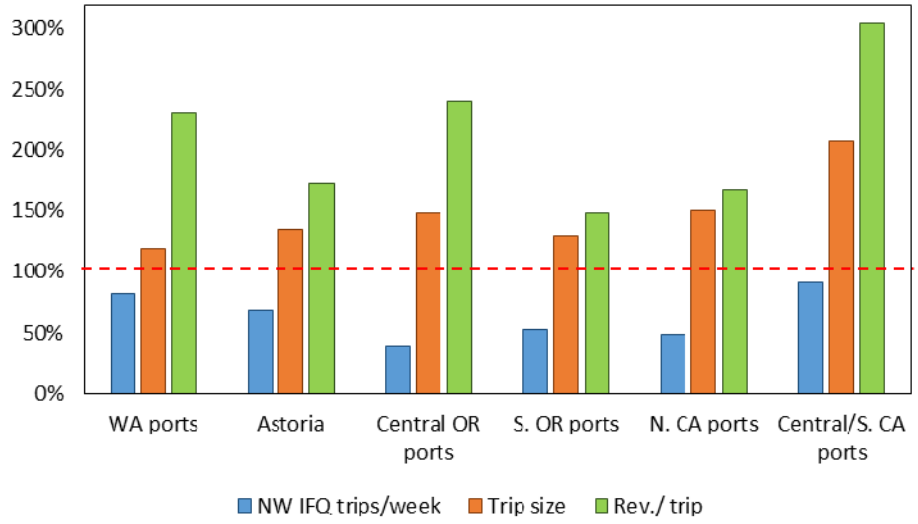


Figure 2. Post-IFQ average values for three metrics as a percent of the corresponding pre-IFQ average. Metrics expressed in this manner include from left to right, number of non-whiting IFQ trips per week (vessel-days, blue columns), average trip size (landed pounds round weight, orange columns), and revenue per trip (dollars per trip, green columns). For example, average weekly trip frequency in Astoria during IFQ was 68 percent of what it was before IFQ, but the average post-IFQ trip size is 135 percent, and post-IFQ average revenue per trip is 172 percent of pre-IFQ values. The pattern is consistent across port groups. See Tables 3 and 4 for values. Red dashed line is 100 percent (pre-IFQ = post-IFQ). See text for port group details.

Table 2. Average number of non-whiting IFQ trips per week (vessel-days) and standard deviation, from three years before IFQ compared with the three years following IFQ. Standard deviation is abbreviated as "std. dev." within the table.

Port group	Ave. trips/ week 2008-10	Std. Dev.	Ave. trips/ week 2011-14	Std. Dev.	Percent (post/pre-IFQ)
WA ports	2.8	1.4	2.3	1.4	82%
Astoria	10.3	4.2	7.0	2.7	68%
Central OR ports	6.6	3.3	2.6	1.7	40%
S. OR ports	9.3	4.4	4.9	2.4	52%
N. CA ports	12.9	6.8	6.3	3.7	49%
Central/S. CA ports	6.3	3.4	5.7	4.6	91%

Table 3. Average non-whiting IFQ trip size (landed pounds round weight), and revenue per trip, from three years before IFQ compared with the three years during IFQ. Percent change between three years before IFQ and during IFQ is shown in the two right hand columns. Also see Figure 6. Revenue is abbreviated as "rev." within the table, and standard deviation is abbreviated as "std. dev."

	2008-2010				2011-2014				Percent (post/pre-IFQ)	
Port group	Ave. trip size	Std. dev. trip size	Ave. rev./ trip	Std. dev. rev.	Ave. trip size	Std. dev. trip size	Ave. rev./trip	Std. dev. rev.	Trip size	Rev./ trip
WA ports	38,160	27,508	15,246	9,129	45,655	28,262	35,107	21,744	120%	230%
Astoria	33,418	21,954	15,226	8,754	45,072	25,465	26,194	13,911	135%	172%
Central OR ports	21,548	12,662	13,606	8,788	32,009	22,102	32,573	26,403	149%	239%
S. OR ports	22,089	13,565	12,497	8,316	28,597	17,581	18,576	11,330	129%	149%
N. CA ports	18,443	10,638	11,749	7,668	27,774	16,390	19,559	12,313	151%	166%
Central/S. CA ports	3,758	4,651	2,818	3,729	7,775	8,653	8,577	9,601	207%	304%

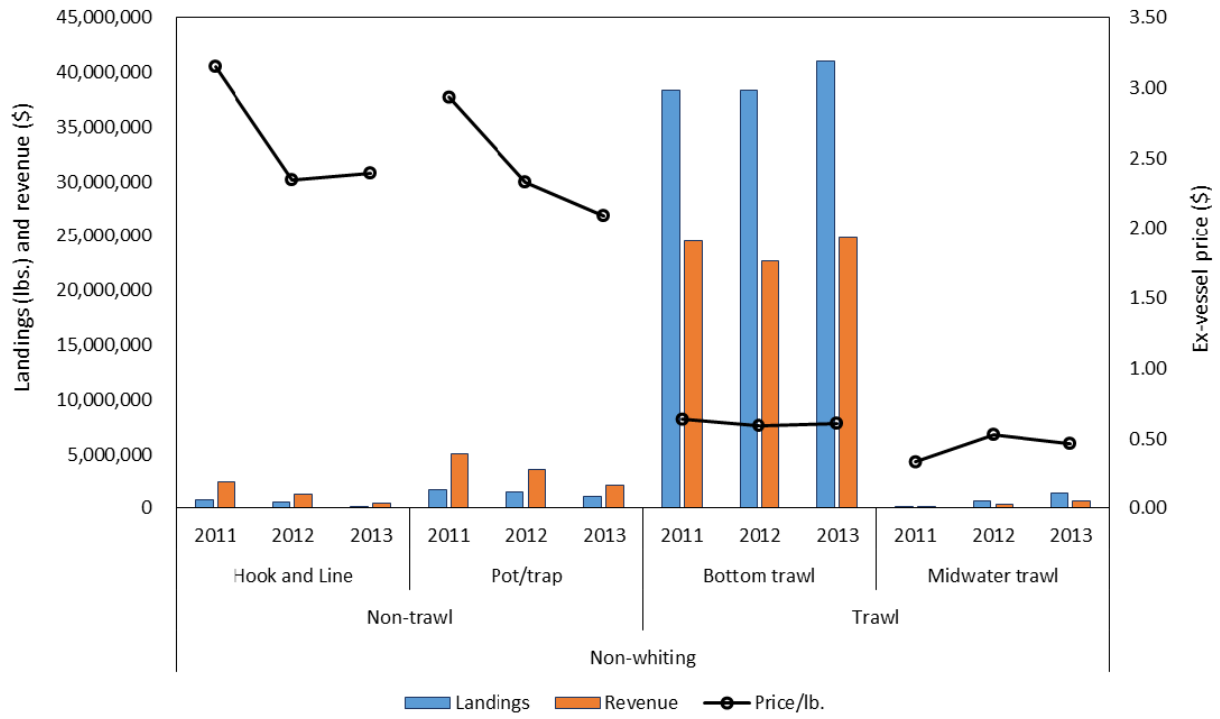


Figure 3. IFQ landings of groundfish species (blue columns, left axis) ex-vessel revenue (orange columns, left axis) and price (black lines, black open circles, right axis) by gear type, trip type and year, for non-whiting trips only. Trips were designated as vessel-days. See Table 1 for values.

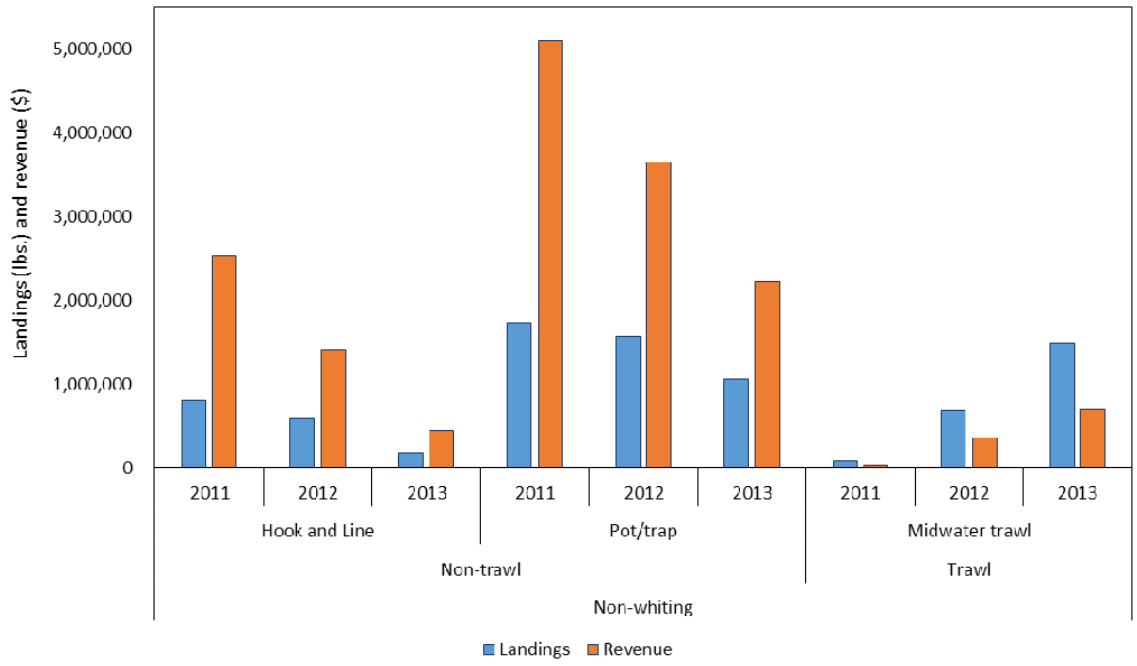


Figure 4. Detail from Figure 1 to enhance visibility for minor gears; non-whiting IFQ landings and revenue for minor gears for 2011 through 2013.

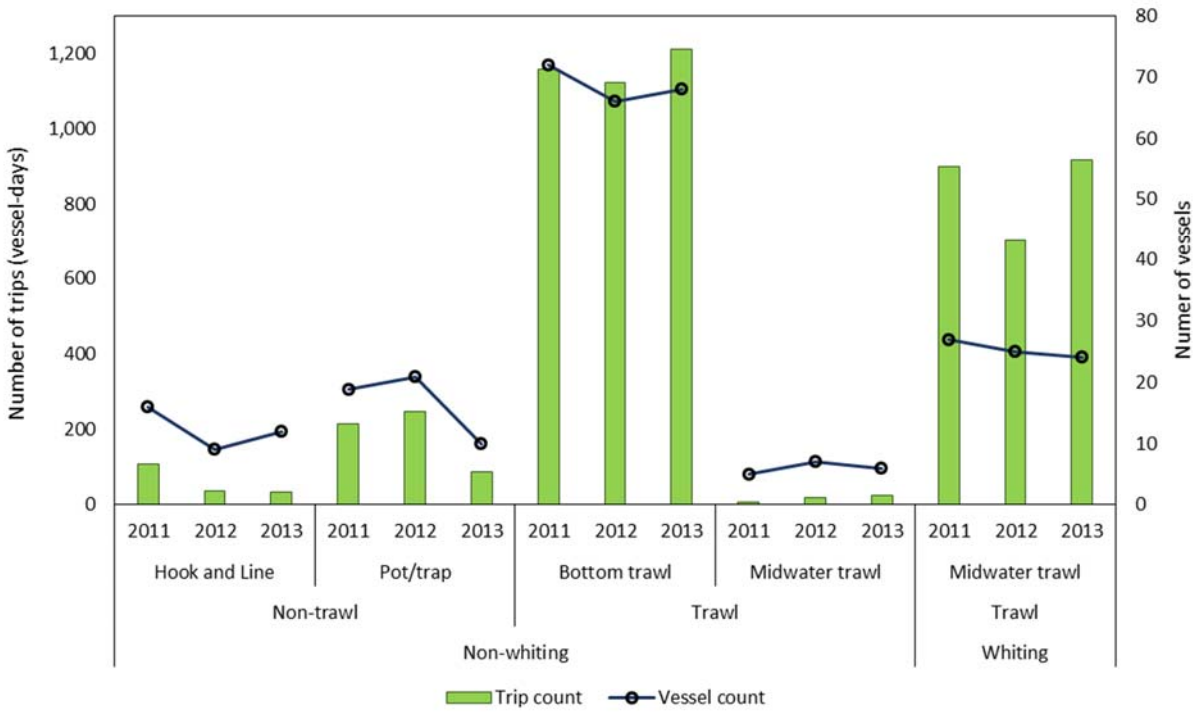


Figure 5. Counts of IFQ trips (green columns, left axis) and vessels (black lines, open circle markers, right axis) by gear type and trip type (whiting or non-whiting) for 2011 through 2013.

Table 4. IFQ landings of groundfish species, corresponding ex-vessel revenue, trips and vessels participating by trip type (whiting or non-whiting), for 2011-present. Trips were defined as vessel-days. *See text for 2014 data completeness in PacFIN as of the date of this query. Columns "NW Land %" and "NW Rev %" show non-whiting landings and revenue as a percentage within each year, among gear types and trip types.

Trip type	Gear group	Gear type	Year	Landings	Revenue	NW Land %	NW Rev %	Price /lb.	Vessels	Trips
Non-whiting	Non-trawl	Hook and Line	2011	806,139	2,539,597	2.0%	7.9%	3.15	16	110
			2012	598,379	1,402,165	1.5%	5.0%	2.34	9	36
			2013	185,973	445,421	0.4%	1.6%	2.40	12	31
		Pot/trap	2011	1,737,470	5,099,863	4.2%	15.9%	2.94	19	217
			2012	1,567,953	3,649,162	3.8%	13.0%	2.33	21	247
			2013	1,060,996	2,218,366	2.4%	7.9%	2.09	10	88
	Trawl	Bottom trawl	2011	38,370,973	24,488,020	93.6%	76.2%	0.64	72	1,156
			2012	38,324,474	22,634,517	93.1%	80.7%	0.59	66	1,121
			2013	41,070,364	24,852,911	93.8%	88.1%	0.61	68	1,210
		Midwater trawl	2011	75,376	25,539	0.2%	0.1%	0.34	5	5
			2012	678,731	356,760	1.6%	1.3%	0.53	7	17
			2013	1,477,346	691,662	3.4%	2.5%	0.47	6	23
Whiting			2011	200,908,989	22,527,476	NA	NA	0.11	27	899
			2012	145,356,364	20,832,282	NA	NA	0.14	25	702
			2013	214,370,280	26,568,537	NA	NA	0.12	24	916

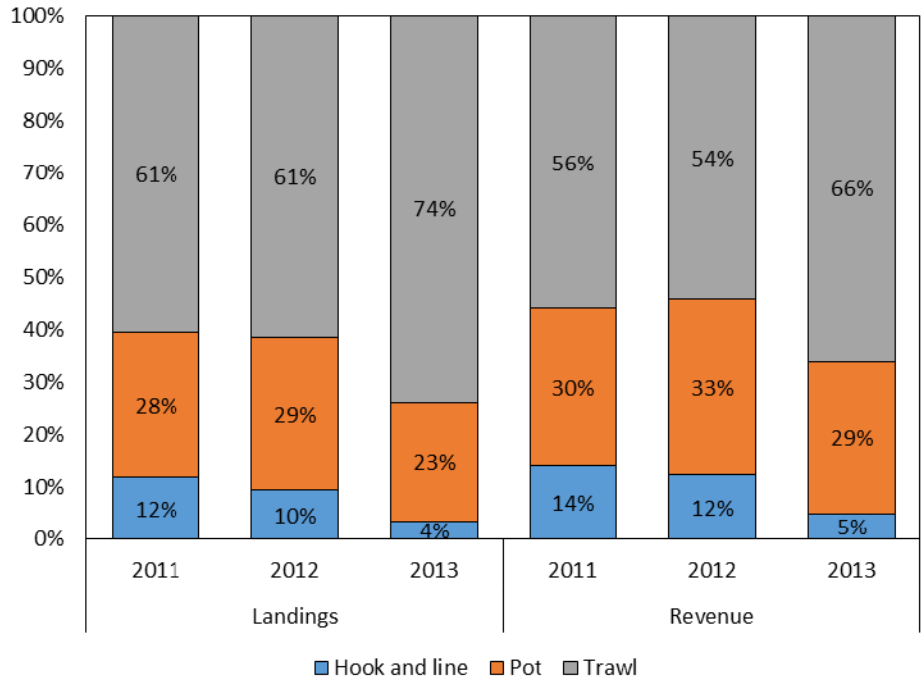


Figure 6. Distribution of sablefish landings and revenue among gear types within each year, in the IFQ sector during 2011 through 2013. Values have been revised from preliminary numbers in the 2012 report.

Table 5. Landings, ex-vessel revenue, price per pound, and distribution of sablefish landings and revenue among gear types, in the IFQ sector during 2011 through 2013; revised since the 2012 report. The columns "Land. dist." and "Rev. dist." within each year in panels A and B show the distribution of landings or revenue among gear types, within each year as a percent.

A. Landings

	2011		2012		2013	
Gear	Landings	Land. dist.	Landings	Land. dist.	Landings	Land. dist.
Hook and line	743,566	12%	517,231	10%	146,831	4%
Pot	1,713,364	28%	1,542,065	29%	949,623	23%
Trawl	3,771,833	61%	3,288,868	61%	3,081,570	74%
Sum	6,228,763	100%	5,348,163	100%	4,178,024	100%

B. Revenue

	2011		2012		2013	
Gear	Revenue	Rev. dist	Revenue	Rev. dist	Revenue	Rev. dist
Hook and line	2,394,665	14%	1,349,444	12%	376,096	5%
Pot	5,076,710	30%	3,615,220	33%	2,147,379	29%
Trawl	9,457,141	56%	5,841,938	54%	4,890,422	66%
Sum	16,928,516	100%	10,806,602	100%	7,413,896	100%

C. Price

Gear	Price/lb. 2011	Price/lb. 2012	Dif. 2012-2011	Price/lb. 2013	Dif. 2013-2012	Dif. 2013-2011
Hook and line	3.22	2.61	-0.61	2.56	-0.05	-0.66
Pot	2.96	2.34	-0.62	2.26	-0.08	-0.70
Trawl	2.51	1.78	-0.73	1.59	-0.19	-0.92
Sum	2.72	2.02	-0.70	1.77	-0.25	-0.94

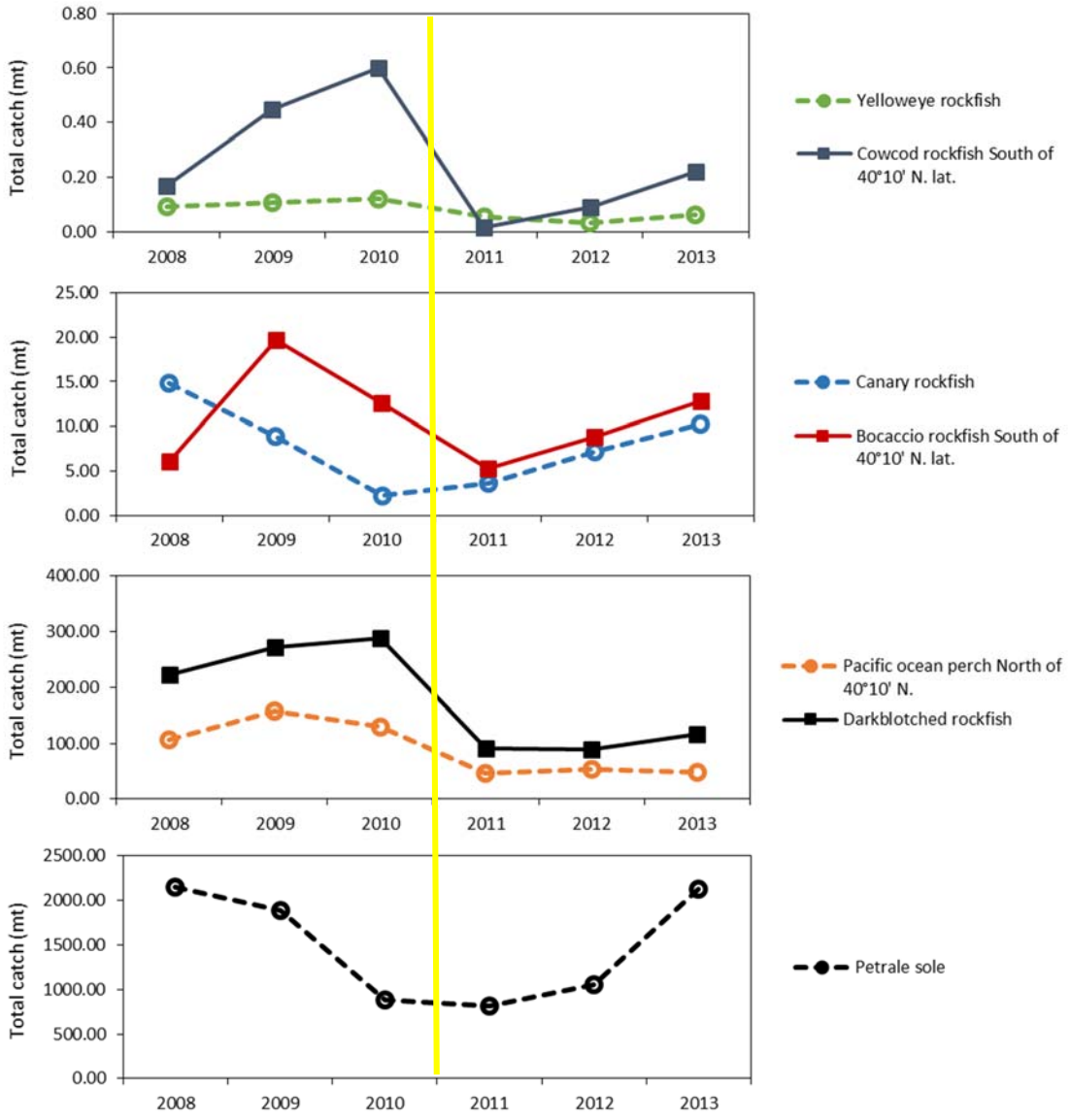


Figure 7. Total annual catch of rebuilding species from 2008 through 2010, in the limited entry trawl and shoreside whiting fisheries, as well as 2011 thorugh 2013, in the Shorebased IFQ Program, in metric tons. Source = WCGOP Groundfish Mortality Report (2008-2010) and the Shorebased IFQ Vessel Accounts System (2011-2013). The yellow vertical line separates pre-IFQ and IFQ years.

Table 6. Total annual catch of rebuilding species from 2008 through 2010, in the limited entry trawl and shoreside whiting fisheries, as well as 2011 and 2012, in the Shorebased IFQ Program, in metric tons. Two-year average catch, and average annual catch in 2011-12 as a percentage of that of 2009-10 is presented in the far right column ("post/pre IFQ"). Source = WCGOP Groundfish Mortality Report (2009-2010) and the Shorebased IFQ Program, Vessel Accounts System (2011-2012).

	Pre-IFQ					Post-IFQ					
	2008	**2009**	**2010**	**Pre-ave.**	**Post-std. dev.**	**2011**	**2012**	**2013**	**Post-ave**	**Post-std. dev.**	**Post/pre ave.**
Bocaccio rockfish South of 40°10' N. lat.	6.14	19.65	12.65	12.81	6.76	5.31	8.83	12.85	9.00	3.77	70%
Canary rockfish	14.83	8.88	2.32	8.68	6.26	3.69	7.23	10.22	7.04	3.27	81%
Cowcod rockfish South of 40°10' N. lat.	0.17	0.45	0.60	0.41	0.22	0.02	0.09	0.22	0.11	0.10	27%
Darkblotched rockfish	223.15	271.38	288.61	261.05	33.93	90.84	89.77	116.34	98.98	15.04	38%
Petrale sole	2154.76	1884.69	885.62	1641.69	668.56	811.76	1057.87	2130.04	1333.22	700.95	81%
Yelloweye rockfish	0.10	0.11	0.12	0.11	0.01	0.06	0.03	0.06	0.05	0.02	47%
Pacific ocean perch North of 40°10' N.	106.74	158.20	129.98	131.64	25.77	46.01	53.59	49.02	49.54	3.82	38%

Table 7. Sector allocations, catch, and attainment of currently rebuilding Pacific coast groundfish stocks in the West Coast Shorebased IFQ Program.

IFQ species/area category	2011 allocation	2011 catch	2011 attain.	2012 allocation	2012 catch	2012 attain.	2012-2011 attain.	2013 allocation	2013 catch	2013 attain.	2013-2011 attain.	2013/2011 allocation
Bocaccio rockfish South of 40°10' N.	132,277	11,715	9%	132,277	19,461	15%	6%	165,126	28,332	17%	8%	125%
Canary rockfish	57,100	8,125	14%	57,761	15,942	28%	13%	87,964	22,526	26%	11%	154%
Cowcod South of 40°10' N.	3,968	39	1%	3,968	204	5%	4%	2,205	486	22%	21%	56%
Darkblotched rockfish	552,997	200,264	36%	548,808	197,918	36%	0%	587,976	256,485	44%	7%	106%
Pacific ocean perch North of 40°10' N.	263,148	101,433	39%	263,441	118,146	45%	6%	241,241	108,062	45%	6%	92%
Petrale sole	1,920,226	1,789,627	93%	2,324,995	2,332,199	100%	7%	5,110,315	4,695,933	92%	-1%	266%
Yelloweye rockfish	1,323	128	10%	1,323	76	6%	-4%	2,205	139	6%	-3%	167%

Appendix A.1. Allocations, total catch, remainder and attainment rates, in the West Coast Groundfish, Shorebased IFQ Program during 2011 and 2012.

IFQ species/area category	2011 allocation	2011 catch	2011 remainder	2011 attain.	2012 allocation	2012 catch	2012 remainder	2012 attain.	2012/ 2011 attain.
Arrowtooth flounder	27,406,105	5,576,000	21,830,105	20%	20,861,131	5,497,232	15,363,899	26%	6%
Bocaccio rockfish South of 40°10' N.	132,277	11,715	120,562	9%	132,277	19,461	112,816	15%	6%
Canary rockfish	57,100	8,125	48,975	14%	57,761	15,942	41,819	28%	13%
Chilipepper rockfish South of 40°10' N.	3,252,370	688,187	2,564,183	21%	2,934,904	642,329	2,292,575	22%	1%
Cowcod South of 40°10' N.	3,968	39	3,929	1%	3,968	204	3,764	5%	4%
Darkblotched rockfish	552,997	200,264	352,733	36%	548,808	197,918	350,890	36%	0%
Dover sole	49,018,682	17,269,411	31,749,271	35%	49,018,682	16,063,162	32,955,520	33%	-2%
English sole	41,166,808	302,936	40,863,872	1%	21,037,611	324,291	20,713,320	2%	1%
Lingcod	4,107,873	639,244	3,468,629	16%	3,991,800	839,509	3,152,291	21%	5%
Lingcod North of 40°10' N.	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lingcod South of 40°10' N.	NA	NA	NA	NA	NA	NA	NA	NA	NA
Longspine thornyheads North of 34°27' N.	4,334,839	2,119,804	2,215,035	49%	4,219,648	2,010,604	2,209,044	48%	-1%
Minor shelf rockfish North of 40°10' N.	1,150,813	34,225	1,116,588	3%	1,150,813	88,221	1,062,592	8%	5%
Minor shelf rockfish South of 40°10' N.	189,598	6,633	182,965	3%	189,598	28,522	161,076	15%	12%
Minor slope rockfish North of 40°10' N.	1,828,779	319,938	1,508,841	17%	1,828,779	486,088	1,342,691	27%	9%
Minor slope rockfish South of 40°10' N.	831,958	113,337	718,621	14%	831,958	271,674	560,284	33%	19%
Other flatfish	9,253,683	1,527,767	7,725,916	17%	9,253,683	1,514,202	7,739,481	16%	0%
Pacific cod	2,502,247	556,691	1,945,556	22%	2,502,247	873,698	1,628,549	35%	13%
Pacific halibut (IBQ) North of 40°10' N.	257,524	70,839	186,685	28%	232,856	100,647	132,209	43%	16%
Pacific ocean perch North of 40°10' N.	263,148	101,433	161,715	39%	263,441	118,146	145,295	45%	6%
Pacific whiting	204,628,442	201,030,361	3,598,081	98%	151,373,798	144,759,024	6,614,774	96%	-3%
Petrale sole	1,920,226	1,789,627	130,599	93%	2,324,995	2,332,199	-7,204	100%	7%
Sablefish North of 36° N.	5,613,719	5,287,802	325,917	94%	5,438,797	4,928,150	510,647	91%	-4%
Sablefish South of 36° N.	1,170,390	1,009,286	161,104	86%	1,133,352	503,511	629,841	44%	-42%
Shortspine thornyheads North of 34°27' N.	3,156,138	1,574,518	1,581,620	50%	3,120,533	1,571,037	1,549,496	50%	0%
Shortspine thornyheads South of 34°27' N.	110,231	18,653	91,578	17%	110,231	803	109,428	1%	-16%
Splitnose rockfish South of 40°10' N.	3,045,245	88,523	2,956,722	3%	3,206,513	130,462	3,076,051	4%	1%
Starry flounder	1,471,586	25,936	1,445,650	2%	1,480,404	18,404	1,462,000	1%	-1%
Widow rockfish	755,348	303,703	451,645	40%	755,352	340,220	415,132	45%	5%
Yelloweye rockfish	1,323	128	1,195	10%	1,323	76	1,247	6%	-4%
Yellowtail rockfish North of 40°10' N.	6,821,455	1,629,184	5,192,271	24%	6,850,556	2,194,139	4,656,417	32%	8%
Sum all	375,004,872	242,304,309	132,700,563	65%	294,855,819	185,869,875	108,985,944	63%	-2%
Without whiting	170,376,430	41,273,948	129,102,482	24%	143,482,021	41,110,851	102,371,170	29%	4%

Appendix A.2. Allocations, total catch, remainder and attainment rates, in the West Coast Groundfish, Shorebased IFQ Program during 2013, and comparisons between years.

IFQ species/area category	2013 allocation	2013 catch	2013 remainder	2013 attain.	2013- 2011 attain.	2013- 2012 attain.
Arrowtooth flounder	8,479,264	5,365,841	3,113,423	63%	43%	37%
Bocaccio rockfish South of 40°10' N.	165,126	28,332	136,794	17%	8%	2%
Canary rockfish	87,964	22,526	65,438	26%	11%	-2%
Chilipepper rockfish South of 40°10' N.	2,423,983	870,774	1,553,209	36%	15%	14%
Cowcod South of 40°10' N.	2,205	486	1,719	22%	21%	17%
Darkblotched rockfish	587,976	256,485	331,491	44%	7%	8%
Dover sole	49,018,682	17,583,083	31,435,599	36%	1%	3%
English sole	14,032,486	486,273	13,546,213	3%	3%	2%
Lingcod	3,785,298	786,769	2,998,529	21%	5%	0%
Lingcod North of 40°10' N.	2,695,305	749,955	1,945,350	28%	NA	NA
Lingcod South of 40°10' N.	1,089,993	36,814	1,053,179	3%	NA	NA
Longspine thornyheads North of 34°27' N.	4,100,267	2,400,808	1,699,459	59%	10%	11%
Minor shelf rockfish North of 40°10' N.	1,119,948	65,686	1,054,262	6%	3%	-2%
Minor shelf rockfish South of 40°10' N.	178,574	44,443	134,131	25%	21%	10%
Minor slope rockfish North of 40°10' N.	1,712,835	431,244	1,281,591	25%	8%	-1%
Minor slope rockfish South of 40°10' N.	829,181	258,778	570,403	31%	18%	-1%
Other flatfish	9,236,501	1,767,468	7,469,033	19%	3%	3%
Pacific cod	2,480,830	339,657	2,141,173	14%	-9%	-21%
Pacific halibut (IBQ) North of 40°10' N.	236,660	72,707	163,953	31%	3%	-13%
Pacific ocean perch North of 40°10' N.	241,241	108,062	133,179	45%	6%	0%
Pacific whiting	216,707,790	215,218,208	1,489,582	99%	1%	4%
Petrale sole	5,110,315	4,695,933	414,382	92%	-1%	-8%
Sablefish North of 36° N.	4,030,050	4,080,318	-50,268	101%	7%	11%
Sablefish South of 36° N.	1,327,800	200,064	1,127,736	15%	-71%	-29%
Shortspine thornyheads North of 34°27' N.	3,054,183	1,825,663	1,228,520	60%	10%	9%
Shortspine thornyheads South of 34°27' N.	110,231	8,150	102,081	7%	-10%	7%
Splitnose rockfish South of 40°10' N.	3,346,838	101,757	3,245,081	3%	0%	-1%
Starry flounder	1,656,774	7,705	1,649,069	0%	-1%	-1%
Widow rockfish	2,191,016	907,513	1,283,503	41%	1%	-4%
Yelloweye rockfish	2,205	139	2,066	6%	-3%	1%
Yellowtail rockfish North of 40°10' N.	5,809,905	1,585,755	4,224,150	27%	3%	-5%
Sum all	345,851,426	260,307,396	85,544,030	75%	11%	12%
Without whiting	129,143,636	45,089,188	84,054,448	35%	11%	6%

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 groundfish fisheries.

Limited Entry/Open Access fixed gear south of 40° 10' N. latitude

The Port San Luis Commercial Fishermen's Association (PSLCFA) requested an increase in the bi-monthly trip limits for both shallow nearshore and deeper nearshore rockfish south of 40° 10' N. latitude to 1,000 lbs. per 2 months for period 6. These limits are already scheduled to go into effect November 1st so no action is needed.

Open Access fixed gear south of 40° 10 N. latitude

The PSLCFA also made a request to increase the open access blackgill rockfish trip limits south of 40° 10' N. latitude by 100 lbs. from the current 475 lbs. per 2 month period to 575 lbs. for period 6. Fishermen are encountering blackgill bycatch in the directed sablefish fisheries and this request would reduce regulatory discards. The data from the West Coast Groundfish Observer Program Mortality Report will not be available until the November Council meeting. This data will better inform the GMT analysis of the blackgill rockfish trip limit increase request to ensure that mortality was within the harvest guidelines in 2013. At this time the request to increase the trip limits cannot be accommodated, however, there may be an opportunity to revisit this for the 2015 season.

Finally, the GAP appreciates the GMT effort put forth in developing the informational report on the selected species scorecard. The GAP notes that the implementation of electronic fishtickets for open access and limited entry fixed gear will hopefully provide more timely information on landed species.

PFMC
09/15/14

THE GROUNDFISH MANAGEMENT TEAM REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS

Action items/Industry requests:

- Request to increase the shallow and deeper nearshore rockfish Period 6 trip limits, south of 40°10' N. latitude, to 1,000 pounds
- Request to increase the blackgill rockfish open access sector Period 6 trip limit, south of 40°10' N. latitude by 100 pounds from its current amount of 475 pounds

Informational items:

- Research catch update
- Overfished Species Scorecard update

The Groundfish Management Team (GMT) considered the most recent information on the status of ongoing fisheries, research, and requests from industry and provides the following recommendations for 2014 inseason adjustments.

1. ACTION ITEMS

1.1. Industry requests for changes to Period 6 trip limits for shallow and deeper nearshore rockfish, and open access blackgill rockfish, south of 40°10’ N. latitude

1.1.1. Summary of issues

Industry submitted a request for Council consideration to increase the Period 6 (November and December) trip limit for the shallow and deeper nearshore rockfishes south of 40°10' N. latitude to 1,000 pounds for each complex (Agenda Item J.4.c, Public Comment, September, 2014). Industry also requested that the open access blackgill rockfish trip limit of 475 pounds for period 6, south of 40°10' N. latitude, be increased by 100 pounds. Regarding the need for a blackgill rockfish trip limit increase, industry contends that the present bi-monthly blackgill rockfish trip limit makes it difficult to have a profitable trip and points out that commercial fishermen from Port San Luis (Avila) are highly dependent on groundfish.

1.1.2. Shallow and deeper nearshore rockfishes

The 2014 non-trawl trip limits for these two complexes are already set at 1,000 pounds for Period 6. Therefore, the GMT did not need to complete an analysis.

1.1.3. Blackgill rockfish

A blackgill rockfish harvest guideline was implemented in 2013 and 2014 along with trip limit reductions for both the limited entry and open access non-trawl fixed-gear sectors south of 40°10' N. latitude. The 2013 West Coast Groundfish Observer Program Groundfish Mortality Report is expected at the November 2014 Council meeting, which will allow the GMT to evaluate whether mortality was within the blackgill rockfish harvest guideline in 2013. At the November 2014 meeting, the Council could then task the GMT with exploring trip limit increases for 2015, if desired.

2. INFORMATIONAL ITEMS

2.1. Research

The International Pacific Halibut Commission (IPHC) has concluded their 2014 standardized stock assessment survey, including expanded stations off of Northern California, and some research stations in Washington. There is anticipated to be some additional work in northern Puget Sound in October, which may increase the Washington numbers. The preliminary estimate of yelloweye rockfish impacts is 0.8 mt (Table 1). In the overfished species scorecard, the set-aside for the IPHC survey was 1.1 mt, with an additional 1.0 mt set-aside of research in Washington. Based on this information, the projected impact to yelloweye rockfish for research from the IPHC survey has been reduced by 0.3 mt (from 1.1 mt to 0.8 mt) in the scorecard (total research from 3.3 mt to 3.0 mt). The GMT will adjust the scorecard at the November meeting if there are any further updates on research.

2.2. Scorecard Update

The current scorecard is presented in Table 1, which reflects changes to yelloweye rockfish estimates as a result of the IPHC survey discussed in Section 2.1.

GMT Recommendations:

1. **No 2014 Period 6 trip limit increase is necessary for both the shallow and deeper nearshore rockfish complex south of 40°10' N. latitude since the requested amount is already in place.**

2. **Maintain the status quo trip limit amount for the open access blackgill rockfish non-trawl fixed-gear sector south of 40°10' N. latitude for the remainder of 2014. At a future time, when enough data are available, an analysis may be completed to determine the effectiveness of the current trip limit amount.**

Table 1 . Scorecard for the beginning of 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: 9 September 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	20.8	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	--	--	18.4	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
Trawl Allocations	79.0	79.0	54.1	54.1	1.0	1.0	293.7	293.7	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			**6.3**	6.3			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	315.7	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	14.3	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%	95.7%	100.0%	98.8%	100.0%	93.5%	100.0%	93.4%
Key			= not applicable											
	--		= trace, less than 0.1 mt											
			= Fixed Values											
			= 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.

GROUNDFISH MANAGEMENT TEAM INFORMATIONAL REPORT ON THE SELECTED SPECIES SCORECARD

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 2015. The purpose of presenting these 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 August 22, 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 (PSMFC), 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 June in Washington, July in Oregon, and May in California, at the time of this query (August 22, 2014). NORPAC data were loaded to repository for this database tool on August 22, 2014 and RecFIN data were loaded on August 14, 2014. RecFIN data were complete through June 30, and NORPAC data run only two days behind, which would make these data complete through August 12.

The reason we use IFQ landings from PacFIN is because "real-time" IFQ e-tickets don't have 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 1–3 and calculated from the most recent two years of available data (West Coast Groundfish Observer Program, 2011 and 2012) as a proxy, since current-year discard estimates are not available for these species and sectors.

Results and Table Description.—Three tables are presented; Table 1 summarizes catch by species and management area, while 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 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 lags and data capture date.

It is important to note that since component 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 http://tinyurl.com/kz7p639). In addition, the 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).

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: August 22, 2014. See text for data source descriptions, completeness information, and other important information.

Species a/	North/ South of 40°10'	2014 inseason retained (mt)	2014 CP & recreational inseason discard (mt)	Ave. annual SB observer discard (mt)	Sum catch (mt)	2014 component OFL	% of the 2014 component OFL	
							North/South of 40°10'	Areas combined
Aurora rockfish [b/]	North	8.91	0.00	3.04	11.96	*15.40*	*78%*	*36%*
	South	0.70	0.00	2.39	3.09	*26.10*	*12%*	
China rockfish	North	4.18	0.17	0.16	4.51	*9.80*	*46%*	*31%*
	South	1.98	0.08	1.48	3.54	*16.60*	*21%*	
Copper rockfish	North	2.56	0.16	0.03	2.74	*26.00*	*11%*	*24%*
	South	36.11	1.43	0.11	37.66	*141.50*	*27%*	
Quillback rockfish	North	3.04	0.11	0.13	3.27	*7.40*	*44%*	*26%*
	South	0.04	0.00	0.00	0.04	*5.40*	*1%*	
Rougheye rockfish [c/]	North	46.52	0.49	14.88	61.88	*71.10*	*87%*	*88%*
	South	1.08	0.00	0.15	1.23	*0.40*	*307%*	
Shortraker rockfish	North	21.78	0.01	2.23	24.02	*18.70*	*128%*	*128%*
	South	0.00	0.00	0.00	0.00	*0.10*	*1%*	
Shortraker/rougheye [d/]	North	0.00	0.00	19.43	19.43	*NA*	*NA*	*NA*

a/ Blackspotted rockfish landings in the northern area were 0.2mt, 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 69 percent and 4 percent, respectively

c/ 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 31 percent and 30 percent respectively

d/ 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 "Sum Catch" column (0.28 and 0.72 respectively), then the new rougheye estimate for the northern area would be 75.88mt, or 106 percent of its component OFL, and shortraker would be 29.46mt, or 157 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: August 22, 2014. See text for data source descriptions, completeness information, and other important information.

Species a/	Sector	2014 inseason retained (mt)	2014 CP & recreational inseason discard (mt)	Average annual observer shorebased discard (mt)	Sum catch (mt)	Sector distri-bution (%)
Aurora rockfish	At-sea hake CP	0.07	0.00	0.00	0.07	1%
	IFQ fixed gear	0.00	0.00	0.00	0.00	0%
	IFQ trawl gear	8.65	0.00	2.84	11.49	96%
	Incidental/miscellaneous	0.15	0.00	0.12	0.27	2%
	Non-Nearshore fixed gear	0.04	0.00	0.08	0.12	1%
	Shoreside hake	0.00	0.00	0.00	0.00	0%
	Treaty	0.00	0.00	0.00	0.00	0%
China rockfish	CA recreational	0.10	0.00	0.00	0.10	2%
	Nearshore fixed gear	2.37	0.00	0.16	2.53	56%
	OR recreational	0.77	0.03	0.00	0.81	18%
	WA recreational	0.94	0.13	0.00	1.07	24%
Copper rockfish	CA recreational	0.33	0.00	0.00	0.33	7%
	Nearshore fixed gear	0.52	0.00	0.03	0.55	23%
	OR recreational	0.99	0.01	0.00	1.00	41%
	WA recreational	0.72	0.14	0.00	0.87	36%

a/ Blackspotted rockfish landings in the North were reported as 0.01 for IFQ trawl and 0.01 for IFQ fixed gear.

Table 2. Continued.

Species	Sector	2014 inseason retained (mt)	2014 CP & recreational inseason discard (mt)	Average annual observer shorebased discard (mt)	Sum catch (mt)	Sector distri-bution (%)
Quillback rockfish	CA recreational	0.13	0.01	0.00	0.14	4%
	IFQ trawl gear	0.11	0.00	0.01	0.12	4%
	Incidental/miscellaneous	0.01	0.00	0.00	0.01	0%
	Nearshore fixed gear	0.66	0.00	0.12	0.78	24%
	OR recreational	1.45	0.05	0.00	1.50	46%
	WA recreational	0.68	0.05	0.00	0.73	22%
Rougheye rockfish	At-sea hake CP	2.16	0.48	0.00	2.65	4%
	At-sea hake MS	0.03	0.01	0.00	0.04	0%
	IFQ fixed gear	0.20	0.00	6.22	6.42	10%
	IFQ trawl gear	30.34	0.00	0.05	30.39	49%
	Incidental/miscellaneous	0.14	0.00	0.01	0.15	0%
	Nearshore fixed gear	0.00	0.00	0.00	0.00	0%
	Non-nearshore fixed gear	7.42	0.00	8.55	15.97	26%
	Shoreside hake	0.02	0.00	0.01	0.02	0%
	Treaty	6.21	0.00	0.04	6.24	10%
Shortraker rockfish	At-sea hake MS	0.00	0.01	0.00	0.01	0%
	IFQ fixed gear	0.00	0.00	0.62	0.62	3%
	IFQ trawl gear	19.25	0.00	0.02	19.26	80%
	Incidental/miscellaneous	0.03	0.00	0.00	0.03	0%
	Nearshore fixed gear	0.00	0.00	0.00	0.00	0%
	Non-nearshore fixed gear	2.27	0.00	1.59	3.86	16%
	Shoreside hake	0.02	0.00	0.00	0.02	0%
	Treaty	0.21	0.00	0.00	0.21	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: August 22, 2014. See text for data source descriptions, completeness information, and other important information.

Species a/	Sector	2014 inseason retained (mt)	2014 CP & recreational inseason discard (mt)	Average annual observer shorebased discard (mt)	Sum catch (mt)	Sector distri-bution (%)
Aurora rockfish	IFQ fixed gear	0.00	0.00	0.01	0.01	0%
	IFQ trawl gear	0.65	0.00	2.11	2.76	23%
	Non-nearshore fixed gear	0.05	0.00	0.27	0.32	3%
China rockfish	CA recreational	1.81	0.08	0.00	1.89	5%
	Incidental/miscellaneous	0.02	0.00	0.00	0.02	0%
	Nearshore fixed gear	0.16	0.00	1.48	1.64	4%
Copper rockfish	CA recreational	34.82	1.43	0.00	36.25	93%
	Incidental/miscellaneous	0.11	0.00	0.00	0.11	0%
	Nearshore fixed gear	1.19	0.00	0.11	1.30	3%
Quillback rockfish	CA recreational	0.03	0.00	0.00	0.03	3%
	Nearshore fixed gear	0.01	0.00	0.00	0.01	1%
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 in the south were reported in the South at the level of 0.11 in the non-nearshore fixed gear sector.

Agenda Item J.4.c
Public Comment
September 2014

Chairman Ms Lowman, Vice Chair Mr. Pollard,

My name is Bill James I am the fisheries consultant for Port San Luis Commercial fishermen's Association.

PSLCFA requests that 1). Shallow Nearshore and Deeper Nearshore bi-monthly trip limits south of 40:10 be increased in period 6 to 1,000/lbs. per 2 months.

Also, PSLCFA requests that the Open Access bi-monthly trip limit for Blackgill Rockfish be increased by 100 lbs. during period 6 south of 40:10. The present bi-monthly trip limit makes it hard to have a profitable trip. At Port San Luis (Avila) the commercial fishermen are highly dependent on groundfish.

Thank you, Bill James