

# **TRAILING ACTIONS FOR THE PACIFIC COAST GROUNDFISH TRAWL RATIONALIZATION PROGRAM, INCLUDING**

- 1. PACIFIC HALIBUT TRAWL BYCATCH  
MORTALITY LIMIT (AMENDMENT 21-1)**
- 2. EXEMPTION FROM THE PROHIBITION ON  
PROCESSING AT SEA IN THE SHOREBASED  
IFQ PROGRAM**

## **FINAL Environmental Assessment**

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## Acronyms

Acronym	Definition
ACL	annual catch limit
AMP	Adaptive Management Program
B <sub>MSY</sub>	the biomass that allows maximum sustainable yield to be taken
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Council	Pacific Fishery Management Council
CV	coefficient of variation
CZMA	Federal Coastal Zone Management Act
DPS	Distinct population segments
EA	environmental assessment
EEZ	Exclusive Economic Zone
EFH	essential fish habitat
EIS	environmental impact statement
EO	Executive Order
ESA	Endangered Species Act
ESU	Evolutionarily significant units
FEIS	final environmental impact statement
FMP	fishery management plan
FR	Federal Register
GAP	Groundfish Advisory Subpanel
IBQ	Individual bycatch quota
IFQ	individual fishing quota
IPHC	International Pacific Halibut Commission
IRFA	initial regulatory flexibility analysis
LE	LE fishery
LOA	Length overall
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSY	maximum sustainable yield
mt	metric ton
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act

Acronym	Definition
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration – the parent agency of National Marine Fisheries Service
NWFSC	Northwest Fisheries Science Center
NWR	National Marine Fisheries Service, Northwest Region
ODFW	Oregon Department of Fish and Wildlife
OY	optimum yield
PacFIN	Pacific Coast Fisheries Information Network. Provides commercial fishery information for Washington, Oregon, and California. Maintained by the Pacific States Marine Fisheries Commission.
PBR	potential biological removal
PFMC	Pacific Fishery Management Council
PIE	Program Improvement and enhancement rule
QS	quota share
RCA	Rockfish Conservation Area
RFA	Regulatory Flexibility Analysis, or Regulatory Flexibility Act
RFFA	reasonably foreseeable future action
RIR	Regulatory Impact Review
ROD	Record of Decision
TAC	total allowable catch
TCEY	total constant exploitation yield
USFWS	U.S. Fish and Wildlife Service – a representative of USFWS is a nonvoting member of the Council
WCGOP	West Coast Groundfish Observer Program

# CHAPTER 1 PURPOSE AND NEED FOR THE PROPOSED ACTION

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## 1.1 Introduction

In January 2011, the National Marine Fisheries Service (NMFS) implemented a trawl rationalization program, a catch share program, for the Pacific coast groundfish limited entry trawl fishery. The program was adopted through Amendments 20 and 21 to the Pacific Coast Groundfish Fishery Management Plan (FMP) and the corresponding implementing regulations at 50 CFR part 660. Amendment 20 established the trawl rationalization program which consists of: an IFQ program for the shorebased trawl fleet (including whiting and non-whiting sectors); and cooperative (coop) programs for the at-sea mothership and catcher/processor trawl fleets (whiting only). Amendment 21 established fixed allocations for limited entry trawl participants.

The following Environmental Impacts Statements (EISs) analyzed the impacts of Amendments 20 and 21:

- Amendment 20 EIS:  
Rationalization of the Pacific Coast Groundfish Limited Entry Trawl Fishery Final Environmental Impact Statement, including Regulatory Impact Review and Initial Regulatory Flexibility Analysis, Council and NMFS, June 2010
- Amendment 21 EIS:  
Allocation of Harvest Opportunity Between Sectors of the Pacific Coast Groundfish Fishery Final Environmental Impact Statement, including Regulatory Impact Review and Initial Regulatory Flexibility Analysis, Council and NMFS, June 2010

The Records of Decision (RODs) for each of these EISs were signed on August 9, 2010.

Since implementation of the trawl rationalization program in January 2011, the Pacific Fishery Management Council (Council) and NMFS have been developing numerous trailing actions to the trawl rationalization program. At their June 2011 meeting, the Council took final action to recommend several of these trailing actions to be implemented by NMFS, including:

- 1) The calculation of a Pacific halibut bycatch mortality limit for the limited entry trawl fishery.
- 2) An exemption from the prohibition on processing at sea for qualified participants in the Shorebased Individual Fishing Quota (IFQ) Program.
- 3) Amendment 21 superseding limited entry and open access allocations for species with trawl/non-trawl allocations under Amendment 21.
- 4) NMFS items for program improvement and enhancement (PIE) rule
- 5) Severability of the mothership catcher vessel (MS/CV) endorsement and associated whiting catch history assignments from the limited entry trawl permit.

- 6) Adaptive Management Program (AMP) - pass through of associated quota pounds through 2014 of the Shorebased IFQ Program or until an AMP process is established, whichever is earlier.

Items 3) through 5) above were analyzed in the EISs for Amendment 20 and 21 and have not been changed from the actions described in those EISs, and therefore require no further analysis under the National Environmental Policy Act (NEPA) of 1969, as amended. Item 6) has been categorically excluded from NEPA because it is a NOAA action that is administrative and informational for the agency and for which any cumulative effects are negligible. Items 1) and 2) above require an environmental assessment (EA) under NEPA and are the subjects of this document. The calculation of the Pacific halibut bycatch mortality limit applicable to the limited entry groundfish trawl fishery would require an amendment to the Pacific Coast Groundfish Fishery Management Plan (FMP). The FMP contains the policies and framework for allocating the harvestable surplus of groundfish and provides for the calculation of the Pacific halibut bycatch mortality limit for the trawl fishery. An exemption from the prohibition on processing at sea for select participants in the Shorebased IFQ Program would be implemented as a regulatory amendment within the framework provided by the existing groundfish FMP.

The proposed action must also conform to the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the principal legal basis for fishery management within the Exclusive Economic Zone (EEZ), which extends from the outer boundary of the territorial sea to a distance of 200 nautical miles from shore. In addition, the proposed action must conform to other applicable laws, as described in Chapter 5.

## **1.2 Purpose and Need for the Proposed Action**

The proposed action is to implement trailing actions for the Pacific coast groundfish trawl rationalization program to further improve and refine the program. Two of the trailing actions require further NEPA analysis and are the subject of this EA. 1) A trailing action to amend the groundfish FMP through Amendment 21-1<sup>1</sup> to change provisions related to the calculation of the amount of the halibut bycatch mortality for which the trawl fishery will be managed (called the “trawl bycatch mortality limit”). 2) A trailing action to amend the regulations implementing the trawl rationalization program to provide an exemption from the prohibition on processing at-sea for select participants in the Shorebased IFQ Program (called the “exemption from prohibition on at sea processing”).

### **1.2.1 Issue 1: Halibut Trawl Bycatch Mortality Limit**

Limits on halibut bycatch mortality for the limited entry groundfish trawl fishery were first established by Amendment 21 and the measures used to manage them (catch shares) were established under Amendment 20. Both of these amendments were approved by NMFS in the summer of 2010. As stated in Amendment 21, the purpose of the limit on trawl halibut bycatch mortality is as follows:

To limit the bycatch of Pacific halibut in future LE trawl fisheries. A total catch limit of Pacific halibut, with the intent of further minimization of Pacific halibut bycatch in Area 2A trawl fisheries, is consistent with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) mandate to minimize bycatch and will provide increased benefits to Area 2A fishers targeting Pacific halibut.

Amendment 21 set a limit on trawl halibut bycatch mortality that was expected to force a mortality reduction of about 50%. However, a few months after Amendment 21 approval, new information on the Pacific halibut bycatch mortality revealed that the groundfish trawl sector was taking more halibut than had previously been

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<sup>1</sup> Amendment 21-1 would also include language stating that the Amendment 21 trawl/non-trawl allocations supersede the limited entry and open access allocations for species with trawl/non-trawl allocations under Amendment 21.

believed. This implied that the reductions imposed by Amendment 21 would have been more limiting than intended. On that basis, following a Council recommendation, NMFS implemented an emergency rule for 2011 limiting trawlers to an amount of halibut expected to attain the original target of a 50% reduction in trawl mortality. Emergency rules are effective only for 180 days and may be renewed only one time, to cover another 186 day period.<sup>2</sup> Absent further action by the Council and NMFS, the limits and consequent reduction in bycatch mortality originally approved in Amendment 21 will become effective at the beginning of 2012. It is believed that such a reduction in mortality would prevent trawlers from accessing healthy groundfish target species with which Pacific halibut is taken as bycatch and thereby have substantial adverse impact for the fishing industry and fishing dependent communities. The purpose of this trailing action as part of the proposed action is to avoid this negative outcome while still reducing trawl bycatch mortality by increasing the trawl halibut bycatch mortality limits.

Action also is needed to evaluate and potentially modify other aspects of the process and formula by which the trawl bycatch mortality limits are set. For example, as currently specified, determining the amount of the limit involves a calculation using the halibut total constant exploitation yield (TCEY). A final value for TCEY is not available until after the start of each year while the calculation of the amount of halibut available to the trawl fishery must be made before the start of the year, in order to issue halibut individual bycatch quota (IBQ) pounds to the trawl fishery before fishing starts. The purpose of additional modifications would be to ensure that the process for determining the trawl bycatch mortality limits can be effectively and efficiently implemented.

## 1.2.2 Issue 2: Exemption from Prohibition on At Sea Processing

Prior to the implementation of the Shorebased IFQ Program, Federal regulations did not prohibit processing groundfish at sea onboard limited entry non-whiting trawl vessels that delivered shoreside (see 50 CFR Part 660, Subpart C-G, Federal Pacific Coast Groundfish Regulations for Commercial and Recreational Fishing 3-200 Nautical Miles off Washington, Oregon, and California, November 1, 2010). However, regulations proposed on August 31, 2010 (75 FR 53380) and finalized on December 15, 2010 (75 FR 78344) for the trawl rationalization program prohibited processing at sea for the Shorebased IFQ Program beginning in January 2011. The definition of processing includes freezing, also referred to as “glazing,” but does not include heading or gutting (§660.11).

After the public comment period had closed on the proposed rule announcing the processing prohibition, NMFS and the Council became aware that at least one non-whiting fishery participant had been engaged in processing non-whiting groundfish at sea under the then-current regulations. At the Council’s March, April and June 2011 meetings, Oregon Department of Fish and Wildlife (ODFW) requested that the Council consider an exemption from the prohibition on processing at sea in the Shorebased IFQ Program for fishermen that had legally processed groundfish at-sea prior to 2011(see Agenda Item H.2.c, ODFW Report 2, March 2011; Agenda Item E.6.b, ODFW Letter, June 2011). Public testimony of one fisherman who had been engaged in processing non-whiting groundfish described how he had invested money on the equipment and the time to develop markets for his trawl vessel to glaze non-whiting groundfish at sea while the trawl rationalization program was still under development. This fisherman also made five deliveries of the glazed product with his trawl vessel during April and May, 2010, while still unaware that regulations proposed on August 31, 2010 (75 FR 53380) for the trawl rationalization program would prohibit him from processing at sea beginning January 2011.

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<sup>2</sup> Renewal of the emergency action, for the second period, is subject to MSA (c)(3)(B): “. . . provided the public has had an opportunity to comment on the emergency regulation or interim measure, and, in the case of a Council recommendation for emergency regulations or interim measures, the Council is actively preparing a fishery management plan, plan amendment, or proposed regulations to address the emergency or overfishing on a permanent basis”

At its June 2011 meeting, the Council indicated that it had not intended to negatively impact any existing at-sea processing operations. The Council recommended an exemption from the prohibition on processing at-sea for participants in the Shorebased IFQ Program that could prove they had legally processed groundfish other than Pacific whiting at-sea prior to the implementation of the trawl rationalization program. The Council had previously rolled over two other at-sea processing exceptions into the shorebased IFQ program during its review of the draft regulations over 2010 and its regulatory deeming process. The two exceptions were for processing that was already allowed in the groundfish fishery prior to the trawl rationalization program and included exemptions for the following: (1) any vessel that is 75-ft (23-m) or less length overall that harvests whiting and, in addition to heading and gutting, cuts the tail off and freezes the whiting, is not considered to be a catcher/processor nor is it considered to be processing fish, and (2) a vessel that has a sablefish at-sea processing exemption, defined at §660.25(b)(3)(iv)(D), subpart C may process sablefish at-sea in both the limited entry fixed gear primary sablefish fishery or in the Shorebased IFQ Program.

The prohibition on processing at-sea in the Shorebased IFQ Program was described in the preamble to the proposed rule dated August 31, 2010 (75 FR 53380). The Shorebased IFQ Program envisioned that participants (with the two exceptions noted above) would not process their catch at sea and that all catch (with the two exceptions noted above) would be delivered to shorebased processors. One of the intentions of this regulation was to promote fairness among fisheries, which was stated in a NMFS report: “Because at-sea processing is prohibited for participants of the limited entry primary sablefish fishery and in order to maintain fairness between this fishery and the shorebased IFQ fishery, sablefish processing at-sea will also be prohibited for participants in the shorebased IFQ fishery.” (Agenda Item I.1.b, Supplemental NMFS Report 3, April 2010, #5). In addition, because vessels participating in the Shorebased IFQ Program may have more flexibility in when and how they harvest their quota, there may be increased opportunity for processing groundfish at sea. Hence, the intent of this regulation was to maintain fairness between fisheries, as well as maintain the character of the fleet and the coastal communities that relied on this fleet delivering their catch to processors on land. This is in line with the Council’s intent when providing the exemption from the sablefish at-sea processing prohibition for a fixed-gear vessel during the primary season beginning January 1, 2007 (see FR 71 10622).

The purpose of this trailing action as part of the proposed action is to allow qualified vessel(s) making deliveries under the Shorebased IFQ Program to process their non-whiting groundfish at-sea provided that the vessel(s) had been operating under a limited entry trawl permit and legally processed non-whiting groundfish at-sea prior to notice of the prohibition of processing non-whiting groundfish at sea. The Council recommendation for this action would qualify anyone who legally processed non-whiting groundfish at-sea prior to July 20, 2010, a date assumed to correspond with the latest date of deliveries of such processed groundfish acknowledged in public testimony on this issue.

# CHAPTER 2 DESCRIPTION OF THE ALTERNATIVES AND COUNCIL RECOMMENDATION

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## 2.1 Issue 1: Halibut Trawl Bycatch Mortality Limit

### 2.1.1 Description of the Alternatives

This section describes the alternatives considered under the issues covered by this environmental assessment. Section 2.1.2 provides the Council's final recommendations on these alternatives and the rationale for those recommendations.

Pacific halibut is a prohibited species in the Pacific coast groundfish limited entry trawl fishery. Under Amendment 20, Pacific halibut bycatch in the Shorebased IFQ Program north of 40°10' N latitude is managed using a system of individual bycatch quotas (IBQs), which requires trawl vessels to cover mortality of halibut caught, as determined by observer protocols, by the vessel's own IBQ allowances. A limit on trawl bycatch induced Pacific halibut mortality will be calculated as follows.

**No Action Alternative** -- Status quo. *Specific plan amendment language:*

The trawl mortality limit for legal and sublegal Pacific halibut be set at 15% of the Area 2A (i.e., waters off California, Oregon, and Washington) constant exploitation yield for legal size halibut, not to exceed 130,000 pounds for the first four years of trawl rationalization and not to exceed 100,000 pounds starting in the fifth year [2015]. This total bycatch limit may be adjusted downward or upward through the biennial specifications and management measures process. Part of the overall total catch limit is a set-aside of 10 mt of Pacific halibut to accommodate bycatch in the at-sea whiting fishery and bottom trawl bycatch south of 40°10' N latitude. The set-aside amount of Pacific halibut to accommodate the incidental catch in the trawl fishery south of 40°10' N latitude and in the at-sea whiting fishery may be adjusted in the biennial specifications and management measures process in future years as better information becomes available.

*Note: based on the Amendment 21 analysis, status quo has been interpreted to include an expansion of the allocation from net to round weight.*

**Alternative 1 (Council Preferred)** – Specify the mortality limit as net weight legal-sized fish and make necessary expansions. Modify the current regulation to clearly specify that the amounts resulting from the calculations would be a total net weight of legal sized halibut which would then be expanded,

converting to total round weight of legal and sublegal sized halibut. *Specific plan amendment language would be as follows.*

For 2012 through 2014, 15% of the Area 2A total constant exploitation yield (TCEY) for legal sized halibut (net weight), not to exceed 130,000 lbs will be subtracted from the TCEY to account for expected trawl bycatch mortality of legal sized halibut (net weight). Beginning in 2015, the amount to be subtracted will be capped at 100,000 lbs. The TCEY used for these calculations will be the best estimate of the TCEY available from the IPHC at the time of the calculation (most likely the preliminary TCEY). The bycatch allocation percent can be adjusted downward or upward (above or below 15%) through the biennial specifications and management measures process but the upper bound on the maximum allocations can only be changed through an FMP amendment.

The shoreside trawl rationalization program keeps the trawl sector within expectations by requiring that trawlers account for their total mortality of all halibut in round weight (legal and sublegal sized). Therefore, to determine a trawl bycatch mortality limit the amount of halibut pounds available to the trawl fleet will be determined by expanding the expected legal sized halibut mortality (net weight) into a round weight legal+sublegal sized amount. To achieve this, the following conversions will be applied.

- i. Net weight to round weight conversion: multiply by the IPHC net weight to round weight conversion factor in use at the time of each year's the calculation (for 2011 the ratio was  $1/0.75=1.33$ ).
- ii. Legal to legal+sublegal sized conversion factor: multiply by the ratio of legal sized halibut to legal+sublegal sized halibut from the most up-to-date NMFS analysis of trawl fishery bycatch available at the time of each year's calculation (for 2011 the ratio was  $1/0.62=1.61$ ).

After these conversions, 10 mt will be subtracted to cover bycatch mortality in the at-sea whiting fishery and trawl fishery south of 40° 10' N. lat, and the remainder will be issued as IBQ, to be used to cover Pacific halibut mortality by vessels operating in the shoreside trawl IFQ program. The amount of Pacific halibut set aside to accommodate incidental catch in the trawl fishery south of 40°10' N latitude and in the at-sea whiting fishery can be adjusted in the biennial specifications and management measures process in future years as better information becomes available.

**Alternative 2** – Set the trawl mortality bycatch limit biennially. Same as Alternative 1 but during the biennial specifications process set a specific amount of halibut as the trawl mortality bycatch limit (rather than a percentage) up to a maximum, and use the calculation described above for calculating the trawl mortality bycatch limit and determining the amount of IBQ quota pounds to be issued. Maximum limits to be analyzed would be 100,000 lbs and 130,000 lbs, both expressed in legal-sized, net weight. *Specific plan amendment language would be as follows.*

*The same plan amendment language as Alternative 1 except replace the first paragraph of Alternative 1 with the following:*

During each biennial specifications and management measures process, the Council will determine a trawl halibut bycatch mortality limit for legal sized halibut, net weight.<sup>3</sup> The maximum to which that limit can be set is:

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<sup>3</sup> The Council November 2010 motion stated that both Alternatives 1 and 2 should “provide for adjustment of the trawl halibut bycatch mortality limit through the biennial management process.” However, for Alternative 2, since the allocation amounts would already be determined through that process, the only other aspect of the provisions that could be modified through the biennial management process would be the upper bounds. If the upper bounds could be modified through the same process and at the same time as the allocation amounts, the upper bounds would have no

Suboption 2a: 100,000 pounds legal-sized, net weight  
 Suboption 2b: 130,000 pounds legal-sized, net weight

NOTE: Alternative 2 it would need to be augmented with an explicit trawl mortality bycatch limit decision for the 2012 fishery, since the fishery would occur after the 2011 emergency rule runs out and before the Council's next biennial management process.

Alternative 1 and 2 were developed by the Council at its November 2010 meeting. The preferred alternative (Alternative 1) was modified at the June 2011 Council meeting in response to comments received from the IPHC. No other alternatives were developed but eliminated from consideration.

The alternatives have been applied retrospectively to the 2004 through 2010 fisheries (a hindcast) and the results are provided in Table 2-1. For each year, each total mortality limit alternative was applied to the Area 2A TCEY, decided annually by the IPHC. For the No Action Alternative, the result was expanded from dressed to round. For Alternatives 1 and 2, the result was expanded using the round/dressed and (legal+sublegal)/legal ratios. Under the No Action Alternative, even though there is not an expansion in the limit from legal to legal+sublegal, the trawl sector would need to use the limit (unexpanded) to cover the mortality of all legal+sublegal fish caught.

**Table 2-1.** A 2004-2010 hindcast of the total pounds available to the West Coast trawl fishery to cover mortality of legal and sublegal sized Pacific halibut (round weight) under each alternative. †

Year	TCEY (lb., legal sized net weight)	Baseline Actual Mortality ††	No Action Alternative (Set by Formula, No Conversion)	Alternative 1 (Set by Formula and Convert to Round Wt Legal + Sublegal)		Alternative 2 (Determine Biennially and Convert to Round Wt Legal + Sublegal) Cap values are provided here – converted to legal + sublegal round weight Actual limits may be lower.	
				15% Capped at 130,000 through 2014	15 % Capped at 100,000 starting in 2015	Alternative 2a (max of 100,000 pounds legal sized net wet)	Alternative 2b (max of 130,000 pounds legal sized net wet)
2004	2,110,000	293,214	173,333	279,570	215,054	215,054	279,570
2005	1,560,000	632,726	173,333	279,570	215,054	215,054	279,570
2006	1,710,000	533,518	173,333	279,570	215,054	215,054	279,570
2007	1,580,000	460,766	173,333	279,570	215,054	215,054	279,570
2008	940,000	458,561	173,333	279,570	215,054	215,054	279,570
2009	640,000	553,360	128,000	206,452	206,452	215,054	279,570
2010	820,000	not/available	164,000	264,516	215,054	215,054	279,570

† Under each alternative, to determine the amount available to the shoreside trawl IFQ fishery subtract 10 mt (22,046 pounds) from the estimated allocations.

†† Heery et. al. 2010.

\* Legal sized Pacifica halibut are 32" and larger, and sublegal sized are under 32".

## 2.1.2 Council Recommendations

The Council took final action on this issue at its June 2011 meeting. In taking that action (recommending Alternative 1) the Council noted its objective to achieve a 50% halibut bycatch mortality in the trawl fishery, an objective that Alternative 1 is expected to achieve. Concern had been expressed that the caps imposed by Alternative 1 could be overly constraining on the trawl fishery if TCEY's increase. An increase in the TCEY corresponding to an increase in halibut biomass might result in an increase in trawler encounter rates with halibut. However, it was noted that TCEYs were not expected to increase in the next few years and that

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effect. For this reason, for Alternative 2 the specification that additional adjustments could be made through that biennial process has not been included in this Council review draft.

fluctuation in the TCEYs did not necessarily correspond to the fluctuations of quotas and trawl bycatch. For example, in 2004 the TCEY was 2.1 million pounds and the trawl mortality estimate was 146 thousand pounds, while in 2008, the TCEY was 940 thousand pounds (less than half the 2004 TCEY) but the trawl bycatch mortality was 207 thousand pounds (up by over 40%). The reduction imposed by Alternative 1 would provide fishermen with more incentive to reduce bycatch mortality by avoiding known areas of high halibut bycatch rates, developing gears with lower halibut bycatch rates, and to fishing (e.g., shorter tow times) and handling fish (e.g., shorter time on deck) in a manner that reduces the mortality of the released fish. Finally, the intent is to have this limit in place for a few years, collect some data, and see whether adjustments to the allocation are needed, either up or down. Alternative 2 would have involved a more burdensome biennial process during which allocation levels would have to be determined during planning for each management cycle.

## **2.2 Issue 2: Exemption from Prohibition on At-sea Processing**

### **2.2.1 Description of the Alternatives**

Three alternatives are analyzed for this issue: no action alternative and two alternatives that would allow a limited number of vessels to process groundfish at-sea under the Shorebased IFQ Program. Additional, more expansive options (e.g., fleet-wide processing by non-whiting shoreside vessels under the IFQ program) were considered but not analyzed because the Council expressed its intent to maintain fairness between fisheries and to maintain the character of the fleet and the coastal communities that rely on catches that are delivered to processors on land (see Chapter 1). The alternatives are narrow in scope, and are designed to allow processing at-sea only for individuals that actively conducted at-sea processing in the limited entry non-whiting trawl fishery prior to the implementation of the Shorebased IFQ Program and the resulting at-sea processing prohibition.

Through 2010, processing at sea by shorebased groundfish vessels was not prohibited for (1) a limited entry fixed gear sablefish-endorsed vessel during the primary sablefish season, (2) a limited entry whiting trawl vessel that participated in the shoreside whiting fishery, and (3) all limited entry non-whiting trawl, limited entry non-sablefish fixed gear, and all open access vessels. Beginning January 1, 2011, at-sea processing for limited entry non-whiting trawl vessels became prohibited, whereas current regulations allow the fixed gear sablefish-endorsed vessel and the limited entry whiting trawl vessel to deliver processed sablefish and whiting, respectfully, under the Shorebased IFQ Program (as long as all other requirements of the Shorebased IFQ Program are satisfied).

The Council is aware of only one limited entry non-whiting trawl fisherman that delivered glazed (i.e., processed) sablefish prior to 2011. That individual made five landings of glazed, trawl-caught product during 2010. No other fishermen have come forward requesting an exemption from the prohibition on at-sea processing, even though the issue has been publicized and discussed at each Council meeting since November, 2010.

**No Action Alternative** -- Status quo. Aside from the exemptions shown in § 660.112(b)(1)(xii), processing groundfish at-sea (“at-sea processing”) by vessels in the Shorebased IFQ Program shall be prohibited regardless of the type of gear use. *Specific federal regulation language for general trawl fishery prohibitions in the Shorebased IFQ Program (§ 660.112(b)(1)) include:*

(xii) Process groundfish at-sea (“at-sea processing”) by vessels in the Shorebased IFQ Program regardless of the type of gear used, with the following exceptions:

(A) A vessel that is 75-ft (23-m) or less LOA that harvests whiting and, in addition to heading and gutting, cuts the tail off and freezes the whiting, is not considered to be a catcher/processor nor is it considered to be

processing fish, and

(B) A vessel that has a sablefish at-sea processing exemption, defined at § 660.25(b)(3)(iv)(D), subpart C may process sablefish at-sea.

Because there is no conversion factor for glazed groundfish in Federal regulation, any glazed groundfish landed by vessels in the Shorebased IFQ Program with an exemption from the prohibition on processing at sea are recorded as the actual scale weight on the electronic fish ticket with no conversion factor applied (i.e., 100% of the scale weight is deducted from the vessel's available QP in its vessel account).

**Alternative 1 (Council Preferred)** – Exempt limited entry non-whiting trawl vessels from the prohibition on processing at-sea under the Shorebased IFQ Program if they meet certain qualification requirements (i.e., limited entry non-whiting trawl vessels that processed groundfish at-sea prior to the implementation of the Shorebased IFQ Program). *Conditions for this exemption will include:*

- (1) **Documentation:** Individuals must prove, through an application process, that they had legally processed groundfish other than Pacific whiting at-sea prior to the implementation of the trawl rationalization program. To qualify, vessels registered to a limited entry trawl permit must have legally processed groundfish other than Pacific whiting at sea prior to July 20, 2010<sup>4</sup>, as verified by fish tickets, dock receiving tickets, landing receipts, or other official documents. This exemption would only apply to the vessel while operating under the Shorebased IFQ Program regardless of the type of gear used.
- (2) **Application Period:** The Council expressed its intent that the exemption from the prohibition on processing at sea in the Shorebased IFQ Program would be structured similar to the previous exemption that was created under the Groundfish FMP's Amendment 14 for the sablefish permit stacking program and implemented in a rule that published March 2, 2006 (71 FR 10614). Thus, similar to the existing exemption for sablefish at-sea processing specified at §660.25(b)(3)(iv)(D), the at-sea processing exemption for non-whiting groundfish in the Shorebased IFQ Program would be open to applicants during a one-time application process.
- (3) **Limitations of the Exemption:** If the conditions stated in (1) and (2) above are met, then an exemption to the prohibition of at-sea processing would be issued to a particular vessel, permit and/or vessel owner who request the exemption, and such exemption would be non-transferable to any other vessel, vessel owner or permit owner for any reason. The at-sea processing exemption would cease with the change in the identity of the owner or if the vessel was totally lost.
- (4) **Conversion Factor:** The Council's motion from its June 2011 meeting included a statement that "Regulatory language should also include an appropriate conversion factor and/or an appropriate process for calculating a conversion factor for glazed

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<sup>4</sup> During the June 2011 Council meeting, the Council recommended a qualification period deadline of July 20, 2010, to ensure that processing-prohibition exemptions would be provided only to individuals that had been processing at-sea without prior knowledge of the upcoming prohibition. The regulation to prohibit processing at sea for the Shorebased IFQ Program was publically proposed for the first time on August 31, 2010 (75 FR 53380). In the preamble to the proposed rule dated September 2, 2011 (76 FR 54888), NMFS proposed using August 31, 2010, as the qualification period deadline instead of July 20, 2010.

groundfish.” In a letter to the Council (Agenda Item E.6.b, ODFW Letter (excerpt), June 2011), ODFW recommended a weight conversion factor as well as a process for calculating a conversion factor as follows: “The following conversion applies to vessels landing sorted catch that is frozen (glazed) in the Shorebased IFQ Program. A conversion factor of 0.95 must be applied when there are fewer than 60 individuals of any species or species group in a single landing. Conversion factors must be calculated for each landing for each species or species group when there are 60 or greater individuals in a category (=species or species group) in a single landing as follows: Weigh a sample of at least 20 glazed fish to obtain the glazed weight; Completely remove glaze from individual fish making up the sample; Re-weigh the sample to obtain the non-glazed weight; Divide the non-glazed weight by the glazed weight to obtain the conversion factor; A separate conversion factor may be calculated for each size grade of a species, but may only be applied to landings of that size grade; Documentation of this calculation must be retained with the dock receiving ticket.”

**Alternative 2** – Exempt limited entry non-whiting trawl vessels from the prohibition on processing at-sea under the Shorebased IFQ Program if they can meet certain qualification requirements (i.e., limited entry non-whiting trawl vessels that processed groundfish at-sea prior to the implementation of the Shorebased IFQ Program). *Conditions for this exemption will include:*

- (1) Those conditions listed under 1, 2, 3, and 4 for alternative 1.
- (2) **Conversion Factor:** A single conversion factor of 0.95 must be applied for any glazed species or species group in a single landing.

### 2.2.2 Council Recommendations

The Council took final action on this issue at its June 2011 meeting. The Council made it clear that although its primary intent was to retain the historic character of this fleet (i.e., to ensure that groundfish are processed in communities at shorebased processing plants), it had not intended to exclude vessels that had legally processed groundfish at sea-prior to the implementation of the Shorebased IFQ Program. The Council provided guidance that vessels making deliveries under the Shorebased IFQ Program be permitted to process groundfish at-sea after the effective date of the rule once NMFS has deemed the criteria being met, if vessels had been operating under a limited entry trawl permit and legally processed groundfish (other than Pacific whiting) at-sea prior to July 20<sup>th</sup>, 2010. Specific Council guidance is shown under Alternative 1.

# CHAPTER 3      **AFFECTED ENVIRONMENT**

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## **3.1      Physical Environment, including Habitat and Ecosystem**

### **3.1.1      West Coast Marine Ecosystems**

The California Current Ecosystem is loosely defined as encompassing the entire U.S. west coast, from the northern end of Vancouver Island to Point Conception, California. The trophic interactions in the California Current ecosystem are extremely complex, with tremendous fluctuations over years and decades (Mann and Lazier 1996; Parrish, *et al.* 1981). To some degree, food webs are structured around coastal pelagic species (CPS) that exhibit boom-bust cycles over decadal time scales in response to low frequency climate variability (Bakun 1996; Schwartzlose, *et al.* 1999), although this is a broad generalization of the trophic dynamics. Similarly, the top trophic levels of such ecosystems are often dominated by highly migratory species such as salmon, albacore tuna, sooty shearwaters, fur seals and baleen whales, whose dynamics may be partially or wholly driven by processes in entirely different ecosystems, even different hemispheres. For this description of the affected environment, the ecosystem is considered in terms of physical and biological oceanography, climate, biogeography, essential fish habitat (EFH). A more detailed description of these elements of the environment will be found in Council, 2008.

### **3.1.2      Physical and Biological Oceanography**

A divergence in the prevailing wind patterns of the California Current causes the west wind drift to split into two broad coastal currents, the California Current to the south and the Alaska Current to the north. As there are really several dominant currents in the region, all of which vary in geographical location, intensity, and direction with the seasons, this region is often referred to as the California Current System (Hickey 1979). A more detailed description of the physical and biological oceanography of west coast marine ecosystems can be found in Volume 1 of the 2008 SAFE document (Council, 2008c).

### **3.1.3      Interannual and Interdecadal Climate Forcing**

The effects of climate on the biota of the California Current ecosystem have been recognized for some time (Hubbs, 1948) Currently, the El Niño/Southern Oscillation (ENSO) is widely recognized to be the dominant mode of interannual variability in the equatorial Pacific, with impacts throughout the rest of the Pacific basin and the globe (Mann and Lazier 1996). During the negative (El Niño) phase of the ENSO cycle, jet stream winds are typically diverted northward, often resulting in increased exposure of the west coast of the U.S. to subtropical weather systems. The impacts of these events to the coastal ocean generally include reduced upwelling winds, deepening of the thermocline, intrusion of offshore (subtropical) waters, dramatic declines in primary and secondary production, poor recruitment, reduced growth and survival of many resident species (such as salmon and groundfish), and northward extensions in the range of many tropical species (McGowan, *et al.* 1998; Percy 2002; Percy and Schoener 1987; Wooster, *et al.* 1985). There is reduced availability of many forage species, particularly market squid, and juvenile survival of most rockfish is extremely low. Concurrently, top predators such as seabirds and pinnipeds often exhibit reproductive failure. In addition to interannual variability in ocean conditions, the North Pacific seems to exhibit substantial interdecadal variability, Pacific (inter) Decadal Oscillation (PDO).

Within the California Current itself, (Mendelssohn, *et al.* 2003) described long-term warming trends in the upper 50 to 75 m of the water column, and recent paleoecological studies from marine sediments also indicate that 20th century warming trend in the California Current have exceeded natural variability in ocean temperatures

over the last 1,400 years (Field, *et al.* 2006). Evidence suggests that although the development of statistical indices of climate variability across multiple time scales have improved our understanding of how climate has affected North Pacific ecosystems and productivity in the past, the future remains subject to extremely poor predictability.

### 3.1.4 **Biogeography**

Biogeography describes spatial patterns of biological distribution. Along the U.S. west coast within the California Current system, such patterns have been observed to be influenced by various factors including depth, ocean conditions, and latitude. Each is discussed in volume 1 of the 2008 groundfish SAFE document (Council 2008c), and is hereby incorporated by reference.

### 3.1.5 **Essential Fish Habitat**

EFH has been described within the project area for highly migratory species, CPS, salmon, and groundfish. The MSA defines EFH to mean “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity” (16 U.S.C. 1802 sec. 3(10)). Regulatory guidelines elaborate that the words “essential” and “necessary” mean EFH should be sufficient to “support a population adequate to maintain a sustainable fishery and the managed species’ contributions to a healthy ecosystem.” The regulatory guidelines also establish authority for Councils to designate Habitat Areas of Particular Concern (HAPC) based on the vulnerability and ecological value of specific habitat types. Councils are required to minimize, to the extent practicable, the adverse of fishing or of EFH. NMFS works through a consultation process to minimize adverse effects of non-fishing activities (50 CFR 600 subpart J). EFH for highly migratory species, CPS, and salmon are discussed in detail in volume 1 of the 2008 groundfish SAFE document (Council 2008c), which is incorporated herein by reference.

EFH for groundfish is described as all waters from the high tide line (and parts of estuaries) to 3,500 meters (1,914 fathoms) in depth. HAPCs are a subset of EFH used to focus management and restoration efforts. The current HAPC types are: estuaries, canopy kelp, seagrass, rocky reefs, and “areas of interest” (a variety of submarine features, such as banks, seamounts, and canyons, along with Washington state waters). In addition to identifying EFH and describing HAPCs, the Council also adopted mitigation measures directed at the adverse impacts of fishing on groundfish EFH. Principal among these are closed areas to protect sensitive habitats. There are three types of closed areas: bottom trawl closed areas, bottom contact closed areas, and a bottom trawl footprint closure. A complete description of groundfish and associated EFH is contained in the Groundfish FMP, which is incorporated herein by reference. EFH for groundfish is discussed in more detail in the CITE 2008 SAFE (Council 2008c).

### 3.1.6 **Marine Protected Areas**

There are numerous marine protected areas distributed throughout the U.S. west coast EEZ. The EIS for Pacific Coast Groundfish EFH contains a complete listing and analysis of these sites and is incorporated here by reference. In California, there are 79 sites covering approximately 59,000 hectares, categorized into 13 designations. In Oregon there are three types of sites; these are all small intertidal sites encompassing approximately 460 hectares. Washington State GIS data for MPA’s contain 68 individual sites covering approximately 28,000 hectares.

In addition to those described in the EFH EIS, there are two new no-take marine reserves designated in Oregon: Otter Rock off Depoe Bay and Redfish Rocks off Port Orford.

As part of the same legislative action, the Oregon Legislature also required state agencies to evaluate potential reserves at Cape Falcon south of Cannon Beach, Cascade Head near Lincoln City and Cape Perpetua near

Yachats. The legislation also directs Oregon state agencies to support a reserve proposal for the Cape Arago-Seven Devils area, south of Coos Bay.

## **3.2 Biological Resources**

### **3.2.1 Groundfish Stocks**

Section 3.1.1 in the Groundfish Harvest Specifications FEIS (Council 2011) describes the species and stocks managed under the Groundfish FMP. This information is incorporated by reference and summarized below. More than 90 fish species are managed under the Groundfish FMP:

- 60-plus rockfish, including all genera and species from the family *Scorpaenidae* (*Sebastes*, *Scorpaena*, *Sebastolobus*, and *Scorpaenodes*) occurring in waters off Washington, Oregon, and California;
- 12 flatfish species,
- 6 roundfish species; and
- 6 miscellaneous fish species that include sharks, skates, grenadiers, rattails, and morids.

#### **3.2.1.1 Rockfish**

Rockfish make up the majority of species managed under the FMP. Rockfish vary greatly in their morphological and behavioral traits, with some species being semi-pelagic and found in mid-water schools, and others leading solitary, sedentary, bottom-dwelling lives (Love, *et al.* 2002). Rockfish inhabit a wide range of depths, from nearshore kelp forests and rock outcrops to varied deepwater (greater than 150 fm) habitats on the continental slope. Despite the range of behaviors and habitats, most rockfish share general life history characteristics, which include slow growth rates, bearing live young, and large but infrequent recruitment events. These life history characteristics contribute to relatively low average productivity that may reduce their ability to withstand heavy exploitation (Parker, *et al.* 2000), especially during periods of unfavorable environmental conditions.

#### **3.2.1.2 Flatfish**

Most of the flatfish species in the Groundfish FMP are distributed coastwide in waters of the continental shelf with the exception of arrowtooth flounder, butter sole, and flathead sole, which occur north of central California. Starry flounder, Pacific sanddab, butter sole, curlfin sole, sand sole and rock sole are primarily found in more nearshore areas while Dover sole, flathead sole, and petrale sole are found in deeper waters. The remaining species show more variation in depth distribution. Many of the flatfish species migrate seasonally from shallow water summer feeding grounds on the continental shelf to deep water spawning grounds over the continental slope (NOAA 1990). Though there are variations between species, most of the flatfishes are found on soft bottom such as sand or sandy gravel substrates and mud; however, some are found in eelgrass habitats (Pearson and Owen 1992) and, in the case of arrowtooth flounder, occasionally over low-relief rock-sponge bottoms (NOAA 1990).

Only the groundfish trawl fishery catches flatfish in significant quantities. Dover sole, petrale sole, and arrowtooth flounder are the main commercially important species

#### **3.2.1.3 Roundfish and Other Miscellaneous Species**

Sablefish, Pacific whiting, and to a lesser extent lingcod are commercially important roundfish in groundfish trawl fisheries. Sablefish occur in deep water on the continental shelf. Pacific whiting is semi-pelagic and is the most abundant single-species groundfish population in the California Current system (Stewart and Hamel 2010). The stock is characterized by highly variable recruitment patterns and a relatively short lifespan.

Of the other species in the FMP only spiny dogfish has any commercial importance, being caught in a specialized fixed gear fishery off Washington. Dogfish are also caught incidentally in the trawl fishery.

### 3.2.1.4 Categorization of Groundfish Stocks by Status and for Management

For management purposes some stocks may be grouped into stock complexes, which are managed as a unit, for example with a single harvest limit for the complex, or geographically subdivided into separate management units.

In addition, Chapter 4 in the Groundfish FMP outlines methods to categorize stocks in relation to available scientific information with related methods for determining stock status determination criteria, and precautionary thresholds for determining actual stock status. These thresholds are used to classify stocks according to the amount of information known about stock status and related scientific uncertainty:

- Category 1: Thresholds set using a recent quantitative stock assessment
- Category 2: Thresholds set using an older assessment, or a recent stock assessment but with limited data
- Category 3: Thresholds set in the absence of quantitative stock assessment results

Precautionary adjustments are applied when setting harvest limits for stocks in these categories to account for associated uncertainty. In all cases the objective is to avoid overfishing and, when necessary, rebuild stocks to MSY biomass.

These three stock status categories are used in management:

- *Healthy stocks*: Biomass is above  $B_{MSY}$ ; annual catch limits (ACLs) set to avoid overfishing.
- *Precautionary zone stocks*: Biomass below  $B_{MSY}$  but above the biomass threshold for overfished stocks; ACLs set to rebuild stocks to  $B_{MSY}$ .
- *Overfished stocks*: Biomass is now or was at one time below the overfished threshold and stock biomass has not yet been rebuilt to  $B_{MSY}$ ; ACLs are set according to a harvest rate estimated to rebuild the stock to  $B_{MSY}$  by the target year identified in a stock rebuilding plan adopted by the Council.

Table 3-1 summarizes information about the groundfish management units.

**Table 3-1. Current groundfish management units, showing species group and status.**

	Management Unit	Stock Type	Species Group	Status
1	Bocaccio South	Stock	Rockfish	Overfished
2	Canary	Stock	Rockfish	Overfished
3	Cowcod South	Stock	Rockfish	Overfished
4	Darkblotched	Stock	Rockfish	Overfished
5	Pacific Ocean Perch	Stock	Rockfish	Overfished
6	Widow	Stock	Rockfish	Overfished
7	Yelloweye	Stock	Rockfish	Overfished
8	Peterale Sole	Stock	Flatfish	Overfished
9	Lingcod North (OR & WA)	Stock Component	Roundfish	Healthy
10	Lingcod South (CA)	Stock Component	Roundfish	Healthy
11	Pacific Whiting	Stock	Roundfish	Precautionary Zone
12	Pacific Cod	Stock	Roundfish	Healthy
13	Sablefish North	Stock Component	Roundfish	Precautionary Zone
14	Sablefish South	Stock Component	Roundfish	Precautionary Zone
15	Shortbelly	Stock	Rockfish	Healthy
16	Chilipepper South	Stock Component	Rockfish	Healthy

17	Splitnose South	Stock Component	Rockfish	Healthy
18	Yellowtail North	Stock Component	Rockfish	Healthy
19	Shortspine Thornyhead North	Stock Component	Rockfish	Healthy
20	Shortspine Thornyhead South	Stock Component	Rockfish	Healthy
21	Longspine Thornyhead North	Stock Component	Rockfish	Healthy
22	Longspine Thornyhead South	Stock Component	Rockfish	Healthy
23	Black Rockfish (WA)	Stock Component	Rockfish	Healthy
24	Black Rockfish (OR-CA)	Stock Component	Rockfish	Healthy
25	California scorpionfish	Stock	Roundfish	Healthy
26	Cabezon (CA)	Stock Component	Roundfish	Healthy
27	Cabezon (OR)	Stock Component	Roundfish	Healthy
28	Dover Sole	Stock	Flatfish	Healthy
29	English Sole	Stock	Flatfish	Healthy
30	Arrowtooth Flounder	Stock	Flatfish	Healthy
31	Starry Flounder	Stock	Flatfish	Healthy
32	Longnose skate	Stock	Other	Healthy
33	Minor Nearshore Rockfish North*	Stock Sub-complex (13 sp.)	Rockfish	†
34	Minor Shelf Rockfish North	Stock Sub-complex (29 sp.)	Rockfish	Healthy
35	Minor Slope Rockfish North	Stock Sub-complex (9 sp.)	Rockfish	Healthy
36	Minor Nearshore Rockfish South*	Stock Sub-complex (16 sp.)	Rockfish	†
37	Minor Shelf Rockfish South	Stock Sub-complex (16 sp.)	Rockfish	Healthy
38	Minor Slope Rockfish South	Stock Sub-complex (9 sp.)	Rockfish	Healthy
39	Other Flatfish	Stock complex	Flatfish	Healthy
40	Other Fish	Stock complex	Other	Healthy

\*ACLs set for both the sub-complexes and the aggregate complexes (Minor Rockfish North, Minor Rockfish South) but harvest is managed according to the sub-complex ACLs.

†Blue rockfish, a precautionary zone stock, is included in this stock complex; a harvest guideline is applied to manage harvests according to this stock component's status.

### 3.2.2 Pacific Halibut

Pacific halibut (*Hippoglossus stenolepis*) range from Hokkaido, Japan to the Gulf of Anadyr, Russia on the Asiatic Coast and from Nome, Alaska to Santa Barbara, California on the North American (Pacific) Coast. They are among the largest teleost fishes in the world, measuring up to 8 ft (2.4 m). With flat, diamond-shaped bodies, Pacific halibut are able to migrate long distances. However, most adults tend to remain on the same grounds year after year, making only a seasonal migration from the more shallow feeding grounds in summer to deeper spawning grounds in winter (IPHC 1998.)

The major spawning grounds for Pacific halibut are in the north Pacific Ocean within the Gulf of Alaska and Bering Sea (IPHC 1998.) During spawning, which generally occurs from November to March, halibut move into deep water, where the eggs are fertilized. As shown in Figure 3.4, the eggs develop into larvae and grow, drifting slowly upward in the water column. During development, the larvae drift great distances with the ocean currents around the northeast Pacific Ocean in a counterclockwise direction (IPHC 1998.) Young fish then settle to the bottom in the shallow feeding areas. Following two to three years in the nursery areas, young halibut generally counter migrate, moving into more southerly and easterly waters, including Area 2A (IPHC management area, explained below in Section 3.3.1.2). Because Area 2A includes the southernmost range of Pacific halibut and the major spawning grounds are north and west of Area 2A, the population of halibut in Area 2A is significantly smaller than in other areas of its range. Pacific halibut reach maturity at approximately 8

years for males and 12 years for females. The average age of Pacific halibut in the commercial fishery in Area 2A was 9.6 in 1996 (IPHC 1998.) Adult halibut are demersal, living on or near the bottom. They prefer water temperatures ranging from 3 to 8 degrees Celsius and are generally caught between 90 and 900 feet (27 and 274 m), but have been caught as deep as 1,800 ft (549 m) (IPHC 1998.) Adult halibut prey on cod, sablefish, pollock, rockfish, sculpins, flatfish, sand lance, herring, octopus, crab, and clams (IPHC 1998.) Adult halibut are not generally preyed upon by other species due to their size, active nature and bottom dwelling habits. The Pacific halibut fishery commonly intercepts rockfish and sablefish, as they are found in similar habitat to Pacific halibut and are easily caught with longline gear.

### 3.2.3 Other Non-Groundfish Species

A variety of other species may be incidentally caught in groundfish fisheries, including trawl fisheries. These species are usually discarded for market or regulatory reasons. The West Coast Groundfish Observer Program, however, monitors and reports these catches as well as providing aggregate discard rate estimates (Bellman, et al 2010). The aggregate bycatch rate (reported by area) for nongroundfish species ranges from 2% to 5% of total catch in the limited entry groundfish trawl fishery.

### 3.2.4 Protected Species, including ESA, MMPA, and MBTA

A variety of species are protected by applicable law (other than the MSA) with the objective of sustaining or rebuilding their populations from critically depleted levels. The applicability of these laws to the action area is described in Chapter 5. Section 3.3 of the 2011-2012 Groundfish Harvest Specifications FEIS and Section 3.18 and 3.19 (Council, 2011) of the *Rationalization of the Pacific Coast Groundfish Limited Entry Trawl Fishery* FEIS (Council, 2010b) describe protected species in the action area that interact with groundfish fisheries. This information is incorporated by reference and summarized here.

The most ubiquitous group listed under the ESA and in the action area are Pacific salmon, for which 17 separate evolutionarily significant units (ESUs) are listed as either threatened or endangered. (An evolutionarily significant unit is a Pacific salmon population or group of populations that is substantially reproductively isolated from other conspecific populations and that represents an important component of the evolutionary legacy of the species.)

Other listed fish species occurring in the action area are the distinct population segments (DPS) of green sturgeon and Pacific eulachon. (A distinct population segment is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. The ESA provides for listing species, subspecies, or distinct population segments of vertebrate species.)

All marine mammals are protected by the MMPA and may be listed under the ESA based on population status. All ESA-listed marine mammals are considered depleted under the MMPA, which may prompt additional scrutiny of any incidental fishery takes. Table 3-83 in the *Rationalization of the Pacific Coast Groundfish Limited Entry Trawl Fishery* FEIS (Amendment 20 EIS, Council, 2010b) lists the marine mammals occurring in the action area, showing which ones have been observed taken in groundfish fisheries as of 2009. Six species have been observed taken in the trawl fishery: California sea lion, Pacific harbor seal, Northern elephant seal, Steller sea lion, harbor porpoise, and Pacific white-sided dolphin. Of these only the Steller sea lion (Eastern Pacific stock) is ESA-listed (threatened) and therefore considered depleted under the MMPA.

Table 3-85 in the *Rationalization of the Pacific Coast Groundfish Limited Entry Trawl Fishery* FEIS (Amendment 20 EIS, Council, 2010b) lists seabird species occurring in the action area that are ESA listed or whose status is considered of concern by the US Fish and Wildlife Service. Incidental seabird take has been more of an issue in fixed gear fisheries and in 2001 NMFS adopted a National Plan of Action to Reduce Incidental Take of Seabirds in Longline Fisheries. However, seabird takes also occur in trawl fisheries during gear deployment.

The WCGOP periodically publishes reports summarizing estimated bycatch of marine mammals, seabirds, and sea turtles in groundfish fisheries. The most recent report was published in February 2011 covering the period 2002-2009 (Jannot, et al. 2011). Overall, during this period 22 species were observed killed or seriously injured through interactions with fishing vessels, gear, or vessel personnel. Bycatch estimates were produced in those cases where sufficient data were available to allow estimation. Incidental take occurred on less than 2 percent of observed trips. The report provides these summary conclusions:

- Incidental takes were recorded for 5 cetacean species, 5 pinniped species, 11 seabird species, and 1 sea turtle species.
- Among marine mammals, bycatch estimates were highest for California and Stellar sea lions, which were caught primarily in trawl nets in the limited entry trawl and California halibut trawl sectors.
- The first recorded take of a bottlenose dolphin occurred in 2009.
- Among seabirds, bycatch estimates in 2009 were highest for northern fulmars. In previous years (2002-2008a) the black-footed albatross had the largest bycatch estimates. In contrast, a single black-footed albatross was recorded opportunistically in 2009.
- One leatherback turtle was killed by gear on an observed open access vessel fishing pot gear in 2008. A bycatch estimate based on this data point was extremely uncertain and was excluded from final results due to strata-specific CV values of greater than 98%.
- Bycatch estimates for all species included in the report were highly uncertain because of the excess number of zero-valued observations in the data and should be considered cautiously.

(Jannot, et al. 2011, pp. 30-31)

### **3.3 Socioeconomic Environment**

#### **3.3.1 Fisheries and Management**

##### **3.3.1.1 Commercial and Treaty Groundfish Fisheries**

The 2011-12 Groundfish Harvest Specification FEIS includes a detailed description and characterization of groundfish fisheries in Section 3.2.2 and a description of the regulatory regime in Section 3.2.1. In addition, Appendix F to the FEIS contains a series of tables showing historical groundfish landing and revenue by species, fishery sector, port, year, month, etc. This information is incorporated by reference. A summary of the operational and regulatory characteristics of groundfish fisheries is provided below.

Groundfish fisheries are divided into several hierarchically arranged sectors for the purpose of management and regulation, including licensing, the allocation of harvest opportunity, and catch accounting.

- At the highest level a distinction is made between the *limited entry* and *open access* sectors. Limited entry vessels possess a Federal groundfish fishery limited access permit, which may be endorsed for trawl, longline, or pot gear. Open access vessels do not possess a groundfish limited access permit, although they may be licensed by the states or under other Council FMPs.
- The limited entry sector is further subdivided between the trawl sector and the fixed gear sector based on permit endorsement.
- The trawl sector comprises the *shoreside* sector, the *mothership* sector, and the *catcher-processor* sector. Catch in the shoreside sector is principally controlled through individual fishing quotas that are tradable allotments of fishing opportunity for particular management units. (A 2-year moratorium on tradability was implemented as part of the program; IFQ becomes fully tradable beginning in 2013.) IFQ is annually converted to “quota pounds” based on ACLs and the allocation to the sector (quota pounds are tradable as of the onset of the program). Quota pounds may be assigned to a vessel and all catch of a management unit must be matched with an equivalent amount of quota pounds. (Management units not managed with IFQs are managed with 2-month cumulative trip limits.) The

mothership and catcher-processor sectors target Pacific whiting exclusively and operate under co-op systems. The catcher-processor sector operates as a single voluntary co-op while the mothership sector co-op system is governed by a more detailed set of Federal regulations. Both sectors receive an allocation of Pacific whiting and selected bycatch species. Under the rules for the mothership co-op each individual co-op receives a portion of this allocation based on the catch history of participating catcher vessels. IFQ and co-op management is intended to foster a high level of individual accountability for catch by fishery participants. This accountability is backed up by at-sea observers monitoring catch and discards.<sup>5</sup>

- The limited fixed gear sector comprises vessels using longline and pot gear, principally to target sablefish. A “primary” fishery occurs during summer months where vessels may participate based on the permits “stacked” on the vessel. Permits are assigned to one of three tiers, which are associated with a fixed amount of sablefish catch opportunity. In this way vessels in the primary fishery have individual vessel quotas. Outside of the primary season vessels may fish under daily trip limits. The fixed gear fishery for sablefish (which includes some “open access” vessels) is often referred to as the “non-nearshore” fishery
- The “open access” sector comprises vessels using fixed gear but not possessing a Federal groundfish limited access permit. As noted above, some of these vessels fish participate in the non-nearshore sablefish fishery under daily trip limits. Others, in the “nearshore fishery,” target rockfish. The nearshore fishery is principally managed by state agencies, although decision-making and catch accounting is coordinated through the Council process.

In order to target groundfish with trawl gear a vessel must have an appropriately endorsed Federal groundfish limited access permit. However, there are trawl fisheries for shrimp, prawns, and California halibut, often referred to as “exempted” trawl fisheries (because these fisheries are not Federally managed). These fisheries catch small amounts of groundfish incidentally. In addition, there are a variety of other non-trawl fisheries that, while not targeting groundfish, catch small amounts of groundfish incidentally.

Overfished groundfish species managed under rebuilding plans require setting low ACLs for these species, which impose tight management constraints on fisheries. Accordingly, catch accounting across the range of fishery sectors catching groundfish is a crucial exercise coordinated through the Council process. While groundfish trawl fisheries have full at-sea observer coverage beginning in the 2011, other fisheries only have partial observer coverage and catches must be estimated through statistical expansion of observed catch. In addition, the effect of periodically establishing and adjusting management measures on catch must be forecast through various model estimation methods.

Several Pacific Northwest Indian tribes have treaty rights to fish for groundfish in their usual and accustomed fishing grounds. Section 6.2.5 in the Groundfish FMP describes the special status of these fisheries. The Federal government has accommodated these fisheries through a regulatory process described at 50 CFR 660.50. Participants in the tribal commercial fisheries use similar gear to non-tribal fishers. Groundfish caught in the tribal commercial fishery pass through the same markets as non-tribal commercial groundfish catch.

Thirteen western Washington tribes possess and exercise treaty fishing rights to halibut, including the four tribes that possess treaty fishing rights to groundfish. Tribal halibut allocations are divided into a tribal commercial component and the year-round ceremonial and subsistence component.

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<sup>5</sup> IFQ management for the shoreside sector and the co-op system for the mothership sector were first implemented in 2011. In previous years the principal catch control for the shoreside sector was cumulative trip limits and for the mothership sector a quota for whiting and “bycatch caps” for selected overfished species. The shoreside sector was subdivided into separately managed whiting and non-whiting sectors. Under IFQ management these two components of the shoreside sector are combined, meaning that whiting quota pounds may be traded among, and utilized by, all permitted vessels.

In addition to hook-and-line fisheries, the Makah tribe annually harvests a whiting allocation using midwater trawl gear. Since 1996, a portion of the U.S. whiting optimum yield (OY, equivalent to the ACL) has been allocated to the Pacific Coast treaty tribes. Under treaty arrangements, tribes manage fisheries prosecuted by their members. Their management is coordinated through the Council process so catches can be accounted for when developing management measures. West coast treaty tribes in Washington State have formal allocations for sablefish, black rockfish, and Pacific whiting. For other species without formal allocations the tribes propose trip limits to the Council, which the Council tries to accommodate while ensuring that catch limits are not exceeded. Whether formally allocated or not, tribal catches are accounted through set asides, which are amounts taken “off the top” of the overall catch limit before any allocations occur to commercial fisheries.

Table 3-2 shows ex-vessel revenue by groundfish sector in 2009. It should be noted harvest limits for Pacific whiting were unusually low in this year so revenue it is not truly representative for the related sectors. Table 3-3 shows the average ex-vessel revenue from these sectors for the 5-year period 2005-2009.

**Table 3-2. Ex-vessel revenue by fishery sector in 2009. (Source: Appendix F, Groundfish Harvest Specifications FEIS).**

<b>Sector</b>	<b>\$Million</b>	<b>Percent</b>
Whiting Catcher Processor	\$3.95	5.7%
Whiting Mothership	\$2.67	3.9%
Shoreside Whiting	\$5.46	7.9%
Shoreside Non Whiting	\$30.48	44.4%
Limited Entry Fixed Gear	\$15.54	22.6%
Open Access Fixed Gear	\$8.06	11.7%
Incidentally Caught Groundfish	\$0.30	0.4%
<b>Subtotal</b>	<b>\$66.46</b>	<b>96.8%</b>
Treaty Mothership	\$1.23	1.8%
Other Treaty	\$1.00	1.5%
<b>Subtotal</b>	<b>\$2.23</b>	<b>3.2%</b>
<b>Grand Total</b>	<b>\$68.69</b>	<b>100.0%</b>

**Table 3-3. Average ex-vessel revenue, 2005-2009, in Pacific whiting sectors. (Source: Appendix F, Table F-20.)**

<b>Sector</b>	<b>\$Million</b>
Shoreside whiting sector	\$10.33
Whiting catcher processors sector	\$11.30
Whiting mothership sector	\$7.24
Treaty mothership whiting sector	\$1.76
Treaty shoreside whiting sector	\$2.37

### 3.3.1.2 Pacific Halibut Fisheries

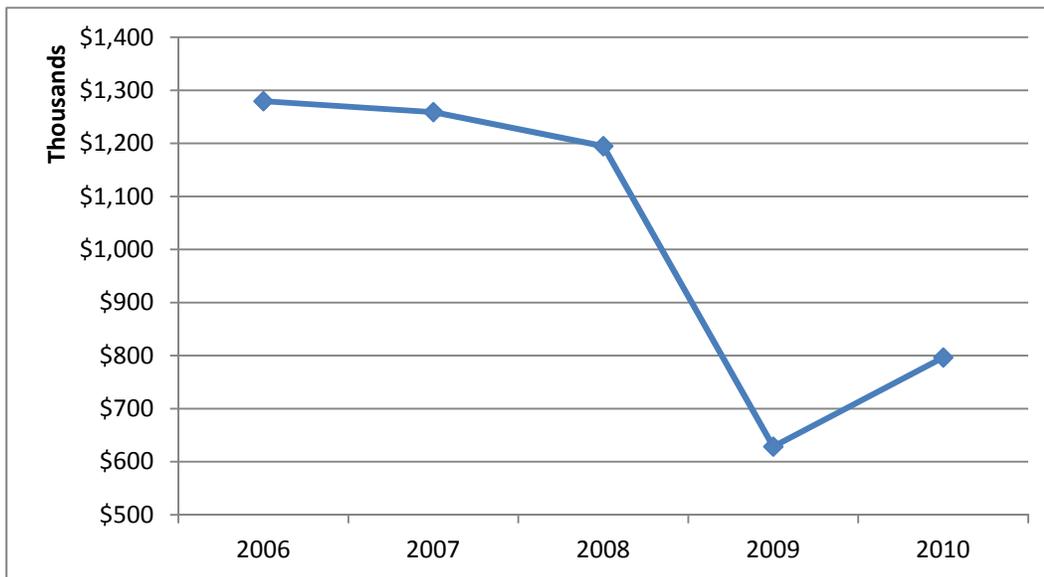
Pacific halibut is managed by the United States and Canada in a bilateral commission known as the International Pacific Halibut Commission (IPHC). Each year, the IPHC sets total allowable catch levels for halibut that will be caught in the U.S. and Canadian exclusive economic zones in the northeastern Pacific Ocean. Implementing regulations are then set by the federal governments of Canada and the United States in their respective waters. The IPHC, responsible for the health of the Pacific halibut resource, conducts extensive stock assessments to ensure that the health and size of the population is correctly estimated. The IPHC then decides on total removals of Pacific halibut in all management areas off the U.S. and Canada at their annual meeting. The IPHC refers to U.S. waters off the states of Washington, Oregon, and California collectively as Area 2A. Regulations for Area 2A are set by NOAA Fisheries’ Northwest Regional Office. Halibut in Area 2A is divided between tribal and non-tribal fisheries, between commercial and recreational fisheries, and between recreational fisheries in

different states (Washington, Oregon, and California). The Pacific halibut fisheries in Area 2A are allocated a small percentage, less than 2%, of the overall total allowable catch (TAC). The Pacific Fishery Management Council describes this halibut catch division each year in a catch-sharing plan.

Annually the Council and NMFS produce an Area 2a Halibut Catch Sharing Plan. The 2011 Catch Sharing Plan (available on the NWR website), describing management of halibut target fisheries and bycatch in nontarget fisheries, is incorporated by reference and is briefly summarized here.

The 2011 Plan allocates 35 percent of the Area 2A TAC to U.S. treaty Indian tribes in the State of Washington in subarea 2A-1, and 65 percent to non-Indian fisheries in Area 2A. The allocation to non-Indian fisheries is divided into three shares, with the Washington sport fishery (north of the Columbia River) receiving 36.6 percent, the Oregon/California sport fishery receiving 31.7 percent, and the commercial fishery receiving 31.7 percent. These allocations are established as subquotas, meaning that each fishery is limited to the allocated amount.

The Catch Sharing Plan describes management measures applicable in the current year for each fishery, which are in addition to various more general regulations (such as size limits) established through the IPHC process (see 76 FR 14300). Tribal fisheries are subdivided into a ceremonial/subsistence component and a commercial component. Nontribal fisheries include target fisheries, nontrawl fisheries catching Pacific halibut incidentally but with some retention allowed (sablefish fixed gear and salmon troll), and recreational fisheries. Figure 3-1 shows annual total commercial ex-vessel revenue of Pacific halibut, based on landings, 2006-2010. Table 3-4 shows landings and revenue by port group area for the same period.



**Figure 3-1. Pacific halibut commercial ex-vessel revenue, 2006-2010. (Source: PacFIN Explorer tool, 6/24/2011)**

**Table 3-4. Pacific halibut commercial landings and revenue, 2006-2010 (PacFIN Explorer 06/24/2011)**

	2006		2007		2008		2009		2010	
	Landings (mt)	Ex-vessel Rev.								
Puget Sound	186.16	\$1,149,320	152.34	\$1,150,885	146.92	\$1,165,406	99.27	\$500,380	62.35	\$505,832
Washington Coast	80.27	\$449,636	75.10	\$521,446	72.88	\$554,855	47.09	\$251,981	15.16	\$119,404
Columbia River (WA)	25.60	\$167,974	24.89	\$173,702	13.79	\$105,354	12.40	\$69,245	14.42	\$120,715
Columbia River (OR) & Tillamook	24.08	\$166,517	18.31	\$143,078	14.64	\$118,637	8.34	\$52,911	5.13	\$45,588
Newport	50.43	\$338,909	50.39	\$386,239	71.10	\$578,404	51.86	\$317,761	45.98	\$377,522
Coos Bay / Brookings	33.57	\$222,253	37.18	\$285,719	19.45	\$167,795	21.19	\$126,538	13.12	\$111,393

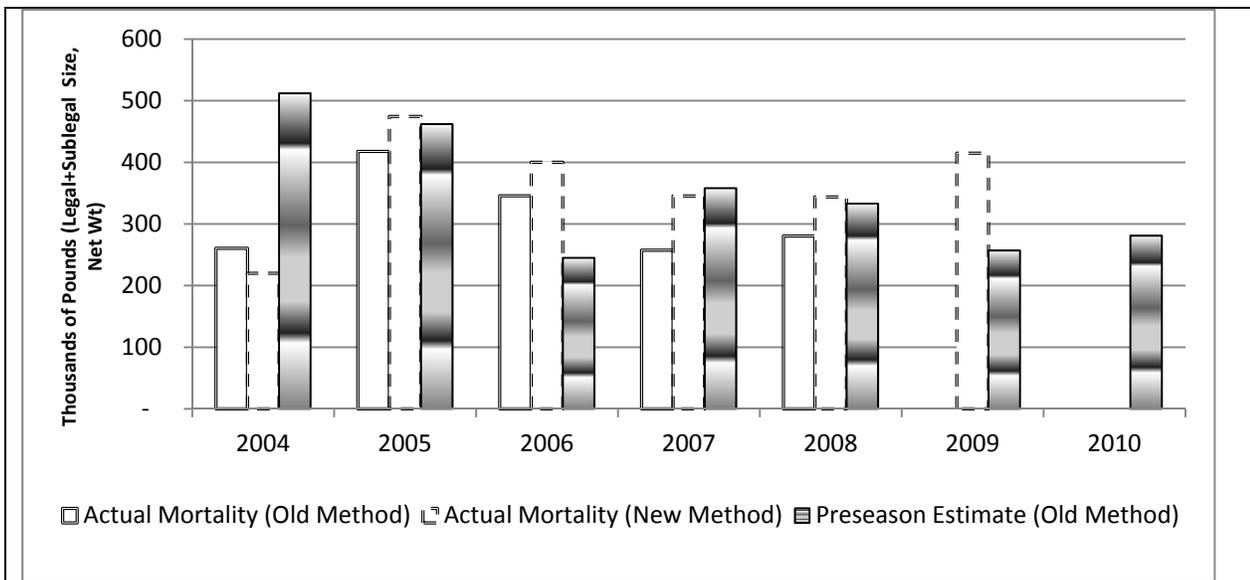
### 3.3.1.3 Pacific Halibut Bycatch Mortality in the Trawl Fishery

Trawl fisheries may not retain incidentally-caught Pacific halibut, resulting in regulatory bycatch. Historically, the IPHC accounted for this bycatch in their estimate of “total constant exploitation yield” (TCEY), but there was not a specific allocation to the fishery for this bycatch. Instead, the amount of Pacific halibut set aside for the trawl fishery each year was based on the estimated trawl Pacific halibut bycatch mortality from 2 years previous (the most recent data available at the time these set asides were determined). Groundfish FMP Amendment 20, implementing trawl rationalization (IFQs and co-ops, described above) included a provision establishing “individual bycatch quota,” or IBQ, for Pacific halibut, which functionally parallels IFQs as a total catch limit, except that retention of Pacific halibut is prohibited. (Note that IFQ / quota pounds must cover *all* catch, not just retained catch, emphasizing this parallel.) Groundfish FMP Amendment 21 established the overall allocation scheme for the groundfish trawl fishery, including the methodology for computing IBQ, which would be modified under the current proposed action.

#### Pacific Halibut Bycatch in Shoreside Trawl Fisheries

Figure 3-2 shows two estimates of annual shoreside trawl bycatch during the 7 years prior to implementation of the trawl rationalization program. The first estimate (the “old method”) are those actually used for management during the years covered by the figure. The second estimate (the “new method”) was presented to the Council in the fall of 2010 by the WCGOP (Heery, et. al., 2010) based on its sampling of trawl trips (about 20% of the trips were observed during this period). During this period trawl halibut bycatch was not directly regulated (although catch was accounted for in the IPHC management scheme as discussed above). During these years the preseason mortality estimate often differs substantially from estimates of actual mortality (whether using the old or new estimation method) as shown in Figure 3-2. Two factors contributed to the inaccuracy of these preseason estimates: 1) the 2-year time lag between the most recent estimate of trawl bycatch mortality and the year in which that estimate was used and 2) the absence of management measures to control trawl bycatch.

The 100% observer coverage requirement the trawl rationalization program implemented in 2011 is expected to increase the accuracy of these Pacific halibut bycatch mortality estimates. By the same token preseason estimates are expected to also improve as measured by the correspondence between preseason and postseason estimates. The program addresses the two factors mentioned above by allowing more timely provision of bycatch data and imposing measures to directly account for Pacific halibut bycatch mortality.



**Figure 3-2. Estimates of actual trawl halibut (legal+sublegal size, net weight) bycatch mortality and preseason estimates for 2004-2010 (estimate from two years prior generally forms the basis for the preseason estimate for each year).**

## Pacific Halibut Bycatch in At-Sea and Southern Trawl Fisheries

According to WCGOP data, from the 2003 to 2006 approximately 0.24 percent of the observed halibut catch occurred south of 40°10' N latitude. Over that period, the annual trawl bycatch estimate for areas north of 40°10' N latitude has been 302-419 mt (666,782-923,693 pounds). Using an estimated bycatch mortality rate of 50 percent, average annual bycatch mortality south of 40°10' N latitude is estimated to range from about 3.7 to 5.1 mt.

Figure 3-3 shows annual Pacific halibut catch by the at-sea trawl sectors (mothership and catcher-processor), 1995-2008. During that period bycatch has not exceeded 4.6 mt annually for these sectors.

Amendment 21 established a 10 mt set aside for the southern (south of 40°10' N latitude) and at-sea trawl fisheries. The above calculations suggest this amount is unlikely to constrain these fisheries. Therefore, no modifications to this aspect of the allocation formula have been proposed in the current alternatives.

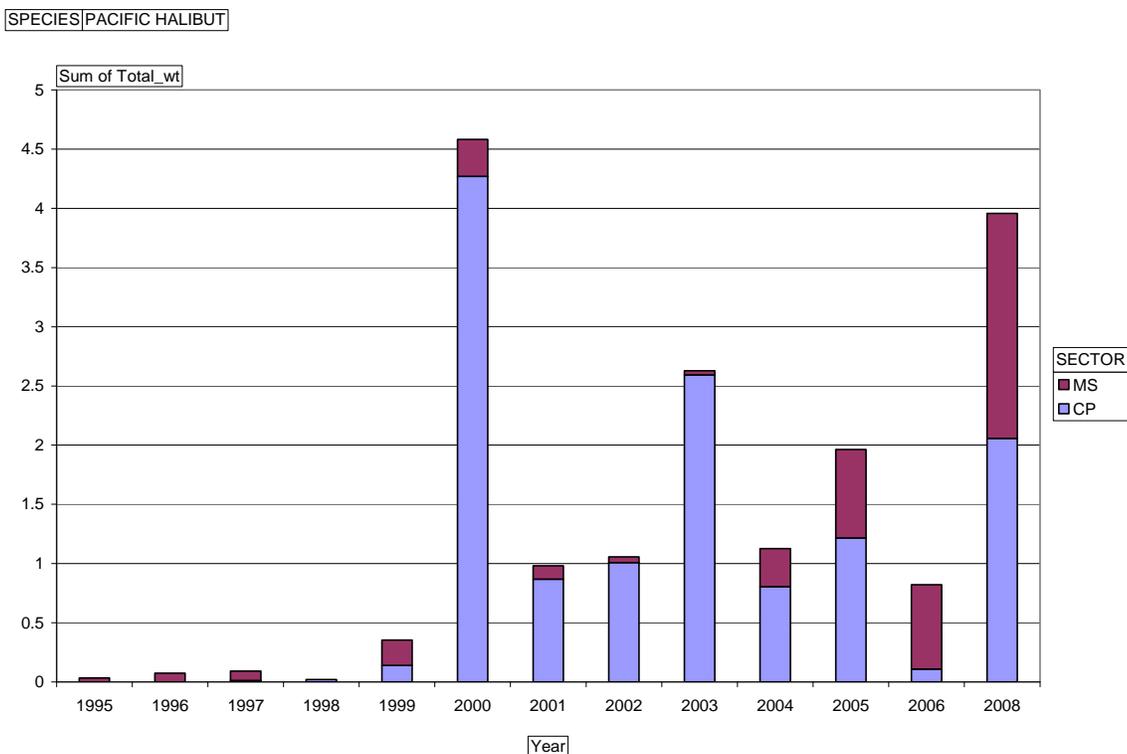


Figure 3-3. Annual bycatch (mt) of Pacific halibut by the at-sea whiting sectors, 1995-2008.

### 3.3.2 Processors

Section 3.9 of the Amendment 20 FEIS describes shoreside processors of trawl groundfish. A more general description of processors is included in Section 5.3 in the 2008 Groundfish SAFE (Council, 2008c).

Although PacFIN data includes a processor identification code, in practice these are “first receivers,” which in addition to processing facilities at the landing site may include buyers that transport fish to other processing facilities located in other ports or away from the coast, restaurant buyers, and others who may do little or no actual processing of the fish before selling into retail markets. At the extreme in this regard is the live fish market, discussed below.

Section 3.9.2 of the Amendment 20 FEIS provides a more detailed description of first receivers. Information from that document indicates that from 2004 to 2006, trawl harvesters delivered nonwhiting from targeted trips to 63 shoreside processing companies located in all three states. Thirty-six to forty-six of these companies received nonwhiting in any one year from 2004 to 2006. This contrasts with the total of 208 companies that received nonwhiting from 1994 to 2006. The geographic distribution of the companies that received whiting indicates that they operate in each of the three states, with 38 in California, 20 in Oregon, and 10 in Washington. Included in these totals are four companies that received nonwhiting in more than one state.

Table 3-5 (from the Amendment 20 FEIS) provides details on the quantities (mt) and raw product costs (RPCs) for each year, including the total for all buyers and averages (and cost) received by a buyer in the year. RPCs are in nominal form; they have not been adjusted for inflation. An average of 18,807 mt per year of nonwhiting was received from harvesters. The RPC was \$23.7 million in 2006, higher than the two previous years, but less than half (in nominal, unadjusted dollars) than the value during the mid-1990s. The average RPC per buyer was \$658,653 in 2006.

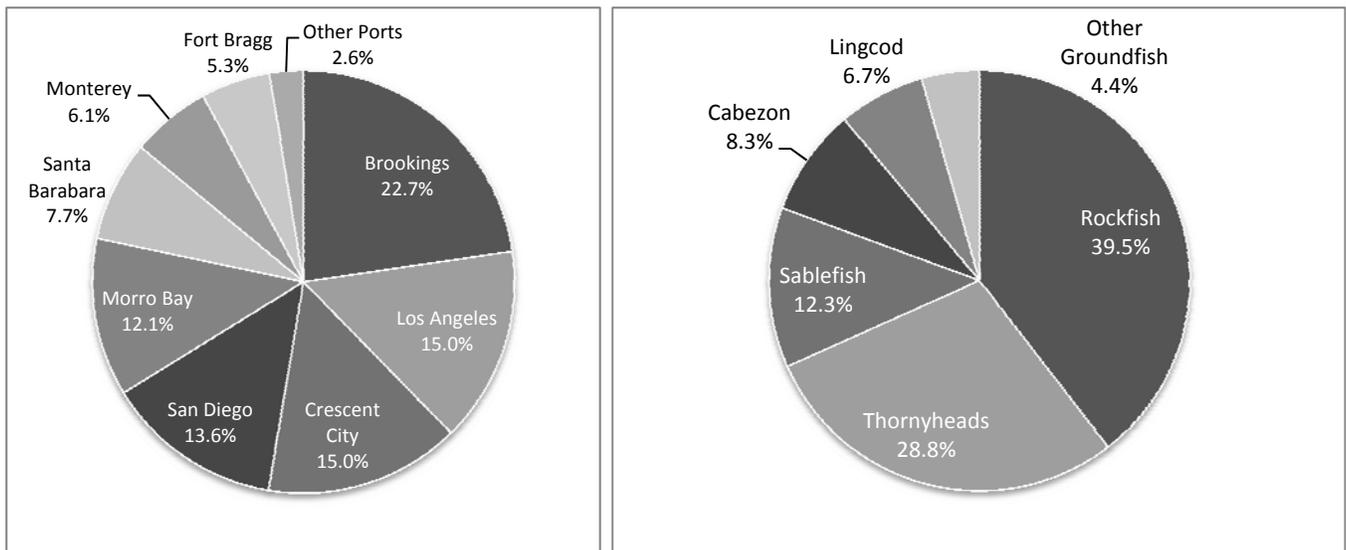
**Table 3-5.** Shoreside nonwhiting receiving characteristics, 2004-06.

	2004	2005	2006	2004-06
Total Received (mt)	20,015.7	18,859.8	17,544.8	18,806.8
Buyers	46	44	36	63
Average Per Buyer (mt)	435.1	428.6	487.4	447.8
Raw Product Cost	\$22,563,138	\$22,275,975	\$23,711,514	N/A
Average RPC per Buyer	\$490,503	\$506,272	\$658,653	N/A

N/A = Not applicable

Information in the 2008 SAFE document (Council, 2008c) demonstrates consolidation and concentration in the west coast seafood processing sector. Based on 2004-2005 landings data, the three largest processing companies accounted for 78 percent of all groundfish purchases, while the next three largest accounted for an additional 12 percent.

The live fish fishery principally involves small vessels fishing in nearshore waters. Live groundfish landings averaged 565 mt annually, 2005-2009, or about a half a percent of coastwide groundfish landings (excluding at-sea whiting). Figure 3-4 shows the distribution of these landings by port and species. The fishery is confined to southern Oregon and California with Brookings, Oregon accounting for the largest share among ports. Rockfish and thornyheads comprise the largest share of landings by species.



**Figure 3-4. Distribution of live groundfish landings, 2005-2009, by port (left) and species (right).**

Through 2010 at-sea processing of groundfish was generally allowed, although the amount of processing of whiting at-sea was constrained by whiting allocations for at-sea processing in the catcher-processor and mothership sectors. The primary exception was the prohibition on at-sea processing of sablefish allocated to the limited entry fixed gear fishery for all except the one vessel which was grandfathered in (discussed below). Additionally, there was an allowance for at-sea processing of the shorebased whiting allocation by vessels under 75 feet in length. On January 1, 2011, a provision was implemented prohibiting at-sea processing of fish harvested under the Shorebased IFQ Program, with the exception of those at-sea processing activities already explicitly allowed, i.e. the vessels that was grandfathered in for at-sea processing of fixed gear sablefish and the allowance for at-sea processing of shoreside allocation of whiting by vessels under 75 feet in length. The new prohibition was intended to ensure that shore-based processors will continue to receive landings from the shorebased IFQ catcher vessels.

The recently added prohibition on the processing of groundfish allocated to the shorebased trawl fishery potentially impacts vessels that had been processing non-whiting groundfish at sea. Only one limited entry non-whiting trawl vessel is known to have delivered glazed (frozen) groundfish prior to the recent proposed rule to expand the prohibition on at-sea processing, dated August 31, 2010. This individual came forward at the November 2010 Council meeting requesting an exemption to the at-sea processing prohibition. No other individuals have come forward requesting an exemption to the prohibition, even though the topic has been discussed at the March, April, and June 2011 Council meetings.

The owner of the trawl vessel that engaged in this at-sea processing operation initiated plans during 2008, made capital expenditures during 2009, and landed his at-sea processed product (sablefish) on five occasions during April and May, 2010. This operation allows the owner to quick freeze groundfish within hours of the harvest. The result is a freshly-frozen product that is of significantly higher value than whole fish delivered to processing plants on ice (Oregon Department of Fish and Wildlife, unpublished data).

It is likely that no other non-whiting limited entry trawl vessels engaged in this quick-freezing operation at sea because of the high start up cost (i.e., equipment) and the difficulty of developing markets. Processing at-sea may compete with shore-based processors making it difficult to locate a typical buyer (e.g., a domestic, shoreside processing plant). As a result it takes time and effort to develop domestic, and possibly, foreign buyers.

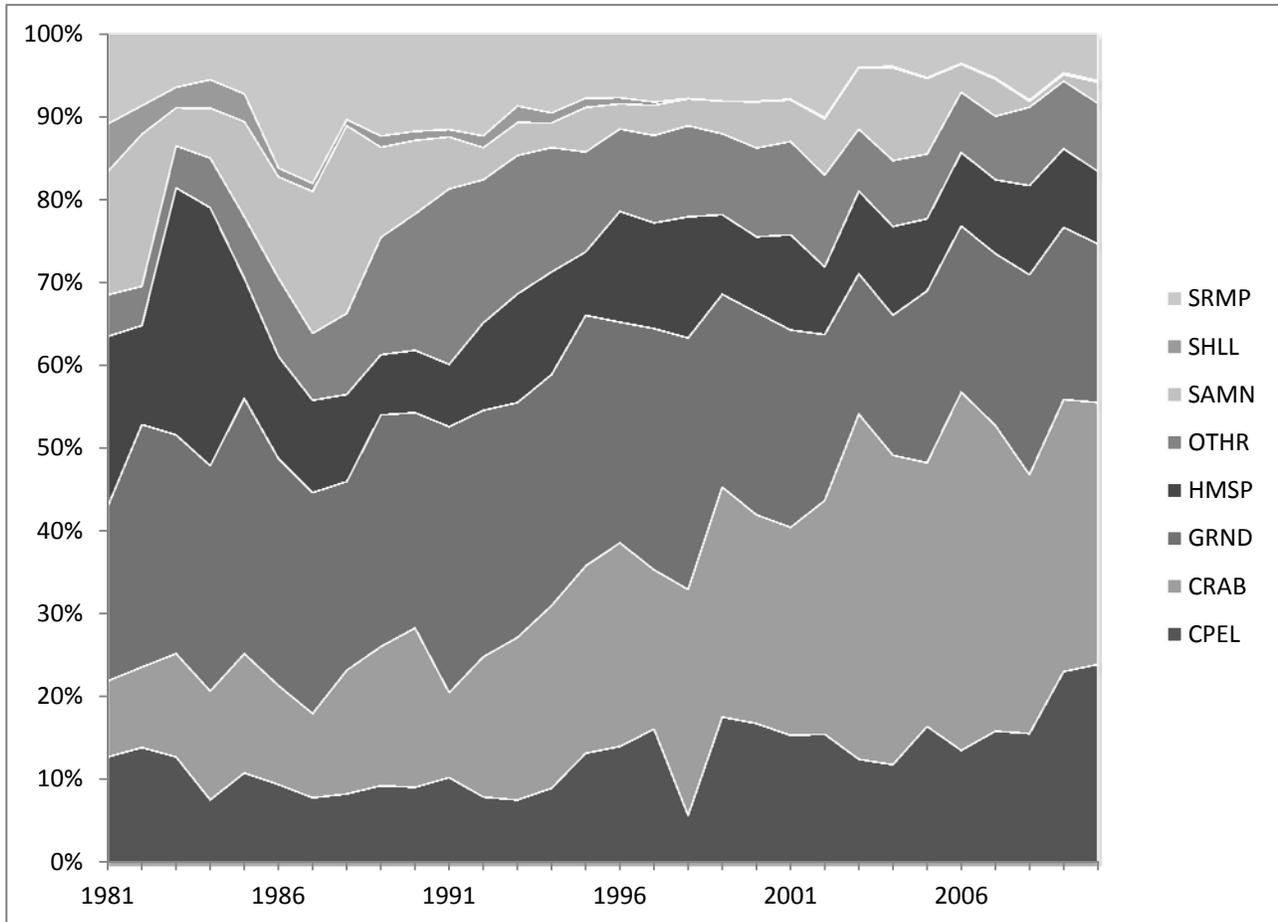
Heading and gutting is not considered processing under Federal regulations. The offal from the headed and gutted product may be discarded at sea, and this discard is discussed in Section 4.2.1.

A similar at-sea processing procedure is allowed for a limited entry fixed-gear sablefish vessel while fishing in the primary fixed gear sablefish fishery. This vessel was exempted from at-sea processing prohibitions for that fishery beginning January 1, 2007 (FR 71 10622). There were no environmental concerns raised when issuing the exemption for that vessel. The Council's intent of limiting at-sea processing to only a few qualifying vessels was to maintain the character of the fishery, which included having the bulk of primary season sablefish being processed onshore. The Council was concerned that workers from coastal communities may relocate their processing jobs from the communities with shorebased processors to the processor vessels and ports with frozen-storage capacity if at-sea processing became widespread, due to the economic efficiency of at-sea processing. Hence, the Council's intent for this at-sea processing prohibition was to reduce the potential for relocation of processing jobs and income away from fishery dependent coastal communities and limit onshore/offshore disputes (FR 71 10622). It should be pointed out that this provision also may result in the loss of some economic benefit to the nation. The intent of limiting at-sea processing for the Shorebased IFQ Program is similar to the intent described for the prohibition crafted for this fixed-gear sablefish fishery.

### 3.3.3 Communities

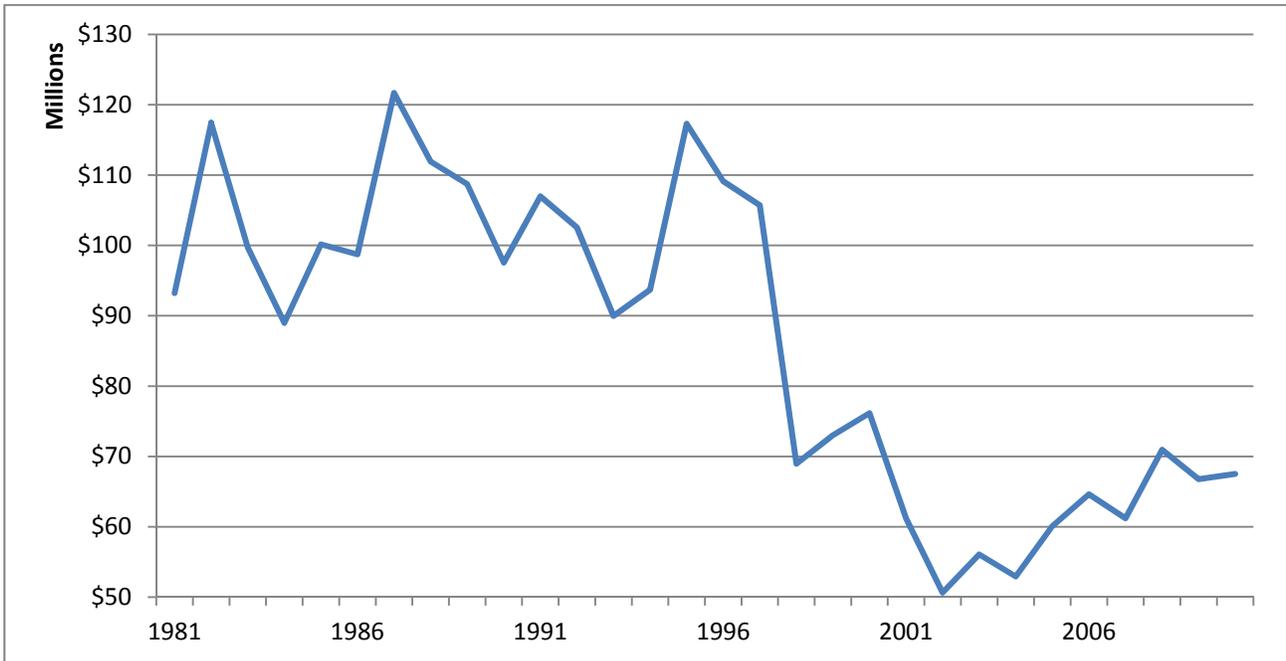
Section 3.14 in the Trawl Rationalization FEIS (Amendment 20 EIS) (Council, 2010b) and Section 3.2 in the 2011-2012 Groundfish Harvest Specifications FEIS (Council 2011) characterize the current socioeconomic and demographic status of west coast fishing communities. This information is incorporated by reference and summarized here.

Figure 3-5 provides a broad view of fishery trends on the west coast, showing inflation adjusted shoreside ex-vessel revenue by major species group, 1981-2010. Groundfish has accounted for between 17% and 32% of total annual shoreside revenue during the period. Through 1998 shoreside groundfish ex-vessel revenue accounted for about 28% of total revenue annually on average, dropping to 21% in the years following.



**Figure 3-5. Inflation adjusted ex-vessel revenue by species group, percent of total, 1981-2010. (Source: PacFIN Explorer, accessed 7/4/2011)**

Figure 3-6 illustrates the substantial drop in groundfish ex-vessel revenue in the shoreside sectors that occurred in the late 1990s. The drop in landings was a consequence of severe constraints placed on fisheries to reduce catches of overfished groundfish species, consistent with rebuilding plans adopted by the Council. The low point in 2002 is 43% of the 1995 peak.



**Figure 3-6. Inflation adjusted shoreside ex-vessel revenue from groundfish, 1981-2010.**

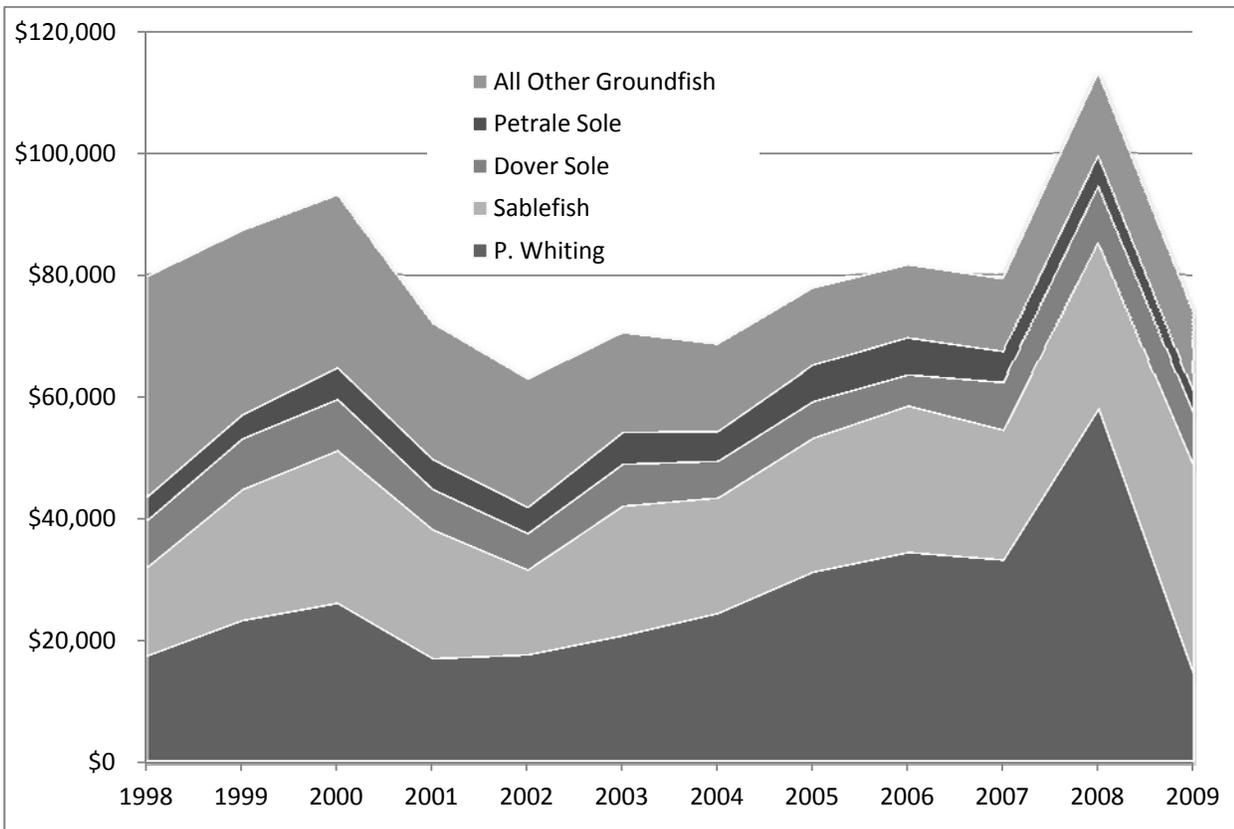
Table 3-6 is excerpted from the 2011-2012 Groundfish Harvest Specifications FEIS and shows general trends in shoreside groundfish ex-vessel revenue by port group between 1998 and 2009, and the more recent 2004-2009 period. Consistent with the longer term trend discussed above, ex-vessel revenue fell 3.6% 1998-2009, but this masks a 25% rebound between 2004 and 2009. There has also been considerable variability at the state and port group level. Over the longer period gains in Washington and Oregon did not quite balance out the substantial drop in revenue in California. Newport showed the biggest gain in revenue among port groups over the longer period at \$1.9 million, while Monterey showed the biggest decline at \$2.7 million. However, during the more recent 2004-2009 period, California and Oregon saw big gains in revenue in percentage terms while Washington experienced a modest decline. While most other port groups showed gains, revenue in Monterey continued to decline. Newport and Astoria showed the largest gains in revenue during the 2004-2009 period.

Figure 3-7 show ex-vessel revenue for the four largest contributing species (Pacific whiting, sablefish, Dover sole, and petrale sole) and all other groundfish, 1998-2009. (The figure includes at-sea Pacific whiting revenue.) Overall for this period Pacific whiting accounted for 33% of ex-vessel revenue, sablefish 28%, Dover sole 9%, petrale sole 6%, and all other groundfish 24%.<sup>6</sup> Recent increases and regional shifts in ex-vessel revenue are likely driven by growth in the relative importance of sablefish and shoreside whiting as components of overall landings.

<sup>6</sup> Petrale sole was declared overfished in 2010 and is currently managed under a rebuilding plan. This will result in a short-term drop in ex-vessel revenue from this species due to required harvest restrictions. The target rebuilding year adopted by the Council is 2016.

**Table 3-6. Change in inflation adjusted ex-vessel revenue from groundfish, \$1,000s, by port group area, 1998-2009 and 2004-2009.**

Port Group Area	Change 1998-2009		Change 2004-2009	
	\$1,000s	Percent	\$1,000s	Percent
Puget Sound	-333	-11.3%	-1,788	-40.6%
North Washington Coast	1,677	57.8%	181	4.1%
South and Central WA Coast	1,415	36.3%	556	11.7%
Unidentified WA	775	115.5%	879	155.1%
<b>Washington Subtotal</b>	<b>3,534</b>	<b>33.9%</b>	<b>-171</b>	<b>-1.2%</b>
Astoria	-348	-3.1%	2,268	26.0%
Tillamook	44	30.5%	-38	-16.8%
Newport	1,949	24.0%	2,233	28.5%
Coos Bay	-556	-8.4%	1,948	47.0%
Brookings	1,506	49.5%	2,522	124.4%
<b>Oregon Subtotal</b>	<b>2,595</b>	<b>8.9%</b>	<b>8,932</b>	<b>38.9%</b>
Crescent City	-1,489	-38.4%	1,172	96.4%
Eureka	-826	-16.2%	1,163	37.4%
Fort Bragg	126	3.2%	1,389	50.9%
Bodega Bay	-1,549	-85.7%	115	81.2%
San Francisco	-1,533	-51.3%	-491	-25.2%
Monterey	-2,684	-67.5%	-698	-35.0%
Morro Bay	-352	-8.6%	1,458	64.2%
Santa Barbara	-452	-37.6%	243	47.9%
Los Angeles	-71	-6.8%	-301	-23.7%
San Diego	238	51.1%	420	148.5%
<b>California Subtotal</b>	<b>-8,592</b>	<b>-30.1%</b>	<b>4,470</b>	<b>28.9%</b>
<b>Coastwide Total</b>	<b>-2,462</b>	<b>-3.6%</b>	<b>13,231</b>	<b>25.2%</b>



**Figure 3-7. Groundfish ex-vessel revenue (including at-sea whiting), \$1,000s, 1998-2009. (Source: Table 4 in Appendix F, 2011-2012 Groundfish Harvest Specifications FEIS)**

Table 3-7 shows average annual shoreside ex-vessel revenue by port group for the 5-year period, 2006-2010. The first and second ranked ports, Astoria-Warrenton (part of the Columbia River, Oregon port area) and Newport are found in Oregon, contributing to Oregon's premier rank among the three west coast states. North Puget Sound ports (principally Bellingham) ranks third and Washington Coast ports fifth. While California has no ports ranked in the top five, this state ranks second, above Washington, accounting for just under a third of coastwide landings during the period.

**Table 3-7. Ex-vessel revenue by port group, 2006-2010. (Source: PacFIN Explorer Tool, 7/4/2011)**

	<b>Average Annual Revenue, 2006-2010</b>	<b>Percent of Total</b>	<b>Rank</b>
<b>Washington</b>	<b>\$12,779,527</b>	<b>23.6%</b>	
North Puget Sound Ports	\$6,088,566	11.2%	3
South Puget Sound Ports	\$29,142	0.1%	19
Washington Coastal Ports	\$5,214,265	9.6%	5
Columbia River Ports (Washington)	\$1,447,555	2.7%	13
<b>Oregon</b>	<b>\$24,214,526</b>	<b>44.7%</b>	
Columbia River Ports (Oregon)	\$8,203,022	15.1%	1
Tillamook Area Ports	\$157,974	0.3%	18
Newport Area Ports	\$6,363,663	11.7%	2
Coos Bay Area Ports	\$5,792,604	10.7%	4
Brookings Area Ports	\$3,697,263	6.8%	7
<b>California</b>	<b>\$17,222,996</b>	<b>31.8%</b>	
Crescent City Area Ports	\$1,602,208	3.0%	11
Eureka Area Ports	\$4,155,830	7.7%	6
Fort Bragg Area Ports	\$3,324,565	6.1%	8
Bodega Bay Area Ports	\$260,816	0.5%	17
San Francisco Area Ports	\$1,657,566	3.1%	10
Monterey Area Ports	\$1,484,547	2.7%	12
Morro Bay Area Ports	\$2,347,413	4.3%	9
Santa Barbara Area Ports	\$757,498	1.4%	15
Los Angeles Area Ports	\$896,749	1.7%	14
San Diego Area Ports	\$735,804	1.4%	16
<b>Grand Total</b>	<b>54,217,048</b>	<b>100.0%</b>	

Table 3-8 is adapted from Table 3-23 in Appendix F to the 2011-2012 Groundfish Harvest Specifications FEIS and shows port areas' relative importance in terms of groundfish trawl landings (based on the proportion of coastwide ex-vessel revenue). Port areas ranked high (bolded in the table) generally align with the areas identified above (because trawl landings account for a large proportion of total groundfish ex-vessel revenue). In California Eureka and Fort Bragg are important non-whiting trawl ports. Trawl fisheries are generally not significant in Central and Southern California.

**Table 3-8. Port Areas' importance to shoreside trawl based on ex-vessel revenue, 2005-2009.**

<b>Port Group Area</b>	<b>Whiting</b>	<b>Non-whiting</b>
Puget Sound	Medium (0.0%)	<b>High (6.5%)</b>
North Washington Coast	Low (0.0%)	Low (2.3%)
South and Central WA Coast	<b>High (27.4%)</b>	Medium (2.9%)
Astoria	<b>High (27.7%)</b>	<b>High (23.6%)</b>
Tillamook	None (0.0%)	Low (0.2%)
Newport	<b>High (35.4%)</b>	<b>High (11.7%)</b>
Coos Bay	<b>High (3.7%)</b>	<b>High (13.7%)</b>
Brookings	Low (0.0%)	Medium (4.3%)
Crescent City	Medium (2.6%)	Medium (4.6%)
Eureka	Medium (3.0%)	<b>High (11.1%)</b>
Fort Bragg	None (0.0%)	<b>High (7.4%)</b>
Bodega Bay	None (0.0%)	Low (0.9%)
San Francisco	None (0.0%)	Medium (4.6%)
Monterey	Low (0.0%)	Medium (3.5%)
Morro Bay	None (0.0%)	Medium (2.4%)
Santa Barbara	None (0.0%)	Low (0.0%)
Los Angeles	None (0.0%)	Low (0.0%)
San Diego	None (0.0%)	Low (0.0%)

# CHAPTER 4      **IMPACTS**

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## **4.1      Issue 1: Halibut Trawl Bycatch Mortality Limit**

### **4.1.1      Overview of the Impact Analysis**

Through 2010, trawl halibut bycatch was managed through a process under which an expected trawl bycatch was estimated and deducted from the Pacific halibut TCEY. There were no management measures designed to specifically limit the amount of trawl fishery bycatch mortality. For 2011, bycatch control measures in the form of individual bycatch quota were established as part of the Amendment 20 trawl rationalization program and a bycatch mortality limit was established through Amendment 21. However, the bycatch mortality limit specified by Amendment 21 was not implemented for 2011; a different limit was implemented through emergency action. The first action analyzed by this document is the modification of the Pacific halibut bycatch mortality limit formula that was developed under Amendment 21 but never implemented.

The quantitative portion of the analysis will largely rely on a hindcast of the Amendment 20 and 21 actions. The limit implemented in lieu of the Amendment 21 limit was implemented for this year (2011) and data on this year's fishery will not be available until after this action is complete. For these two reasons (that Amendment 21 limits were not implemented for 2011 and the unavailability of 2011 data) there is no information available to assess impacts of the fishery under status quo. The baseline used for the hindcast is 2004 through 2009, the six most recent years for which data is available<sup>7</sup>. The hindcast method is intended to use conditions from past years to illustrate a variety of conditions that might be encountered in the future and how each alternative would perform under such conditions.

The starting point for each year of the hindcast period will be the TCEYs and the amounts of quota allocated to each of the Pacific halibut retention fisheries. From there, we will examine the change in the amount of the trawl halibut bycatch mortality that would be expected given implementation of each of the alternatives. The amount of change will depend on the baseline assumptions regarding the amount of trawl halibut bycatch mortality that would have been expected in each year. There are two assumptions that may be made regarding the trawl halibut bycatch mortality used for the baseline.

1. **Actual Preseason Estimates Based on Old Method:** The amount of trawl bycatch mortality that would have been expected is the preseason estimate used by the IPHC when the season was planned. In general, the amount of trawl bycatch mortality expected for a coming year was based on the most recent post season estimate available at the time the fishery was planned. For example, the post season estimate for the 2008 fishery provides the basis for planning the 2010 fishery.
2. **Hypothetical Preseason Estimates Based on New Method:** In the fall of 2010 a new estimation procedure resulted in revisions to the post season estimates going back through 2002 (Heery, et. al., 2010). For most years the estimates of legal and sublegal sized trawl caught halibut bycatch mortality resulting from this new method were higher than those based on the old method. As mentioned, the purpose of the hindcast is to use past stock conditions to indicate the range of management situations that might be encountered under the alternatives assuming there is a reasonable probability that similar conditions might repeat themselves in the future. Since this new estimation procedure would be used in the future and provides the best estimate of actual trawl

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<sup>7</sup> This baseline includes both an unusually low year of trawl bycatch (2004) and an unusually high year (2005). Extending the range back to 2003 would have picked up a second unusually low year and starting the range in 2006 would have resulted in a comparable average without picking up the range of variability in fleet performance. There is only a 3% difference between the 2004-2009 average and the 2006-2009 average.

bycatch and bycatch needs during the baseline period, it seems appropriate to use the new estimates in modeling a hindcast of the impacts of the proposed management measures. However, use of the new method to develop hypothetical preseason estimates has its challenges. While IPHC based its preseason estimates on the most recent post season estimate available, in some cases the IPHC found it appropriate to make modifications. It is impossible to determine how the IPHC might have modified the hypothetical preseason estimates based on the new estimates, which is why they have been termed here as “hypothetical.” Additionally, if the new bycatch information had been available this would have resulted in changes in the estimated stock biomass and amounts of TCEY made available for retention fisheries.

Each of these methods for estimating the baseline trawl bycatch mortality has its merits and in some cases both may be used to further illustrate the range of possible outcomes.

The quantitative analysis will be based on a comparison of the following.

**Hindcast Baseline** – retention fishery quotas and 2004-2009 trawl Pacific halibut bycatch mortality levels. (For comparisons where complete data is available for the 2010 fishery, 2010 is included in the baseline).

**No Action Alternative** – Status quo, Amendment 21 trawl Pacific halibut bycatch mortality limit, including calculation to convert from net to round weight.

**Alternative 1** – Amendment 21 trawl Pacific halibut bycatch mortality limit, with an additional calculation to convert from legals to legals+sublegal.

**Alternative 2** – Set trawl Pacific halibut bycatch mortality limit (minus percentage cap) biennially and use same calculations as for Alternative 1.

Under each alternative, the hindcast assumes that the trawl rationalization program would be in place to ensure that the trawl halibut bycatch mortality limits are not exceeded.

There are some general impact mechanisms and impacts which form the basis of the analyses more fully developed in each subsection. These are as follows.

1. **Trade-Offs:** In general, the level of Pacific halibut bycatch mortality available to the trawl fishery will not directly affect total Pacific halibut mortality since any reduction in trawl bycatch will likely result in increased quota in retention fisheries. However, on some occasions, particularly when the halibut TCEY is going through a rapid decline, the IPHC has provided for an adjustment period by allocating quota in excess of the TCEY (or in amounts that result in mortalities in excess of the TCEY when nonretention fishery discard mortality is taken into account). In such years, a reduction in the Pacific halibut needed to cover trawl mortality could go toward reducing the overall mortality and better achieving the TCEY rather than increasing the quota for retention fisheries. Assuming that quota and bycatch mortality limits are set to meet the TCEY, the following are the general effects.
  - **Effect of a Trawl Mortality Bycatch Limit In Excess of Trawl Bycatch Needs.** Any halibut trawl mortality bycatch limit in excess of the needs of the trawl fishery would likely represent foregone halibut opportunity for retention fisheries and total halibut mortality levels below the TCEY. The retention fishery fishing industry (including commercial harvesting, recreational charter, and processing businesses and workers), fishing communities, tribes, recreational fishers, and fish consumers would experience a reduction in benefits resulting from reduced Pacific halibut harvest. The habitat and ecosystem impacts of the retention fishery would be lower than if enough quota had been allocated to fully utilize the TCEY.
  - **Effect of a Trawl Mortality Bycatch Limit Less than Trawl Bycatch Needs.** If the trawl fishery does not receive enough halibut to fully harvest the amount of groundfish harvest allowed by its allocations, the fishing industry, fishing communities, and fish consumers would

experience a reduction in benefits resulting from reduced groundfish harvest; and impacts to habitat, the ecosystem, and the groundfish resource would be reduced below levels anticipated to result from the regulations analyzed and approved through the biennial specifications process.

2. **Effect on Management and Agency Resources.** The procedures established for setting the trawl mortality bycatch limit levels will have impacts on the management system's flexibility to respond to changing conditions and the amount of administrative effort required to make changes in the future.
3. **General Comparison of the Trawl Halibut Allocation by Alternative.** In general, the level of impact of the alternatives vary by the amount of halibut provided to the trawl sector. The nature of the impacts are discussed in the following section but the relative size of the impacts will vary proportionally to the relative amounts of fish allocated to the trawl sector. For the No Action Alternative and Alternative 1, the maximum amounts provided to the trawl sector will be directly related to the Pacific halibut TCEY. For Alternative 2, there would not necessarily be any relationship between the TCEY and the amounts allocated to the trawl fishery, except as is determined through each biennial specification process and recommended by the Council. However, Alternative 2 would cap the total allocation to the trawl sectors.

For the two action alternative, Figure 4-1 compares the results from applying the cap (100,000 or 130,000 pounds) and, for Alternative 1, the 15% allocation. Because there is no allocation formula for Alternative 2, the allocations could potentially be anywhere between zero (unlikely) and the Alternative 2 cap amounts (100,000 pounds for Alternative 2a and 130,000 pounds for Alternative 2b). On the other hand, for Alternative 1, the allocation would be set to 15% of the TCEY or the cap amount, whichever is less, and the cap amounts vary by time period. Thus for lower TCEYs, the amount allocated under Alternative 2 may be above or below that allocated under Alternative 1, depending on the allocation decision the Council would make under Alternative 2 and the time period and level of cap applied under Alternative 1. The amounts by which Alternative 2 could potentially exceed Alternative 1 under standard procedures are illustrated in Figure 4-1 by the height of the Alternative 2 line above the Alternative 1 line. For higher TCEYs, the maximum allocation under Alternative 2a (100,000 pound cap) would be below Alternative 1 for the first three years and the same as Alternative 1 thereafter. The maximum allocation under Alternative 2b (130,000 pound cap) would be the same as Alternative 1 for the first three years and above Alternative 1 thereafter. While standard procedures under Alternative 1 specify a 15% allocation, because Alternative 1 allows the 15% to be modified during the preseason process, any allocation that could be achieved through decisions made during the biennial specifications process under Alternative 2 could be achieved under Alternative 1 by following a similar decision process during the biennial specifications process, except as constrained by the caps.

The differences between the No Action and action alternatives are in the expansion factors applied. In the first step of the calculation, determination of the amount of legal sized net weight of halibut to deduct from the TCEY, the No Action Alternative and Alternative 1 are identical and would be represented by the same lines in Figure 4-1. However, under the No Action Alternative, there is only an expansion from dressed to round weight (1.33) to determine the amount of halibut available to the trawl fishery. Under the action alternatives, there are expansions both for going from dressed to round (1.33) and from legal sized fish to legal and sublegal sized fish (1.61). The magnitude of differences between the No Action Alternative and action alternatives are illustrated in Figure 4-2 which displays the round pounds of legal and sublegal halibut that would be available to the trawl sector. In Figure 4-2 it can be seen that the maximum amount of pounds allocated under either of the action alternatives would far exceed No Action Alternative. Because the formula used for the No Action Alternative and Alternative 1 vary primarily by the application of the 1.61 expansion factor, Alternative 1 would generally be calculated to provide 1.61 time more halibut to the trawl fishery than the No Action Alternative. At the same time, the flexibility provided under all the alternatives would allow the trawl allocation to be set below the formulaically specified levels of the No Action Alternative.

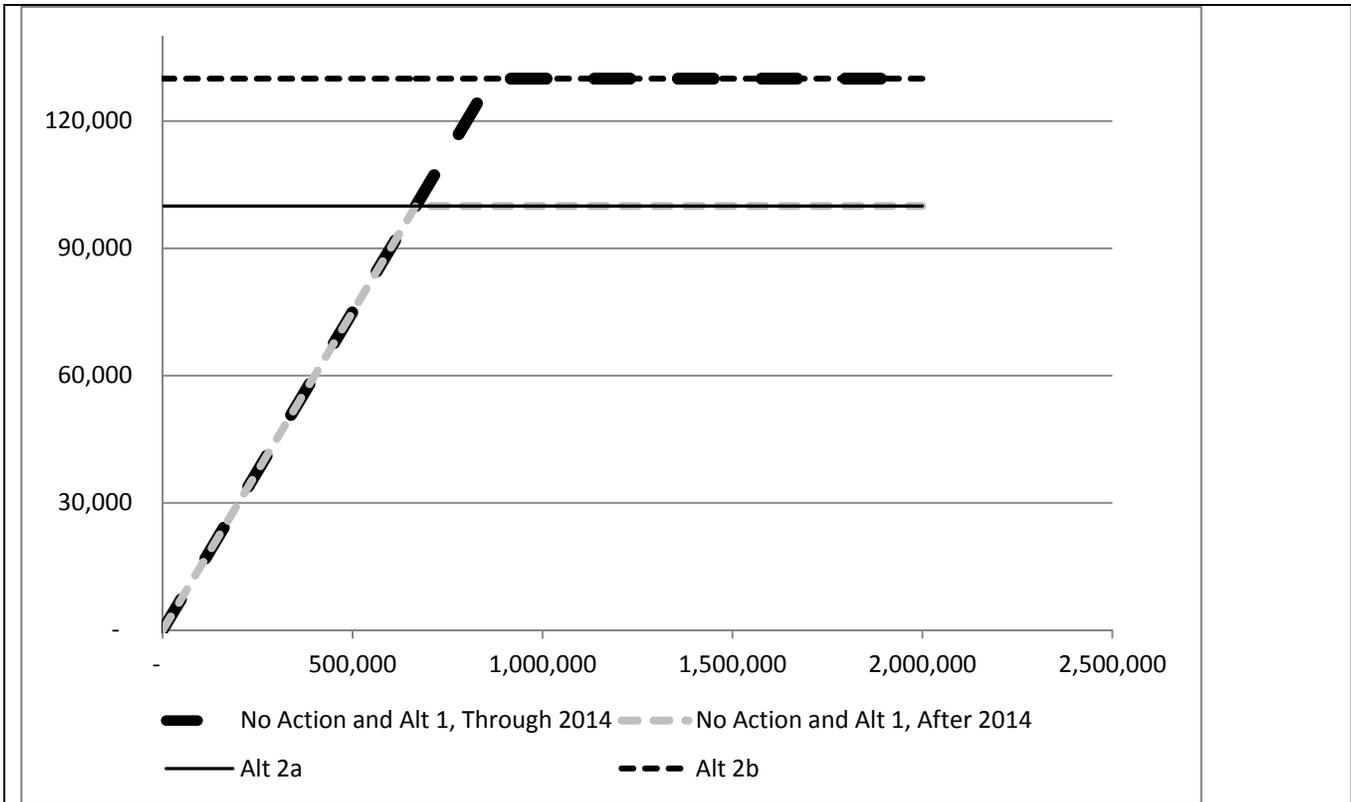


Figure 4-1. Maximum allocations of legal sized halibut (pounds net weight on vertical axis) for various TCEY levels (legal sized fish, pounds, net weight on horizontal axis) for the alternatives as calculated during the first step in applying the allocation formula.

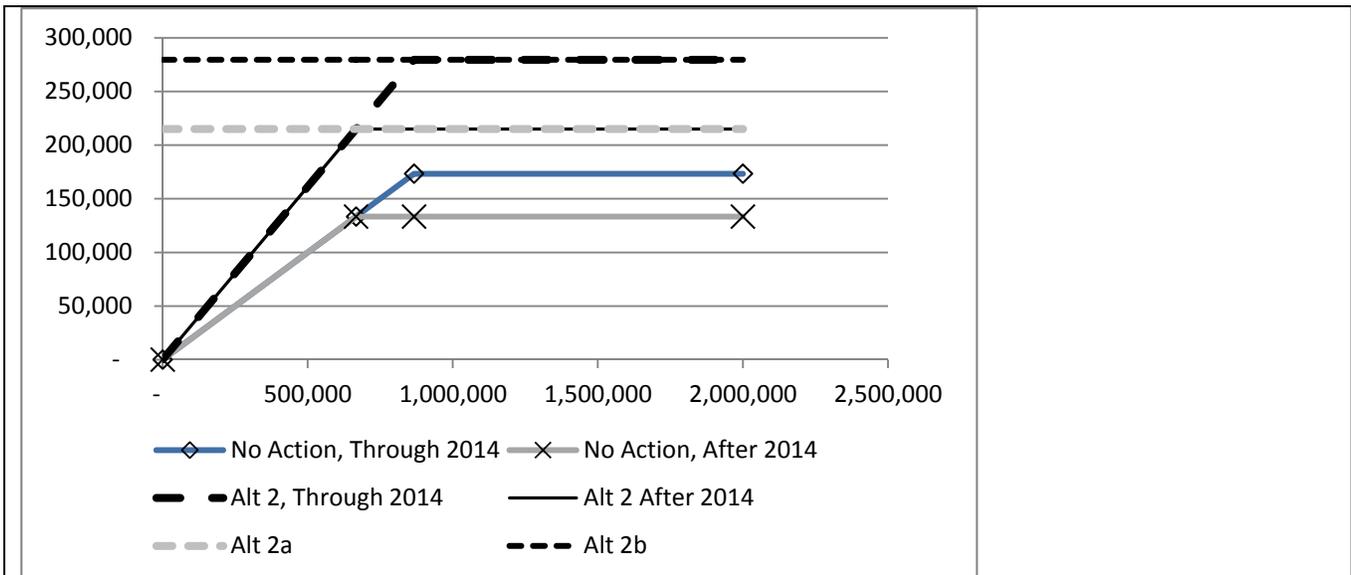


Figure 4-2. Maximum allocations of legal and sublegal sized halibut (pounds round weight on vertical axis) compared to TCEY (legal sized fish, pounds, net weight on horizontal axis) for each alternative.

#### 4.1.2 **Direct and Indirect Impacts to the Physical Environment, Including Habitat and Ecosystem**

The direct and indirect impacts of the trawl fishery to groundfish essential fish habitat (EFH) and the California current ecosystem were analyzed in the Amendment 20 and 21 EISs (Council, 2010a and b). For the range of alternatives considered here, the halibut allocated to cover trawl halibut bycatch mortality are not expected to affect the total amount of trawl activity (and hence the physical environment). This is based on the assumption that there is enough halibut IBQ pounds for fishers to catch their target groundfish species and, if not, then fishers can change their behavior to some extent to avoid halibut and still target groundfish. If these assumptions are wrong and there is not enough to allow the full harvest of target groundfish and halibut becomes constraining, then there would be reduced trawl activity and reduced impacts on the environment. Those reduced impacts would likely be very minimal.

Under normal circumstances, a reduction in the amount of halibut made available for the trawl fishery bycatch would likely increase the amount of quota available for tribal, sport, and non-trawl commercial halibut retention fisheries, increasing the impacts of those fisheries. The proportions by which the retention fishery activity might increase are described in section 4.1.3 on impacts to the fishery. An increase in activity in retention fisheries might not occur if the additional quota is instead used to better achieve conservation goals, as described in the first assumption/premise listed in Section 4.1.

None of the alternatives (No Action, Alternative 1, or Alternative 2) are expected to change the total amount of trawl activity or result in any significant impacts to the physical environment. If the alternatives are not sufficient to accommodate full harvest of the groundfish allocated to the trawl fishery in a given year, then there would be reduced impacts on the physical environment due to less groundfish trawl fishing opportunity. The amount of trawl activity would be expected to be related to the level of the halibut allocation to the trawl sector. Generally, the action alternatives allow for more allocation than the No Action Alternative and Alternative 2 potentially allows for a greater harvest trawl allocation at lower TCEY levels than Alternative 1, as is explained in greater detail in Section 4.1.1

In addition, none of the alternatives alter the management measures by which each sector is kept within its allowable harvests. Such direct and indirect impacts are the concern of the groundfish biennial specification process and the Pacific halibut catch sharing plan, and are analyzed in separate environmental analyses that are part of those processes.

#### 4.1.3 **Direct and Indirect Impacts to the Biological Environment**

##### **Pacific Halibut**

The total mortality of Pacific halibut is not expected to be altered by any of the action alternatives. The main effect of the alternatives is to change the amount of trawl sector halibut mortality and hence the amount left over for harvest by other sectors. Under the No Action alternative, Alternative 1, and Alternative 2, the trawl sector bycatch mortality limit would be below the amount the trawl fishery took under the baseline conditions. Generally, the action alternatives allow for more allocation and trawl mortality than the No Action alternative and Alternative 2 potentially allows for a greater harvest trawl allocation at lower TCEY levels than Alternative 1, as is explained in greater detail in Section 4.1.1. The allocations for other sectors may be increased as a result of the reduction in trawl sector bycatch mortality. However, because in some recent years the IPHC has set quota levels in excess of the TCEY (Figure 4-4), it is possible that rather than increasing the harvest of other sectors, in some years the reduction in the trawl sector bycatch mortality might be used to more closely achieve the TCEY.

With respect to future impacts on total halibut mortality, the difference between the alternatives is a matter of the likelihood that the trawl bycatch mortality limit will exceed trawl needs. If a bycatch mortality limit is in

excess of the trawl fishery's needs (provides more halibut than the minimum amount required by the trawl fishery to take its allotted amount of groundfish) then halibut in the amount of that excess may go unused, resulting in underutilization of the halibut TCEY. Because both the No Action Alternative and action alternatives reduce trawl halibut bycatch mortality substantially below the baseline levels, it appears that all alternatives have a low probability of substantially exceeding the needs of the trawl fishery. Regardless of how low that probability is, since Alternative 1 provides a greater bycatch mortality limit for the trawl fishery, its probability of exceeding the trawl fisheries needs is greater than the No Action Alternative. While ultimately the Alternative 2 allocation is indeterminant (halibut allocations determined as part of the biennial specifications process) and the impacts of the Alternative 2 allocation would have to be assessed as part of that process the caps established by Alternative 2 allow for a greater allocation at lower TCEY levels than would be achieved by following the 15% allocation formula of Alternative 1 (as is discussed in greater detail in Section 4.1.1).

### **Groundfish, Including Overfished Species**

The amount of halibut bycatch mortality available to the trawl sector under the action alternatives will not increase the total mortality of groundfish to levels above those anticipated and analyzed in the impact assessments produced during the biennial specifications process. Total mortality, expected mortality, and amount of catch allocated to the trawl sector is determined through that biennial process. Catch accounting and 100% observer coverage in the trawl fishery assure adequate control over total mortality. A shortage of IBQ-pounds for Pacific halibut could constrain trawl harvest and prevent the sector from attaining the allocations anticipated during the biennial specifications process. The probability of such a shortage occurring is greater under the No Action alternative than under Alternative 1 or Alternative 2. Following standard procedures specified under each action alternative, at low TCEYs more halibut might be provided under Alternative 2 as compared to Alternative 1, and thus a lower probably of an IBQ shortage. Section 4.1.1 discusses the relative performance of the alternatives with respect to the amount of halibut provided the trawl fishery. .

### **ESA Listed Salmon and Other Protected Species**

No significant changes from the current condition are expected with any of the alternatives (No Action, Alternative 1, or Alternative 2). Slight changes may occur if trawl activity is constrained by a shortage in the sector's halibut bycatch mortality limit (reducing salmon bycatch and impacts on other protected species) or harvest in the halibut retention fisheries is increased (increasing any salmon bycatch and impacts on other protected species occurring in those fisheries). Since no significant changes to current conditions are anticipated no significant adverse impact would occur under any of the alternatives. Under alternative 2 impacts on ESA salmon species and impacts on other protected species are accounted for in the decision process related to the annual establishment of harvest levels for halibut and are therefore not directly affected by this action. A determination of whether or not to allocate to the directed fisheries that halibut TCEY made available as a result of the reduced trawl mortality would have to take into account the impact on ESA listed salmon and impacts on other protected species.

### **Other Fish Resources**

No substantial changes from the current condition are expected on other fisheries resources with any of the alternatives (No Action, Alternative 1, or Alternative 2), except to the degree that other fish resources are encountered as bycatch in the trawl fishery or directed halibut fisheries. If impacts occur in conjunction with the trawl fishery and the halibut trawl mortality bycatch limit is insufficient to allow that fishery to be fully prosecuted, impacts on other fish resources may be reduced. None of the alternatives are expected to result in a significant impact on other fish resources.

## 4.1.4 Direct and Indirect Impacts to the Socioeconomic Environment

### 4.1.4.1 Fishery Impacts

#### Approach to Analysis

Since the actions contemplated in this document concern calculation of a limit to cover groundfish trawl bycatch mortality of halibut, without directly altering the total halibut mortality, the more substantial effects are socioeconomic. The resulting modifications of the amounts to cover trawl bycatch mortality will affect the amount of halibut available for halibut retention fisheries and therefore the total tribal harvest, commercial revenue, recreational trips and associated community impacts from those fisheries. Each retention fishery will be affected differently depending on how the available halibut is split among the retention fisheries and on the management measures used to keep each sector within its allocation. These allocations and the management measures are developed annually by the Council through the catch sharing plan and recommended to the IPHC for adoption. The impacts of those specific decisions are considered through that process. Rather than speculating on the various mixes of allocations among retention fisheries, management measures, and impacts that might result, the quantitative portion of this analysis provides a baseline for the various sectors and focuses on the proportional changes in opportunities expected under each alternative. The ability to project impacts for the groundfish trawl fishery is limited by the shift of this fishery to the trawl rationalization program, a catch share program, in 2011. The catch share program is expected to have a major impact on how this fishery is prosecuted. Key to understanding the impacts on the trawl fishery will be the halibut bycatch encounter and mortality rates. At this time, there is a great deal of uncertainty about what these rates will be under catch share management. This uncertainty will limit the quantification of the economic impacts on the groundfish trawl fishery in this EA.

#### Impact on the Groundfish Trawl Fishery

Since Pacific halibut bycatch retention by the trawl fishery is not allowed, the trawl halibut limit will not directly affect total trawl revenue. The primary issue for the trawl fishery is whether the amount is sufficient to allow the sector to access its groundfish target catch and if not, the amount by which that target catch might be reduced through a halibut bycatch constraint.

There are two ways to display the trawl mortality bycatch limit for the purpose of assessing its impacts. One way is to show the allocations in terms of the legal sized halibut, net weight. Displays of the limits in these units are useful first because they are the units in which most of the alternatives are denominated (e.g. upper limits of Alternatives 1 and 2 are specified in terms of legal sized net pounds); and second, because the retention fishery quotas (and consequently the changes in those quotas that might be affected by changes in the trawl limits) are in terms of legal sized net pounds. On the other hand, the trawl sector is held accountable for the amount of halibut mortality it causes in round weight of both legal and sublegal fish. In terms of understanding the amount of quota available to the trawl fishery and the meaning of the constraints, display of the impacts on the trawl halibut in terms of legal+sublegal round weight is most useful.

One indication of the potential constraint that the Pacific halibut trawl mortality bycatch limit alternatives may impose on the groundfish trawl fishery is the amount available to cover the fishery's round weight of legal and sublegal sized halibut bycatch in comparison to the best estimate of the trawl induced actual mortality each year. On average the No Action Alternative would have been expected to reduce trawl induced mortality by 66% compared to actual observed mortality (Table 4-1). The individual accountability provided under the trawl program is expected to provide fishermen with a number of incentives and opportunities to reduce their bycatch mortality. Total bycatch may be reduced through gear modifications, changing areas of catch, and reducing tow length to allow vessels to detect whether or not they are in a high encounter rate area. Shorter tow lengths may also reduce mortality rates because the halibut are likely to be in better condition when discarded. Further fishermen will have opportunity to reduce mortality rates through more careful and rapid discard of halibut taken as bycatch. Through all of these means and others it may be possible to achieve a substantial reduction in

the total halibut mortality associated with targeted trawl catch. However, if the trawlers are not able to reduce their bycatch mortality rates to the degree required, the amount of halibut IBQ-pounds available to the fishery will not be sufficient, and directed groundfish catch will be forgone resulting in a reduction in the total trawl exvessel revenue and the attendant revenues and benefits for crew members, shoreside processors, communities, and the fish consuming public.

Table 4-1 Halibut limits under the alternatives in comparison to best estimates of bycatch mortality for each year.

Year	Postseason Bottom Trawl Halibut Bycatch Mortality Estimate † Legal and Sublegal Sized (O32 + U32) (Round Wt)	Pounds Available to Cover Groundfish Trawl Bycatch Mortality Of Legal (O32) and Sublegal (U32) Sized Pacific Halibut (Round Wt) ††			Percent Change from Post Season Estimate		
		No Action Alternative (130,000 lb upper bound on O32 + U32 net wt)	Alternatives 1 & 2 (130,000 lb upper bound on O32 net wt)	Alternatives 1 & 2 (100,000 lb upper bound on O32 net wt)	No Action Alternative	Alternatives 1 & 2 (130,000 lb upper bound)	Alternatives 1 & 2 (100,000 lb upper bound)
2004	293,214	173,333	279,570	215,054	-41%	-5%	-27%
2005	632,726	173,333	279,570	215,054	-73%	-56%	-66%
2006	533,518	173,333	279,570	215,054	-68%	-48%	-60%
2007	460,766	173,333	279,570	215,054	-62%	-39%	-53%
2008	458,561	173,333	279,570	215,054	-62%	-39%	-53%
2009	553,360	128,000	206,452	206,452	-77%	-63%	-63%
2010	n/a	164,000	264,516	215,054			
2004-2009 Avg	488,691	165,778	267,384	213,620	-66%	-45%	-56%

Notes: Since no trawl caught fish are "legal" the IPHC preferred terminology is over 32" (O32) for legal sized halibut and under 32" (U32) for sublegal sized halibut. To assist in the transition to this new terminology, the expressions are maintained side-by-side in this table.

† Heery et. al. 2010 (Table 5).

†† No Action Alternative: limit expanded from net to round weight. Alternative 1: limit expanded from net to round weight and from O32 to O32+U32.

Alternative 1 provides 15% of the legal sized halibut TCEY to the groundfish trawl fishery, capped at 130,000 pounds for 2012 through 2014 and at 100,000 pounds starting in 2015. If Alternative 1 with the 130,000 pound cap is applied over the 2004-2009 time period, the reduction compared to actual mortalities would have been 45%. If Alternative 1 with the 100,000 pound cap is applied over the 2004-2009 time period, the reduction compared to actual mortalities would have been 56%. Because the Alternative 1 trawl limits are greater than under the No Action Alternative, relative to the No Action Alternative there would be a lower risk that socio-economic benefits of harvest opportunity might be forgone because of the amount of halibut was insufficient to allow complete access to the trawl sector's groundfish allocation.

Under Alternative 2, every two years the Council would determine the amount of trawl halibut limit for the coming two years. Within Alternative 2, there are suboptions on the maximum amount the trawl fishery would be allowed: Alternative 2a: 100,000 pounds and Alternative 2b, 130,000 pounds. While the amounts of halibut available to the trawl sector under Alternative 2 are subject to biennial determinations, Alternative 2 initially sets them at either 100,000 or 130,000 pound caps analyzed under Alternative 1. Therefore, Alternative 2a is expected to have similar impacts to Alternative 1 under the 100,000 pound cap (2105 and beyond) and Alternative 2b is expected to have similar impacts to Alternative 1 under the 130,000 pound cap (2012-2014).

Section 4.1.1 discusses in more detail the relative performance of the alternatives with respect to the amount of halibut provided the trawl fishery.

Some indication of the potential impacts of the Pacific halibut limit on the shoreside trawl fishery target species retention may be derived through an examination of trawl fishery bycatch rates. These rates can be used to indicate the amount of target species forgone per pound of halibut, assuming that halibut constrains target harvest. In Table 4-2, Pacific halibut bycatch rates are provided using a number of different denominators: arrowtooth flounder and petrale sole retained catch, all FMP flatfish retained catch, groundfish retained catch (except Pacific hake), and the retained catch of a group of species that were shown to have a positive correlation with Pacific halibut bycatch in the limited entry trawl sector (arrowtooth flounder, petrale sole, Pacific cod, unspecified skates, lingcod, yellowtail rockfish, and Pacific Ocean Perch) (Heery, et al. 2010). The rates are in terms of all halibut caught by the fleet in proportion to the indicated denominators for the areas and depths indicated. The lower the bycatch rates the greater the value of each pound of halibut for the trawl fishery, i.e. the greater the amount of target species can be harvested, along with the attendant revenue and other benefits, per pound of halibut. This information is presented graphically in Figure 4-3.

**Table 4-2.** Pacific halibut bycatch rates for the combined years of 2003-2006 (period used in initial issuance rule) and 2002-2009 in the limited entry bottom trawl groundfish fishery stratified according to area and depth.

		Shoreward of Trawl RCA (0-115 fm)				Seaward of Trawl RCA (>115 fm)			
		Pacific Halibut Bycatch Rates				Pacific Halibut Bycatch Rates			
		Arrowtooth flounder +Petrale sole Retained	All FMP Flatfish Retained	FMP Groundfish Retained	Positive Correlation Species Retained	Arrowtooth flounder +Petrale sole Retained	All FMP Flatfish Retained	FMP Groundfish Retained	Positive Correlation Species Retained
<b>North of 47° 30' N. lat.</b>									
	2003-2006	0.2257	0.1478	0.0782	0.1136	0.0842	0.0349	0.0268	0.0754
	2002-2009	0.2356	0.1413	0.0712	0.1088	0.1068	0.0508	0.0394	0.0961
<b>40° 10' to 47° 30' N. lat.</b>									
	2003-2006	0.0863	0.0392	0.0245	0.0515	0.0339	0.0090	0.0057	0.0268
	2002-2009	0.0978	0.0405	0.0255	0.0585	0.0421	0.0105	0.0067	0.0333
<b>South of 40° 10' N. lat.</b>									
	2002-2009	0.0146	0.0114	0.0059	0.0132	0.0057	0.0005	0.0003	0.0049

Note: Data summaries provided by the NWFSC, April 27, 2011.

Figure 4-3 Pacific halibut bycatch rates computed using 3 different denominators for the combined years of 2003-2006 (period used in initial issuance rule) and 2002-2009 in the limited entry bottom trawl groundfish fishery stratified according to area (north of 47° 30' N. lat and 40° 10' to 47° 30' N. lat) and depth (0-115 fm, >115 fm). We use PHLB as an abbreviation for Pacific halibut, ARTH for arrowtooth flounder, PTRL for petrale sole, ALLFLT for all FMP flatfish, and POSCOR for species whose retained catch has been found to be correlated with Pacific halibut bycatch (Heery et al. 2010).

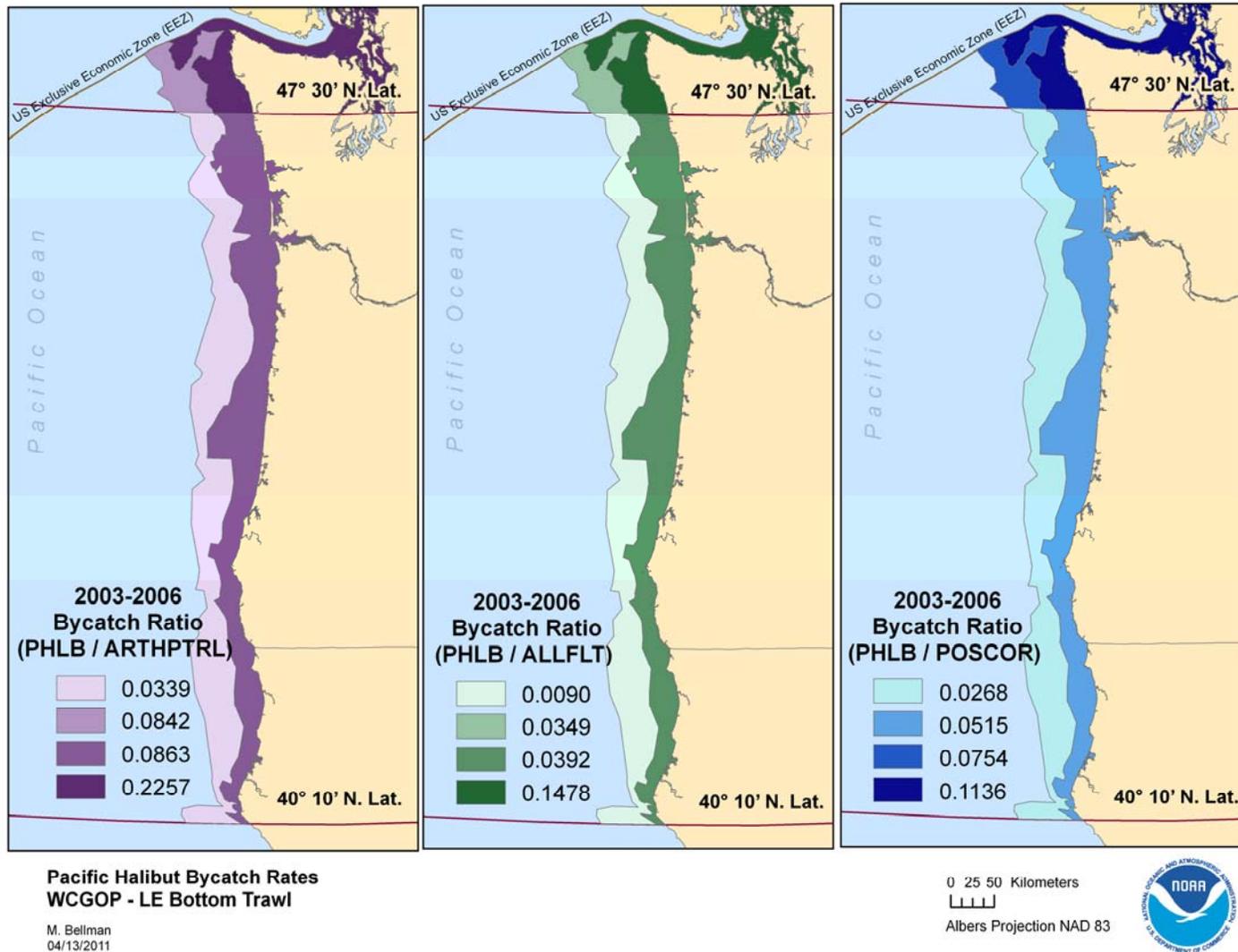
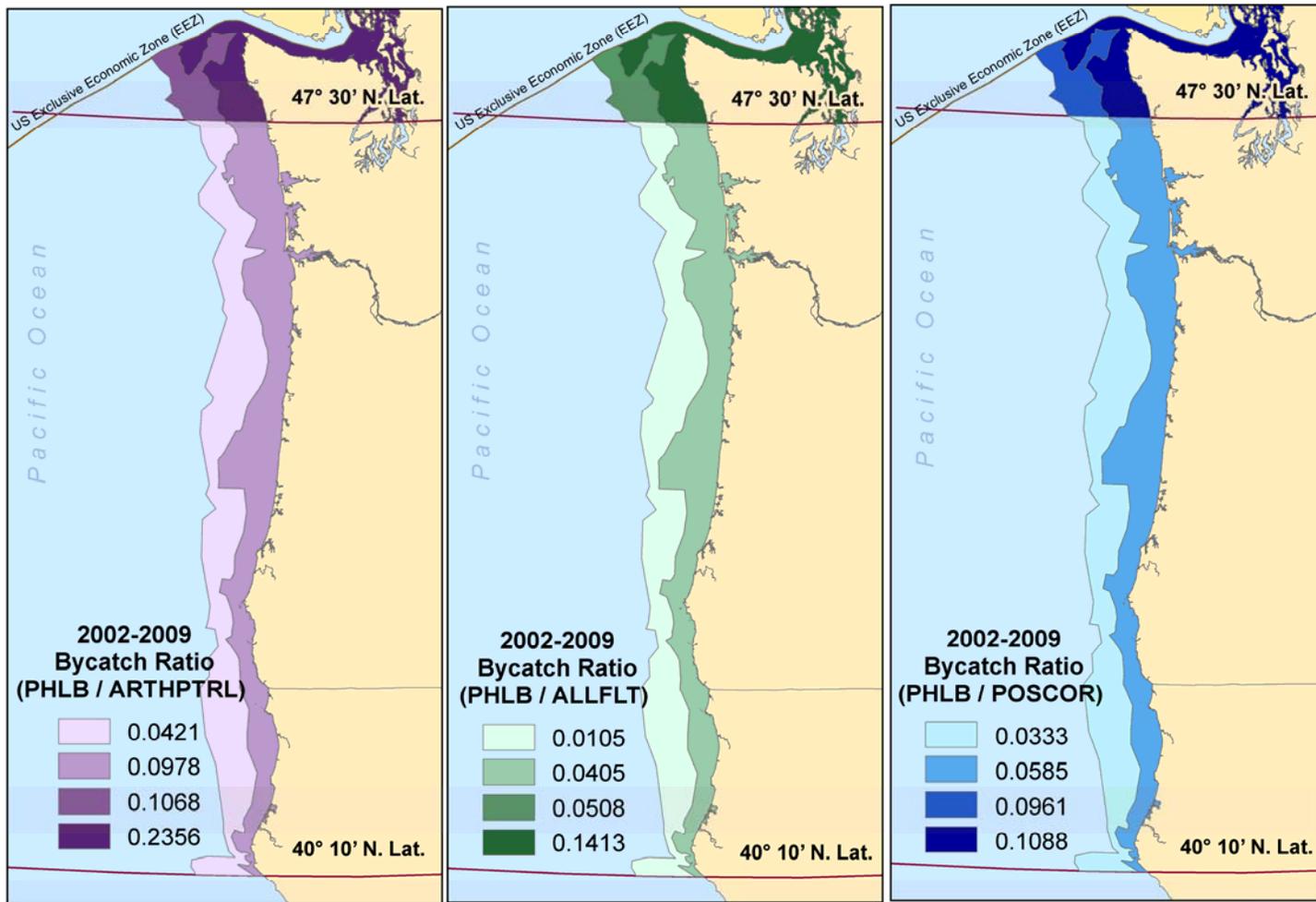


Figure 1 (continued).



**Pacific Halibut Bycatch Rates  
WCGOP - LE Bottom Trawl**

M. Bellman  
04/13/2011

0 25 50 Kilometers  
  
 Albers Projection NAD 83



Since the trawl fleet is limited by bycatch mortality rather than total bycatch, to the degree that discarded halibut survive, the amount of target species a trawler can take per pound of IBQ is greater than indicated in Table 4-2 and Figure 4-3. Data from the NWFSC indicates that from 2004 through 2009, on average about 29 pounds of halibut mortality was incurred for every 100 pounds discarded. This conclusion is based on the data provided in Table 4-3.

Table 4-3. Summary of Pacific halibut viability data and annual discard mortality rates in the LE bottom trawl groundfish fishery. The condition of observer sampled Pacific halibut was identified as Excellent, Poor, or Dead based on the injury key presented in Appendix L of the WCGOP training manual (NWFSC 2010), which is consistent with International Pacific Halibut Commission (IPHC) protocols. The percentage of individuals in each viability category was weighted based on the length-weight relationship as described in the Methods section of Heery et al. 2010. Discard mortality rates for each viability category-year were obtained by multiplying the % of individuals in each viability category by a category specific mortality rate:  $m_{\text{excellent}} = 0.20$ ,  $m_{\text{poor}} = 0.55$ ,  $m_{\text{dead}} = 0.90$  based on Clark et al. 1992 (see also: Heery et al. 2010).

Year	% of individuals in each viability category (weighted average)			Discard Mortality Rate for each viability category		
	Excellent	Poor	Dead	Excellent	Poor	Dead
2004	32%	22%	46%	0.0643	0.1185	0.4166
2005	28%	23%	49%	0.0568	0.1266	0.4374
2006	36%	16%	48%	0.0718	0.0899	0.4296
2007	22%	11%	67%	0.0437	0.0627	0.6009
2008	23%	17%	60%	0.0460	0.0910	0.5440
2009	29%	16%	54%	0.0589	0.0891	0.4890
<b>All Years Combined</b>	28%	18%	54%	0.0566	0.0993	0.4828

Note: Methods used to estimate these values can be found on pages 13-14 of Heery et al. 2010; [http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/pacifichalibut\\_totalmortality\\_2010.pdf](http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/pacifichalibut_totalmortality_2010.pdf)

With respect to opportunities for the at-sea whiting trawl fishery and the groundfish trawl fishery south of 40° N. latitude, there is no difference between the alternatives. For all alternatives, including the No Action Alternative, 10 mt of legal and sublegal sized round weight halibut are allocated to cover bycatch.

### Impact on Retention Fisheries

For the retention fisheries, the impact of the alternatives on the amounts of halibut is analyzed in terms of legal sized halibut available, net weight, because that is how those fisheries are tracked and managed. For that reason, tables and figures in this section portray the allocations and effects in those units. Table 4-4 provides TCEYs, retention fishery allocations, and trawl bycatch estimates and allocations in terms of the pounds of legal sized halibut represented by each.

Table 4-4. Pacific halibut TCEYs, retention fishery quotas, actual preseason estimates, and trawl bycatch mortality limits under each alternative for a 2004-2010 hindcast (all values are pounds of legal sized halibut (O32) net weight; limits under the alternatives have not been expanded.).

Year	TCEY	Sum of Retention Fishery Quotas	Trawl Bycatch Mortality Actual Preseason Estimates (Based on Old Method)*	No Action Alternative (130,000 lb upper bound on O32 + U32 net wt)***	Alternatives 1 (130,000 lb upper bound on O32 net wt)	Alternative 1 (100,000 lb upper bound on O32 net wt)
Legal sized(O32) halibut (pounds net wt)						
2004	2,100,000	1,480,000	344,690	77,623	130,000	100,000
2005	1,560,000	1,330,001	367,000	79,677	130,000	100,000
2006	1,710,000	1,380,000	172,000	86,015	130,000	100,000
2007	1,580,000	1,340,000	228,000	67,944	130,000	100,000
2008	940,000	1,220,000	252,000	70,909	130,000	100,000
2009	640,000	950,000	128,000	53,742	96,000	96,000
2010	820,000	810,000	183,000	73,918	123,000	100,000

\*The 2004 preseason estimate of the legal sized trawl halibut bycatch mortality was derived by applying the average 2005-2009 legal to legal+sublegal ratio to the preseason estimate of legal+sublegal trawl halibut bycatch mortality. All other preseason estimates in this column were provided directly by IPHC.

\*\*Since no trawl caught fish are "legal" the IPHC preferred terminology is over 32" (O32) for legal sized halibut and under 32" (U32) for sublegal sized halibut. To assist in the transition to this new terminology, the expressions are maintained side-by-side in this table.

\*\*\* Pounds of legal sized fish derived using legal to legal+sublegal ratios from the new halibut bycatch mortality estimation method (lagged two years to account for the information that would have been available during each year's planning process had the new methodology been in place).

As discussed, the halibut bycatch mortality available to the trawl fishery affects the amount of the TCEY left for allocation among the retention fisheries. In Table 4-5, the potential reduction in the amounts available to the trawl fishery are displayed as a percent of the total quotas for all retention fishery over the course of a 2004-2010 base period, i.e. the proportion by which retention fishery quotas might be increased given the reduction in trawl bycatch mortality that might be imposed under each alternative. The degree of change in opportunity depends on what would have been assumed about the expected trawl bycatch mortality in the absence of a limit, which in turn depends on the model used for estimation of bycatch (the "old method" or "new method" as described earlier), and how the IPHC would have used the estimates. For the purposes of this hindcast approach, the actual quotas for each year and hypothetical preseason trawl limit are based on the new bycatch estimates. Assuming that all of the additional legal sized halibut made available through reductions in the trawl bycatch mortality levels are used to increase the quota for the retention fisheries, for the base period years the increases might have averaged 11.7% under the No Action Alternative, 7.4% under Alternative 1 with a 130,000 pound cap, and 8.4% under Alternative 1 with a 100,000 pound cap. A similar comparison is provided graphically in Figure 4-4, but using the actual preseason estimates of trawl bycatch mortality (based on the old methodology) rather than the estimates based on the new methodology.

Table 4-5. Proportions by which retention fishery quotas might increase with a decrease in the amount of halibut limit for the trawl bycatch mortality (based on hypothetical preseason estimates that might have been used if the new bycatch estimation methodology had been available during the period of the hindcast).

	Legal Sized Halibut (pounds (O32) net weight)			Potential Change in Total Halibut Quota Available for Retention Fishery in Moving from Baseline to Trawl Bycatch Limit Alternative (as a percent of retention fishery quotas)		
	TCEY	Sum of Retention Fishery Quotas	Trawl Baseline (New Hypothetical Preseason Estimates Trawl Bycatch Mortality)*	No Action Alternative (Status Quo)	Alternative 1 130,000 lb upper bound	Alternative 1 100,000 lb upper bound
2004	2,100,000	1,480,000	340,614	17.8%	14.2%	16.3%
2005	1,560,000	1,330,001	125,663	3.5%	-0.3%	1.9%
2006	1,710,000	1,380,000	145,505	4.3%	1.1%	3.3%
2007	1,580,000	1,340,000	248,020	13.4%	8.8%	11.0%
2008	940,000	1,220,000	218,257	12.1%	7.2%	9.7%
2009	640,000	950,000	193,455	14.7%	10.3%	10.3%
2010	820,000	810,000	206,683	16.4%	10.3%	6.0%
'04-'10 average				11.7%	7.4%	8.4%

Note: Hypothetical preseason estimates derived from the most recent post season trawl bycatch mortality estimate that would have been available at the time the fishery was planned if the new estimation method was in place. For example, planning for the 2010 fishery occurred in 2009 at which time the most recent post season estimate available was for 2008.

While these tables indicate the amounts of halibut the alternatives might have freed up for the halibut retention fisheries, actual quotas may have varied for a variety of reasons. One reason is that the new bycatch estimation methodologies may have affected the TCEY. Another is that for some years, due to changing circumstances, the IPHC found it appropriate to set quotas in excess of the TCEY. To illustrate, Figure 4-4 shows that with the declining TCEY, starting in 2008 the IPHC allocated more quota to retention fisheries than was available under the TCEY. Under these conditions, it may be that savings from reduced halibut mortality might have gone to stock conservation rather than increases in quota for the retention fishery.

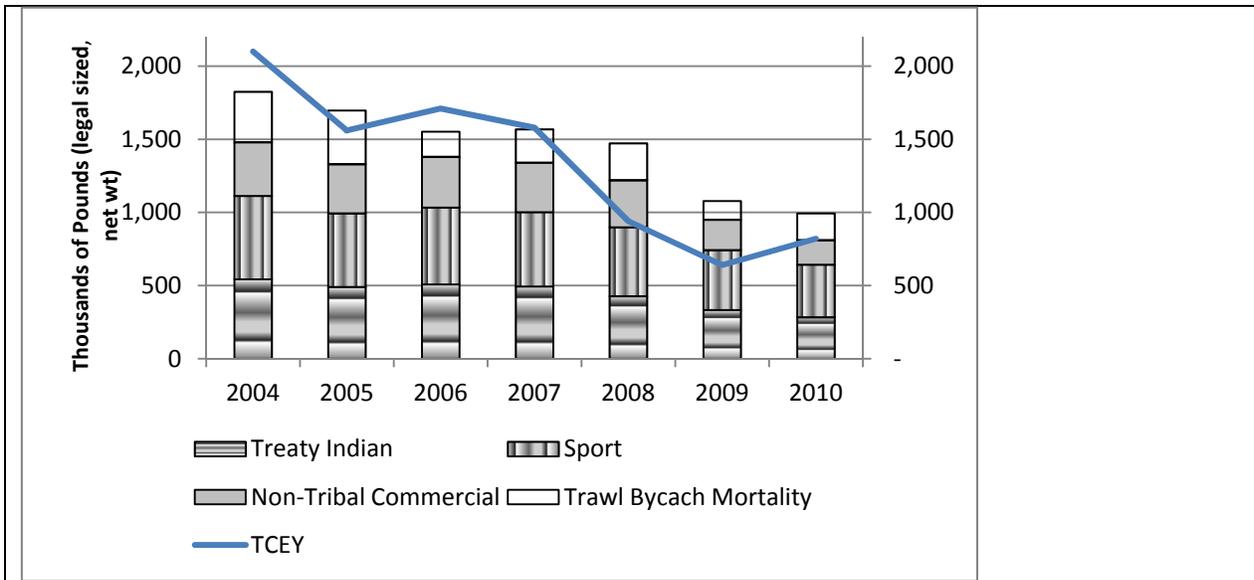


Figure 4-4. Halibut TCEYs, halibut quotas for retention fisheries, and actual preseason projections of trawl bycatch mortality, 2004 through 2010.

Additional figures provide a visual sense of the additional fishing or conservation opportunity that might have been provided under the No Action Alternative (Figure 4-5), Alternative 1 with a 130,000 pound upper limits (Figure 4-6), and Alternative 1 with a 100,000 pound upper bound (Figure 4-7).

Like Alternative 1, Alternative 2 has upper bounds: Alternative 2a has a 100,000 pound upper bound, and Alternative 2b has a 130,000 pound upper bound. Given that these upper bounds constrain most years of the baseline period (Table 4-5), if the flexibility provided by Alternative 2 were exercised, such that the Alternative 2 allocations varied from Alternative 1, it would be more likely to provide trawlers with a lesser rather than greater allocation, except possibly in low TCEY years such as 2009 and 2010 and as is discussed in Section 4.1.1.

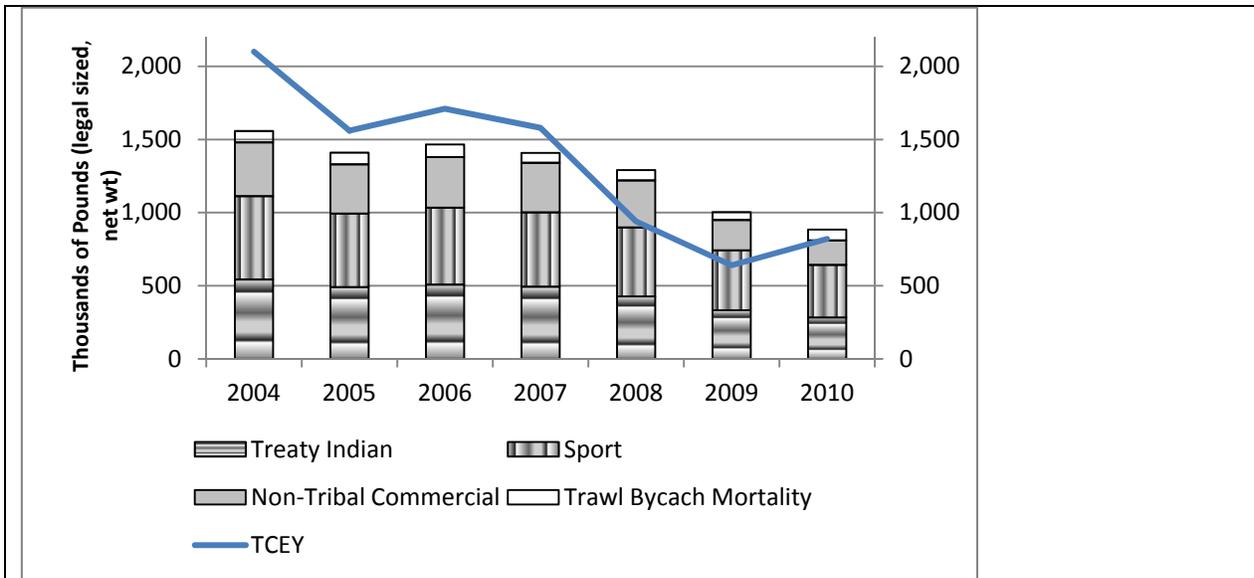


Figure 4-5. Halibut TCEYs, halibut quotas for retention fisheries, and trawl halibut bycatch mortality limit based on the No Action Alternative, 2004 through 2010.

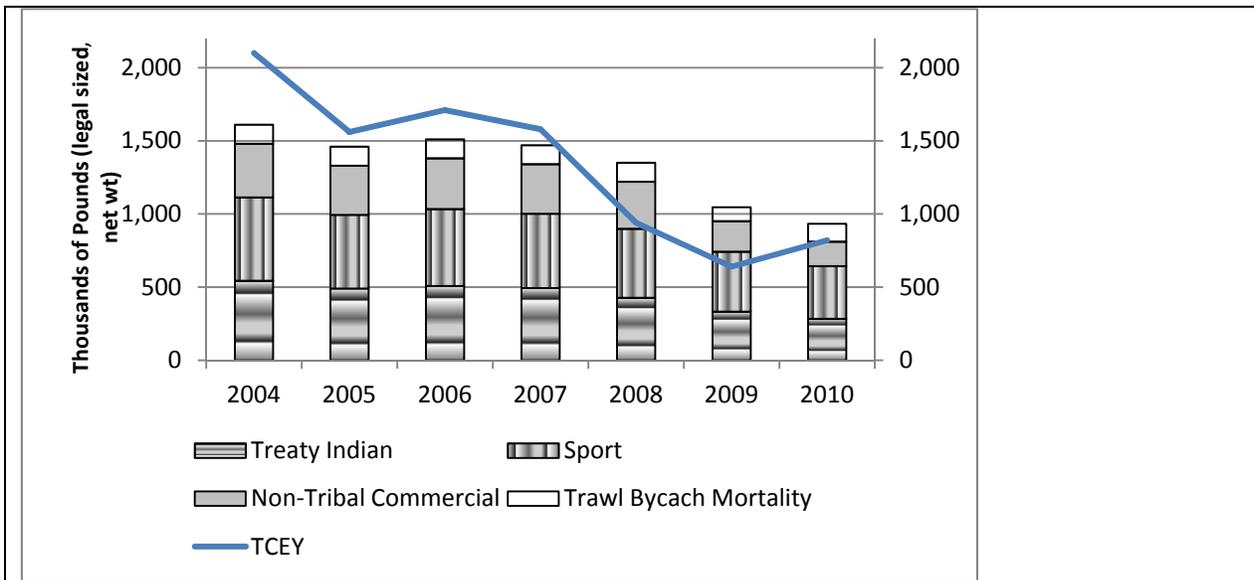


Figure 4-6. Halibut TCEYs, halibut quotas for retention fisheries, and trawl halibut bycatch mortality limit based on the Alternative 1 with a 130,000 pound upper limit, 2004 through 2010.

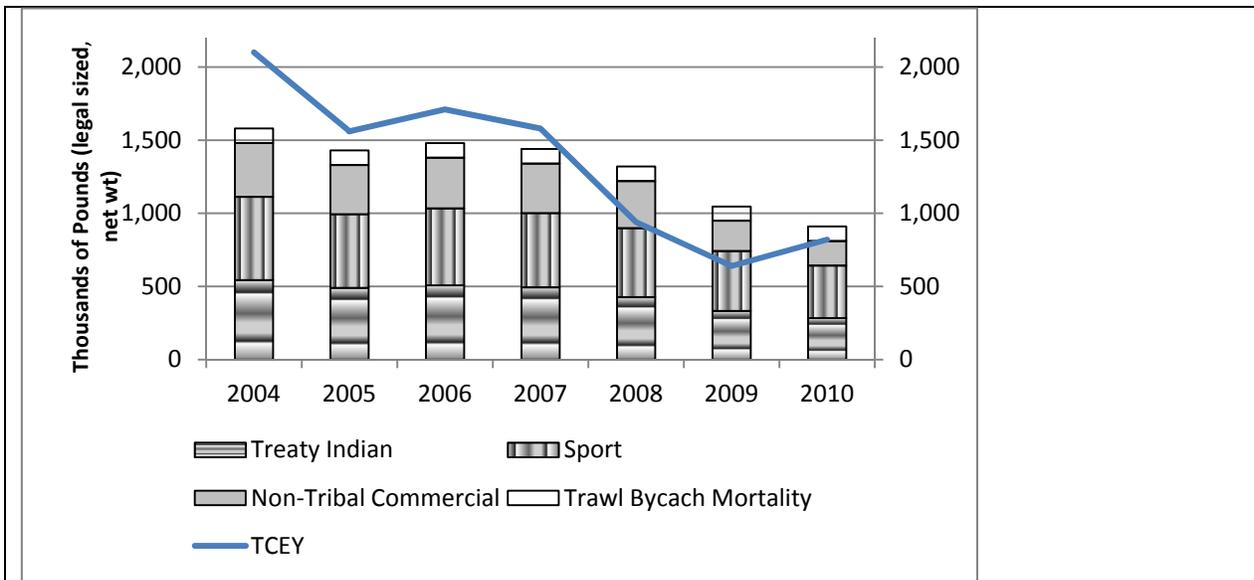


Figure 4-7. Halibut TCEYs, halibut quotas for retention fisheries, and trawl halibut bycatch mortality limit based on the Alternative 1 with a 100,000 pound upper limit, 2004 through 2010.

### Impact on Both Trawl Bycatch and Retention Fisheries

The Council’s November 2010 motion language indicated that under Alternative 2, the trawl bycatch mortality limits would be specified as “a specific amount . . . rather than a percentage...” If this language is followed strictly, the absence of flexibility to use a ratio could result in some potential negative effects for all the fisheries (bycatch and retention). Under Alternative 2, the Council would be setting limits before the TCEY is available for the first year of the upcoming biennial period and over a year before more certain information on the TCEY for the second year is available. For example, in the spring of 2010 the Council would have been setting the trawl bycatch limit for the 2011 and 2012

fisheries while the IPHC would not have set the 2011 TCEY until the winter of 2011. To the extent that stock assessment documents accurately forecast the TCEYs for future years this might not be a problem. However, if those forecasts are not always accurate a problem could occur if the fishery, without sufficient advance warning, ran into a series of TCEYs such as occurred from 2007 to 2009, when the TCEY dropped by nearly 50%. If the trawl bycatch amounts had been set based on 2007 levels, the retention fisheries might have been more constrained than would otherwise have been desirable. The effect could also run in the opposite direction, with an unexpected increase resulting in a situation where the trawl fishery is more constrained than necessary. Under Alternative 2, this potentiality might be handled during the biennial process if rather than a specific amount the limits can be set using a percent or a schedule, tied to the TCEY, for determining the amount of trawl halibut bycatch mortality for the second year of the biennial period. These procedural and timing problems are overcome by the percentages provided by the No Action Alternative and Alternative 1.

#### **4.1.4.2 Impacts on Communities**

All of the alternatives (No Action, Alternative 1, and Alternative 2) on halibut bycatch limits are more likely to affect communities along the northern coast where halibut bycatch rates are higher and communities which are involved in the retention halibut fisheries. On the one hand, inadequate amount of halibut IBQ for the trawl fishery could lead to a shift of substantial portions of the groundfish trawl fishery landings into more southern areas where bycatch rates are lower, assuming species in those areas are not more constraining than halibut. On the other hand, to the degree that bycatch amounts for the trawl fishery are minimized (without constraining trawl groundfish harvest), there will be more halibut available for retention fisheries, which also benefits coastal communities. The communities involved with halibut retention fisheries also tend to be more northerly distributed. Thus communities are impacted via the impacts on the trawl and the halibut retention fisheries. The impacts of the alternatives on each of these fisheries is discussed in previous sections.

#### **4.1.4.3 Impacts on Agencies and Public Decision Processes**

Each of the alternatives provides for making adjustments to the trawl bycatch limits in a somewhat different manner. Under the No Action Alternative, the limit and the adjustment opportunities are stated as follows.

The trawl mortality limit for legal and sublegal Pacific halibut be set at 15% of the Area 2A (i.e., waters off California, Oregon, and Washington) constant exploitation yield for legal size halibut, not to exceed 130,000 pounds for the first four years of trawl rationalization and not to exceed 100,000 pounds starting in the fifth year [2015]. This total bycatch limit may be adjusted downward or upward through the biennial specifications and management measures process.

For this analysis, the interpretation of this provision for the No Action Alternative is that the 15% value can be modified or the 130,000 pound (100,000 pound) upper bound can be modified. This interpretation is based on the fact that the “limit” is derived as the combined effect of applying both of these parameters and that what is subject to modification, as described in the second sentence, is the limit. Further, when the Council discussed this issue at its June 2009 Council meeting, there was considerable concern that the limit would not be sufficient to meet the needs of the trawl fishery and that an opportunity should be provided to move that limit up or down (as compared to the initial proposal that the limit just be downwardly modifiable). As indicated by the hindcast analysis provided in Table 2-1, for most years modifying the 15% would not result in an upward increase in the amount of halibut

available to the trawl sector (due to the effect of the upper bound constraint). The upper bound would have had to have been modified to effect a change.

Under Alternative 1, the Council motion with respect to adjustment of the trawl limits through the biennial management process has been interpreted and captured in the language of Alternative 1 as follows.

The bycatch allocation ratio percent can be adjusted downward or upward (above or below 15%) through the biennial specifications and management measures process but the upper bound on the maximum allocations can only be changed through an FMP amendment.

This language makes explicit the intent behind the motion that only the percent applied to the TCEY could be modifiable through the biennial specifications process but that the value used as the upper bounds could not.

Under Alternative 2, there would be a biennial determination of the amount of Pacific halibut provided to the trawl fishery and that amount would be capped (an upper bound of 100,000 pounds or 130,000 pounds for Alternatives 2a and 2b, respectively). There would not be a default rate for calculation of the limit (e.g. 15% up to an upper limit). Therefore, the Council would have to make a specific decision on the limit during each biennial management process. In order for the upper bound to be a constraint on the biennial process, it cannot be adjusted through that process. Therefore, the Council motion on this alternative has been interpreted to intend that the upper bounds could be adjusted only through the FMP amendment process.

Setting aside the issue of the level of the upper bound (cap), for any particular biennial process the same distributional result could be achieved under either Alternative 1 or 2. The only difference is that under Alternative 2, the Council would have to deliberate over the trawl halibut bycatch amount during every biennial process and under Alternative 1, while the Council would have the option to deliberate the issue during every process, a default formula for calculation of the limit would be in place (15%). Thus, Alternative 1 and 2 have similar flexibility with respect to outcome but Alternative 1 has more flexibility with respect to process (the option to go with the default calculation and not take up the trawl halibut bycatch mortality limit during a particular biennial process). While the calculation formula under the No Action Alternative differs from those of Alternatives 1 and 2, the No Action Alternative has greater flexibility than under Alternative 1 or 2 because it also includes the opportunity modify the upper bounds through the biennial process (as well as the opportunity to modify the percentage or go with the default calculation). A comparison of the flexibility differences among the alternatives is provided in Table 4-6.

Table 4-6. Summary of the flexibility provided under each Alternative during the biennial specifications process.			
	No Action Alternative	Alternative 1	Alternative 2
During the biennial specifications process			
Would there be a default calculation?	Yes	Yes	No
Could the percent of TCEY used to calculate the trawl bycatch mortality limit be modified?	Yes	Yes	Not Applicable
Could the upper bound of the trawl mortality bycatch limit be modified?	Yes	No	No

Note: a more flexible approach to Alternative 2 is described below.

In terms of impact on agency resources, including those of the Council, the flexibility provided by the No Action Alternative (combined with the presence of a default calculation formula) would be the least

burdensome. Alternative 2 could be the most burdensome, requiring Council deliberation on the trawl mortality bycatch limit during every biennial management process and requiring a plan amendment to modify the upper bounds of the limit. However, if under Alternative 2, it is specified that a percent could be adopted rather than a specific amount, the Council would have the flexibility to select an amount or establish a default calculation formula that would run for several management cycles (or be a default formula, in place until changed). The advantage of this approach to Alternative 2 would be that by the spring of 2012 there will be substantially more information available indicating the amount of halibut mortality that may be required to reasonably prosecute the trawl fishery. With that additional information, it might be easier for the Council to set a default calculation through the biennial specifications process (as might be allowed under Alternative 2) or the Council could continue to set a limit every two years if it so desired.<sup>8</sup> However, if the Alternative 2 is selected, it will need to be augmented with an explicit trawl mortality bycatch limit decision for the 2012 fishery, since the fishery will occur before the Council the next biennial management process.

#### 4.1.5 **Summary of Direct and Indirect Impacts by Alternative and Comparison Among Alternatives**

The following table summarizes results by alternative. Parallel display of the impacts of each alternative allows the alternatives to be compared to one another.

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<sup>8</sup> See end of Section 4.1.4.1 (Fishery Impacts) for a discussion of the potential challenges in setting a bycatch mortality level for the second year of a biennial management period if such a level cannot be set using a percentage.

Table 4-7. Summary of impacts of the alternatives and comparison among alternatives.

	No Action	Alternative 1 (Preferred)	Alternative 2
Trawl Mortality Bycatch Limit Levels General	Substantial reduction in trawl bycatch mortality. See following row.	Limits greater than the No Action Alternative by the amount of the legal to legal+sublegal ratio. At present, that ratio is 1.61. Thus, for as long as that ratio applies, the limits under Alternative 1 would be 61% greater than the No Action Alternative.	For a cap of 100,000 pound and TCEYs > 666,666 pounds the maximum limit allowed under Alternative 2 would be the same as the Alternative 1 limit (Figure 4-1). For an cap of 130,000 pound and TCEYs > 866,666 pounds the maximum limit allowed under Alternative 2 would be the same as the Alternative 1 limit (Figure 4-1). At these cap and TCEY levels, Alternative 2 allocations to the trawl fishery can only be equal to or less than those that result from following the Alternative 1 formula.
Relative to 2004-2009 Baseline Years	Greatest reduction in trawl mortality bycatch limit relative to baseline (a 66% reduction for hindcast years, Table 4-1).	Lesser reduction in trawl mortality bycatch limit relative to baseline (a 45% to 56% reduction for hindcast years, depending on the cap, Table 4-1).	For the TCEY levels of the hindcast period, the upper bound caps are constraining for most years, therefore the reduction could be equal to or greater than Alternative 1, assuming the same upper bound cap is applied under both Alternatives 1 & 2.

	No Action	Alternative 1 (Preferred)	Alternative 2
<p>Trawl limits <b>in excess</b> of trawl fishery's needs (trawl fishery able to harvest the groundfish allocation accessible given other limiting factors)</p> <p>Impacts of this outcome (as compared to a trawl halibut limit that just meets the trawl fishery needs):</p> <ul style="list-style-type: none"> <li>• Habitat and ecosystem impacts from retention fishery below anticipated levels.<sup>i</sup></li> <li>• Habitat and ecosystem impacts from trawl fishery at anticipated levels.</li> <li>• Total halibut mortality below TCEY.</li> <li>• Groundfish mortality at Acceptable Catch Target.</li> <li>• Forgone opportunity for harvest in halibut retention fisheries.</li> <li>• Reduction in benefits from retention fishery, adversely impacting <ul style="list-style-type: none"> <li>○ Commercial harvesting in halibut retention fisheries (including crew and processing businesses and workers)</li> <li>○ Recreational charter operations (including crew)</li> <li>○ Recreational fishers</li> <li>○ Tribes</li> <li>○ Communities benefiting from activities of the above.</li> <li>○ Fish consumers (halibut consumption)</li> </ul> </li> <li>• Opportunity for greater harvest in trawl fishery (impacting beneficiaries of the trawl fishery identified in the following row of this table).</li> </ul>	<p>Lowest probability of limit in excess of trawl fishery needs, relative to baseline (see hindcast, Table 4-1)</p>	<p>Lower probability of limit in excess of trawl fishery needs relative to baseline but higher than No Action (see hindcast, Table 4-1)</p>	<p>Same as Alternative 1</p>

	No Action	Alternative 1 (Preferred)	Alternative 2
<p>Trawl limit <b>less than</b> trawl fishery’s needs (trawl fishery unable to harvest the amount of the groundfish allocation it would have been able to had there been a greater halibut limit)</p> <p>Impacts of this outcome (as compared to a trawl halibut limit that just meets the trawl fishery needs):</p> <ul style="list-style-type: none"> <li>• Habitat and ecosystem impacts from retention fisheries at anticipated levels.</li> <li>• Habitat and ecosystem impacts from trawl fishery below anticipated levels.</li> <li>• Total halibut mortality at TCEY (assuming other fisheries take their full allocation).</li> <li>• Groundfish harvests at less than Acceptable Catch Target.</li> <li>• Opportunity for greater harvest in retention fisheries (impacting beneficiaries of the retention fishery identified in the previous row of this table).</li> <li>• Reduction in benefits from trawl fishery, impacting <ul style="list-style-type: none"> <li>○ Commercial harvesting in the trawl fishery (including crew and processing businesses and workers)</li> <li>○ Communities benefiting from activities of the commercial harvesters.</li> <li>○ Fish consumers (groundfish consumption).</li> </ul> </li> </ul>	<p>Highest probability of not meeting trawl fishery needs (see hindcast, Table 4-1)</p>	<p>Higher probability of not meeting trawl fishery needs relative to baseline but lower than No Action (see hindcast, Table 4-1)</p>	<p>Same as Alternative 1</p>
Management Agency Flexibility			
Limit in absence of Council action during biennial specifications process (management flexibility to not address the issue directly during the biennial specifications process..)	Default calculation in place (15%).	Default calculation in place (15%).	No default calculation
Trawl limit = 15% of TCEY:	15% is <b>Adjustable</b> during biennial specifications process.	15% is <b>Adjustable</b> during biennial specifications process.	15% is <b>not applicable</b> (complete “adjustability” within upper bound).
Upper bound (100,000 or 130,000 pounds)	Upper bound set, <b>adjustable</b> during biennial specifications process.	Upper bound set, <b>not adjustable</b> during biennial specifications process.	Upper bound set, <b>not adjustable</b> during biennial specifications process.
Management Agency Costs	Lesser management costs, relative to Alt 2 (somewhat less than Alt 1)	Lesser management costs, relative to Alt 2 (somewhat more than No Action because a more extensive process is required to adjust the upper bound).	Greater management costs, relative to No Action or Alt 1

<sup>i</sup> “Anticipated levels” are those anticipated in the NEPA and other environmental assessments conducted in support of development of the management program and regulations for the affected fishery (i.e. the IPHC regulations for the halibut retention fisheries and the biennial specifications process and supporting analyses and plan and regulatory amendments for the groundfish trawl fishery).

## 4.2 Issue 2: Exemption from Prohibition on At-Sea Processing

Through 2010, processing at sea by shorebased groundfish vessels was permitted for (1) a limited entry fixed gear sablefish-endorsed vessel during the primary sablefish season, (2) a limited entry whiting trawl vessel that participated in the shoreside whiting fishery, and (3) all limited entry non-whiting trawl, limited entry non-sablefish fixed gear, and all open access vessels. Beginning January 1, 2011, at-sea processing for limited entry non-whiting trawl vessels became prohibited, whereas current regulations allow the fixed gear sablefish-endorsed vessel and the limited entry whiting trawl vessel to deliver processed sablefish and whiting, respectfully, under the Shorebased IFQ Program (as long as all other requirements of the Shorebased IFQ Program are satisfied).

The Council, when it made its final recommendation, was aware of only one limited entry non-whiting trawl fisherman that delivered glazed (i.e., processed) sablefish prior to 2011. That individual made five landings of glazed, trawl-caught product during 2010. No other fishermen have come forward requesting an exemption from the prohibition on at-sea processing, even though the issue has been publicized and discussed at each Council meeting since November, 2010.

Analyses presented below will be limited because NMFS is unaware of any more than one shorebased vessel per shorebased fishery (limited entry non-whiting trawl fishery, limited entry fixed gear sablefish fishery, and shorebased whiting trawl fishery) that has processed groundfish at-sea. Confidentiality restrictions prevent detailed and specific analyses.

Considerations for the analyses include:

- (1) The number of vessels that would be allowed an exemption to at-sea processing will be limited to only those that can show proof of processing at-sea during a window period (i.e., prior to July 20, 2010),
- (2) The amount of groundfish that each exempted vessel would be allowed to process would be limited by vessel accumulation limits under the Shorebased IFQ Program, and
- (3) Observer coverage is 100% under the Shorebased IFQ Program, and therefore, actual catches and biological samples can be estimated or attained prior to any processing, whereas prior to the Shorebased IFQ Program, observer coverage was much lower and total catch was estimated by extrapolating from sampled catches (e.g., during 2009, observer coverage was 19–30% north of 40°10' N latitude on board limited entry non-whiting trawl vessels (Bellman et al., 2010)). Estimation of total mortality is much more accurate under the Shorebased IFQ Program because of the increased observer coverage and improvements in catch monitoring and weighing.

Quantitative analysis will be based on the following:

**No Action Alternative** – Two vessels currently glaze groundfish in shorebased fisheries: one vessel in the limited entry fixed gear primary sablefish fishery and a second vessel in the shorebased whiting IFQ fishery.

**Alternatives 1 and 2:** In addition to the two shorebased vessels that process groundfish at-sea shown under the No Action Alternative, these alternatives will assume that at least one and no more than three limited entry non-whiting trawl vessels may be eligible for exemption from the at-sea processing prohibition.

#### 4.2.1 Direct and Indirect Impacts to the Physical Environment, Including Habitat and Ecosystem

The direct and indirect impacts of the trawl fishery to groundfish essential fish habitat (EFH) and the California current ecosystem were analyzed in the Amendment 20 and 21 EISs (Council, 2010a and b). Under the No Action Alternative, ecologically important and sensitive habitats are protected through closed areas and the bottom trawl footprint closure (Council 2008b, 2010b). Under the No Action Alternative, bottom trawling is prohibited in areas of EFH, as well as Marine Protected Areas (MPAs), Rockfish Conservation Areas (RCAs), and Groundfish Conservation Areas (GCAs). Although the intent of RCAs and GCAs is to protect and rebuild overfished stocks and reduce discards (among other reasons), these depth-restricted areas also protect a large amount of habitat from bottom trawling. For those areas where bottom trawling is allowed, fishing effort is regulated through limited entry (i.e., the number of permits; Council 2008b; 2010a) through sector-specific catch limits (Council 2008b; 2010b; 2011), and vessel accumulation limits (Council, 2010b; 2011).. Combined, these limits regulate the amount and location of bottom trawling that may occur during a year (i.e., trawling hours), and therefore limit the amount of impacts to the physical environment. Additional measures to minimize or reduce the impacts of the bottom trawl fishery under the No Action Alternative can be found in Council (2008b, 2010b, and 2011). No changes from the current conditions of the physical environment are expected under the proposed alternative actions (Alternative 1 and Alternative 2) relative to the No Action Alternative, because fishing effort and fishing behavior will likely remain unchanged for the action alternatives relative to the No Action Alternative. Therefore, there would be no significant adverse impacts under any of the alternatives.

The shorebased IFQ fishery will operate at the current capacity regardless of the Alternative selected, because processing at-sea (i.e., glazing) will not alter the maximum amount of fish allowed to be caught for exempted vessels relative to the No Action Alternative. If additional fish were harvested due to the Action Alternatives relative to the No Action Alternative, or if the processing action reduced the efficiency or catchability of the net during hauls, then one would expect increased impacts to the physical environment because both would result in the need for increased effort (i.e., towing hours) relative to the No Action Alternative. Neither situation should occur for Alternative 1 or Alternative 2. AT-sea processing of the catch may reduce sorting efficiency on the deck, but will have no impact on the fishing efficiency during a haul (e.g., catchability of the net). In addition, vessel accumulation limits will cap the maximum allowable catch per vessel, and 100% observer coverage allows for accurate accounting for most of the catch under all alternatives (No Action Alternative, Alternative 1, and Alternative 2). For example, a single vessel will be allowed to catch no more than 3.2% of the sablefish quota pounds per year (= 81.5 mt of sablefish (whole weight) for 2011), regardless of whether that vessel delivered all sablefish glazed or unglazed. Observers will be onboard and will sample all hauls prior to sorting and processing. The amount of groundfish that will be harvested under the action alternatives will therefore be similar to the amount of groundfish harvested under No Action Alternative. Hence, the maximum fishing effort (i.e., towing hours) will remain unchanged for exempted vessels under Alternatives 1 and 2 relative to the maximum fishing effort that would be observed for the same vessels operating under the No Action Alternative. Fishing effort, and therefore associated gear contact the substrate, will not be significant for the Action Alternatives relative to the No Action Alternative.

Under the No Action Alternative, two vessels are allowed to process at-sea under the Shorebased IFQ Program: a limited entry whiting vessel and a limited entry fixed gear sablefish vessel. No limited entry non-whiting IFQ “trawl” vessels would be allowed to process at-sea under the Shorebased IFQ Program under the No Action Alternative. Although “heading and gutting” is not considered processing, one may assume that glazing may encourage “heading and gutting” (whole fish are typically delivered on ice). Under the No Action Alternative, the two vessels that may process at sea under the Shorebased IFQ

Program may discard heads and guts prior to freezing. The impacts of these actions are likely not significant because (a) only two shorebased vessels are allowed to process at-sea under the No Action Alternative, (b) this discard is substantially less than total discard of whole fish by the entire fleet (Bellman et al. 2010)), and (c) sand fleas (i.e., amphipods), hagfish, and other scavengers assimilate discarded fish (flesh) within days after discard (see Suuronen and Erickson 2010). There may be some increase in offal discharge (i.e., heads and guts) under Alternatives 1 and 2 by vessels that may process at-sea relative to the No Action Alternative. Any increase in offal discharge would be minimal, however, because (a) no more than three additional vessels are expected to be eligible for exemption from at-sea processing, (b) these vessels will probably not process all groundfish caught at sea during every trip due to the limited availability of markets and to the effort required to process fish, and (c) any additional offal discharge under the action alternatives will be assimilated by scavengers within days of discard (see above). Therefore, it is expected that impacts of additional offal discharge produced under Alternatives 1 and 2 will not be significant relative to the No Action Alternative.

The following provides an estimate of the amount of the potential amount of offal that may be produced by a single vessel that heads and guts the maximum amount of sablefish allowed to be harvested during a season. If it is assumed that no additional heading and gutting would occur under the No Action Alternative, and that all sablefish (for example) caught by exempted vessels under the action alternatives were “headed and gutted”, then the maximum additional discharge offal per vessel under the action alternatives relative to the No Action Alternative may be estimated as follows:

- (1) Vessel accumulation limit for sablefish in 2012 = 3.2%
- (2) 2012 shoreside, non-whiting trawl ACL for sablefish = 2,467 mt
- (3) Vessel limit (mt) for sablefish = 3.2% x 2,467 mt = 78.9 mt
- (4) Conversion for sablefish from “headed and gutted” to “whole weight” = 1.6
- (5) Maximum offal per vessel = [78.9 mt – (78.9 mt / 1.6)] = 29.6 mt

The maximum offal for a Shorebased IFQ vessel that may process the entire vessel limit for sablefish (for example) during 2012 would be 29.6 mt. To put this in perspective, the limited entry trawl fishery discarded 306.8 mt of sablefish during 2009, of which 50% or 153.4 mt was estimated dead (Bellman et al., 2010). Therefore, if a single vessel is exempted under this program, and if that vessel processed all sablefish caught during the year, then the amount of offal discharged would be approximately 19% of the dead sablefish discarded by the limited entry trawl fleet north of 36° N latitude during 2009. It must be emphasized that vessels may “head and gut” sablefish even under the No Action Alternative. This extreme case is made under the assumption that processing encourages “heading and gutting” and that all fish caught would be processed.

For further ecosystem information, a comprehensive description of the West Coast essential fish habitats can be found in Amendment 11 to the Pacific Coast Groundfish FMP.

In summary, compared to the No Action Alternative, Alternatives 1 and 2 are expected to have no additional impacts on the physical environment, including EFH, because fishing effort and fishing behavior will likely remain unchanged. Therefore, the impacts of Alternatives 1 and 2 are expected to be not significant relative to the No Action Alternative.

#### 4.2.2 Direct and Indirect Impacts to the Biological Environment

#### 4.2.2.1 Groundfish, including Overfished Species

Some management measures that may minimize impacts to groundfish under the No Action Alternative were described under Section 4.2.1. These measures included areas closed to bottom groundfish trawling, allowable catch levels (ACLs), and fishing effort (see Council 2008b; 2010b; 2011). In addition, other management measures under the No Action Alternative are designed to minimize or reduce impacts to the biological environment. These include gear restrictions (i.e., minimum mesh size to protect immature fish and selective flatfish trawl to minimize the catch of rockfishes; Council 2008b), trip limits for non-IFQ species (Council 2011), accumulation limits (Council 2011), and others (see Council 2008b; 2010b; 2011). Under the No Action Alternative, Shorebased IFQ vessels are allowed to employ trawl or fixed gear to capture quota pounds (see Council 2010b). Under the No Action Alternative, at-sea observer coverage is 100%, so all fish caught (retained and discarded) are accounted for. Biological samples may be taken at sea by observers or on shore by observers or State Port Biologists under the No Action Alternative. Additional management measures and potential impacts to groundfish under the No Action Alternative can be found in Council (2008b; 2010b; 2011).

Alternatives 1 and 2 are not anticipated to impact gear selectivity, catchability or fishing behavior (i.e., location of trawl-hauls) relative to the No Action Alternative (see discussion in section 4.2.1 above). In addition to the discussion in section 4.2.1, all management measures described for the No Action Alternative will remain in effect for Alternatives 1 and 2, with the exception of at-sea processing. Although it is possible that the action alternatives may influence catch rates of groundfish (e.g., through gear switching), the total catch of any species will not increase the total mortality of groundfish to levels above those anticipated and analyzed in the impact assessments produced during the biennial specifications process. In addition, less than three vessels are expected to qualify for the exemption and be allowed to process groundfish under the action alternatives. Finally, vessels have already switched from trawl to fixed gear under the Shorebased IFQ Program (Oregon Department of Fish and Wildlife, unpublished data), even though at-sea processing is currently prohibited. This illustrates that gear switching will occur regardless of the alternative that is selected. It should be pointed out that switching from trawl to fixed gear (in particular pots) would likely reduce the overall impact to overfished species by vessels that switch gears (see Bellman et al., 2010; NWFSC 2010). Hence, for Alternative 1 and Alternative 2, the impact of vessels that process at-sea to groundfish is expected to be not significant relative to the No Action Alternative.

Processing at-sea may reduce the vessel sample size from which state port biologists collect biological data. The impact of the action alternatives (Alternative 1 or 2) on these shore-side collections will likely be insignificant compared to the No Action Alternative. The number of vessels that may be allowed to process sablefish and groundfish will be limited (less than three additional vessels are expected to qualify). This represents 0.9% to 2.6% of the limited entry non-whiting trawl vessels that delivered groundfish during 2009 (117 vessels; Council 2011, Appendix F). Hence, even under the most extreme cases, collection of biological samples across vessels may be reduced by 0.9% to 2.6% (assuming that all exempted vessels will process all groundfish every trip). It is unlikely, however, that exempted vessels will process all groundfish during every trip; these vessels may opt to process only a portion of the catch, choosing to land the remaining fish whole (for those trips that the vessel opted to process at all). In such a scenario, the vessel sample size would not change, as the fish landed unprocessed and whole would have the opportunity to be sampled by port biologists. Therefore, shoreside biological collections will not be significantly impacted by Alternatives 1 and 2 relative to the No Action Alternative.

At-sea collections of biological samples will not be impacted by Alternatives 1 or 2 relative to the No Action Alternative, because under the Shorebased IFQ Program, all participating vessels are required to have observer coverage during all fishing activities, and as a result, there will be an opportunity to collect

biological samples prior to fish processing at-sea. Therefore, at-sea biological collections will not be significantly impacted by Alternatives 1 and 2 relative to the No Action Alternative.

In summary, none of the alternatives (No Action, Alternative 1, or Alternative 2) are expected to have significant impacts on the groundfish resource beyond a potential slight impact on the vessel sample size for shoreside biological sampling programs. None of the alternatives are expected to result in a significant impact to the groundfish resource.

#### 4.2.2.2 Pacific Halibut

Under the No Action Alternative, Pacific halibut mortality by the Shorebased IFQ Program is controlled by Individual Bycatch Quota (IBQ; Council 2010b, 2011). Other management measures that restrict fishing area, gear, trip limits, etc. under the No Action Alternative were described in sections 4.2.1 and 4.2.2.1 (above). Catch accounting was also described above, where all halibut caught will be accounted for by the at-sea observers.

The total mortality of Pacific halibut is not expected to be directly altered by any of the alternatives for this issue, including the No Action Alternative. The action alternatives are not expected to impact trawling effort (i.e. number of hauls), gear, selectivity, fishing behavior, or catch accounting relative to the No Action Alternative (see sections 4.2.1 and 4.2.2.1 above). None of the alternatives are expected to have a significant impact on the Pacific halibut resource.

#### 4.2.2.3 Other Non-Groundfish Species

Under the No Action Alternative, impacts to non-groundfish species are managed by restricting fishing effort and fishing areas, accounting for all catch by the at-sea observer program, gear restrictions, and other measures (see sections 4.2.1 and 4.2.2.1 above).

The total mortality of other non-groundfish species is not expected to be directly altered by any of the action alternatives relative to the No Action Alternative (see discussion in section 4.2.2.1 above). None of the alternatives are expected to have a significant impact on other non-groundfish species.

#### 4.2.2.4 Protected Species, including ESA and MMPA

Under the No Action Alternative, encounters with protected species are not expected to have a significant impact. Although most management measures for the Shorebased IFQ Program are designed to maintain catches of groundfish at or below ACLs, minimize impacts to overfished species, protect EFH, minimize catch of immature individuals, etc. (Council 2008b; 2010b; 2011), many of these measures likely reduce or minimize the likelihood of encountering protected species relative to no management measures. For example, the catch of green sturgeon by bottom trawls has been reduced dramatically during the past decade (relative to the 1980s and 1990s) – reasons may include RCAs (which provide some protected areas), vessel buyback program (which reduced total towing effort, hours), selective flatfish trawl (which allows for powerful swimming fish, such as sturgeons, to escape over the cut-back headrope), and others.

Encounters with protected species, including endangered species and marine mammals, are not expected to be directly altered by any of the action alternatives relative to the No Action Alternative (see discussion in section 4.2.1 and 4.2.2.1 above). All management measures described for the No Action Alternative

remain in effect for Alternatives 1 and 2, with the exception of the at-sea processing exemption. None of the alternatives are expected to have a significant impact on protected species.

### 4.2.3 Direct and Indirect Impacts to the Socioeconomic Environment

#### 4.2.3.1 Impacts on Fisheries

Under the No Action Alternative, the maximum amount of groundfish that may be caught by vessels participating under the Shorebased IFQ Program (by IFQ species or species group) is limited by vessel accumulation limits and ACLs (Council 2010b, 2011). Trip limits only apply to non-IFQ species under this program. Hence, participating vessels may choose when to catch and deliver quota pounds, as opposed to pre-IFQ, when catches by limited entry trawl vessels were regulated, in part, using bimonthly trip limits. In this latter case, individual vessels were forced to harvest trip limits within a two-month period or forgo that potential harvest for the year. Under the No Action Alternative, individual vessels within the Shorebased IFQ Program could choose to participate in other fisheries (e.g., Dungeness crab and pink shrimp) without forgoing potential groundfish catch because their quota pounds can be caught at any time during the year. However, Under the No Action Alternative, all shorebased IFQ vessels must deliver catches to shoreside fish processing plants (with the exception of one shoreside whiting vessel and one limited entry fixed gear sablefish vessel; see Section 2.2.1). The No Action Alternative will have no significant effect on fisheries.

The maximum amount of groundfish that may be caught and retained by those vessels exempted from at-sea processing (Alternatives 1 and 2) will be unaffected relative to the No Action Alternative (see section 4.2.2.1). On the other hand, the value of the landings may be highest under the action alternatives. Fish tickets suggest that prices paid for glazed sablefish are higher than prices paid for sablefish delivered whole and on ice (Oregon Department of Fish and Wildlife, unpublished data). Total revenue of groundfish landings for those vessels exempted from the at-sea processing prohibition may therefore be impacted under the action alternatives relative to the No Action Alternative. The fishery impact will be largely unaffected, however, because the number of eligible vessels under the Action Alternatives will be low (less than three additional vessels are expected to be eligible for the exemption; see section 2.1.2). Therefore, the maximum amount of groundfish that may be caught (i.e., coast-wide Total Mortality) will not be significantly impacted by any of the Alternatives.

Under Alternatives 1 and 2, processing at-sea may result in exempted vessels reducing their participation in other fisheries relative to the No Action Alternative. Many shorebased IFQ vessels participate in multiple fisheries such as the pink shrimp or Dungeness crab (see above). The determining factor will be the tradeoff between the net revenue gained from either processing at-sea or from participating in other fisheries. Under the IFQ program, quota pounds may be delivered at any time during the year. It is expected that, under this new management scenario, vessels will schedule their fisheries to maximize economic gains. If the timing of markets for glazed product is flexible, then there may be no impact of the action alternatives relative to the No Action Alternative: vessels may opt to participate in non-groundfish fisheries until revenues from those fisheries drop to some level, at which time the vessels would begin fishing for their quota pounds in Shorebased IFQ Program. This was described for the IFQ fishery at the June Council meeting (Agenda Item E.5.b., Supplemental ODFW Report, June 2011). Therefore, there should be no significant impact to fishing opportunities for Alternatives 1 and 2 relative to the No Action Alternative.

There is no time constraint on harvesting under the Shorebased IFQ Program. Because there is no harvesting time constraint, shoreside processing operations may have to “compete” with the harvesting

vessel's own processing capabilities under Alternatives 1 and 2. In essence, if a vessel can generate positive net revenue by doing its own processing (appropriately taking into account all opportunity costs), then a processor will need to offer a high enough price for the fish such that the vessel earns as high or higher net profits (including a risk factor) by delivering to the processor than by doing its own processing. If at-sea processing opportunities result in processors offering higher prices than would otherwise be the case, there will likely be a net redistribution of income from processors to harvesters. In addition, the redistribution of income may be even greater if the at-sea processor establishes its' own market and sells directly to the end consumer. However, the action alternatives restrict the number of potential at-sea processors shorebased IFQ fishery to no more than 3 limited entry non-whiting trawl vessels. This cap on the number of vessels that may be exempted from at-sea processing prohibition, combined with vessel accumulation limits, will restrict the degree of at-sea processing of groundfish under the Shorebased IFQ Program to a low percentage of the entire non-whiting shorebased IFQ fleet (see discussion above). Therefore, there should be no significant impact of groundfish deliveries to shoreside processing plants under Alternatives 1 and 2 relative to the No Action Alternative.

In summary, there are no expected significant impacts to fisheries by any of the alternatives (No Action Alternative, Alternative 1, or Alternative 2).

#### 4.2.3.2 Impacts on Communities

Limited entry non-whiting trawl groundfish deliveries (weight and/or value) by port have been illustrated in Chapter 3 of this EA (above), as well as in the 2011-2012 groundfish harvest specifications EIS (Council 2011). In addition, port vulnerabilities were well described in the 2011-2012 groundfish harvest specifications EIS (Council 2011). Even though there is a level of uncertainty, we expect the distribution of landings, income, and vulnerabilities to be somewhat similar to those described in the 2011-2012 groundfish harvest specifications EIS (Council 2011) for the No Action Alternative. There are no expected significant impacts of the No Action Alternative to communities relative to the current situation (i.e., Status Quo).

At-sea processing (Alternatives 1 and 2) could result in the redistribution of income and employment from shoreside-processing to at-sea processing under the Shorebased IFQ Program (see Sections 2.2.3.1) and 4.2.3.1), and therefore impact communities that historically processed groundfish landed whole. It is likely that vessels would be required to employ additional crew to process fish at-sea under the action alternatives, relative to current fishing operations (No Action Alternative) where all fish caught are stored whole on ice prior to delivery. Few vessels (i.e., less than three) are anticipated to meet the criteria for exemption from the processing at-sea prohibition (Alternatives 1 and 2), and as a result, the impact on communities is expected to be minimal. If an exemption from prohibition on processing at-sea were allowed, there will be some tendency for vessels with greater net revenue to obtain additional quota pounds and starting in 2013, to obtain additional quota shares which translate to an expansion of harvest for those vessels receiving an exemption. However, all shorebased IFQ permit holders are restricted by control limits with the maximum possible aggregate non-whiting quota share holding being 2.7% of groundfish (the vessel accumulation limit is 3.2%). If multiple permit holders each met this control limit, the impacts on communities would be substantial. However, because Alternatives 1 and 2 limit the potential number of exemptions to 1-3, there is no expected significant impact to communities (i.e., redistribution of income) under Alternatives 1 and 2 relative to the No Action Alternative.

If a particular port-community is able to provide economic benefits not present in other port-communities (e.g. higher ex-vessel prices, processors with ample cold storage capabilities), over time there may be a tendency for geographic redistribution and concentration of harvest under Alternatives 1 and 2 relative to the No Action Alternative. However, because so few vessels are expected to qualify for an exemption from prohibition on processing at-sea (i.e., 1 – 3 vessels), fleet redistribution is expected to be minimal.

Therefore, no significant fleet redistribution is expected under the Action Alternatives relative to the No Action Alternative

In summary, none of the alternatives are expected to result in significant impacts to communities.

#### 4.2.3.3 Impacts on Management

Under the No Action Alternative, catches are observed both at-sea by observers and monitored at fish processing plants (first receivers) by shoreside monitors (Council 2010b) and State Port Biologists. In addition, at-sea observers may sample catches for biological information (lengths, otoliths, etc) whereas State port biologists and shoreside monitors may sample landings for biological information (age, length, etc.); biological samples may be needed for stock assessments or other management reasons. Other management measures associated with the No Action Alternative were described in previous sections as well as in Council (2010b and 2011). Significant impacts to management under the No Action Alternative are not expected.

Under Alternatives 1 and 2, an exemption from prohibition on processing at-sea will create a slightly greater variety of regulatory complexity and reporting requirements relative to the No Action Alternative. The at-sea processing exemption for non-whiting groundfish in the Shorebased IFQ Program would be open to applicants during a one-time application process during early 2012. Participants interested in qualifying for at-sea processing must submit evidence of the requisite landings of processed (glazed) groundfish. Time to collect and document the evidence may vary among permits. However, because only 1 to 3 applicants are expected, the impact of Alternatives 1 and 2 to management are not expected to be significant.

Both Alternatives 1 and 2 provide a conversion factor for processed groundfish. If conversion factors are inaccurate then catch estimates may be incorrect because the weight of landed catches is used to calculate total retained weights of groundfish under the Shorebased IFQ Program. The following example is provided to illustrate the maximum effect of erroneous glazing conversions for a single vessel processing sablefish in 2012:

- (1) Vessel accumulation limit for sablefish in 2012 = 3.2%
- (2) 2012 shoreside, non-whiting trawl ACL for sablefish = 2,467 mt
- (3) Vessel limit (mt) for sablefish = 3.2% x 2,467 mt = 78.9 mt
- (4) Assumed conversion for sablefish from “glazed” to “iced” = 0.95
- (5) Total weight after glazing: 78.9 mt x 0.95 = 75.1 mt
- (6) Difference: 78.9 mt – 75.1 mt = 3.8 mt

This suggests that an error of 5% for conversion factors may lead to a maximum difference of approximately 3.8 mt for sablefish catch for a single vessel operating under the Shorebased IFQ Program, assuming that the vessel landed its' entire vessel limit for sablefish. This potential error represents 0.15% (= 3.8 mt / 2,467 mt) of the 2012 shoreside non-whiting trawl ACL for sablefish (north of 36° N latitude). Hence, under Alternatives 1 and 2, the expected magnitude of potential errors in glazing conversions (e.g., expected to be no more than 5% error relative to a 95% glazing conversion shown under Alternative 2) will likely have no significant effect on management relative to the No Action Alternative.

Under Alternative 1, the application of variable conversions by species and/or geographic area would be calculated by personnel at the shorebased processing facility and the total weight after applying conversions would be entered on the state fish ticket. This process does not comply with the Federal requirements for electronic fish tickets as specified at 50 CFR §660.113(b)(4) which requires actual scale

weights on the electronic fish ticket as well as the condition code for how the fish were landed. The conversion factor is built in to the online IFQ system and automatically applied based on the product condition code and conversion factors specified in Federal regulation. The conversion factor in Alternative 2, a set conversion factor of 0.95, could be easily implemented in Federal regulations through a rulemaking. The No Action Alternative does not include a specific conversion factor for glazed non-whiting groundfish. Therefore, Alternative 1 while not a significant impact under NEPA, would require more agency resources and burden relative to Alternative 2 and the No Action Alternative.

Under Alternatives 1 and 2, any potential impact to management of the action alternatives would be limited only to landings by those vessels receiving an exemption from the prohibition on at-sea processing. These exemptions will be issued to a limited number of vessels/vessel owners and would be non-transferable to any other vessel, vessel owner or permit owner for any reason. The at-sea processing exemption would expire upon vessel transfer to a new owner or if the vessel was totally lost. Impacts to management would therefore likely be limited to landings by a few vessels over a limited duration of time.

In summary, the impacts on management are expected to be not significant for Alternatives 2 and the No Action Alternative. Alternative 1, on the other hand, while not significant under NEPA, would require additional changes to the Federal Regulations and/or changes to the electronic fish ticket data base prior to implementation, and may require management to oversee or conduct calculations for variable conversion factors.

#### 4.2.4 Summary of Direct and Indirect Impacts by Alternative and Comparisons Among Alternatives

The following table summarizes alternatives and potential impacts of each alternative. Parallel display of the impacts of each alternative allows the alternatives to be compared to one another.

	No Action	Alternative 1	Alternative 2
Exemption from prohibition on processing at-sea under the Shorebased IFQ Program <ul style="list-style-type: none"> <li>Excluding prior exemptions found in § 660.112(b)(1)(xii)</li> </ul>	Processing at-sea prohibited regardless of gear type	Qualifying LE non-whiting trawl vessels exempt from prohibition on processing at-sea	Qualifying LE non-whiting trawl vessels exempt from prohibition on processing at-sea
Conversion factor for glazed groundfish	None	If < 60 fish of species or group then conversion factor = 0.95, or; If > 60 fish of species/species group conversion factor must be calculated for each landing	A single conversion factor of 0.95 must be applied to for any glazed species or species group in each landing
Total current/estimated shorebased vessels glazing at-sea	2 vessels (one limited entry shorebased whiting vessel, and one limited entry fixed gear sablefish vessel)	Estimated 1-3 additional vessels	Estimated 1-3 additional vessels.
Impact to Physical Environment – Fishing effort and bottom contact	No significant impact	Fishing effort and bottom contact by trawl gear will not increase; Not	Fishing effort and bottom contact by trawl gear will not increase: Not

		significant relative to No Action Alternative	significant relative to No Action Alternative (same as Alternative 1)
Impact to Physical Environment - Offal discharge	No significant impact	Slight increase of offal discharge relative to No Action Alternative, Impacts to the physical environment are not significant due to accumulation limits, few vessels qualifying, and scavengers.	Slight increase of offal discharge relative to No Action Alternative. Impacts to the physical environment are not significant due to accumulation limits, few vessels qualifying, and scavengers (same as Alt 1)
Impact to the Biological Environment – Groundfish, including overfished species (Total Mortality)	No significant impact	No significant impact (no increase in total mortality of groundfish relative to the No Action Alternative)	No significant impact (no increase in total mortality of groundfish relative to the No Action Alternative; same as Alt 1)
Impact to the Biological Environment – Groundfish, including overfished species (Shoreside Biological Data Collection)	No significant impact.	Although a potential reduction in sample size may occur relative to the No Action Alternative, the impact is not significant due to few qualifying vessels.	Although a potential reduction in sample size may occur relative to the No Action Alternative, the impact is not significant due to few qualifying vessels (same as Alt 1)
Impact to Biological Environment – Groundfish, including overfished species (At-Sea Biological Data Collection)	No significant impact (biological collections may be made by at-sea observers.	No significant impact (same as the No Action Alternative)	No significant impact (same as the No Action Alternative)
Impact to Biological Environment – Pacific halibut	No significant impact	No significant impact	No significant impact
Impact to Biological Environment – Other Non-groundfish Species	No significant impact	No significant impact	No significant impact
Protected Species	No significant impact	No significant impact	No significant impact
Impact to the Socioeconomic Environment – Fisheries (Maximum amount of groundfish caught)	No significant impact	No significant impact (same as the No Action Alternative)	No significant impact (same as the No Action Alternative)
Impact to the Socioeconomic Environment – Fisheries (Participation in other fisheries)	No significant impact	No significant change in fishing opportunities relative to the No Action Alternative	No significant change in fishing opportunities relative to the No Action Alternative (same as Alt 1)
Impact to the Socioeconomic Environment – Fisheries (Deliveries to shoreside processors)	No significant impacts	No significant impact relative to the No Action Alternative due to few qualifying vessels	No significant impact relative to the No Action Alternative due to few qualifying vessels (same as Alt 1)

Impacts to the Socioeconomic Environment - Communities (Redistribution of Income)	No significant impact	No significant impact relative to the No Action Alternative due to few vessels, all of which are restricted by accumulation limits	No significant impact relative to the No Action Alternative due to few vessels, all of which are restricted by accumulation limits (same as Alt 1)
Impacts to the Socioeconomic Environment – Communities (Geographic redistribution)	No significant impact	No significant impact relative to the No Action Alternative due to few vessels, all of which are restricted by accumulation limits	No significant impact relative to the No Action Alternative due to few vessels, all of which are restricted by accumulation limits (same as Alt 1)
Impacts to Management (Identifying Qualifying Vessels)	No significant impact	Although identifying qualified vessels will impact management, the impact will not be significant due to few vessels that will likely apply.	Although identifying qualified vessels will impact management, the impact will not be significant due to few vessels that will likely apply (same as Alt 1).
Impacts to Management (potential error in glazing conversions)	No significant impact	Although some error in glazing estimates is likely to occur, the impact to management will not be significant because few vessels and expected error is < 5. Error will likely be lower than Alt 2.	Although some error in glazing estimates is expected, the impact to management will not be significant because few vessels and expected error is < 5%. Error will likely be higher than Alt 1.
<ul style="list-style-type: none"> <li>Impact to Management (Conversion factor calculations)</li> </ul>	No significant impact	Largest impact relative to No Action and Alt 2, due to multiple conversion factors. Would require personnel to make or oversee calculations, and for potential adjustments to the Federal online IFQ system.	No significant impact because a single conversion would be assumed.

### 4.3 Cumulative Effects

CEQ regulations at 40 CFR 1508.25 identify three types of impacts that must be considered: direct, indirect, and cumulative effects. Direct effects are directly related to the action (occurring at the same time and place); for indirect effects there is some intermediate cause-and-effect between the proposed action and the actual effect being evaluated (occurring at a distance in time and/or place). The regulations also define a

cumulative impact as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or nonfederal) or person undertakes such actions.” Although the regulations and guidance identify cumulative effects as a separate, third class of impacts, all effects can be viewed as cumulative to the extent they are part of some causal chain that results in an ultimate effect on an environmental component. Using this concept of cumulative effects, this document frames the cumulative effects analysis in terms of an additive model. To arrive at the final, cumulative effect on an environmental component, the effects in a causal chain are traced out and measured qualitatively or quantitatively. The components in this additive model include baseline conditions, reasonably foreseeable future actions (RFFAs), the effect of the proposed action, and any mitigation that is proposed separately from the alternatives. Baseline conditions in the affected environment are described in Chapter 3 and Section 4.1 through 4.2 describe the direct and indirect impacts of the alternatives on fish stocks, fishery sectors, fishing communities, protected species, essential fish habitat, and the ecosystem. This section enumerates the “external actions” and “ongoing trends” that contribute to the effects of the proposed action under the different alternatives to produce a cumulative effect. Many of the effects listed here are described in more detail in Section 4.3 of the Final Environmental Impact Statement for the 2011-2012 harvest specifications (Council, 2011) and the Amendment 20 EIS (Council, 2010b). These actions and trends represent the past, present and reasonably foreseeable future actions that add to the effect of the proposed action.

Covered under the groundfish FMP are the following issues:

- Past and future harvest specifications, including harvest management, overfishing and overfished species (Amendments 4, 12, 13, 16 et. seq., 17, and biennial specifications)
- Bycatch reduction and monitoring (Amendment 18 and regulatory amendments)
- Rationalization and fleet consolidation (Amendments 6, 9, 14, and 20 and regulatory amendments)
- Trailing actions on trawl rationalization and intersector allocation (among which this is included)
  - Clarifying that Amendment 21 allocations replace the Amendment 6 allocations (Council action completed, implementation pending)
  - Trawl rationalization cost recovery (Council action pending)
  - QS Control Rule safe harbors for risk pools, community fishing associations, and lenders (Council action pending)
  - Severability of whiting catcher vessel/catch history assignments from limited entry permits (Council action completed, implementation pending)
  - Extension of the adaptive management program quota pound pass through (Council action completed, implementation pending)
  - Exemption from the prohibition on at-sea processing of nonwhiting (Council action completed, implementation pending, covered in this EA)
  - Trawl halibut bycatch mortality limits (Council action completed, implementation pending, covered in this EA)
- Allocation of yield to the trawl sector (Amendment 21)
- Habitat and ecosystem protection (Amendments 11 and 19)
- Amendment 23 National Standard 1 Guidelines Framework (Council action completed, implementation pending)

External to the groundfish FMP are the following:

- Ongoing activities in nongroundfish fisheries.
- Change in the use of ocean areas including wave energy proposals.
- Changes to coastal economies and land use.
- Increased demand for protein affecting real prices.
- Increased consumer awareness affecting purchasing decisions.
- Continued rebuilding of overfished species.

- Cyclical and ongoing climate change.

The above provide the context within which the impacts summarized in the following section occur. The incremental differences among the alternatives are not affected by the cumulative impacts but the importance of the impacts must be assessed within this context. The contexts most relevant to the current action and how those cumulative effects may influence the weighting of the marginal differences among the alternatives are as follows.

- The implementation of trawl rationalization, which requires each vessel to be accountable for its own catch, increases assurance of total mortality accounting, and provides fishermen with more flexibility to respond to management constraints (including flexibility to reduce bycatch).

*This program has not been in place long enough for analysts and managers to have a good understanding of the fleet's expected bycatch rates and abilities to avoid halibut bycatch. Therefore, there is greater uncertainty about the impacts of reductions in the trawl halibut bycatch mortality than might be the case in the absence of such a substantial recent change in the management of the trawl sector. This situation might lead decision makers to place a higher weight on options that are more conservative in reducing the trawl allocation (i.e. weight Alternative 1 for the Pacific halibut bycatch mortality issue more heavily than the No Action Alternative).*

*In addition, 100% of the shorebased IFQ trips are observed at sea and monitored at first receivers under the trawl rationalization program. Prior to trawl rationalization, less than 50% of the catch was monitored, and total mortality was estimated through various expansion methods. Although there may be some potential error in weight estimation for fish that are processed at sea (i.e., due to inaccurate conversion factors if conversions vary by species, fish size, or geographically), the amount of error caused by inaccurate glazing conversions (probably < 5% error) is much lower than sampling error prior to the trawl rationalization program. The improvement in catch monitoring and catch accounting under the trawl rationalization program reduces the significance and the need for maximizing the precision for conversion factors, especially glazing. This situation might lead decision makers to place a higher weight on Alternative 2 than on Alternative 1 for the at sea processing issue.*

- A trend toward increasing costs, including fuel, the requirement that vessels carry observers, the need to acquire quota to cover catch, and an expected requirement that vessels landing under the program bear a portion of the program costs.

*While those who remain in the trawl fishery are expected to experience substantial financial benefits under the new management program, their costs will also be increasing both because of the trawl rationalization program and because other prices have increased recently, such as fuel prices. Therefore, in addition to uncertainty about the fleet's ability to avoid bycatch, if the halibut allocation constrains trawl catch of groundfish target species there is more uncertainty about the significance of the financial effects than might be the case in the absence of such a substantial recent change in the management of the trawl sector. This situation might lead decision makers to place a higher weight on options that are more conservative in reducing the trawl allocation (i.e. weight Alternative 1 for the Pacific halibut bycatch mortality issue more heavily than the No Action Alternative).*

*One result of implementation of trawl rationalization has been an increase in financial benefits for some who remained in the trawl fishery. Expenses have also increased, however. Processing at-sea provides a fresher frozen product than is possible for fish delivered on ice to shoreside*

*processing facilities, and will likely provide more economic benefit to the exempted fisherman and to the nation. This increased in economic efficiency might lead decision makers to place a higher weight on the Action Alternatives for the at sea processing issue than on the No Action Alternative.*

- A decline in the Pacific halibut TCEY in recent years, putting more stress on all the sectors which share the available TCEY.

*The recent declines in the halibut TCEYs have adversely impacted the halibut retention fisheries. If trawl bycatch can be reduced, these fisheries may regain some of their quota and be provided some relief from the economic impacts of the recent TCEY reductions. This situation might lead decision makers to place a higher weight on options that are more liberal in reducing the trawl allocation (i.e. weight the No Action Alternative for the Pacific halibut bycatch mortality issue more heavily Alternative 1 or 2).*

- A trend of decreasing agency resources which is expected to continue into the future.

*Decreases in management agency budgets increase the importance of the impacts of these alternatives on management costs. This situation might lead decision makers to favor the alternatives which have the least impact on agency resources. (i.e., for both issues, weight the No Action Alternative more heavily than Alternative 1 or Alternative 2). In addition, for the exemption from the prohibition on processing at-sea, additional dockside processing time to calculate conversion factors and the issues that come with a variable conversion factor might lead decision makers to favor Alternative 2 over Alternative 1.*

- A trend toward Oregon-based trawl vessels gaining a competitive advantage by processing at sea in the Shorebased IFQ Program.

*Exemptions from at-sea processing have been previously adopted for two vessels: (a) a small catcher vessel that harvests and processes whiting is not considered to be a catcher/processor and (b) a vessel that has a sablefish at-sea processing exemption may process sablefish at-sea. Both of these vessels operate primarily from Oregon ports, and the vessel owner that requested an exemption under the action alternatives also delivers to Oregon ports. This may result in disproportionate impacts to communities (i.e., most impact would be to Oregon ports). This might lead decision makers to place higher weight on the No Action Alternative for the at sea processing issue than on the Action Alternatives.*

- A trend toward increased consumer awareness affecting purchasing decisions.

*Marketing seafood in the U.S. has been difficult relative to other nations. The availability of freshly-frozen fish (i.e., through at-sea processing), even if only from a few eligible individuals, may improve the overall perception of consumers and help expand the domestic fish market in the U.S. This might lead decision makers to place a higher weight on the Action Alternatives for the at sea processing issue than on the No Action Alternative for the exemption from the prohibition on processing at sea.*

# CHAPTER 5 OTHER APPLICABLE LAWS

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## 5.1 Other Federal Laws

### 5.1.1 Magnuson-Stevens Fishery Conservation and Management Act

The proposed action is consistent with the Magnuson-Stevens Fishery Conservation and Management Act (MSA), as reauthorized in 2007, and the ten national standards contained in the MSA at §301.

### 5.1.2 Coastal Zone Management Act

Section 307(c)(1) of the Federal Coastal Zone Management Act (CZMA) of 1972 requires all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. The *Council-preferred Alternatives* would be implemented in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved coastal zone management programs of Washington, Oregon, and California. This determination has been submitted to the responsible state agencies for review under Section 307(c)(1) of the CZMA. The relationship of the groundfish FMP with the CZMA is discussed in Section 11.7.3 of the Groundfish FMP. The Groundfish FMP has been found to be consistent with the Washington, Oregon, and California coastal zone management programs. The recommended action is consistent and within the scope of the actions contemplated under the framework FMP.

Under the CZMA, each state develops its own coastal zone management program which is then submitted for Federal approval. This has resulted in programs which vary widely from one state to the next. The allocation and processing issues covered by this EA are not expected to affect any state's coastal management program.

### 5.1.3 Endangered Species Act

NMFS issued Biological Opinions under the ESA on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999 pertaining to the effects of the Pacific Coast groundfish FMP fisheries on Chinook salmon (Puget Sound, Snake River spring/summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley spring, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal), chum salmon (Hood Canal summer, Columbia River), sockeye salmon (Snake River, Ozette Lake), and steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south/central California, northern California, southern California). These biological opinions have concluded that implementation of the FMP for the Pacific Coast groundfish fishery was not expected to

jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS, or result in the destruction or adverse modification of critical habitat.

NMFS reinitiated a formal section 7 consultation under the ESA in 2005 for both the Pacific whiting midwater trawl fishery and the groundfish bottom trawl fishery. The December 19, 1999, Biological Opinion had defined an 11,000 Chinook incidental take threshold for the Pacific whiting fishery. During the 2005 Pacific whiting season, the 11,000 fish Chinook incidental take threshold was exceeded, triggering reinitiation. Also in 2005, new data from the West Coast Groundfish Observer Program became available, allowing NMFS to complete an analysis of salmon take in the bottom trawl fishery.

NMFS prepared a Supplemental Biological Opinion dated March 11, 2006, which addressed salmon take in both the Pacific whiting midwater trawl and groundfish bottom trawl fisheries. In its 2006 Supplemental Biological Opinion, NMFS concluded that catch rates of salmon in the 2005 whiting fishery were consistent with expectations considered during prior consultations. Chinook bycatch has averaged about 7,300 fish over the last 15 years and has only occasionally exceeded the reinitiation trigger of 11,000 fish.

Since 1999, annual Chinook bycatch has averaged about 8,450 fish. The Chinook ESUs most likely affected by the whiting fishery has generally improved in status since the 1999 section 7 consultation. Although these species remain at risk, as indicated by their ESA listing, NMFS concluded that the higher observed bycatch in 2005 does not require a reconsideration of its prior "no jeopardy" conclusion with respect to the fishery. For the groundfish bottom trawl fishery, NMFS concluded that incidental take in the groundfish fisheries is within the overall limits articulated in the Incidental Take Statement of the 1999 Biological Opinion. The groundfish bottom trawl limit from that opinion was 9,000 fish annually. NMFS will continue to monitor and collect data to analyze take levels. NMFS also reaffirmed its prior determination that implementation of the Groundfish FMP is not likely to jeopardize the continued existence of any of the affected ESUs.

Lower Columbia River coho (70 FR 37160, June 28, 2005) were recently listed and Oregon Coastal coho (73 FR 7816, February 11, 2008) were recently relisted as threatened under the ESA. 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.

The Southern Distinct Population Segment (DPS) of green sturgeon was listed as threatened under the ESA (71 FR 17757, April 7, 2006). The southern DPS of Pacific eulachon was listed as threatened on March 18, 2010, under the ESA (75 FR 13012). NMFS has reinitiated consultation on the fishery, including impacts on green sturgeon, eulachon, marine mammals, and turtles.

After reviewing the available information, NMFS has concluded that, consistent with Sections 7(a)(2) and 7(d) of the ESA, the action would not jeopardize any listed species, would not adversely modify any designated critical habitat, and would not result in any irreversible or irretrievable commitment of resources that would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures.

#### **5.1.4 Marine Mammal Protection Act**

The MMPA of 1972 is the principle Federal legislation that guides marine mammal species protection and conservation policy in the United States. Under the MMPA, NMFS is responsible for the management and conservation of 153 stocks of whales, dolphins, porpoise, as well as seals, sea lions,

and fur seals; while the U.S. Fish and Wildlife Service is responsible for walrus, sea otters, and the West Indian manatee.

Off the west coast, the Steller sea lion (*Eumetopias jubatus*) eastern stock, Guadalupe fur seal (*Arctocephalus townsendi*), and Southern sea otter (*Enhydra lutris*) California stock are listed as threatened under the ESA. The sperm whale (*Physeter macrocephalus*) Washington, Oregon, and California stock, humpback whale (*Megaptera novaeangliae*) Washington, Oregon, and California - Mexico Stock, blue whale (*Balaenoptera musculus*) eastern north Pacific stock, and Fin whale (*Balaenoptera physalus*) Washington, Oregon, and California stock are listed as depleted under the MMPA. Any species listed as endangered or threatened under the ESA is automatically considered depleted under the MMPA.

The WA/OR/CA sablefish pot fishery moved from a Category III listing to a Category II fishery due to interactions with humpback whales (73 FR 73032, December 1, 2008). In Category II fisheries annual mortality and serious injury of a stock in a given fishery is greater than 1 percent and less than 50 percent of the potential biological removal (PBR) level (i.e., occasional incidental mortality and serious injuries of marine mammals). All other west coast groundfish fisheries are proposed as Category III fisheries indicating a remote likelihood of or no known serious injuries or mortalities to marine mammals. The proposed action will affect Pacific halibut allocation to the trawl fishery and at-sea processing of nonwhiting. But these changes would not change the effects of the groundfish fisheries on marine mammals.

#### **5.1.5 Migratory Bird Treaty Act**

The MBTA of 1918 was designed to end the commercial trade of migratory birds and their feathers that, by the early years of the 20th century, had diminished the populations of many native bird species. The MBTA states that it is unlawful to take, kill, or possess migratory birds and their parts (including eggs, nests, and feathers) and is a shared agreement between the United States, Canada, Japan, Mexico, and Russia to protect a common migratory bird resource. The MBTA prohibits the directed take of seabirds, but the incidental take of seabirds does occur. The proposed action is unlikely to affect the incidental take of seabirds protected by the MBTA.

#### **5.1.6 Paperwork Reduction Act**

The proposed action to exempt catcher vessels which have done at-sea processing of non-whiting species will require the collection-of-information and be subject to the Paperwork Reduction Act.

#### **5.1.7 Regulatory Flexibility Act**

The purpose of the Regulatory Flexibility Analysis (RFA) is to relieve small businesses, small organizations, and small governmental entities of burdensome regulations and record-keeping requirements. Major goals of the RFA are; (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require agencies to communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action. An initial regulatory flexibility analysis (IRFA) is conducted unless it is determined that an action will not have a “significant economic impact on a substantial number of small entities.” The RFA requires that an IRFA include elements that are similar to those required by EO

12866 and NEPA. The IRFA will be combined with the regulatory impact review (RIR) and provided as a separate analysis to accompany the proposed regulations.

## **5.2 Executive Orders**

### **5.2.1 EO 12866 (Regulatory Impact Review)**

EO 12866, Regulatory Planning and Review, was signed on September 30, 1993, and established guidelines for promulgating new regulations and reviewing existing regulations. The EO covers a variety of regulatory policy considerations and establishes procedural requirements for analysis of the benefits and costs of regulatory actions. Section 1 of the EO deals with the regulatory philosophy and principles that are to guide agency development of regulations. It stresses that in deciding whether and how to regulate, agencies should assess all of the costs and benefits across all regulatory alternatives. Based on this analysis, NMFS should choose those approaches that maximize net benefits to society, unless a statute requires another regulatory approach.

The RIR and IRFA determinations will be provided with the proposed regulations are submitted.

### **5.2.2 EO 12898 (Environmental Justice)**

EO 12898 obligates Federal agencies to identify and address “disproportionately high adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations in the United States” as part of any overall environmental impact analysis associated with an action. NOAA guidance, NAO 216-6, at Section 7.02, states that “consideration of EO 12898 should be specifically included in the NEPA documentation for decision-making purposes.” Agencies should also encourage public participation, especially by affected communities during scoping, as part of a broader strategy to address environmental justice issues.

The environmental justice analysis must first identify minority and low-income groups that live in the project area and may be affected by the action. Typically, census data are used to document the occurrence and distribution of these groups. Agencies should be cognizant of distinct cultural, social, economic, or occupational factors that could amplify the adverse effects of the proposed action. (For example, if a particular kind of fish is an important dietary component, fishery management actions affecting the availability, or price of that fish, could have a disproportionate effect.) In the case of Indian tribes, pertinent treaty or other special rights should be considered. Once communities have been identified and characterized, and potential adverse impacts of the alternatives are identified, the analysis must determine whether these impacts are disproportionate. Because of the context in which environmental justice is developed, health effects are usually considered, and three factors may be used in an evaluation: whether the effects are deemed significant, as the term is employed by NEPA; whether the rate or risk of exposure to the effect appreciably exceeds the rate for the general population or some other comparison group; and whether the group in question may be affected by cumulative or multiple sources of exposure. If disproportionately high adverse effects are identified, mitigation measures should be proposed. Community input into appropriate mitigation is encouraged.

Section 3.2 of the 2011-2012 biennial specifications (Council, 2011) describes the demographic characteristics of coastal communities and Section 4.3 (Council, 2011) describes the potential effects of the proposed action. This information is illustrative of the effects on minority and low income populations. It should be noted that fishery participants make up a small proportion of the total population in these communities, and their demographic characteristics may be different from the community as a whole. However, information specific to fishery participants is not available.

Furthermore, different segments of the fishery-involved population may differ demographically. For example, workers in fish processing plants may be more often from a minority population while deckhands may be more frequently low income in comparison to vessel owners.

Participation in decisions about the proposed action by communities that could experience disproportionately high and adverse impacts is another important principle of the EO. The Council offers a range of opportunities for participation by those affected by its actions and disseminates information to affected communities about its proposals and their effects through several channels. In addition to Council membership, which includes representatives from the fishing industries affected by Council action, the GAP, a Council advisory body, draws membership from fishing communities affected by the proposed action. While no special provisions are made for membership to include representatives from low income and minority populations, concerns about disproportionate effects to minority and low income populations could be voiced through this body or to the Council directly. Although Council meetings are not held in isolated coastal communities for logistical reasons, they are held in different places up and down the west coast to increase accessibility. In addition, fishery management agencies in Oregon and California sponsored public hearings in coastal communities to gain input on the proposed action. The comments were made available to the Council in advance of their decision to choose a preferred alternative.

The Council disseminates information about issues and actions through several media. Although not specifically targeted at low income and minority populations, these materials are intended for consumption by affected populations. Materials include a newsletter, describing business conducted at Council meetings, notices for meetings of all Council bodies, and fact sheets intended for the general reader. The Council maintains a postal and electronic mailing list to disseminate this information. The Council also maintains a website ([www.pcouncil.org](http://www.pcouncil.org)) providing information about the Council, its meetings, and decisions taken. Most of the documents produced by the Council, including NEPA documents, can be downloaded from the website.

### 5.2.3 **EO 13132 (Federalism)**

EO 13132, which revoked EO 12612, an earlier federalism EO, enumerates eight “fundamental federalism principles.” The first of these principles states “Federalism is rooted in the belief that issues that are not national in scope or significance are most appropriately addressed by the level of government closest to the people.” In this spirit, the EO directs agencies to consider the implications of policies that may limit the scope of or preempt states’ legal authority. Preemptive action having such “federalism implications” is subject to a consultation process with the states; such actions should not create unfunded mandates for the states; and any final rule published must be accompanied by a “federalism summary impact statement.”

The Council process offers many opportunities for states (through their agencies, Council appointees, consultations, and meetings) to participate in the formulation of management measures. This process encourages states to institute complementary measures to manage fisheries under their jurisdiction that may affect federally-managed stocks.

The proposed action does not have federalism implications subject to EO 13132.

#### 5.2.4 **EO 13175 (Consultation and Coordination with Indian Tribal Government)**

EO 13175 is intended to ensure regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

The Secretary recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. In Section 302(b)(5), the MSA reserves a seat on the Council for a representative of an Indian tribe with Federally-recognized fishing rights from California, Oregon, Washington, or Idaho.

The U.S. government formally recognizes the four Washington coastal tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish. In general terms, the quantification of those rights is 50 percent of the harvestable surplus of groundfish available in the tribes' U and A fishing areas (described at 50 CFR 660.324). Each of the treaty tribes has the discretion to administer their fisheries and to establish their own policies to achieve program objectives.

Accordingly, the proposals covered by this EA have been developed in consultation with the affected tribe(s) and, insofar as possible, with tribal consensus.

#### 5.2.5 **EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds)**

EO 13186 supplements the MBTA (above) by requiring Federal agencies to work with the U.S. Fish and Wildlife Service (USFWS) to develop memoranda of agreement to conserve migratory birds. NMFS is in the process of implementing a memorandum of understanding. The protocols developed by this consultation will guide agency regulatory actions and policy decisions in order to address this conservation goal. The EO also directs agencies to evaluate the effects of their actions on migratory birds in environmental documents prepared pursuant to the NEPA.

Past EISs evaluating the impact of groundfish harvest specifications (Council, 2004, Council, 2006, Council, 2008a) evaluated impacts to seabirds and concluded that the proposed action will not significantly impact seabirds. There is no new information to indicate that the current proposed action would result in greater impacts to seabirds, and the previous evaluations are incorporated by reference.

# CHAPTER 6 LIST OF PREPARERS

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Name	Affiliation	Primary Contribution
Jim Seger	Pacific Fishery Management Council	Sections on Halibut Allocation and development of document structure.
Kit Dahl	Pacific Fishery Management Council	Chapter 3 and review of document structure.
Daniel L. Erickson and Kelsey L. Adkisson	Oregon Department of Fish and Wildlife	Sections on At-sea Processing

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