TRAWL RATIONALIZATION TRAILING ACTIONS: WIDOW ROCKFISH REALLOCATION, DIVESTITURE DEFERMENT AND FORFEITURE METHODOLOGY

Magnuson-Stevens Act Analysis

and

Environmental Assessment

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Chapter 1 Introduction

This document provides background information about, and analyses for, regulatory changes affecting the catch share program for the shorebased groundfish trawl fishery (a program that provides individual fishing quotas (IFQ) for the harvest of groundfish delivered to shoreside processors and bycatch of Pacific halibut). The regulatory changes would reallocate widow rockfish quota shares (QS). The proposed action would require an amendment to the regulations implementing the Pacific Coast Groundfish Fishery Management Plan (FMP), and must conform to the Magnuson-Stevens Fishery Conservation and Management Act (MSA)—the principal legal basis for fishery management within the Exclusive Economic Zone (EEZ). The EEZ extends from the outer boundary of the territorial sea to a distance of 200 nautical miles from shore.

In addition to addressing MSA mandates, this document serves as a draft environmental assessment (EA) covering the impacts of the action alternatives relative to the No Action Alternative, pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended.

1.1 How this Document is Organized

This document describes the proposed action (Chapter 1), proposes alternatives (Chapter 2), describes the current physical, biological, and socio-economic environments relevant to the proposed action (Chapter 3), and analyzes the proposed alternatives (Chapter 4). The analyses in Chapter 4 compare action alternatives to the No Action Alternative and provide an assessment of potential impacts relative to specified physical, biological, and socio-economic criteria.

1.2 Description of the Proposed Action

The proposed action is to consider whether to amend the regulations governing the groundfish fishery by modifying the allocation of widow rockfish. This document contains information which will assist the Council and National Marine Fisheries Service (NMFS) in determining whether or not to recommend and implement the proposed action.

1.3 Purpose and Need for the Proposed Action

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

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

Prior to the declaration of overfished status for widow rockfish, there was a substantial target fishery for this species. However, widow rockfish became overfished in 2001, and was allocated using an overfished species formula upon IFQ program implementation. Since this time, the species has been rebuilt, and the annual catch limit (ACL) has increased dramatically. Without a reallocation, QS owners who previously used widow QS as bycatch and may not have historically participated in directed widow targeting will be the primary beneficiaries of the increased fishing opportunity. Historical widow fishery participants wanting to take advantage of renewed fishing opportunities would have to purchase widow QS (or quota pounds; QP) on the market, in common with other later entrants to the fishery. Thus, the proposed action would be needed to implement a policy that allows historical widow fishery participants to benefit from the renewed fishing opportunities through a direct reallocation rather than having to acquire widow QS on the open market.

1.4 Background

1.4.1 Widow Rockfish Target and Bycatch Fisheries

Management of widow rockfish to achieve optimum yield (OY) from the resource on a continuing basis (sustained yield objective) is undertaken by the state and Federal ocean fishery authorities of the United States acting under the MSA. Management of the resource is coordinated under the Pacific Coast Groundfish Fishery Management Plan (Groundfish FMP), adopted by the Pacific Fishery Management Council and approved by the Secretary of Commerce. Widow rockfish is one of over 90 species managed under this plan.

Widow rockfish is harvested primarily in the commercial fishery, though some minor amounts are also caught in the recreational fishery. There are numerous commercial gears used in the Pacific Coast groundfish fishery, including groundfish trawl gears. There are two primary types of groundfish trawl gears: bottom trawl and midwater trawl. Vessels using midwater trawl gear take widow rockfish both as bycatch on whiting targeted trips and as a strategy targeting on pelagic rockfish (in which it is caught jointly with yellowtail rockfish). Widow rockfish is also caught along with other species on trips using bottom trawl gear.

In accordance with Groundfish FMP Amendment 21, the nontreaty limited entry groundfish trawl fishery (trawl fishery) is allocated 91 percent of the widow rockfish ACL with the remaining 9 percent going to nontreaty commercial, tribal, and recreational fisheries. The trawl fishery ACL for widow rockfish is split between the at-sea sectors and shorebased sectors in accordance with an allocation formula established under Amendment 21. Under this formula, the greater of 10 percent or 500 mt of the trawl fishery allocation is allocated to all whiting sectors (at-sea and shorebased) with the remainder going to the shorebased nonwhiting fishery. Of the amount allocated to the whiting sectors, 42 percent is allocated to the shorebased fishery. This 42 percent is combined with the remainder that went to the shorebased nonwhiting fishery to create a single allocation for the shorebased fishery.

Amendment 20 to the Groundfish FMP established the trawl rationalization program (also known as a catch share program), which consists of the shorebased IFQ program and the at-sea cooperative programs, including the Mothership (MS; at sea processing only) and Catcher Processor (C/P) sectors. The trawl rationalization program was implemented in 2011. The IFQ and at-sea cooperative programs replaced the

previous catch control tools. For widow-targeted trips, cumulative trip limits were used to control catch. Seasonal management (closures) of the whiting fishery was used to control fishing mortality in that fishery.

After a major fishing-down in the 1990s, widow rockfish was declared overfished in 2001, and from the latter part of 2002 through 2012 was managed for rebuilding (He et. al., 2011 and PFMC, 2012). Based on a 2011 assessment of widow rockfish (He et. al., 2011), the stock was declared rebuilt and increased fishing opportunities were provided for the 2013-2014 biennial harvest specifications period. Widow ACLs were further increased for the 2015-2016 biennial period (Figure 1-1).

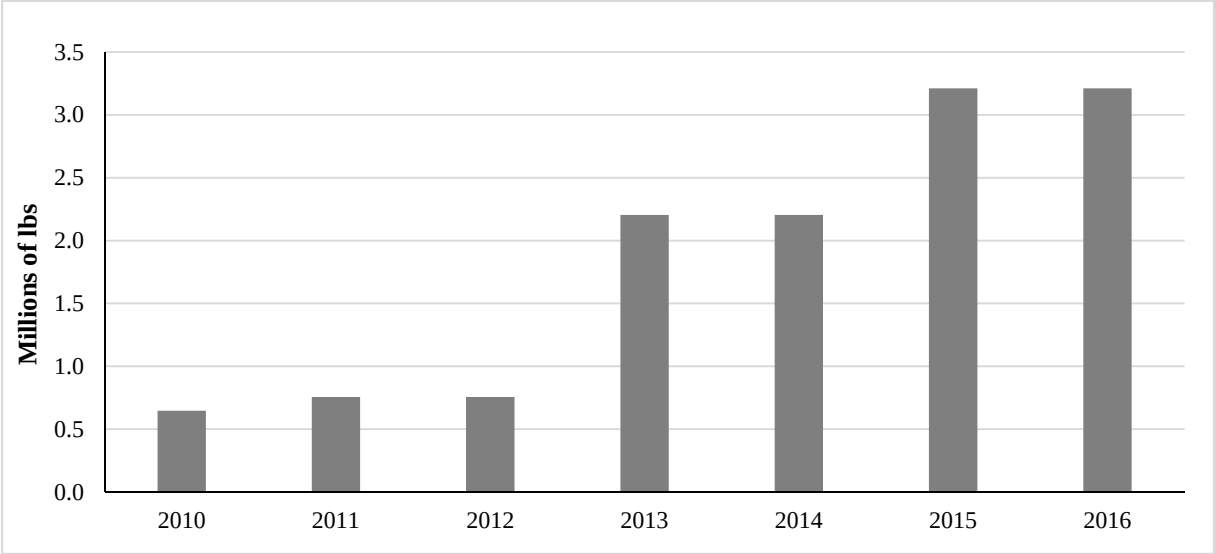

Figure 1-1. Recent and upcoming allocations of widow rockfish to the shorebased trawl fishery, 2010 through 2016.

The shorebased trawl fishery has been managed under an IFQ program since 2011, implemented through Amendments 20 and 21 of the groundfish FMP. Under Amendment 20, separate QS were issued for each of 30 management units (IFQ species categories), one of which was widow rockfish. Each year, those who own the QS are issued an amount of QP proportional to their QS holdings. The QP must be transferred to a vessel account from which they are used to cover the catch.

Widow rockfish QS for nonwhiting trips was originally allocated using an allocation formula for overfished species. Under Amendment 20, species that were overfished at the time of initial allocation, such as widow rockfish, were allocated to LE permit holders based on the QS allocation of the target species, with which the overfished species was incidentally caught, and logbook information on the depths and latitudes in which each LE permit had fished in more recent years.

This analysis covers one of several trailing actions that the Council has and continues to pursue for regulatory implementation. These trailing actions address issues related to optimizing the benefits of the catch share program which were outstanding as of the completion of the Council's initial work on the program. These actions also address provisions needed to complete or clarify the final program and new concerns identified during and after program implementation. For a recent accounting of the Trailing

Action process see the Council's trawl trailing action webpage (http://www.pcouncil.org/groundfish/fishery-management-plan/trailing-actions/). The history (scoping process) of this Groundfish FMP amendment initiative is reviewed in Section 4.5.4(a)(1).

1.4.2 Divestiture Deadline and Widow QS Trading

Amendment 20 includes control limits for all species individually (5.1 percent for widow rockfish) and an aggregate control limit for nonwhiting species of 2.7 percent. Consistent with Amendment 20, some QS permit owners were initially allocated QS in excess of the control limits, based on their catch history. All persons controlling QS in excess of the limits were required to divest of their excess amount by November 30, 2015 for all species except widow rockfish, for which there continues to be a trading moratorium. No matter what reallocation alternative is chosen, the trading moratorium on widow rockfish QS will need to be lifted once the reallocation decision is final. In addition, pending the outcome on this rulemaking, QS permit owners may need to divest of excess QS. If widow rockfish QS is not reallocated, the permit owners who currently hold widow rockfish in excess of the accumulation limits will need to divest. If widow rockfish QS is reallocated, the reallocation may push QS permit owners over Amendment 20's individual species limit for widow (5.1 percent) or the aggregate limit across nonwhiting species (2.7 percent), and those permit owners will need to divest.

1.5 Council and Agency Scoping

1.5.1 Process

The Council process is based on stakeholder involvement and allows for public participation and public comment on fishery management proposals during Council, subcommittee, and advisory body meetings. This process is the principal mechanism to scope NEPA-based initiatives, including EAs. The advisory bodies involved in groundfish management include the Groundfish Management Team (GMT), with representation from state, Federal, and tribal fishery scientists, and the Groundfish Advisory Subpanel (GAP), whose members are drawn from the commercial, tribal, and recreational fisheries, fish processors, and environmental advocacy organizations. Additionally, the Council receives management advice from its Enforcement Consultants, composed of representatives from each state, NMFS and the United States Coast Guard (USCG). Scientific information is reviewed by the Council's Scientific and Statistical Committee (SSC). Meetings of the Council and its advisory bodies constitute the Council scoping process, involving the development of alternatives and consideration of the impacts of the alternatives.

Table 1-1. Chronology of meetings and actions leading to widow QS and divestiture deadline delay covered in this document.

Date	Meeting	Action
June 16-18, 2011	Council meeting, Spokane, WA	The Council finalized recommendations on Amendment 20 and related regulatory actions, including: provisions which prohibited QS trading during the initial years of the program; a deadline by which individual must divest of any QS they are initially allocated in excess of QS control limits; and a provision for consideration of the reallocation of overfished species QS upon the attainment of rebuilt status. http://www.pcouncil.org/bb/2009/0609/E10a_ATT2_0609.pdf http://www.pcouncil.org/bb/2009/0609/E10a_ATT3_0609.pdf http://www.pcouncil.org/wp-content/uploads/June_2009_Minutes.pdf
March 28, 2013	NMFS publishes final rule.	NMFS publishes rule which provides for the start of QS trading for all species except widow rockfish, for which the trading moratorium is continued while widow rockfish QS reallocation is reconsidered. http://www.pcouncil.org/wp-content/uploads/2013-07162.pdf
September 14-18, 2014	Council meeting, Spokane, WA	The Council prioritized the consideration of widow rockfish QS allocation for action with completion of Council action scheduled for 2014. http://www.pcouncil.org/wp-content/uploads/I6a_Sup_Joint_NMFSandPFMCstaff_Rpt_SEPT2014BB.pdf The Council also decided to consider the delay of divestiture deadline as part of its consideration of the widow rockfish QS reallocation. http://www.pcouncil.org/wp-content/uploads/0914decisions.pdf
November 12-19, 2014	Council meeting, Costa Mesa, CA	The Council adopted a range of alternatives for analysis and public review. http://www.pcouncil.org/wp-content/uploads/1114decisions.pdf
April 2015	Council meeting, Rohnert Park, CA	The Council adopted its final preferred alternative.

1.5.2 Impact Scoping

Impacts of the trawl rationalization program, including the control limits, were evaluated as part of the Amendment 20 EIS. For this rulemaking, the main impacts would be the harvesting sector (Section 4.3.1), first receivers and processors (Section 4.3.4), communities (Section 4.3.6) and governmental entities (Section 4.3.7), with some impacts also possible for the physical (Section 4.1) and biological (Section 4.2) environments. No impacts would be expected for the tribal sector (Section 4.3.2), recreational fishery (Section 4.3.3), or observer providers and other support sectors (Section 4.3.5). The following are some of the primary types of impacts addressed in Chapter 4.

1.5.2(a) *Physical Environment*

Reallocation of QS might geographically redistribute harvest over the short term, temporarily redistributing the impacts on the physical environment.

1.5.2(b) *Biological Environment*

Reallocation of QS might geographically redistribute harvest over the short term, temporarily redistributing the impacts on the biological environment.

1.5.2(c) *Socio-Economic Environment*

1.5.2(c)(1)(i) *Commercial Harvester Sector (Non-tribal, Including QS Owners)*

The direct impact would be through the allocation of widow rockfish QS among those owning QS. This would impact the wealth of initial QS recipients. The reallocation may also impact transaction costs. Vessel owners that also own QS may be affected differently from vessel owners that do not own QS.

1.5.2(c)(1)(ii) *First Receivers and Processors*

There could be effects on first receivers and processors as a result of changes in the geographic distribution of QS.

1.5.2(c)(1)(iii) *Communities*

There could be effects on communities as a result of changes in the geographic distribution of QS.

1.5.2(c)(1)(iv) *Government Entities*

There would be impacts on government related to implementation of the action but no long-term ongoing impacts appear likely.

1.5.3 Rationale for Council Final Preferred Alternative

1.5.3(a) *Widow QS Reallocation Alternatives*

Noting that allocation decisions are some of the most difficult and controversial decisions that the Council makes, requiring balance between a variety of objectives and MSA National Standards, the Council selected Alternative 5 as its FPA (a compromise between Alternative 2 Suboption a and Alternative 2 Suboption b).

Amendment 20 specified that "when a stock becomes rebuilt, the reallocation to facilitate the reestablishment of historic target fishing opportunities" (Section A-2.1.6). Re-establishment of historic opportunities at the sector level is partially facilitated by the opportunity that individuals have to trade QS. However, such redistribution would take time and involve transactions costs, and the commitment under Amendment 20 was to consider a direct reallocation, which has the effect to re-establish more quickly those opportunities. Additionally, Council members interpreted this Amendment 20 provision as a commitment to individuals and communities that historically harvested and invested in the fishery, so it also had fairness and equity implications.

At the start of the program, allocations of QS for each species were made based on each LE permit's whiting trips and nonwhiting trips. The bycatch species needs for the multispecies trawl fishery (nonwhiting), which in the years leading up to and immediately after implementation of Amendment 20 most often used bottom trawl gear, is different from the needs of those who participated in the whiting directed fishery, which use midwater trawl gear. In most years, less than 2 percent of the catch in the Pacific whiting fishery are species other than Pacific whiting. Although many vessels participate in both the shorebased whiting and nonwhiting fishery, the QS was allocated in two different pools to more accurately meet the expected bycatch species needs of each fishery once the trawl rationalization program was implemented. For the QS allocated for nonwhiting trips, the allocation formula for non-overfished species ("target species") was different from that used for overfished species. For target species, individuals received allocations based on their LE permits' harvest history of those species during the 1994 through 2003 allocation period. For overfished species, QS was distributed to each recipient to meet bycatch expected based on the recipient's target species QS allocation. Overfished species QS was allocated in proportion to the amount of target species QS a person received (taking into account area of fishing and likely bycatch rates). Using this approach, many individuals received very low initial allocations of overfished species even though they had significantly depended on targeting the species and had fished within harvest levels permissible at the time. Thus individuals who yielded the most widow in more recent years to rebuild the stock were impacted again by initial QS allocations, which did not recognize their historic dependence on the fishery (while historic dependence was recognized for fishing on other species). As a species becomes rebuilt, reallocating to those individuals would take into account historic fishing investment and dependence on those species. With respect to widow rockfish, there is an additional fairness and equity issue in that stock assessments now indicate that widow rockfish was potentially never overfished (He et. al., 2011) and had the species been declared rebuilt one management cycle earlier (or never declared overfished), widow would have been allocated based on the Amendment 20 allocation formula for target species.

Reallocating to reestablish historical opportunities necessitates consideration of historic harvests. The Alternatives 2 and 5 allocation formulas would base reallocation on the allocation formula used for target species at the start of the Amendment 20 program, a formula that used 1994 through 2003 landing history

as one of the primary bases for allocation. Comparison of historic landings to the status quo allocations shows that a substantial number of individuals with significant widow rockfish history received very low initial allocations under the status quo bycatch need approach used for overfished species (Figure 4-4). Alternatives 2 and 5 fully implement the historic catch history based portions of the Amendment 20 target species allocation formula.. Additionally, Alternatives 2 and 5 would also meet the current needs of most individuals for QS to cover widow bycatch by providing QS amounts that would give them as much QP as they received in 2012, and to a lesser degree as much as they received in 2014 (Figure 4-21)—this is a result of increases in the widow ACL. For those that might have to acquire more quota (QS or QP) to cover current bycatch needs, the amount that they would need to purchase would be small in comparison to the amounts individuals would have to acquire to re-establish the fisheries on which they have historically depended.

Suboption a and Suboption b of Alternative 2 reflected different balances in the amount of widow QS allocated to each LE permit for whiting trips and the amount for nonwhiting trips. Suboption a is based on the 2016 ACL, which was set below the ABC as a precautionary measure because widow rockfish has been only recently declared rebuilt and there is some stock assessment uncertainty. Suboption b assumes an ACL equivalent to the much higher ABC. Because at the levels considered here the Amendment 21 intersector allocation formula provides a fixed amount of widow for whiting trips (210 mt), as the ACL increases the percent of the QS to be distributed for whiting trips decreases. Those arguing on both sides of these two suboptions recognized that this would be a onetime widow QS reallocation and that after the reallocation is completed there would no longer be a distinction between the widow QS allocated for whiting trips and that allocated for nonwhiting trips.

Those in favor of the using the lower ACL (Alternative 2 Suboption a), which generally benefits whiting participants (see Figure 4-24 and Figure 4-25), argued that there was uncertainty regarding future ACL levels and that the amount allocated to cover bycatch in the valuable whiting fishery would be a onetime allocation with no opportunity to have that allocation increased if either the whiting harvest levels increased or increasing widow biomass resulted in increased bycatch rates in that fishery. They argued that: 1) using the current ACL would be most fair and better take into account current harvests in the whiting fishery by more likely meeting the bycatch needs of that fishery in the present and over the long run, 2) if widow bycatch rates increase or the ACLs for whiting increase there will be more need for widow quota in the whiting fishery, 3) using a higher ACL based on the ABC was speculative, and 4) given uncertainty in the widow stock assessments there is a reasonable probability that the practice of setting the ACL below the ABC will continue. Further, even though Suboption a is more favorable to the whiting fishery than Suboption b, Suboption a would still significantly reallocate from the whiting to nonwhiting participants, relative to Alternative 1 (no action), because Alternative 2 Suboption a is between Alternative 1 and Alternative 2 Suboption b with respect to the amounts allocated for whiting trips; and while the difference between Suboption a and b is relatively small for the nonwhiting trips, moving to suboption b cuts the QS allocation going for whiting trips by about 50%.

Those in favor of using the higher ACL (Alternative 2 Suboption b) argued that the current ACL had been deliberately set low by the Council as a precautionary measure reflecting uncertainty. The current stock assessment indicates that widow rockfish was never overfished[1] and using the ABC as the ACL would

[1] The re-evaluation of the past status of the stock is the result of changes made to the structure of the stock assessment model which took into account new understandings of the stock.

likely better reflect the ACL that would have been used for widow rockfish had there never been an overfished declaration. Further, by the time the widow QS reallocation is finished the Council will be approaching the next management cycle and at that time a less precautionary approach may be taken. Additionally, allocating more quota to those that historically participated in the widow fishery will shift more fish to those processing companies which process non-whiting groundfish and rely on widow rockfish to better market a broader mix of groundfish products and do more to re-establish historic fishing opportunities, which is the purpose and need for the action. It was also noted that the shoreside nonwhiting sector has been struggling more economically under IFQ management than the whiting sector, and that this would provide them a bit more economic opportunity, and that the whiting fishermen would likely be in a better financial position to purchase additional quota if they needed it to prosecute their fishery. The nonwhiting opportunities would be particularly important in California, which does not have a whiting fishery, while at the same time the whiting opportunities would be particularly important for Washington, which does not have a substantial nonwhiting fishery.

With respect to these arguments on the Alternative 2 suboptions, Council members saw some merit in both positions and noted that it is difficult to know what the ACL would have been had widow never been overfished. In lieu of choosing one over the other, a compromise was identified as a fair and equitable approach the Council decided to split the difference between the two such that each recipient would be allocated an amount at the midpoint between what they would have received under Suboption a and Suboption b (provided as the FPA, Alternative 5).

Alternative 3 gave the Council an opportunity to consider more recent participation,in the groundfish fishery by reallocating a portion of the widow QS based on 2003-2010 total revenue, thereby including harvest-based criteria relying on more recent fishing periods than Alternatives 2 or 5. This alternative would take into account dependence on the groundfish fishery as a whole rather than just widow rockfish—because after 2002 the only harvest of widow rockfish was incidental to effort targeted on other species (see Section 2.1.3(b) for more discussion of rationale for design of the alternative). The Council rejected this alternative because it detracted too much from achieving the primary purpose and need for the action, which relates to re-establishing historic fishing opportunities. Additionally other aspects of the total allocation amount take into account recent participation as described below. A strong equal allocation element ensures that those with LE permits that had stronger participation after 2003 than before receive some widow QS allocation (approximately 30 percent of the total QS would be allocated equally). The equal allocation alone will meet or exceed the bycatch needs of many. And, Alternatives 2 and 5 better reflect how widow would have been allocated at the start of the program if it had not been overfished at that time. It might also be noted that Alternative 3 would reward catch history after the control date and prior to the initial allocation of QS, potentially adversely impacting the effectiveness of future control dates (as was discussed in the Council rationale for its decision on the whiting reallocation, PFMC, 2013b).

Under all alternatives, recent participation was taken into account by reallocating QS among current QS holders rather than other groups, such as, for example, current vessel LE permit holders. Such a reallocation would have departed substantially from past allocation practices, allocating from one class of participants to another rather than among the existing class (in this case QS holders), and have been out of line with general market expectations (see Section 2.1.8(b)(2) for further discussion). Given that the current QS allocations take into account current investment in the fishery (in the form of the investments in LE permits as an asset and the subsequent holding of the QS which devolved from that investment) reallocating QS

among current QS holders rather than another class of participants continues to take that investment into account. Allocating to current LE permit holders based on 2011-2014 landings would have detracted from addressing the primary purpose and need for the action and was rejected early on because it is not always possible to link catch and the QP used to cover that catch back to the QS accounts which generated the QP (see Section 2.1.8(b)(1) for further discussion).

All of the alternatives affect vessels, processors, vessel and processor employment and communities indirectly through the allocations—except that vessel and processor owners may be directly affected to the degree that they acquired an initial allocation of QS due to their ownership of an LE permit. Because the ACLs of widow have only recently increased enough to allow targeting and most alternatives would provide nearly all QS owners at least as much QP as they received in 2012, none of the action alternatives are expected to substantially disrupt recent activities or have significant adverse impacts on recent investments (other than QS ownership). The Council considered the moratorium on widow QS trading as providing a strong signal of the impending reallocation, providing individuals an opportunity to anticipate widow QS reallocation as part of their recent investment planning. Overall employment is not expected to change but may be redistributed among firms and geographically redistributed among communities. Geographic redistribution effects are expected to be greatest over the short term and diminish with time (see Section 4.3.1(a)(3) for a discussion of impacts on vessel labor, Section 4.3.4 for a discussion of impacts on processors and processor labor, Section 4.1.2 for a general discussion on expected geographic redistribution, and Section 4.3.6 for a discussion of impacts to communities).

The projected geographic reallocations did not vary substantially among Alternatives 2, 3, and 5 and would have been much lower under Alternative 4 (Table 4-15). Thus these impacts could only be avoided with No Action or something close to it. The impacts are not expected to be substantial because widow comprises a small portion of the trawl groundfish fishery (Table 3-12 and Figure 3-2) and would be a small portion of the groundfish landings in any particular geographic area (Table 3-16). Further, geographic distributions are likely to be driven more by the trading of quota pounds. While QS may be less fluid, the distribution among communities and implication of the alternatives is harder to track because QS owners do not necessarily use their QS/QP in the communities in which they reside.

The Council took into account expected impacts of each alternative on harvesters, processors, workers, investments, and communities as reflected in the environmental assessment and recognized its final decision as drawing a balance between impacts to the whiting and nonwhiting fishery, not allocating too much away from any one sector, re-establishing historic fisheries, and the geographic distribution of impacts among the communities in Washington, Oregon, and California. This action is part of an overall program designed to ensure that conservation objectives are met and is focused on mitigating some of the distributional effects of those conservation measures. As compared to Alternatives 3 or 4, the FPA (as well as Alternative 2) moves most directly toward reestablishing the targeted widow rockfish fishery and is therefore expected to better achieve the OY and more immediately benefit struggling communities.

Alternative 4, relative to Alternatives 2, 3, or 5, would have taken a smaller step toward reallocating widow QS to re-establish historic fishing opportunities, leaving enough QS in every QS holders account to assure that they received at least as much QP as they did in 2014 (see Section 2.1.4(b) for further discussion of the rationale for design of this alternative). Alternative 4 would have given more weight to the status quo and the bycatch regime only reallocating 8.7% of the QS (Table 4-8), a relatively minimal adjustment to the

status quo situation and therefore not making substantial progress toward addressing the purpose and need for the action.

The Council also noted that this reallocation of widow QS was not necessarily a precedent for future reallocations of other currently overfished species because widow QS trading had been frozen to facilitate that reallocation in anticipation that the stock would soon be rebuilt and such an action has not been taken with regard to other overfished species. It is likely that widow will be the only overfished species for which QS can be reallocated based on pre-catch share program historic harvest because the widow QS trading moratorium allows that QS to be tied back to those historic landings through the catch history of the vessel LE permits which were used as the basis for establishing the initial allocations. This will not be possible for other overfished species since QS for those species has already been trading, and tracking each of those trades across multiple transactions and QS owners for reallocation purposes likely would be infeasible.

Chapter 2 Alternatives

2.1 Reallocation Alternatives

In this section a No Action Alternative (Alternative 1) is described along with four action alternatives. For each of the action alternatives, a portion of QS would be reallocated among the QS accounts (QS permits) based on the history of the limited entry (LE) permits which were used to establish the QS accounts when the catch share program was first implemented under Amendment 20 (QS will not be reallocated to the current owners of the LE trawl permits except to the extent that the current QS account owners still own the LE permits originally used to establish the QS accounts). For example, if the history from LE permit number GF001 was allocated to QS account (permit) number QS001, and then GF001 was sold, the history from GF001 will still be allocated to the owner of QS001, regardless of who owns GF001 now. As a reminder, there is a moratorium on trading widow QS, so the original 128 QS recipients of widow QS still hold that QS and would receive a reallocated amount under any of the action alternatives[2]. In situations for which QS allocations to multiple LE permits were combined into a single QS account at the time of initial allocation, the history of each LE permit will be evaluated individually, as was done under Amendment 20 (e.g. the worst years will be determined for each LE permit individually rather than determined collectively for all LE permits associated with a particular QS account).

Reallocation Alternative 1 (No Action): *Status quo widow QS allocations.*

Reallocation Alternative 2: *Use a Modified Amendment 20 Target Species Allocation Formula* (a portion held aside for the adaptive management program (AMP), a portion divided among all LE permits equally, a portion based indirectly on whiting trip landings history between 1994 and 2003, and a portion based directly on nonwhiting trip landings history between 1994 and 2002)

Suboptions for determining amount of QS allocated for whiting vs. nonwhiting trips.

Suboption a: *Use an ACL of 2,000 mt* (the widow ACL adopted for the 2016 fishery). Apply Amendment 21 allocation rules to the 2016 widow ACL in order to determine the split of widow rockfish QS between whiting and nonwhiting trips.

Suboption b: *Use an ACL of 3,790 mt.* Same as Suboption a, but use as an ACL an amount equivalent to the 2016 ABC.

Reallocation Alternative 3: *Include Revenue Shares for 2003 through 2010 as a Proxy for Recent Participation* (same as Alternative 2 but take the portion of the QS that would have been allocated based on nonwhiting landing history and allocate half that amount as specified for nonwhiting landings history in Alternative 2 and half of it based on share of nonwhiting exvessel revenue for 2003 through 2010).

Suboption a: *Drop three worst years from the revenue calculation.*

Suboption b: *No drop year provision for the revenue calculation.*

[2] With the exception of QS permits where court orders prompted the creation of a new QS permit and a NMFS administrative transfer of QS and individual bycatch quota IBQ species.

AND: Select Alternative 2 suboptions for the formula portion based on Alternative 2.

Reallocation Alternative 4: *Use a Pounds Neutral Reallocation* (leave a base amount of QS unreallocated, such that in 2016 every QS account have would received the same amount of quota pound (QP) that it received in 2014, the last year of rebuilding; and reallocate the remainder using the Alternative 2 formula. **Select** Alternative 2 suboptions for the formula portion based on Alternative 2.

AND: Select Alternative 2 suboptions for the formula portion based on Alternative 2.

Reallocation Alternative 5 (FPA): *Alternative 2 Midpoints.* Provide each recipient QS amounts equal to the widow QS allocation result midpoints between Alternative 2 Suboption a and Suboption b.

2.1.1 Reallocation Alternative 1 (No Action): Status Quo Widow QS Allocation.

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

2.1.1(a) *Detailed Description of Reallocation Alternative 1*

Reallocation Alternative 1 (No Action): existing allocation formula

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

Whiting Trips: 28 percent[3] of widow QS for whiting trips
Nonwhiting Trips: 62 percent[3] of the widow QS for nonwhiting trips

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

The net effect with respect to the amount of QS used for each of the above bases for allocation was as follows 10% for AMP + 28% for whiting trips + 62% for nonwhiting trips equals 100%]

Divestiture: QS permit owners who exceed the control limit for widow rockfish (5.1%) would have one year from the time widow QS trading begins to divest.

[3] The percent widow QS allocated for shoresbased whiting and nonwhiting trips is derived based on the following allocations: 52 percent of the widow goes to the whiting sector and 48 percent to the nonwhiting sector. Of the 52 percent that goes to the whiting sector, 42 percent goes to the shorebased whiting sector. 10 percent of the QS goes to adaptive management. Therefore, the portion of the QS allocated for each type of trip (shorebased whiting and nonwhiting) is derived as follows, where T = the trawl sector's allocation of widow:
Shorebased trawl whiting share of widow=[T x 0.52 (whiting share) x 0.42 (shorebased share of whiting)] = 0.22 T.
Shorebased trawl nonwhiting share of widow = [T x 0.48 (nonwhiting share)] = 0.48 T
Total shorebased share = [0.22 T + 0.48 T] = 0.7 T

2.1.1(b) *Rationale for Design of the Alternative*

This alternative is the initial QS allocation formula that was implemented as part of the IFQ program for the shorebased fishery that was approved as part of Amendment 20 to the groundfish fishery management plan. Under this alternative, no reallocation would occur and QS permit owners would continue to hold their current widow QS amounts. Widow rockfish was overfished at the time of initial allocation and the main objective of the alternative was to ensure that widow rockfish was distributed to each LE permit based on its allocation of QS for target species with which widow was caught. Thus the historic landings taken into account were not the landings of widow rockfish but rather the landings of relevant target species, as represented by allocations of QS for those species for a particular LE permit. Additionally, for nonwhiting trips information on an LE permit's geographic distribution of catch from logbooks was used to take into account geographic differences in bycatch rates. QS permit owners divested of all QS and IBQ in excess of the control limits by the November 30, 2015 divestiture deadline, except for widow rockfish. QS permit owners who exceed the control limit for widow rockfish (5.1%) would have one year from the time widow rockfish QS trading begins to divest, in order to allow permit owners time to find a buyer and coordinate the transfer.

2.1.2 Reallocation Alternative 2: Use a Modified Version of the Amendment 20 Target Species Allocation Formula

Summary: **Reallocate based on the Amendment 20 formula for target species**

AMP: 10 % of QS held aside for adaptive management

Equal Division: 28% of widow QS divided equally among all LE permits (buyback history)

Remainder divided between allocations for whiting and nonwhiting trips

- Allocation based indirectly on 1994-2003 whiting landings history for whiting trips
- Allocation based directly on 1994-2002 widow landings history for non-whiting trips
  - Suboptions for determining portions allocated for whiting vs. nonwhiting trips.
    - **Suboption a**: *Use 2,000 mt as an ACL* (the widow ACL adopted for the 2016 fishery). Apply Amendment 21 allocation rules to the 2016 widow ACL in order to determine the split of widow rockfish QS between whiting and nonwhiting trips.
    - **Suboption b:** *Use 3,790 mt as an ACL*. Same as Suboption a, but use as an ACL an amount equivalent to the 2016 ABC.

Shorebased trawl whiting share of shorebased widow = [0.22T/0.7T] = 0.31
Shorebased trawl nonwhiting share of shorebased widow = [0.48T/.7T] = 0.69
Multiply both values by 0.9 to reduce result for the 10 percent AMP set aside.
[0.31 x 0.9] = 0.28; [0.69 x 0.9] = 0.62

2.1.2(a) *Detailed Description of Reallocation Alternative 2*

Reallocation Alternative 2: Reallocate Widow QS Using a Modified Version of the Amendment 20 Target Species Allocation Formula

Adaptive Management: Set aside 10 percent of all widow rockfish QS for adaptive management [achieve result specified at 660.140(d)(8)(iv)(F)].

Equal division: Equally divide among all LE permits,[4] a pool of QS determined using the 1994-2003 whiting and nonwhiting trip widow landings history from Federal limited entry groundfish LE permits that were retired through the Federal buyback program (70 FR 45695, August 8, 2005) [in conformity with the methods specified at 660.140(d)(8)(iv)(B)(2)(i) and 660.140(d)(8)(iv)(C)(1)]. Based on that process, the amount of all widow rockfish QS expected to be allocated equally is 28.6% under Suboption a and 30.6% under Suboption b.

Whiting/Non-whiting Split: Divide the remaining widow QS between allocations for whiting and nonwhiting trips based on the following proportions, adjusted to take into account the amounts deducted for each trip type for equal allocation [apply proportions as specified at 660.140(d)(8)(iv)(D) and deduct amounts for equal sharing].

Whiting Trips: The shorebased portion of the whiting sector allocation of widow (42 percent of 500 mt)

Suboption a: *Use an ACL of 2,000 mt* –12.3 percent of all widow QS will be allocated for whiting trips (shoreside whiting sector allocation minus amount set aside for equal allocation)

Suboption b: *Use an ACL of 3,790 mt* –5.7 percent of all widow QS will be allocated for whiting trips (shoreside whiting sector allocation minus amount set aside for equal allocation)

Nonwhiting Trips: The 2016 trawl allocation of widow minus 500 mt

Suboption a: *Use an ACL of 2,000 mt* –49.1 percent of all widow QS will be allocated for nonwhiting trips (shoreside non-whiting sector allocation minus amount set aside for equal allocation)

Suboption b: *Use an ACL of 3,790 mt* –53.7 percent of all widow QS will be allocated for nonwhiting trips (shoreside non-whiting sector allocation minus amount set aside for equal allocation)

Historic Landings Formula for the widow QS Distributed for Whiting Trips: Allocate to LE permits[4] for whiting trip history as specified for Alternative 1, No Action.

Historic Landings Formula for the widow QS Distributed for Non-Whiting Trips: Allocate to LE permits[4] for nonwhiting trip history as specified in Amendment 20, Section A-2.1.3, for nonoverfished species and in regulations at 660.140(d)(8)(iv)(B)(2)(ii) (nonwhiting trip Group 1 species) but modify the allocation period to 1994-2002. The formula includes the following elements for each LE permit

- use a 1994-2002 allocation period,
- measure an LE permit's widow landings for each year relative to the widow landings of the entire fleet (i.e. measure annual LE permit history as a percent of the fleet's total landings for a year),
- drop three lowest years

Divestiture: QS permit owners who exceed the control limits as the result of reallocation would have one year from the time widow QS trading begins to divest.

NOTE: the above, while listed in a different order than in the regulations, is intended to achieve QS allocations which would result from treating widow rockfish as a "Group 1 species" except that the period 1994-2002 would be used for the nonwhiting trip landings history instead of 1994-2003. The net effect with respect to the amount of QS used for each of the above bases for allocation is expected to be as follows.

Suboption a: 10% for AMP + 28.6% for equal allocation + 12.3% for whiting trips + 49.1% for nonwhiting trip landing weight history equals 100%

Suboption b: 10% for AMP + 30.6% for equal allocation + 5.7% for whiting trips + 53.7% for nonwhiting trip landing weight history equals 100%

2.1.2(b) *Rationale for Design of the Alternative*

This alternative is based on the Amendment 20 allocation formula used for all nonoverfished species with modifications for the time period used to evaluate the LE permit history for nonwhiting (changing "1994-2003" to "1994-2002") and modifications for the ACLs used to determine the amount of widow QS

allocated for whiting trip history and the amount allocated for nonwhiting trip history (see suboptions). With the exception of the date modification and the ACLs used to determine the split of allocation between whiting and nonwhiting trips, this is the allocation formula which would have been applied under Amendment 20 if widow rockfish had been rebuilt for the 2011 fishery instead of 2013.

For the nonwhiting trips, 2003 is left off the historic allocation period because regulations were implemented in 2003 designed to discourage widow harvest. Since only a few vessels made landings that year and because the allocation formula calculates history based on share of the fleets total, a relatively small amount of widow landed by a single LE permit can constitute a large portion of the fleet total for that year and have a disproportionate effect on the allocation for that LE permit. Therefore, 2003 is not included in the allocation formula.

The QS allocated based on landing history is distributed between whiting and nonwhiting trips. The portion going for each type of trip is determined by the Amendment 20 allocation formula. Under that formula, when the widow rockfish is rebuilt and the whiting sectors (at-sea and shorebased) are allocated the greater of 500 mt or 10% of the trawl allocation, with the remainder going to the nonwhiting shorebased sector. Of the portion allocated to whiting sectors 42% is allocated to the shorebased sector. This amount is combined with the allocation to the shorebased sector to determine the total allocation for the shorebased IFQ program. The allocation of QS will be a one-time allocation and the credit that whiting fishery participants receive for their whiting catch history will depend on the level the ACL used to determine the whiting nonwhiting split. If widow QS is reallocated, the allocation is expected to be in place for the 2017 fishery. Suboption a uses the 2016 ACL for widow rockfish to determine the whiting/nonwhiting split. However, the 2016 ACL was set substantially below the ABC because widow rockfish was only recently rebuilt and there is substantial uncertainty in the widow rockfish stock assessment. A higher ACL would result in a greater allocation to LE permits based on their whiting catch history. For many stocks the ACL is set at or near the ABC. For these reasons, Suboption b is provided which uses as an ACL the 2016 ABC instead of the ACL.

QS permit owners who exceed the control limits as the result of reallocation would have one year from the time QS trading begins to divest, in order to allow permit owners time to find a buyer and coordinate the transfer.

2.1.3 Reallocation Alternative 3: Include Revenue Shares for 2003 through 2010 as a Proxy for Recent Participation

Summary: *S*ame as Alternative 2 but take the portion of the QS that would have been allocated based on nonwhiting landing history and allocate half that amount as specified for landings history in Alternative 2 and half based on each LE permit's share of nonwhiting exvessel revenue for 2003 through 2010).

[4] QS would be reallocated among the QS accounts based on the history of the LE trawl permits which were used to establish the QS accounts when the catch share program was first implemented under Amendment 20 (QS will not be reallocated to the current owners of the LE trawl permits except to the extent that the current QS account owners still own the permits originally used to establish the QS accounts). In situations for which QS allocations to multiple permits were combined into a single QS account at the time of initial allocation, the history of each permit will be evaluated individually, as was done under Amendment 20 (e.g. the worst years will be determined for each permit individually rather than determined collectively for all permits associated with a particular QS account).

Suboption a: *Drop three worst years from the revenue calculation.*

Suboption b: *No drop year provision for the revenue calculation.*

For portion of the allocation formula based on Alternative 2, **select Alternative 2 suboptions.**

2.1.3(a) *Detailed Description of Reallocation Alternative 3*

Reallocation Alternative 3: Include Revenue Shares for 2003 through 2010 as a Proxy for Recent Participation

Same as Reallocation Alternative 2 except modify the section on historic landings for nonwhiting trips as follows.

Historic Landings Formula for the widow QS Distributed for Non-Whiting Trips:

Allocation one half the widow QS to be distributed for nonwhiting trips as described in Alternative 2 (under Alternative 2 suboption a, 24.6 percent of the QS; or under Alternative 2, suboption b 26.8 percent of the QS):

Allocate to LE permits[4] for nonwhiting trip history as specified in Amendment 20, Section A-2.1.3, for nonoverfished species and in regulations at 660.140(d)(8)(iv)(B)(2)(ii) (nonwhiting trip Group 1 species) but modify the allocation period to 1994-2002. The formula includes the following elements for each LE permit

- use a 1994-2002 allocation period,
- measure an LE permit's widow landings for each year relative to the widow landings of the entire fleet (i.e. measure annual LE permit history as a percent of the fleet's total landings for a year),
- drop three lowest years

Allocation the other half of the widow QS to be distributed for nonwhiting trips as follows:

For each LE permit,[4] and with respect to the legal limited entry trawl landings of that LE permit

- use a 2003-2010 allocation period,
- measure an LE permit's nonwhiting exvessel revenue for each year during that period relative to the nonwhiting revenue of the entire fleet (i.e. as a percent of the fleet's total nonwhiting revenue for a year),
- Drop years: **Suboption a:** *Drop three worst years from the revenue calculation.* For the portion of the formula based on 2003 through 2010 revenue, an LE permit's three worst years of revenue would be dropped from the calculation.
  Suboption b: *No drop year provision for the revenue calculation.*

After completing these calculations the result for each LE permit is divided by the sum of the results for the entire fleet to determine each LE permits share of the QS allocated on the basis of this portion of the allocation formula.

Select Alternative 2 Suboptions: see Alternative 2.

Divestiture: QS permit owners who exceed the control limits as the result of reallocation would have one year from the time widow QS trading begins to divest.

The net effect with respect to the amount of QS used for each of the above bases for allocation is expected to be as follows.

When Combined With Alternative 2 Suboption a: 10% for AMP + 28.6% for equal allocation + 12.3% for whiting trips + 24.6% for nonwhiting trip landing weight history + 24.6% for nonwhiting trip landing revenue history equals 100%

When Combined With Alternative 2 Suboption b: 10% for AMP + 30.6% for equal allocation + 5.7% for whiting trips + 26.8% for nonwhiting trip landing weight history + 26.8% for nonwhiting trip landing revenue history equals 100%

2.1.3(b) *Rationale for Design of the Alternative*

This alternative considers more recent participation in the nonwhiting fishery than the other action alternatives, participation after 2002. An allocation alternative based on more recent years of widow rockfish harvest was rejected for reasons described below in Section 0. These reasons are primarily related to the absence of a directed midwater trawl for widow rockfish or other pelagic rockfish species after 2002. Therefore, more recent period and dependence is being considered through the evaluation of an allocation that would be based on each LE permit's total nonwhiting groundfish revenue.

The suboption of dropping the three worst years is provided to take into account potential hardships fishermen may have encountered in particular years. This provision is similar to that provided in Amendment 20 to take hardship into account while minimizing administrative costs that would be associated with considering specific hardships.

QS permit owners who exceed the control limits as the result of reallocation would have one year from the time QS trading begins to divest, in order to allow permit owners time to find a buyer and coordinate the transfer.

2.1.4 Reallocation Alternative 4: Use a Pounds Neutral Reallocation

Summary: Leave a base amount of QS unreallocated, such that in 2016 every LE permit would receive the same amount of quota pound (QP) that they received in 2014, the last year of rebuilding; and reallocate the remainder using the Alternative 2 formula.
For portion of the allocation formula based on Alternative 2, **select Alternative 2 suboptions.**

2.1.4(a) *Detailed Description of Reallocation Alternative 4*

Reallocation Alternative 4: Pounds Neutral Reallocation

Neutral Step: Determine the amount of QS to leave in each QS account such that the amount of QP which would be issued to the account in 2016 would be the same as was issued in 2014. Based on the 2014 shorebased trawl allocation of 994 mt of widow rockfish and the 2016 shorebased trawl allocation of 1,421 mt of widow rockfish, every QS account would retain 70 percent of its total widow rockfish QS (994/1,421 = 70 percent).

90 percent of all widow QS is allocated among QS accounts.
Therefore a total 63 percent of all widow QS will be left in existing QS accounts (0.7 x 0.9 = 0.63)

Adaptive Management: Set aside 7 percent of all widow rockfish QS for adaptive management [an additional 3 percent will be set aside for AMP in the following step to achieve a 10 percent set aside][5]

Remainder: Allocate the remaining 30 percent among LE permits[4] based on the Alternative 2 allocation formula.

Application of Alternative 2 Suboption a			
Alternative 2 Allocation Basis	Total QS Allocated on this Basis Under Alt 2	Total QS to be Reallocated Under Alt 4	Total QS Reallocated on this Basis Under Alt 4
AMP Set Aside	10.0%	x 30% =	3.0%
Equal division	28.6%	x 30% =	8.6%
Whiting Trips	12.3%	x 30% =	3.7 %
Nonwhiting Trips	49.1%	x 30% =	14.8%
Total	100%		30%

[5] This approach to displaying the 10 percent set aside is taken to make it mathematically simpler to follow the relationship between this alternative and the Alternative 2 allocation formula.

Application of Alternative 2 Suboption b			
Alternative 2 Allocation Basis	Total QS Allocated on this Basis Under Alt 2	Total QS to be Reallocated Under Alt 4	Total QS Reallocated on this Basis Under Alt 4
AMP Set Aside	10.0%	x 30% =	3.0%
Equal division	30.6%	x 30% =	9.2%
Whiting Trips	5.7%	x 30% =	1.7%
Nonwhiting Trips	53.7%	x 30% =	16.2%
Total	100%		30%

Select Alternative 2 Suboptions: see Alternative 2.

Divestiture: QS permit owners who exceed the control limits as the result of reallocation would have one year from the time widow QS trading begins to divest.
The net effect with respect to the amount of QS used for each of the above bases for allocation is expected to be as follows.

When Combined With Alternative 2 Suboption a: 10.0% for AMP + 8.6% for equal allocation + 23.4% for whiting trips + 58.0% for nonwhiting trip landing weight history equals 100%

When Combined With Alternative 2 Suboption b: 10% for AMP +9.2% for equal allocation + 21.4% for whiting trips + 59.4% for nonwhiting trip landing weight history equals 100%

2.1.4(b) *Rationale for Design of the Alternative*

This alternatives uses the Alternative formula but leaves enough QS in each account to ensure that the account owner would be no worse off in terms of the QP it receives in 2016 relative to its 2014 QP allocation. Current QS permit owners would see no reductions relative to QP allocations in recent years (2013-2014) as long as widow remains rebuilt and the ACL and sector allocation is equal to or higher than 2016's. At the same time those who targeted widow would also receive a benefit with the remaining QS that was reallocated.

QS permit owners who exceed the control limits as the result of reallocation would have one year from the time QS trading begins to divest, in order to allow permit owners time to find a buyer and coordinate the transfer.

2.1.5 Reallocation Alternative 5 (FPA): Midpoint of Alternative 2 Suboptions

The Council developed the FPA at the time of its final action at the April 2015 Council meeting as a compromise between the Alternative 2 suboptions.

Summary: This alternative provides a sector split that results in allocations that are mid-points between the Alternative 2 Suboption a and Suboption b.

Sector Split: For purposes of calculating the division between whiting and nonwhiting trips use 10.8 percent for whiting trips and 89.2 percent for nonwhiting trips.

AMP: 10 % of QS to adaptive management

Equal Division: 30% of widow QS divided equally among all participants (buyback history)

Remainder divided between allocations for whiting and nonwhiting trips

Allocation based indirectly on 1994-2003 whiting landings history for whiting trips

Allocation based directly on 1994-2002 widow landings history for non-whiting trips

2.1.5(a) *Detailed Description of Reallocation Alternative 5*

Reallocation Alternative 5 (FPA): Midpoint of Alternative 2 Suboptions

Adaptive Management: Set aside 10 percent of all widow rockfish QS for adaptive management [achieve result specified at 660.140(d)(8)(iv)(F)].

Equal division: Equally divide among all LE permits[4] a pool of QS determined using the 1994-2003 whiting and nonwhiting trip widow landings history from Federal limited entry groundfish LE permits that were retired through the Federal buyback program (70 FR 45695, August 8, 2005) [in conformity with the methods specified at 660.140(d)(8)(iv)(B)(2)(i) and 660.140(d)(8)(iv)(C)(1)]. Based on that process, the amount of all widow rockfish QS expected to be allocated equally is approximately 29.602 percent.

Whiting/Non-whiting Split: Divide the remaining widow QS for whiting and nonwhiting trips as follows. Apply substitute proportions in place of those specified at 660.140(d)(8)(iv)(A)(10) and in conformity with the methods specified at 660.140(d)(8)(iv)(D). The substitute proportions would be a simple average of the sector level proportions derived for Alternative 2 suboption a and b. These have been calculated as 10.863 percent for nonwhiting trips and 89.166 percent for nonwhiting trips.[6] Based on the results from applying these percentages, the following have been determined as the QS amounts that will be allocated for each type of trip, after deducting amounts of QS allocated for adaptive management and equal division.

Whiting Trips: 9.016 percent of all widow QS will be allocated for whiting trips
Nonwhiting Trips: 51.382 percent of all widow QS will be allocated for nonwhiting trips

Historic Landings Formula for the widow QS Distributed for Whiting Trips: Allocate to LE permits[4] for whiting trip history as specified for Alternative 1, No Action.

Historic Landings Formula for the widow QS Distributed for Non-Whiting Trips: Allocate to LE permits[4] for nonwhiting trip history as specified in Amendment 20, Section A-2.1.3, for nonoverfished species and in regulations at 660.140(d)(8)(iv)(B)(2)(ii) (nonwhiting trip Group 1 species) but modify the allocation period to 1994-2002. The formula includes the following elements for each LE permit

- use a 1994-2002 allocation period,
- measure an LE permit's widow landings for each year relative to the widow landings of the entire fleet (i.e. measure annual LE permit history as a percent of the fleet's total landings for a year),
- drop three lowest years

Divestiture: QS permit owners who exceed the control limits as the result of reallocation would have one year from the time widow QS trading begins to divest.

NOTE: the above, while listed in a different order than in the regulations, is intended to achieve QS allocations which would result from treating widow rockfish as a "Group 1 species" except that the period 1994-2002 would be used for the nonwhiting trip landings history instead of 1994-2003. The net effect with respect to the amount of QS used for each of the above bases for allocation is expected to be as follows: 10% for AMP + 29.6% for equal allocation + 9.0% for whiting trips + 51.4% for nonwhiting trip landing weight history equals 100%.

[6] The following table shows the calculations used to determine these percentages.

	Step	Alt 2 Suboption a	Alt 2 Suboption b	Simple Avg of SubOpt a & b Results	Alt 5, ACL Equivalent Back Calculated
	Assumed ACL	2,000	3,790	2,895	2,569
A	Assumed Fishery HG (Subtract 2016 set asides)	1,880	3,670	2,775	2,449
B	Trawl Allocation (91% x A)	1,711	3,340	2,526	2,228
C	Whiting Sector Allocation (500 mt)	500	500		500

2.1.5(b) *Rationale for Design of the Alternative*

Alternative 5 is identical to Alternative 2 except that the proportions of widow QS allocation allocated for whiting and nonwhiting trips are fixed to ensure that the allocation provided in association with each LE permit would be a midpoint between the what would have been provided under Suboption a and Suboption b of Alternative 2. The proportions that achieve this end are calculated as 10.834 percent for whiting trips and 89.166 percent for nonwhiting trips. The assumption of these proportions is the equivalent of assuming an ACL of 2568.86 mt and applying the Amendment 21 allocation rules (as was done for the Alternative 2 Suboption a and Suboption b assumed ACLs and illustrated in footnote 6). The ACL equivalent that achieves the midpoints of these two suboptions for each LE permit (2568.86 mt) is not the midpoint of the ACLs used in those suboptions ((2,000 + 3,790)/2 = 2895 mt) because the Amendment 21 amount allocated for whiting trips is set at a fixed amount and does not change proportionally with a change in the ACLs.

QS permit owners who exceed the control limits as the result of reallocation would have one year from the time QS trading begins to divest, in order to allow permit owners time to find a buyer and coordinate the transfer.

2.2 Alternatives Considered But Rejected from Detailed Analysis

2.2.1 Amendment 20 Deliberations

Groups Receiving the Allocation. The EIS for Amendment 20 addresses the possibility of allocating to LE permit owners, vessel owners, skippers and crew, processors, communities and the general public. The decision was made to allocate QS among limited entry trawl permit holders. The impacts of allocating to other groups and the rationale for the Council and NMFS decision on the groups to which the allocation would be made is provided in the Amendment 20 EIS.

Earliest Year Used. Amendment 20 also considered and addressed allocations based on periods prior to 1994, the first year of the license limitation program. The full rationale for the Council and NMFS decision to consider only years from 1994 on is provided in the Amendment 20 EIS.

Basic Elements of the Formula. All of the action alternatives include some element of Alternative 2, which is based on the Amendment 20.allocation formula used for nonoverfished species. Some of the central provisions of this formula are the set-aside of 10 percent of the QS for an adaptive management program, equal allocation of the portion of the QS associated with LE permits which were bought back at the end of 2003, measurement of an LE permit's history for each year as a percentage of the fleet history

D	Shorebased Whiting mt (42% of 500 mt)	210	210		210
E	At-sea Whiting mt (58% of 500 mt)	290	290		290
F	Shorebased Nonwhiting Mt (B-C)	1,211	2,840		1,728
G	Total Shorebased Widow Mt (D+F)	1,420.62	3,050		1,938
	Share of Shorebased Widow Allocation				
H	Whiting Trips (D/G)	15%	7%	10.834%	10.833%
I	Nonwhiting Trips (F/G)	85%	93%	89.166%	89.167%
		100%	100%	100%	100%

for that year, and the dropping of an LE permit's worst years from the allocation formula. Alternatives to each of these provisions were considered as part of Amendment 20 and the full rationale for the Council and NMFS decision is provided in the Amendment 20 EIS.

2.2.2 Current Deliberations

2.2.2(a) *Permit History for 2011-2014*

In development of the action alternatives explicitly considered here, the Council rejected consideration of 2011-2014 LE permit history because of complexities in connecting vessel catch back to QS accounts. Once QS was issued in 2010, LE permits became transferable separate from the QS. QS is held in QS accounts and widow QS remains for the most part in the accounts to which it was originally issued, because a trading moratorium has been in place. Each year QP are issued to QS accounts and all QP is transferred to vessel accounts by September 30 of the year. QP also transfers between vessel accounts such that it is not possible to track the QP used to cover fish landed by a particular vessel back to the QS account that generated those QP. Additionally, some fishermen joined together in risk pools to manage their overfished species and QP in these pools was handled in special accounts set up by those pools. Because widow rockfish was overfished in 2011 and 2012, some of the QP used during the period was in accounts administered by managers of the risk pools.

2.2.2(b) *Current Permit Holders*

Another alternative would have been to reallocate a portion of the QS to current LE permit holders, rather than allocating only among the QS accounts. Once the QS allocations were distributed in 2010, LE permit trading started such that the current QS account holders might no longer hold the LE permits for which the allocations were originally issued. Therefore, such an allocation would entail allocating away from one class of participants and to another class, rather than reallocating among existing members of the class of QS holders. This would be inconsistent with past Council actions which have attributed catch history to a particular asset for purposes of allocation and then considered the catch history to be associated with that asset from then on. Vessel history generated LE permits and the LE permits were then considered to be the vehicle for transferring catch history among fishermen from that time forward as the limited entry fixed gear tier program was developed and then the trawl rationalization program. Similarly, LE permit history generated QS accounts and the QS is now the effective vehicle for transferring that history among fishermen. To switch unexpectedly to another allocational basis, allocating to an entirely different class of participants would likely not be considered fair and equitable. For example, LE permits that were sold relatively cheaply with the expectations that the QS allocations were completed and that the value of the LE permits was no longer related to catch history would see that value inflated—there would be an unexpected windfall for those purchasing the LE permits at the expense of those who had retained their QS but sold their LE permits.

2.2.2(c) *Use of Post 2002 Widow Rockfish Landings History*

An allocation alternative based on more recent years of widow rockfish harvest was rejected because it would reward those who caught widow rockfish when the stock was in overfished status and under rebuilding. Additionally, regulations after 2002 discouraged widow rockfish catch and retention.

Therefore, if total pounds were used as the measure or landing history, it would have very little effect on the allocation. Alternatively, if annual landings history for an LE permit were measured as a proportion of the fleet total (relative history), as it would be for the 1994-2002 period, a small amount of landings by a single vessel could result in a disproportionate amount of allocation for that vessel.

Chapter 3 Affected Environments

National Marine Fisheries Service (NMFS) and Council staff scoped the range of environmental components that could be significantly affected by the proposed actions. This chapter describes the affected environment in terms of these components. The affected environment reflects conditions as they exist before the proposed actions are implemented and provides a baseline for considering effects. This chapter is organized into the following sections:

- Section 3.1: Physical Environment
- Section 3.2: Biological Environment
- Section 3.3: Socio-economic Environment

This outline closely follows the outline used in the immediately preceding chafing gear and whiting season date environmental assessments (EA) (PFMC 2014b and PFMC 2015b) and incorporates information in the affected environments section of those documents by reference.

3.1 Physical Environment, including Essential Fish Habitat and Ecosystem

This action will make changes affecting the shorebased trawl fishery. With respect to that fishery, the physical environment is impacted by vessels targeting widow rockfish with midwater gear and those catching widow rockfish as bycatch while targeting whiting with midwater gear, and those targeting other groundfish species with bottom trawl gear. Bottom trawl gear is most likely to have the most direct and notable interactions with the physical environment. This action is not expected to appreciably alter fishing activity (see discussion in Section 4.1).

3.1.1 Physical Oceanography.

The activities covered under this document occur within the California current system off the West Coast (Figure 3-1). A more detailed description of the physical and biological oceanography of Pacific Coast marine ecosystems can be found in PFMC 2013a.

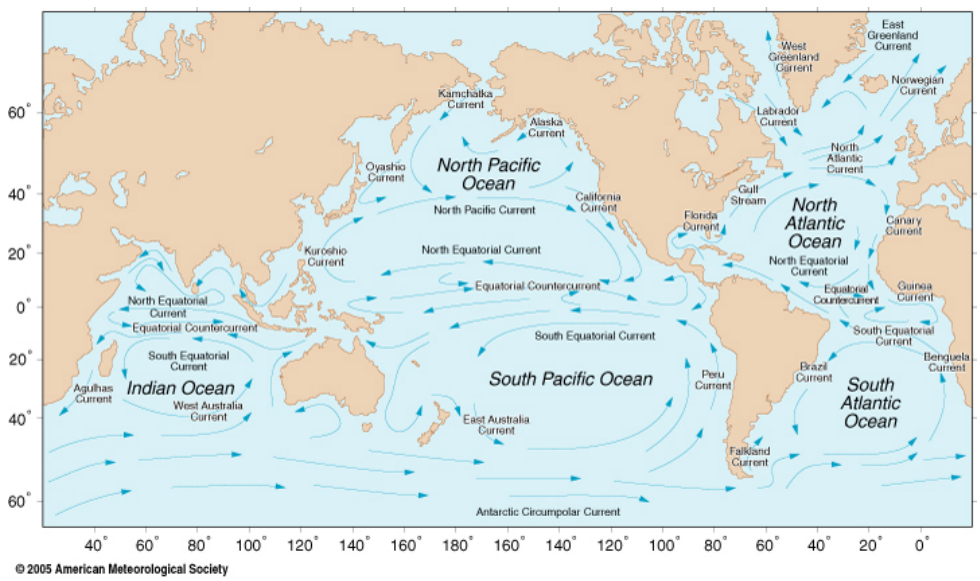

Figure 3-1. Location map of the major ocean currents of the world, including the California Current of the Council management area.

3.1.2 Pacific Marine Ecosystem

The ecosystem off the West Coast where the groundfish fishery occurs is termed the California current ecosystem (CCE). The trophic interactions in the CCE are extremely complex, with large fluctuations over years and decades (PFMC 2013a). Trophic level fishes and invertebrates of the CCE, including groundfish, are described as a trophic group in Section 3.2.1.2 of the Fishery Ecosystem Plan (FEP, PFMC 2013a). Mid- to high-trophic-level fish that feed on zooplankton include midwater rockfish such as widow rockfish and yellowtail rockfish) (Dufault et al. 2009, feeding guilds B and G). However, diets are more varied and most rockfish are omnivorous mid-trophic level predators that may be piscivorous at times.

Within the CCE, spatial patterns of biological distribution (biogeography) have been observed to be influenced by various factors including depth, ocean conditions, and latitude. Cape Mendocino (Mendocino Escapement) is one of the most noteworthy influences to the latitudinal distribution of rockfish species diversity in the action area. Widow rockfish is managed as a single stock coastwide. The biogeography of the action area is discussed in detail in PFMC 2008.

3.1.3 Marine Protected Areas, Essential Fish Habitat, and Habitat Areas of Particular Concern

3.1.3(a) *Marine Protected Areas*

There are numerous Federal and state-managed Marine Protected Areas (MPAs) distributed throughout the project area. The Environmental Impact Statement (EIS) for Pacific Coast Groundfish essential fish habitat (EFH) (Amendment 19 to the groundfish FMP) contains a complete analysis of these sites. EFH is defined by the Magnuson-Stevens Act as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. 1802(10)). EFH has been described within the project area for highly migratory species (HMS), coastal pelagic species (CPS), salmon, and groundfish. EFH for highly migratory species, CPS, and salmon are discussed in detail in Volume 1 of the 2008 groundfish Stock

Assessment and Fisheries Evaluation (SAFE) document (PFMC 2008). Under Amendment 19, groundfish EFH is described and has been deemed to include (1) all ocean and estuarine waters and substrates in depths less than or equal to 3,500 m, to the upriver extent of saltwater intrusion, which is defined based on ocean salt content during low runoff periods, and (2) areas associated with seamounts in depths greater than 3,500 m.

3.1.3(b) *Habitat Areas of Particular Concern*

Under the EFH guidelines published in Federal regulations (50 CFR 600.815(a) (8)), habitat areas of particular concern (HAPCs) are types or areas of habitat within EFH that are identified based on the vulnerability and ecological value of specific habitat types. The Council has identified HAPCs by habitat type and by specific geographic areas. HAPCs based on habitat type (estuaries, canopy kelp, sea grass and rocky reefs) may vary in location and extent over time. The most recent assessment of the distribution of HAPCs is provided in Chapter 7 of the groundfish Fishery Management Plan (FMP). The coordinates for HAPCs identified by discrete boundaries (areas of interest HAPCs) are provided in Appendix B to the groundfish FMP.

3.1.3(c) *Essential Fish Habitat Conservation Areas*

An Essential Fish Habitat Conservation Area (EFHCA), a type of closed area, is a geographic area defined by coordinates expressed in degrees of latitude and longitude at 50 CFR §§ 660.75 through 660.79, subpart C, where specified types of fishing are prohibited. EFHCAs apply to vessels using bottom trawl gear or to vessels using "bottom contact gear," to include bottom trawl gear, among other gear types. Midwater trawling is allowed in EFHCAs when midwater trawl fishing is allowed in adjacent waters by the groundfish regulations (50 CFR 660 Parts C-G available at http://www.trawl.org/Groundfish%20Regulations/pink-pages.pdf).

3.2 Biological Environment

This action affects vessels which target widow rockfish and those which participate in a groundfish targeting strategy that takes widow rockfish as bycatch (mainly whiting trawl but also bottom trawl). Widow rockfish is the subject species of the action alternatives and other species may be incidentally affected; however, the action alternatives are primarily allocative and are expected to have minimal effects on the amount, type, and distribution of fishing activity (see Section 4.2.2).

The groundfish FMP (PFMC 2016a) contains the rules for managing the groundfish fishery. It outlines the areas, species, regulations, and methods that the Council and the Federal government must follow to make changes to the fishery. The FMP also creates guidelines for the biennial process of setting harvest levels.

The biological resources covered in this subsection include those species that share the same marine environment both temporally and spatially with widow rockfish, the principal species under consideration in this assessment.

3.2.1 Groundfish Targeting and Identification of Incidental Catch

Previous to the trawl rationalization program, the retention of catch of non-target groundfish species were limited by bimonthly cumulative trip limits and, for whiting, season restrictions. The fishery is managed under the groundfish FMP. Retention of nongroundfish bycatch is either prohibited (salmon, crab, halibut) or allowed – subject to other governing regulations. The first year of the trawl rationalization program was 2011. Beginning that year, fishers had to cover their groundfish catches of individual fishing quota (IFQ) species with quota pounds (QP) and an observer was required onboard the vessel to document total fishery impacts. Trip limits were in place for most non-IFQ species. Individual bycatch quota was provided for halibut to provide an incentive for bycatch avoidance (retention not allowed). The program did not change management of other species.

Historically, widow rockfish has been targeted by itself and jointly with yellowtail rockfish. It is also taken as bycatch on trips with midwater trawl targeting on whiting and bottom trawl targeting primarily on other species. From 2002 through 2010, widow rockfish targeting opportunities and the opportunity to retain widow rockfish bycatch in the trawl fishery were minimal because the stock was overfished and trip limits were low or did not allow retention. Additionally, areas where widow rockfish bycatch has been higher, in the Rockfish Conservation Areas (RCAs), have been closed to bottom trawling. Starting in 2011 there was an opportunity to use widow QP to retain widow rockfish, but the amount of QP available was limited due to its overfished status. Since widow rockfish was a primary target species in the nonwhiting midwater trawl fishery, this limitation has depressed widow rockfish catch levels in that fishery. The amount of QP available increased in 2013 when the stock became rebuilt and activity in the nonwhiting midwater trawl fishery has increased. Indication of the catch rates of widow rockfish in each of these fisheries is provided in Table 3-1. Additional data on these rates is provided in Section 3.3.1.

Table 3-1. Widow rockfish catch rates as a percent of total catch for each strategy.

	Midwater Trawl		
	Nonwhiting	Whiting	Bottom Trawl
2000a/	57.92%		
2001a/	48.21%		
2002a/	29.07%		
2002-20010 b/	d/		0.12%
2011 c	d/		
2012 c/	5.02%	0.16%	0.19%
2013 c/	59.08%	0.24%	0.25%

a/ Washington, Oregon, California state logbook data.
b/ WCGOP Limited entry (LE) bottom trawl 2002-2010 Excel Sheet – Release Date 2014
http://www.nwfsc.noaa.gov/research/divisions/fram/observation/xls/LE_Trawl_CatchTable_Years_2002-2010_111814.xlsx
c/ WCGOP Groundfish Mortality Reports – Released to GMT
d/ Not available due to confidentiality restrictions.

3.2.1(a) *Species Caught in the Nonwhiting Midwater Trawl Fishery*

For purposes of this analysis, nonwhiting midwater trawl trips are those in which midwater trawl gear was used and less than 50 percent of the catch was Pacific whiting. In Council area fisheries these are trips in which pelagic rockfish species comprised most of the nonwhiting catch but, as will be discussed, this is not always the case. Non-target species data for the pelagic rockfish fishery and other nonwhiting mid-water trawl fisheries were obtained from two sources: (1) The West Coast Groundfish Observers Program

(WCGOP) database maintained by NMFS and (2) the State logbook database (PacFIN) maintained by the Pacific States Marine Fisheries Commission.

Information from the WCGOP is provided for the periods 2002-2011 and 2012-2013. For the earlier period, sample data was provided by the observer program for 49 observed tows, most of which occurred in 2011. During this period, there was very little targeting of pelagic rockfish with midwater trawl gear. Data for 2012-2013 covers a period of increased targeting which occurred with opportunities provided by the trawl rationalization program and the rebuilding of widow rockfish. For 2002-2011, data is provided for north and south of 40° 10' N. latitude. For the latter period, all fishing was in the northern area. Catch estimates for these periods and areas are provided in the whiting season EA (PFMC, 2015b) and summarized here.

A total of 62 categories of fish and invertebrates were observed in the coastwide nonwhiting midwater trawl fishery catch during 2002-2011 (Table 3-2). Catches in the north and south management areas were noticeably different with regard to species categories present and relative amounts in the catch. The south area data showed a large catch of bank rockfish (56 mt retained), a southern area minor slope rockfish species, while the north area catch was dominated by yellowtail rockfish (103 mt retained) and widow rockfish (75 mt retained), two major shelf rockfish species in the north area (*ibid.*). Yellowtail and widow rockfish were not encountered in the southern tows. It would appear these were the likely target species of the fisheries, because the bank rockfish catch represented 90 percent of the south area retained catch, while the combined yellowtail rockfish and widow rockfish catches represented 99 percent of the north area retained catch (*ibid.*). Notable discard species in the south area included unidentified rockfish, shortbelly rockfish, and Pacific whiting. The major discard species in the north area was Pacific whiting. Groundfish species dominated the catch in both areas: 99 percent in the south area and 97 percent in the north area (*ibid.*). Overfished groundfish and prohibited species were caught in both areas (Table 3-2). CPS was encountered in both areas, but no HMS species or Pacific halibut were encountered in either area.

Table 3-2. Species and species groups caught on nonwhiting midwater trawl trips during 2002-2011 by management area and species category. The north and south management areas are divided at 40º 10' N. latitude (West Coast Groundfish Observer Program catch data provided January 7, 2013).

North		South	
Overfished Groundfish			
Canary Rockfish		Bocaccio Rockfish	Darkblotched Rockfish
Pacific Ocean Perch		Cowcod Rockfish	Petrale Sole
Other Groundfish			
Arrowtooth Flounder	Rockfish Unid	Bank Rockfish	Pacific Hake
Bocaccio Rockfish	Rosethorn Rockfish	Big Skate	Pacific Sanddab
Chilipepper Rockfish	Sablefish	Blackgill Rockfish	Rex Sole
Harlequin Rockfish	Sharpchin Rockfish	California Skate	Rockfish Unid
Lingcod	Shelf Rockfish Unid	Chilipepper Rockfish	Sablefish
Longnose Skate	Silvergray Rockfish	Curlfin Turbot	Sharpchin Rockfish
Pacific Cod	Skate Unid	Dover Sole	Shortbelly Rockfish
Pacific Hake	Spiny Dogfish Shark	English Sole	Skate Unid
Redstripe Rockfish	Widow Rockfish	Greenspotted Rockfish	Spiny Dogfish Shark
Rex Sole	Yellowtail Rockfish	Greenstriped Rockfish	Splitnose Rockfish
		Lingcod	Spotted Ratfish
		Longnose Skate	Stripetail Rockfish
Prohibited Species			
King (Chinook) Salmon	Silver (Coho) Salmon	Dungeness Crab	
CPS			
Jackmackerel		Market Squid	
Other Nongroundfish			
American Shad	Pacific Herring	Armored Box Crab	Ribbonfish Unid
Jellyfish Unid	Shark Unid	King of the Salmon	Sandpaper Skate
Mackeral Unid	Squid Unid	Mola Mola (Sunfish)	Slender Sole
		Pacific Electric Ray	Spot Shrimp
		Red Rock Crab	Squid Unid

a/ Target species comprised an average of 95% of total catch in 2012 and 2013 (West Coast Groundfish Observer Program data from Table 3a of the workbook version of the 2012 and 2013 groundfish mortality reports).
b/ No Pacific Halibut were reported.

The observed trips in 2012 and 2013 produced a total catch of 425.97 mt of fish, 196.5 mt in 2012 and 208.4 mt in 2013 (PFMC, 2015b). About 95 percent of the total catch in the two years combined was composed of pelagic rockfish species including yellowtail rockfish (270.30 mt) and widow rockfish (270.3 mt). A variety of species comprised the remainder of the catch including overfished groundfish (canary rockfish, darkblotched rockfish, Pacific Ocean perch, and petrale sole), IFQ and nonIFQ groundfish species (45 categories), and nongroundfish species (3 species). Dungeness crab was the only prohibited species encountered. There were no CPS or HMS in the observed catch, however the total catch in this strategy has been very low (roughly just over 200 mt per year of all species). Bycatch data for 2012-2013 is not provided for eulachon, green sturgeon, salmon, or Pacific halibut. Preliminary data showing nonwhiting midwater trawl salmon bycatch rates in 2014 is presented in Section 3.2.7.

Table 3-3. Species and species groups caught on nonwhiting midwater trawl trips observed by the West Coast Groundfish Observer Program during 2012 and 2013 (data from Table 3a of the workbook version of the 2012 and 2013 groundfish mortality reports).[a/] All fishing was conducted north of 40° 10' N. latitude.

OVERFISHED GROUNDFISH	OTHER GROUNDFISH			NONGROUNDFISH[b/]
Canary Rockfish	Arrowtooth Flounder	*Minor nearshore rockfish (N)*	Rougheye Rockfish	*Protected/Prohibited Species*
Darkblotched Rockfish	Dover Sole	Quillback Rockfish	Sharpchin Rockfish	Dungeness Crab
Pacific Ocean Perch (N)	English Sole	*Minor shelf rockfish (N)*	Shortraker Rockfish	
Petrale Sole	Petrale Sole	Bocaccio Rockfish	Slope Rockfish Unid	
	Lingcod (North)	Chilipepper Rockfish	Splitnose Rockfish	*Non-FMP flatfish*
	Longnose Skate	Greenspotted Rockfish	*Other flatfish*	Slender Sole
	Longspine Thornyhead (N)	Greenstriped Rockfish	Butter Sole	*Non-FMP skate*
	Pacific Cod	Redstripe Rockfish	Curlfin Turbot	Pacific Electric Ray
	Pacific Hake	Rosethorn Rockfish	Flathead Sole	
	Sablefish (N)	Silvergray Rockfish	Pacific Sanddab	
	Shortspine Thornyhead (N)	Stripetail Rockfish	Rex Sole	
	Spiny Dogfish	*Minor slope rockfish (North)*	Rock Sole	
	Starry Flounder	Aurora Rockfish		
	Widow Rockfish	Blackgill Rockfish	Big Skate	
	Yellowtail Rockfish (N)	Redbanded Rockfish	Skate Unid	
			Spotted Ratfish	
			Skate Unid	

a/ Target species comprised an average of 95% of total catch in 2012 and 2013 (West Coast Groundfish Observer Program data from Table 3a of the workbook version of the 2012 and 2013 groundfish mortality reports).
b/ There were no HMS, CPS, boccaccio rockfish, cowcod, or yelloweye rockfish.

3.2.1(b) *Species Caught in the Shorebased Whiting Fishery*

Directed whiting fishing vessels and their landings are those that conform to the regulations found at 50 CFR 660, subparts C-G. (in particular §160.131). The fishery is limited to permitted vessels that have declared their intent to participate in the taking of Pacific whiting using specified fishing gear (midwater trawl), during the specified primary whiting season (which may vary by geographic area) and in specified ocean fishing areas. Data for species caught in the IFQ non-tribal shorebased whiting fishery were obtained from the WCGOP database maintained by NMFS.

The directed whiting fishery average annual catch during 2007-2010 totaled 57,380 mt of fish and invertebrates. From 2007 through 2010, the nonwhiting bycatch included over 100 species of animals, which comprised 1.24 percent of the total catch for a total of 57,380 mt (PFMC, 2015b). Endangered species included eulachon and some stocks of salmon. Overfished groundfish included overfished bocaccio rockfish, canary rockfish, darkblotched rockfish, and Pacific Ocean perch. From 2011 through 2012, the nonwhiting bycatch comprised 0.99 percent of the total catch for a total of 85,032 mt (PFMC, 2015b). Endangered species included eulachon and some stocks of salmon. Overfished groundfish included overfished bocaccio rockfish, canary rockfish, darkblotched rockfish, Pacific Ocean perch, and Petrale sole.

Table 3-4. Species and species groups caught in the shorebased whiting fishery from 2007 through 2013 (Source: 2007-2012 from the 2012 multiyear data product (Bellman, et al. 2013); 2013 groundfish data from the 2013 groundfish mortality report provided by the WCGOP; 2013 data for nongroundfish data is from fish tickets).

TARGET SPECIES	*Minor slope Rockfish (Rf) N.*[a/]	Pacific Cod	**Endangered Species**	**Other Nongroundfish**
Pacific Hake	Aurora Rf	Sablefish (N)	Eulachon	American Shad
NON-TARGET SPECIES	Bank Rf	Sablefish (S)	*(also salmon)*	Bivalves Unid
Groundfish IFQ Species	Blackgill Rf	Shortspine Thornyhead (N)	**Prohibited Species**	Black Skate
Overfished Groundfish	Blackspotted Rf	Starry flounder	Dungeness Crab	Brown Cat Shark
Bocaccio Rf (S) [b/]	Redbanded Rf	Widow Rf	Chum Salmon	California Mussel
Canary Rf	Rougheye Rf	Yellowtail Rf (N)	Chinook Salmon	Echinoderm Unid
Cowcod Rf (S)	Sharpchin Rf	**Groundfish Landing Limit Species**	Coho Salmon	Fish Unid
Darkblotched Rf	Shortraker Rf	Black Rf (N)	Pink Salmon	Hagfish Unid
Pacific Ocean Perch (N)	Slope Rf Unid	Black Rf (S)	Sockeye Salmon	Jellyfish Unid
Petrale Sole	Splitnose Rf	Nearshore Rf Unid	Salmon Unid	Mackerel Unid
Yelloweye Rf	Yellowmouth Rf	Quillback Rf	Pacific Halibut b/	Mixed Species
Non-Overfished Groundfish	Other flatfish	Spiny Dogfish Shark	**CPS**	Mola Mola (Sunfish)
Arrowtooth flounder	Flatfish Unid	**Groundfish Non-Landing Limit**	Market Squid	Octopus Unid
Chilipepper Rf (S)	Flathead Sole	Longnose skate	Northern Anchovy	Other Nongroundfish
Dover sole	Pacific Sanddab	Mixed thornyheads	Pacific Mackerel	Pacific Herring
English sole	Rex Sole	Other groundfish	Pacific Sardine	Pacific Pomfret
Lingcod (N)	Rock Sole	Big Skate	Jack Mackerel	Pink Shrimp
Lingcod (S)	Sand Sole	Grenadier Unid	**HMS**	Prowfish
Longspine Thornyhead (N)	Sanddab Unid	Groundfish Unid	Albacore Tuna	Sea Cucumber Unid
Minor shelf Rf (N)		Skate Unid	Bonito (Shortfin Mako) Shark	Shark Unid
Bocaccio Rf		Shortbelly Rf	Blue Shark	Shrimp Unid
Chilipepper Rf		Soupfin Shark	Common Thresher Shark	Smelt Unid
Greenblotched Rf		Spotted Ratfish		Squid Unid
Greenspotted Rf				Walleye Pollock
Greenstriped Rf				White Sturgeon
Redstripe Rf				Wolf-eel
Rosethorn Rf				
Shelf Rf Unid				
Silvergray Rf				
Stripetail Rf				

a/ N = North of 40°10' N. lat.
b/ S=South of 40°10' N. lat

3.2.1(c) *Species Caught in the Bottom Trawl Fishery*

Data provided here is for vessels using bottom trawl gear from 2002 through 2010.

The directed bottom trawl fishery average annual catch during 2002-2010 averaged 5,944 mt of fish and invertebrates. By weight, 93 percent of the catch in the bottom trawl fishery is of species managed under the groundfish plan. Five groundfish species comprise 60 percent of the total weight of landings: Dover sole, arrowtooth flounder, sablefish, petrale sole, and longspine thornyhead. Of the nongroundfish bycatch

that comprise the remaining 7 percent, 5 percent is accounted for by 5 categories of bycatch: tanner crab, Pacific halibut, dungeness crab, and "kelp, rocks, wood, and mud." An additional 273 species and categories comprise the remaining 2 percent (an average of 445 mt per year). Species for which more than one half metric ton total was caught from 2002 through 2010 are listed in Table 3-5. Endangered species landed included eulachon and some stocks of salmon. A total of 0.01 mt of eulachon was caught over the entire period. Endangered species included eulachon and some stocks of salmon. Overfished groundfish included overfished bocaccio rockfish, canary rockfish, darkblotched rockfish, Pacific Ocean perch, yelloweye rockfish, and Petrale sole.

Table 3-5. Species and species groups caught in the bottom trawl fishery from 2002 through 2010 for which more than 0.5 mt was caught for the entire period (an average of more than 122 pounds per year).

Groundfish species	**Petrale Sole**	**Non-groundfish species**	Kelp Rocks Wood Mud
Arrowtooth Flounder	Popeye Grenadier	Albacore Tuna	Chinook Salmon
Aurora Rockfish	Quillback Rockfish	Aleutian Skate	Longnose Cat Shark
Bank Rockfish	Redbanded Rockfish	American Shad	Mixed Species
Big Skate	Redstripe Rockfish	Anemone Unid	Octopus Unid
Blackgill Rockfish	Rex Sole	Angulatus Tanner Crab	Opaleye
Black Rockfish	Rockfish Unid	Armored Box Crab	Pacific Halibut
Bocaccio Rockfish	Rock Sole	Bigfin Eelpout	Pacific Herring
Butter Sole	Rosethorn Rockfish	Black Coral	Pacific Sardine
California Grenadier	Rougheye Rockfish	Black Skate	Pacific Sleeper Shark
California Skate	Sablefish	Blacktail Snailfish	Pacific Staghorn Sculpin
Canary Rockfish	Sanddab Unid	Blob Sculpin	Pacific Tom Cod
Chilipepper Rockfish	Sand Sole	Brittle/Basket Star Unid	Pink Surfperch
Cowcod Rockfish	Sharpchin Rockfish	Brown Box Crab	Plainfin Midshipman
Curlfin Turbot	Shelf Rockfish Unid	Brown Cat Shark	Ragfish
Darkblotched Rockfish	Shortbelly Rockfish	Brown Smoothhound Shark	Sandpaper Skate
Deepsea Skate	Shortraker Rockfish	California Halibut	Sculpin Unid
Dover Sole	Shortraker/Rougheye Rockfish	California Slickhead	Sea Cucumber Unid
English Sole	Shortspine/Longspine Thornyhead	Cat Shark Unid	Sea Snail Unid
Flatfish Unid	Shortspine Thornyhead	Common/Giant Pacific Octopus	Sea Star Unid
Flathead Sole	Silvergray Rockfish	Corals Unid	Shark Unid
Greenspotted Rockfish	Skate Unid	Crab Unid	Slender Sole
Greenstriped Rockfish	Slope Rockfish Unid	Decomposed Fish	Slickhead Unid
Grenadier Unid	Soupfin Shark	Deepsea Sole	Smelt Unid
Lingcod	Spiny Dogfish Shark	Dogfish Shark Unid	Snailfish Unid
Longnose Skate	Splitnose Rockfish	Dungeness Crab	Sponge Unid
Longspine Thornyhead	Spotted Ratfish	Eelpout Unid	Squid Unid
Pacific Cod	Starry Flounder	Egg Case Unid	Sunstar Starfish
Pacific Electric Ray	Starry Skate	Filetail Cat Shark	Tanner Crab Unid
Pacific Flatnose	Stripetail Rockfish	Garbage/Trash	Tanneri Tanner Crab
Pacific Grenadier	Vermilion Rockfish	Giant Grenadier	Threadfin Slickhead
Pacific Hake	Widow Rockfish	Giant Squid	Twoline Eelpout
Pacific Ocean Perch	**Yelloweye Rockfish**	Humboldt (Jumbo) Squid	Urchin Unid
Pacific Sanddab	Yellowmouth Rockfish	Invertebrate Unid	Walleye Pollock
	Yellowtail Rockfish	Irregular Echinoids	White Anemone
		Jellyfish Unid	White Croaker
			Wolf-eel

a/ WCGOP Limited entry (LE) bottom trawl 2002-2010 Excel Sheet – Release Date 2014
http://www.nwfsc.noaa.gov/research/divisions/fram/observation/xls/LE_Trawl_CatchTable_Years_2002-2010_111814.xlsx

3.2.2 Overfished Groundfish Species

There are currently five overfished rockfish stocks (bocaccio south of 40 º10' N. latitude, cowcod south of 40º 10' N. latitude, darkblotched rockfish, Pacific ocean perch, and yelloweye rockfish (PFMC 2016b). All species of overfished groundfish are actively managed in all ocean management areas and fisheries where

they occur, as explained below. They occur as bycatch in the pelagic rockfish fishery as shown in WCGOP data (Table 3-2) and in the Pacific whiting shorebased fishery as shown in Table 3-4. New assessments and rebuilding analyses for these overfished stocks do not indicate any need to modify existing rebuilding plans since all these analyses indicate progress towards rebuilding is on track and, in most cases, ahead of schedule.

3.2.3 Other Non-target Groundfish Species

Other groundfish species (other than target species and overfished groundfish) are frequently caught in the nonwhiting midwater trawl and shorebased whiting fishery. The Groundfish Harvest Specifications for 2015-2016 (PFMC 2015a) describe the species and stocks managed under the Groundfish FMP. More than 90 fish species are managed under the Groundfish FMP. WCGOP data from 2002-2011 collected in the nonwhiting midwater trawl fishery showed that three species or species groups made up 73 percent of the incidental catch: bank rockfish, Pacific whiting, and unidentified rockfish (PFMC 2015b). WCGOP data for 2007-2013 for the whiting fishery show that the largest incidental catch tonnages were for yellowtail rockfish, widow rockfish, and dogfish shark (PFMC 2015b). The bottom trawl fishery is a multi-species strategy which includes a mixture of strategies. In 2012 there were 16 species and species groups for which more than 100 mt was caught: petrale sole, arrowtooth flounder, dover sole, english sole, Pacific sanddab, rex sole, chilipepper rockfish, yellowtail rockfish, longspine thornyhead, shortspine thornyhead, lingcod, sablefish, Pacific cod, whiting, spiny dogfish, longnose skate, and unidentified skate. These species comprised 93 percent of the catch in this fishery.

A synopsis of biological information on widow rockfish is provided here. Biological information for many of the bycatch species identified in this report can be found on the Council web page at: www.pcouncil.org.

3.2.3(a) *Widow Rockfish*

Biology (CDFG 2001b): Widow rockfish *(Sebastes entomelas)* are found from Todos Santos Bay, Baja California, to Kodiak Island, Alaska. Peak abundance is off northern Oregon and southern Washington, with significant aggregations occurring south to central California. While many commercial catches occur at bottom depths between 450 and 750 feet, young fish occur near the surface in shallow waters, and adults have been caught over bottom depths to 1,200 feet. It exhibits extreme night and day movement during spring and summer feeding migrations as it feeds on a variety of pelagic fishes or zooplankton. It is commonly found at depths of 160 to 1,500 feet but has been found from the surface to 2,600 feet. Widow rockfish often form midwater schools, usually at night, over bottom features such as ridges or large mounds near the shelf break. There appears to be some seasonal movement of fish among adjacent grounds, and there is evidence that fish move from area to area as they age, with fish of the same size tending to stay together.

Fishery Management: Widow rockfish was an untargeted species prior to 1979. In 1979 a highly directed midwater trawl fishery developed for widow rockfish. Schooling behavior of widow rockfish allows them to be targeted easily by fishermen, and catches (when the fishery was active) were often 100 percent widow rockfish. Midwater trawling for widow rockfish historically occurred at night when they formed dense off-bottom schools, which dispersed at dawn (Tagart 1987; Ralston and Pearson 1997). The targeted widow fishery stopped in 2002 after it was declared overfished. Since the Trawl Rationalization Program began in 2011 and widow stocks being rebuilt, some targeting has started again.

An Oregon-based widow rockfish fishery took place during 1991-2003 on Cobb Seamount, located outside of the U.S. Exclusive Economic Zone (EEZ), approximately 280 nautical miles northwest of the northern Oregon coast (Douglas 2011). U.S. fishing activity on the Cobb Seamount ceased in early 2004 when NMFS stopped issuing high seas permits for net gear types.

Stock Status (He et al. 2011): The most recent widow rockfish assessment in 2011 applied to widow rockfish located in the territorial waters of the U.S., including the Vancouver, Columbia, Eureka, Monterey, and Conception areas. The stock is assumed to be a single mixed stock and subject to five major fisheries. The stock was declared overfished in 2001. A stock that has declined to less than 25 percent of its unfished spawning biomass is considered "overfished" until it rebuilds to 40 percent of its unfished spawning biomass. The most recent stock assessment showed that the stock had rebuilt to a depletion level of 51 percent and a spawning stock size of 36,342 mt.

Management Performance (He et al. 2011 and GMT 2013): Management uncertainty is low since widow rockfish is a trawl-dominant species and there is mandatory 100 percent observer coverage in trawl fisheries (PFMC 2015a).

The combined fishery catches of widow rockfish during 1999-2001, prior to the species being declared overfished, achieved between 92 percent and 98 percent and averaged 95 percent of the harvest guideline (HG). From 2002-2012 the widow rockfish catch ranged from 5 percent to 74 percent and averaged 47 percent of the HG.

3.2.4 Pacific Halibut

Pacific halibut (*Hippoglossus stenolepis*) are managed by the bilateral (U.S./Canada) International Pacific Halibut Commission (IPHC) with implementing regulations set by Canada and the U.S. in their own waters. Pacific halibut mortality in the groundfish trawl fishery is managed with individual bycatch quotas (IBQ). There was no halibut catch in the WCGOP sampling of the non-whiting midwater trawl fishery conducted during 2002-2011 (PFMC, 2015b). A total of 4.5 mt was caught in 2002-2012 shorebased whiting fishery samples (*ibid*).

3.2.5 Coastal Pelagic Species

CPS (Pacific sardine, Pacific mackerel, jack mackerel, northern anchovy, and market squid) are taken incidentally in the groundfish fishery and are believed to be most vulnerable to midwater trawl gear compared to other groundfish gear types because of their off bottom schooling behavior. Small amounts (<0.13 mt) of CPS were observed caught in the nonwhiting midwater trawl fishery during 2002-2013 (PFMC, 2015b). A total of 450 mt of CPS was estimated caught in the shorebased whiting fishery during 2002-2012 (*ibid.*).

3.2.6 Highly Migratory Species (HMS)

HMS include tunas, migratory pelagic sharks, billfish, and swordfish. No HMS species were observed in nonwhiting onboard observation samples from 2007-2013 (PFMC, 2015b). HMS that were recorded in 2002-2012 shorebased whiting catches collectively weighed about 11 mt compared to a whiting catch of 775,780 mt.

3.2.7 Salmonids (Including ESA-Listed Stocks)

Salmon caught in West Coast groundfish fisheries originate in fresh water streams and rivers from Central California to Alaska. NMFS has identified eight evolutionarily significant units (ESUs)[7] that are most likely to be caught in the groundfish fisheries. Those ESUs range geographically from the Sacramento River to Puget Sound and are subject to the 2006 consultation (Table 3-6). Widow rockfish QS reallocation is not expected to affect salmon bycatch rates.

Table 3-6. Endangered Species Act Status of West Coast salmon and steelhead (highlighted ESUs are those subject to the 2006 consultation).

Species	ESU	Status	ESU	Status
Sockeye	Snake rive	Endangered	Ozette Lake	Threatened
Chinook	**Sacramento River Winter-run**	Endangered	**Lower Columbia River**	Threatened
	Upper Columbia River Spring-run	Endangered	**Upper Willamette River**	Threatened
	Snake River Spring/Summer -run	Threatened	**Central Valley Spring-run**	Threatened
	Snake River Fall-run	Threatened	**California Coastal**	Threatened
	Puget Sound	Threatened	Central Valley Fall & Late Fall-run	Species of Concern
Coho	Central California Coast	Endangered	Oregon Coast	Threatened
	Southern Oregon/Northern California	Threatened	Puget Sound/Strait of Georgia	Species of Concern
	Lower Columbia River	Threatened		
Chum	Hood Canal Summer-run	Threatened	Columbia River	Threatened
Steelhead	Southern California	Endangered	California Central Valley	Threatened
	Upper Columbia River	Threatened	Upper Willamette River	Threatened
	Central California Coast	Threatened	Middle Columbia River	Threatened
	South Central California Coast	Threatened	Northern California	Threatened
	Snake River Basin	Threatened	Puget Sound	Threatened
	Lower Columbia River	Threatened	Oregon Coast	Species of Concern

Chinook salmon have been the primary salmonid species impacted in West Coast trawl fisheries, including the directed whiting midwater trawl fishery, by over 90 percent for trawl fisheries in combination (Table 3-7).

[7] An ESU, or evolutionarily significant unit, is a Pacific salmon population or group of populations that is substantially reproductively isolated from other nonspecific populations and that represents an important component of the evolutionary legacy of the species. The ESU policy (56 FR 58612) for Pacific salmon defines the criteria for identifying a Pacific salmon population as a DPS, which can be listed under the ESA." Source: http://www.nmfs.noaa.gov/pr/glossary.htm#esu

Table 3-7. Estimated bycatch of salmon (no. of fish) in all U.S. west coast fisheries observed by the West Coast Groundfish Observer Program (WCGOP) and the At-Sea Hake Observer Program (A-SHOP) from 2002-2010, as well as salmon bycatch in shoreside Pacific whiting sectors.

	Nonwhiting Sectors	Whiting Sectors	Total	Percent
Chinook	37,466	51,620	89,086	91%
Chum	51	735	789	1%
Coho	338	1,688	2,026	2%
Pink	2	4,982	4,984	5%
Sockeye	0	4	4	0%
Unspecified	178	351	529	1%
Total	38,037	59,380	97,417	100%
Percent	39%	61%	100%	

NMFS first consulted under the ESA on the effects of the fishery on listed salmonids in 1990 and reinitiated consultation several times thereafter.

The effects of ongoing implementation of the groundfish FMP on listed salmonid species were considered in a 1999 biological opinion that focused on bycatch of Chinook salmon, which comprises the largest portion of salmonid bycatch in the whiting fishery. Bycatch consists primarily of unlisted salmonid species; however, some ESA-listed evolutionarily significant units (ESUs) are caught in small numbers.

The 1999 opinion determined that the fishery was not likely to jeopardized any of the listed ESUs and provided an incidental take statement estimating that total Chinook bycatch (listed and unlisted fish) for the whiting fishery (mothership, catcher/processor (C/P), shorebased, and tribal combined), would likely be 11,000 Chinook per year or 0.05 fish per metric ton (mt) of whiting catch. The 1999 biological opinion indicated consultation must be reinitiated if Chinook bycatch rates exceed 0.05 Chinook salmon/mt whiting or catch exceeds 11,000 Chinook per year. For the bottom trawl fishery, the 1999 biological opinion estimated that 6,000 to 9,000 Chinook salmon would be taken annually. The biological opinion concluded that if the bottom trawl fishery changes substantially in magnitude or character or if bycatch exceeds 9,000 salmon, consultation must be reinitiated.

In 2013, NMFS reinitiated section 7 consultation on the FMP to address the effects on salmonids caused by the re-emerging use of midwater trawl gear to target non-whiting groundfish species such as yellowtail and widow rockfish.

3.2.8 Forage Fish Species

These are lower trophic level species that are preyed upon by higher-level species such as most groundfish species, including Pacific whiting. The shorebased whiting fishery data for 2002-2012 show an estimated total catch of potential forage fish of about 553 mt, which was nearly (99 percent) all American shad and Pacific herring (Table 3-4, Table 3-2).

3.2.9 Other Miscellaneous Non-groundfish Species

A wide variety of nongroundfish species have been recorded in nonwhiting midwater trawl, whiting midwater trawl, and bottom trawl fisheries (see Table 3-2, Table 3-3, Table 3-4, and Table 3-5).

3.2.10 Marine Mammals, Seabirds, and ESA-Listed Species (Other Than Salmonids)

A list of marine mammals, seabirds, and ESA-listed species in the project area is provided in Table 3-8. These species and fishery impacts are more fully described in the Final Environmental Impact Statement (FEIS) for the 2015-2016 groundfish specifications. These species are not likely to be affected under any of the action alternatives. More information is available on these species in the referenced documents and in the FEIS for the 2015-2016 groundfish specifications (PFMC, 2015a).

Table 3-8. List of marine mammals, seabirds, and ESA-listed species (other than salmonids) in the project area (St = Status; T = threatened; E = endangered).

Class/ Species	Listing	St	Determination	Source
Fish				
Green Sturgeon (*Acipenser medirostris*)	ESA	T	No Jeopardy (likely to adversely affect)	NMFS (2012)
Eulachon (*Thaleichthys pacificus*)	ESA	T	No Jeopardy (likely to adversely affect)	NMFS (2012)
Bull trout (*Salvelinus confluentus*)	ESA	T	May affect, but is not likely to adversely affect	USFWS (2011)
Marine Mammals				
30 species in U.S. West Coast waters (Trawl Interaction)	MMPA Cat III		Remote likelihood of/no known incidental mortality or serious injury of marine mammals	
Humpback Whales (*Megaptera novaeangliae*)	ESA	E	No Jeopardy (likely to adversely affect)	NMFS (2012)
Stellar Sea Lions (*Dennochelys coriacea*)	ESA	E	No Jeopardy (likely to adversely affect)	NMFS (2012)
Sei Whales (*Balaenoptera borealis*)	ESA	E	May affect, but is not likely to adversely affect	NMFS (2012)
North Pacific Right Whales (*Eubalaena japonica*)	ESA	E	May affect, but is not likely to adversely affect	NMFS (2012)
Blue Whales (*Balaenoptera musculus*)	ESA	E	May affect, but is not likely to adversely affect	NMFS (2012)
Fin Whales (*Balaenoptera physalus*)	ESA	E	May affect, but is not likely to adversely affect	NMFS (2012)
Sperm Whales (*Physter macrocephalus*)	ESA	E	May affect, but is not likely to adversely affect	NMFS (2012)
Southern Resident Killer Whales (*Orcinus orca*)	ESA	E	May affect, but is not likely to adversely affect	NMFS (2012)
Guadalupe Fur Seals (*Arctocephalus townsendi*)	ESA	T	May affect, but is not likely to adversely affect	NMFS (2012)
Southern Sea Otter (*Enhydra lutris nereis*)	ESA	E	May affect, but is not likely to adversely affect	USFWS (2012)
Reptiles				
Leatherback Sea Turtles (*Dennochelys coriacea*)	ESA	E	No Jeopardy (likely to adversely affect)	NMFS (2012)
Green Sea Turtles (Chelonia mydas)	ESA	T	May affect, but is not likely to adversely affect	NMFS (2012)
Olive Ridley Sea Turtles (Lepidochelys olivacea),	ESA	T	May affect, but is not likely to adversely affect	NMFS (2012)
Loggerhead Sea Turtles (Carretta carretta)	ESA	E	May affect, but is not likely to adversely affect	NMFS (2012)
Critical Habitat for				
Bull trout			May affect, but is not likely to adversely affect	
Green Sturgeon (*Acipenser medirostris*)	ESA		Not likely to adversely modify critical habitat	NMFS (2012)
Eulachon (*Thaleichthys pacificus*)	ESA		Not likely to adversely modify critical habitat	NMFS (2012)
Humpback Whales (*Megaptera novaeangliae*)	ESA		N/A	NMFS (2012)
Stellar Sea Lions (*Dennochelys coriacea*)	ESA		Not likely to adversely modify critical habitat	NMFS (2012)
Leatherback Sea Turtles (*Dennochelys coriacea*)	ESA		Not likely to adversely modify critical habitat	NMFS (2012)
Seabirds				
10 species interact with groundfish gears (2002-2009)				Jannot et. al. (2011)
Common murre (*Uria aalge*)			Interact with trawl fishery	Jannot et. al. (2011)
Leach's storm petrel (Oceanodroma leucorhoa)			Interact with trawl fishery	Jannot et. al. (2011)
Northern fulmar (Fulmarus glacialis)			Interact with trawl fishery	Jannot et. al. (2011)
Short-tailed Albatros (*Phoebastria albatrus*)	ESA	E	No Jeopardy	USFWS (2011)
Marbled Murrelet (*Brachyrampphus marmoratus*)	ESA	E	May affect, but is not likely to adversely affect	USFWS (2011)
California least tern (*Sterna anillarum browni*)	ESA	E	May affect, but is not likely to adversely affect	USFWS (2011)

3.3 Socio-Economic Environment

Amendment 21 to the groundfish plan describes formal allocations of groundfish species and species' complexes for sectors of the groundfish fishery.

Section 3.2 in the 2013-14 Groundfish Harvest Specifications FEIS (PFMC 2012) describes commercial fisheries targeting groundfish and characterizes west coast fishing communities with respect to groundfish fisheries. That information is a useful resource upon which the 2015-16 Groundfish Harvest Specifications EIS is based (PFMC 2015a) is based. The 2014 Groundfish SAFE document (PFMC 2016) contains a series of tables summarizing landings and ex-vessel revenue in groundfish fisheries, landings and revenue by port, and indicators of fishery participation. These data are summarized in the Draft 2015-16 Specs to highlight current fishery trends. Long-term historical landings, revenue, and price data (the full PacFIN database time series) and a recent a 10-year baseline period of 2003-2012 are used in the Draft 2015-16 Specs to characterize fisheries and communities**.**

3.3.1 Commercial Harvest Sector

3.3.1(a) *QS Owners*

As of the start of 2015, there were a total of 99 entities that held widow in a total of 141 QS accounts (Table 3-9). These are the entities that will be most directly impacted by the reallocation of QS. They include 73 entities that own QS accounts and vessels; 4 that own QS accounts, vessels and first receiver licenses; 1 that own QS accounts and first receiver licenses; and 22 that only own QS accounts – as determined by ownership names and addresses on QS account information, vessel LE permits, and first receiver licenses and other publically available information on ownership of corporations.

Table 3-9. Asset holdings of business entities by mix of holdings.

Holdings of Business Entities	Number of Entities	Number of Vessels	Number of First Receiver Licenses	Number of QS Accounts with Widow QS b/	Widow QS
QS Accounts with Widow QS Vessels	73	101	n/a	101	59%
QS Accounts with Widow QS Vessels First Receivers Licenses	3	12	9	16	6%
QS Accounts with Widow QS First Receivers Licenses	1	n/a	5	1	0.1%
QS Accounts with Widow QS	22	n/a	n/a	22	25%
Vessel Only	16	18	n/a	n/a	n/a
First Receiver License Only	17	n/a	27	n/a	n/a
First Receiver and Vessel	2	6	2	n/a	n/a
	134	137	43	**140**	90%

a/ Not included in this table are 9 entities owning first receiver sites but not first receiver licenses QS accounts or vessels; and one entity that owns a trawl LE permit but not a vessel, QS account, or first receiver site or license.
b/ Additionally, there were 11 QS accounts which held no widow QS. Of these 5 were held by individuals with QS accounts and no other fishery assets, 5 by entities that also had first receivers licenses (one of which also had a vessel), and one by an entity that did not have a first receiver license but had a vessel. Inclusion of these accounts would change the number of entities in each row. For example, five entities would be moved from the "First Receiver License Only" row to the QS account and first receiver license row.
Source: Analysis of ownership records from WCR Permit Office, February 23, 2015.

For most QS owners, widow QS holdings are a relatively small amount of their total nonwhiting QS holdings. For Figure 3-2, QS has been converted to revenue equivalents based on 2015 trawl allocations and 2013 prices and fleet average allocation attainment (the percentages of the total QP actually harvested)—except for widow rockfish no downward adjustment was made for low allocation attainment, i.e. it was assumed that widow rockfish would be fully harvested. This approach yields upper end estimates for the expected amounts that widow rockfish might contribute to the shoreside nonwhiting groundfish exvessel values associated with the QS owned by each entity. In this figure, business identifiers are arrayed across the bottom from those that currently have the least total QS to those that have the most. Above each point on the horizontal axis representing a business are plotted three points: (1) the value of the non-widow QS endowment, (2) the value of widow QS (which in many instances is barely visible) and (3) the percent of the value of the total nonwhiting QS represented by widow QS. Because trading of non-widow QS has started, in some cases these equivalents do not reflect the original account endowments. Of a total of 99 entities that continue to hold widow rockfish QS, there are two entities that appear to have transferred nearly all of their QS but are continuing to hold very small amounts of widow QS (over 90 percent of their total holdings of business entities B01 and B02 at the far left hand side of the graph). There are 17 entities for which widow QS comprises between 5 and 11 percent of the attainment adjusted total exvessel value equivalent of the QS remaining in their accounts; 16 for which widow QS comprises between 3 and 5 percent, 46 for which widow QS comprises between 1 and 3 percent, and 18 for which widow QS comprises less than 1 percent. Figure 3-3 provides similar information including both nonwhiting and whiting (at-sea and shorebased). In that figure, widow comprises more than 5 percent of the total for only 5 business entities, between 1 and 3 percent for 51 entities, and less than 1 percent for 34 entities.

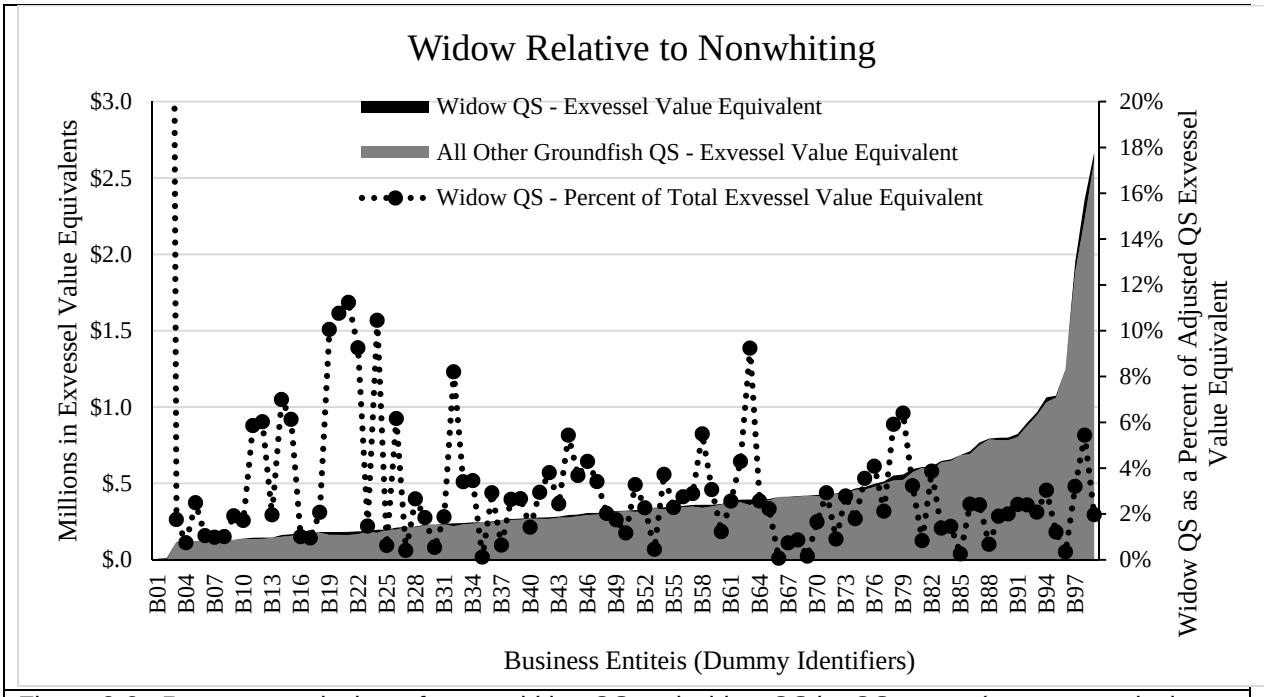

Figure 3-2. Revenue equivalents for nonwhiting QS and widow QS by QS owner (revenue equivalents have been adjusted to account for the fleet's under-harvest of available QP for most species, except for the value of widow QP, 100% of which are assumed caught); and the percent of owners' total QS value equivalent represented by their widow QS holdings (dotted line).

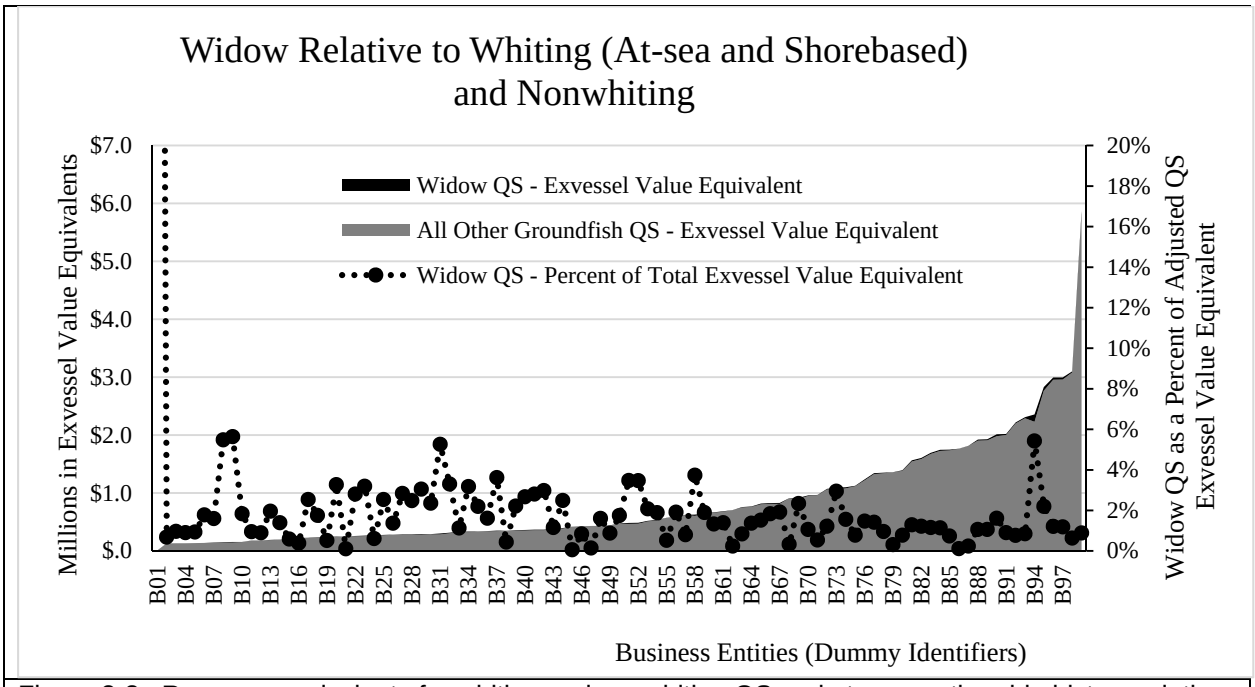

Figure 3-3. Revenue equivalents for whiting and nonwhiting QS and at-sea mothership history relative to widow QS, by QS owner (revenue equivalents have been adjusted to account for the fleet's under-harvest of available QP for most species, except for the value of widow QP, 100% of which are assumed caught); and the percent of owners' total QS value equivalent represented by their widow QS holdings (dotted line).

3.3.1(b) *Vessel Owners*

Of the 99 entities that hold widow QS, 76 are also associated with vessel ownership, and three of these are also first receivers. An additional 16 entities own 18 vessels but do not appear to own any QS (Table 3-9).

The earliest records of foreign landings of widow rockfish were in 1966. U.S. catches of widow rockfish began in 1973 (117 mt), peaking in 1981 (26,938 mt as shown in Figure 3-4). Since the 1981 peak through 2002 there has been a steady decline in the landings of widow. Catches were mostly from commercial fisheries. While the dominant gear type historically has been the midwater trawl, widow rockfish can be harvested with both bottom trawl and midwater gear. Additionally, gear switching is allowed in the trawl fishery (e.g. use of fishpot or longline gear), however, widow rockfish are not generally targeted with commercial gears other than trawl. Widow is taken as bycatch in the midwater trawl whiting fishery and has a targeted species in the nonwhiting midwater trawl fishery. During the early 1990s, bottom trawl catches nearly matched the midwater trawl catches. Since the late 1990s, midwater trawl again became the dominant gear type (He, et al. 2010). This was due in part to restrictions that were imposed in the bottom trawl fishery staring in 2000, to protect overfished rockfish species primarily associated with the shelf. Bottom trawl landings of widow rockfish declined from 19,928 mt in 1999 to 56 mt in 2000 (Table 3-10). At the same time, the reduction in bottom trawl opportunities led to increased participation in the midwater fishery in with landings increasing from 1,721 mt in 1999 to 2,644 mt in in 2000, and the number of vessels participating increasing from 56 in 1999 to 119 in 2000. In 2001, widow rockfish was declared overfished and regulations substantially reducing its harvest were

implemented starting in 2002. After 2002, there were only a few years in which small quantities of widow rockfish were delivered in the nonwhiting midwater trawl fishery and the deliveries of widow in the bottom trawl fishery were generally less than 10 mt. The number of participants in the nonwhiting midwater trawl fishery declined substantially after 2002. To preserve confidentiality, 2002 has been combined with data on the 2003 through 2010 fisheries (Table 3-10). While the averages for the nonwhiting fisheries during this period are generally much lower than the preceding and following periods, they would be substantially lower if 2002 were not included in the averages.

Vessels encounter widow rockfish both as a targeted catch and as bycatch. When it is encountered as bycatch, vessels are still responsible for having the QP to cover that catch. Therefore, access to widow rockfish QP may be important to a vessel's ability to catch other target species. Subsections below provide figures which illustrate the occurrence of widow on whiting midwater, nonwhiting midwater, and bottom trawl tows. However, access to widow QP may be important even for trips on which no widow is taken, if there was a chance that the vessel might have encountered widow rockfish. Table 3-10 puts widow landings in the context of the total landings made on trips on which widow was landed. Comparing the widow landings to total landings shows that widow is a very small portion of the landings on midwater whiting trips, historically made up the vast majority of the landings on midwater nonwhiting trips but contributed a substantially lesser amount to these trips in more recent years, and historically made up about 10 to 20 percent of the landings on bottom trawl trips but contributed only around 1 percent in more recent years. Table 3-11 provides similar picture but with respect to revenue.

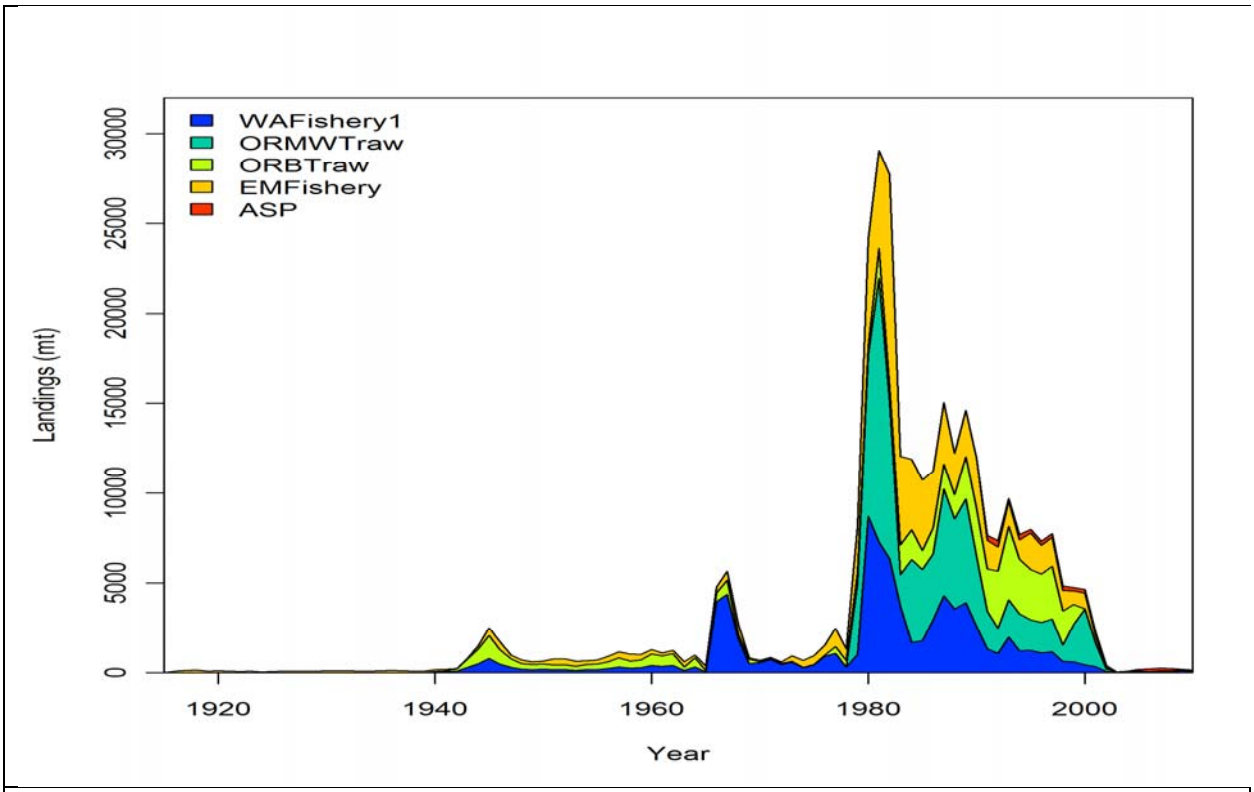

Figure 3-4. Historic commercial catch of widow rockfish by gear/area type -- Washington fishery (WAFishery 1), Oregon midwater trawl (ORMWTraw), Oregon bottom trawl (ORBTraw), California (EM Fishery); and At-sea whiting fishery (ASP) (source: He, et.al., 2011).

Table 3-10. Widow landings (mt), total landings on trips on which widow was landed, number of vessels making widow landings by trawl fishery (midwater whiting, nonmidwater whiting, and bottom trawl), and total number of vessels by trawl fishery, 1994-2014.

	Widow Landings (mt)			Mt of All Spp Landed With Widow (Includes Widow)			Vessels Landing Widow Rockfish			Total Vessels in Sector (Landing and Not Landing Widow Rockfish)		
	Midwater Trawl		Bottom Trawl	Midwater Trawl		Bottom Trawl	Midwater Trawl		Bottom Trawl			
	Whiting	Nonwhiting		Whiting	Nonwhiting		Whiting	Nonwhiting		Whiting	Nonwhiting	Bottom Trawl
1994	241	1,772	4,047	55,976	1,879	33,252	33	51	236	33	52	263
1995	236	1,553	4,711	43,308	1,663	31,919	33	46	222	38	56	245
1996	586	1,231	4,191	67,100	1,554	34,076	37	43	233	41	46	250
1997	163	1,699	4,459	41,709	1,914	28,591	36	51	207	46	57	239
1998	346	535	2,759	59,186	618	24,500	39	30	206	45	31	225
1999	194	1,721	1,928	37,231	1,826	20,014	36	56	199	42	59	223
2000	83	3,644	56	42,424	6,121	7,522	36	119	143	38	122	201
2001	45	1,673	37	29,076	3,153	2,814	26	100	121	33	110	198
2002-2010 (avg)	58	26	6	25,726	58	2,040	31	6	52	34	7	135
2011-2014 (avg)	177	111	54	82,702	377	4,978	25	5	41	33	6	69

Source: PacFIN Answers data query, June 2015.

Table 3-11. Widow landings (exvessel revenue), total exvessel revenue for landings on **trips** that included widow, 1994-2014, inflation adjusted.

	Widow Revenue ($ Millions)			Revenue from West Coast Landings **On Trips** With Widow Rockfish ($ Millions)			Widow as a Percent of All Revenue on Widow Landings		
	Midwater Trawl		Bottom Trawl	Midwater Trawl		Bottom Trawl	Midwater Trawl		Bottom Trawl
	Whiting	Nonwhiting		Whiting	Nonwhiting		Whiting	Nonwhiting	
1994	0.19	1.67	3.81	5.42	1.74	38.68	4%	96%	10%
1995	0.17	1.51	4.70	6.46	1.60	45.10	3%	94%	10%
1996	0.39	1.12	3.83	5.87	1.48	43.97	7%	76%	9%
1997	0.14	1.52	4.00	5.18	1.78	34.93	3%	86%	11%
1998	0.24	0.56	2.97	4.28	0.62	28.42	6%	91%	10%
1999	0.15	1.86	2.06	4.05	1.98	21.65	4%	94%	10%
2000	0.08	4.32	0.08	4.82	7.31	8.58	2%	59%	1%
2001	0.04	2.13	0.05	2.72	4.06	3.95	1%	52%	1%
2002-2010 (avg)	0.05	0.03	0.01	3.91	0.07	2.52	1%	5%	1%
2011-2014 (avg)	0.14	0.09	0.05	21.59	0.31	6.40	1%	21%	1%

Source: PacFIN Answers data query, June 2015

Table 3-12. Widow landings (exvessel revenue), total exvessel revenue for **vessels** that landed widow, 1994-2014, inflation adjusted.

	Widow Revenue ($ Millions)			Revenue from All West Coast Landings **By Vessels** Landing Widow Rockfish			Widow as a Percent of All Revenue by Vessels Landing Widow Rockfish (including non-widow landings)		
	Midwater Trawl			Midwater Trawl		Bottom Trawl	Midwater Trawl		
	Whiting	Nonwhiting	Bottom Trawl	Whiting	Nonwhiting		Whiting	Nonwhiting	Bottom Trawl
1994	0.19	1.67	3.81	16.37	24.11	81.37	1%	7%	5%
1995	0.17	1.51	4.70	20.69	26.69	90.10	1%	6%	5%
1996	0.39	1.12	3.83	17.95	21.37	89.02	2%	5%	4%
1997	0.14	1.52	4.00	18.83	24.24	77.35	1%	6%	5%
1998	0.24	0.56	2.97	13.19	10.32	57.58	2%	5%	5%
1999	0.15	1.86	2.06	15.89	22.65	59.16	1%	8%	3%
2000	0.08	4.32	0.08	16.06	44.25	42.49	0%	10%	0%
2001	0.04	2.13	0.05	10.20	33.08	30.78	0%	6%	0%
2002-2010 (avg)	0.05	0.03	0.01	18.06	1.97	20.74	0%	0%	0%
2011-2014 (avg)	0.14	0.09	0.05	30.28	3.56	31.38	0%	2%	0%

Source: PacFIN Answers data query, June 2015.

In terms of total vessel revenue from all west coast fisheries, widow rockfish accounts for a much smaller portion of vessel income, generally less than 10% of total revenue—not taking into account the importance of widow rockfish for accessing other target species (Table 3-12).

In general, under trawl rationalization higher net profits are being reported for vessels in the shorebased Pacific whiting fishery in contrast to other shoreside trawl fisheries Table 3-13.

Table 3-13. Average per vessel net revenue, taking into account variable and fixed costs (thousands of dollars), 2011-2012.

Vessels participating in the	Thousands of Dollars Exvessel Revenue per Vessel	
	2011	2012
Shoreside Pacific Whiting Fishery	159.3	53.9
Dover Sole, Thornyhead Sablefish (DTS) Fishery	81.3	23.4
Non-whiting, Non-DTS Trawl Fishery	23.0	26.9

Source: Steiner, et. al., 2015

3.3.1(b)(1) Catch Composition in the Nonwhiting Midwater Trawl Fishery

Widow rockfish QP is needed by vessels to cover their directed catch of widow rockfish which is often taken in a strategy that targets pelagic rockfish. The widow rockfish and yellowtail rockfish composition of nonwhiting tows with one of these two species for 1997-2001 and 2011-2014 is shown in Figure 3-5 and Figure 3-6, respectively. The figure for the earlier period indicates that there is likely a substantial capability for targeting and catching widow rockfish with little incidental catch. Forty percent of the tows were 98 percent or more widow rockfish. In the more recent period, there has been less targeting on widow, likely because of the limited availability of widow quota. This targeting may increase given recent increases in the widow ACLs.

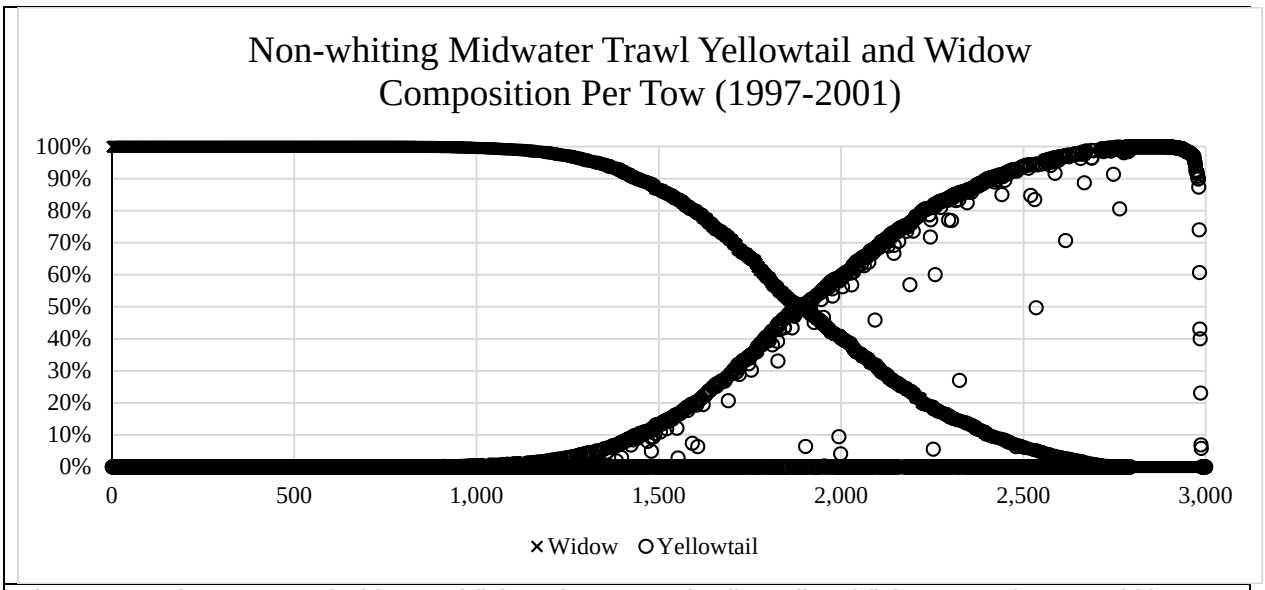

Figure 3-5. The percent of widow rockfish and percent of yellowtail rockfish per tow for non-whiting targeted midwater tows with widow rockfish or yellowtail rockfish (1997-2001) (there were 470 non-whiting midwater tows with neither widow rockfish nor yellowtail rockfish).

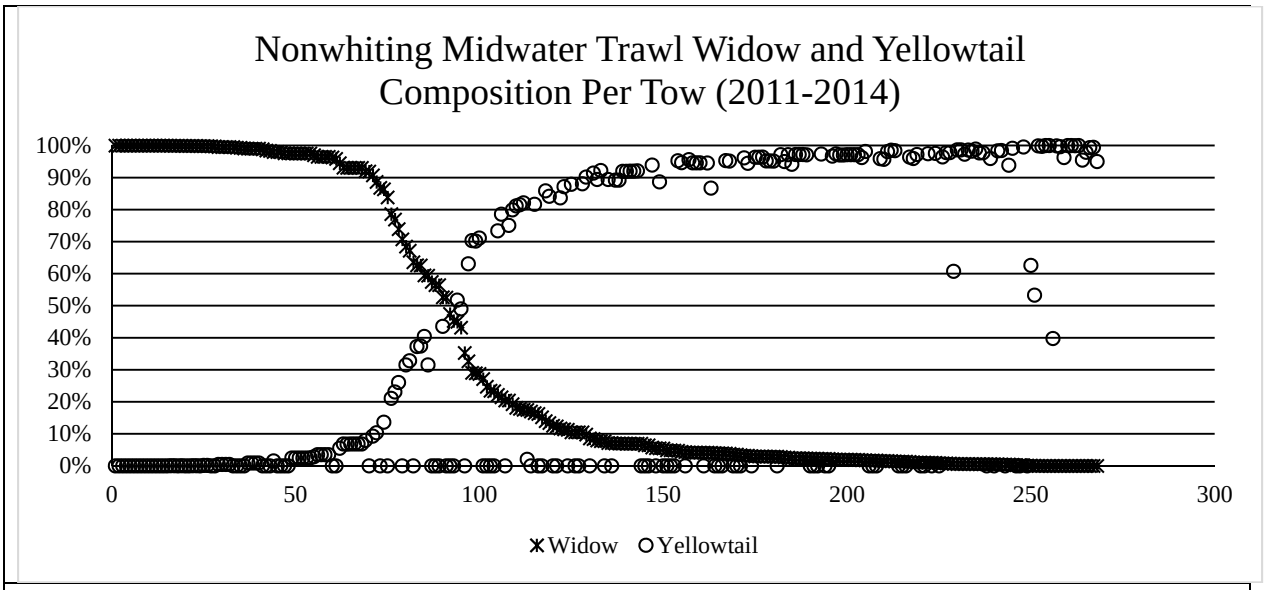

Figure 3-6. The percent of widow rockfish and percent of yellowtail rockfish per tow for non-whiting targeted midwater tows with widow rockfish or yellowtail rockfish (2011-2014).

3.3.1(b)(2) Catch Composition in the Directed Shorebased Whiting Fishery

The percent of widow and yellowtail rockfish caught in whiting directed tows from 1997-2001 is displayed in Figure 3-7. Widow rockfish comprised more than one percent of fewer than 200 of over 8,000 tows in the shorebased whiting fishery.

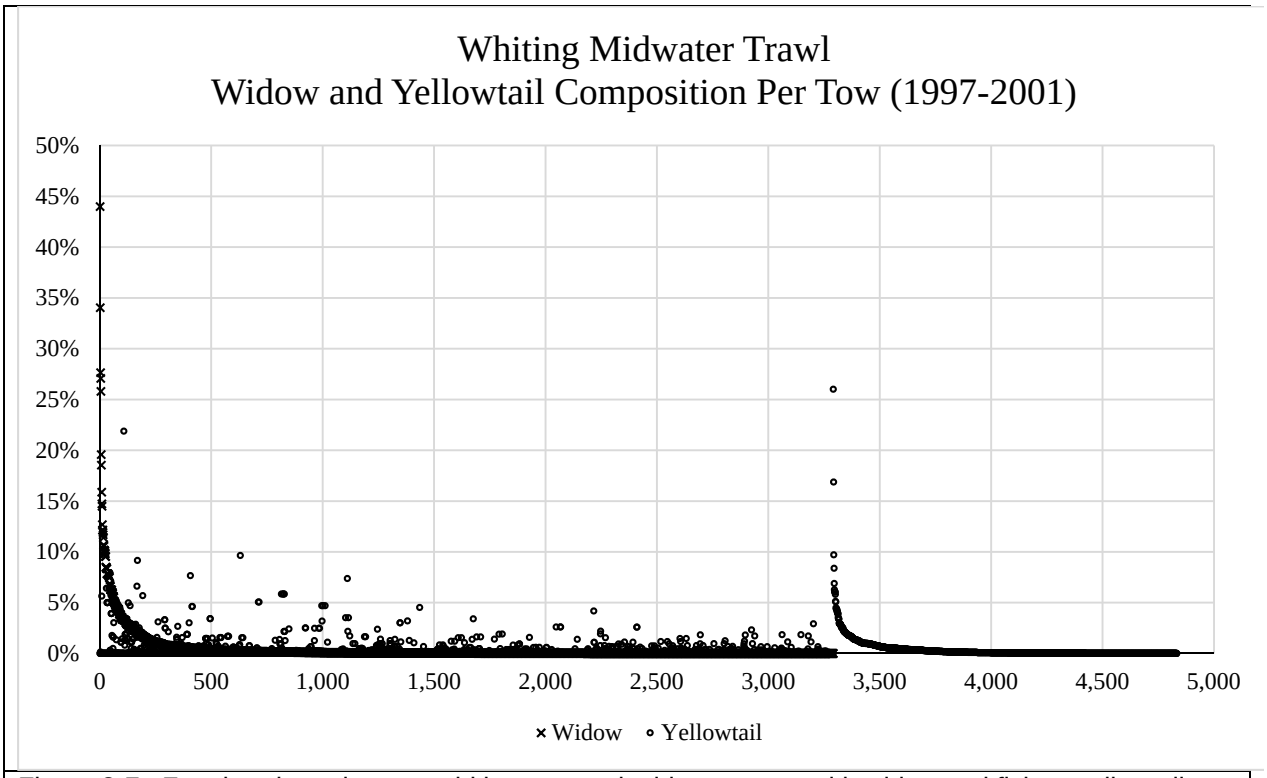

Figure 3-7. For shorebased sector whiting targeted midwater tows with widow rockfish or yellowtail rockfish, the percent of widow rockfish per tow (3,335 whiting tows with no widow rockfish or yellowtail rockfish are not included in this graph).

3.3.1(b)(3) Catch Composition in the Directed Bottom Trawl Fishery

The catch of widow rockfish on bottom tows varies greatly. Figure 3-8 displays the widow and yellowtail rockfish contribution to tows on which one of these two species was caught. The variation in widow rockfish bycatch is influenced by depth, latitude, gear configurations, and targeting strategy. Of the 131,000 bottom trawl tows made from 1997 through 2001, approximately 25% (32,500) had either widow or yellowtail rockfish.

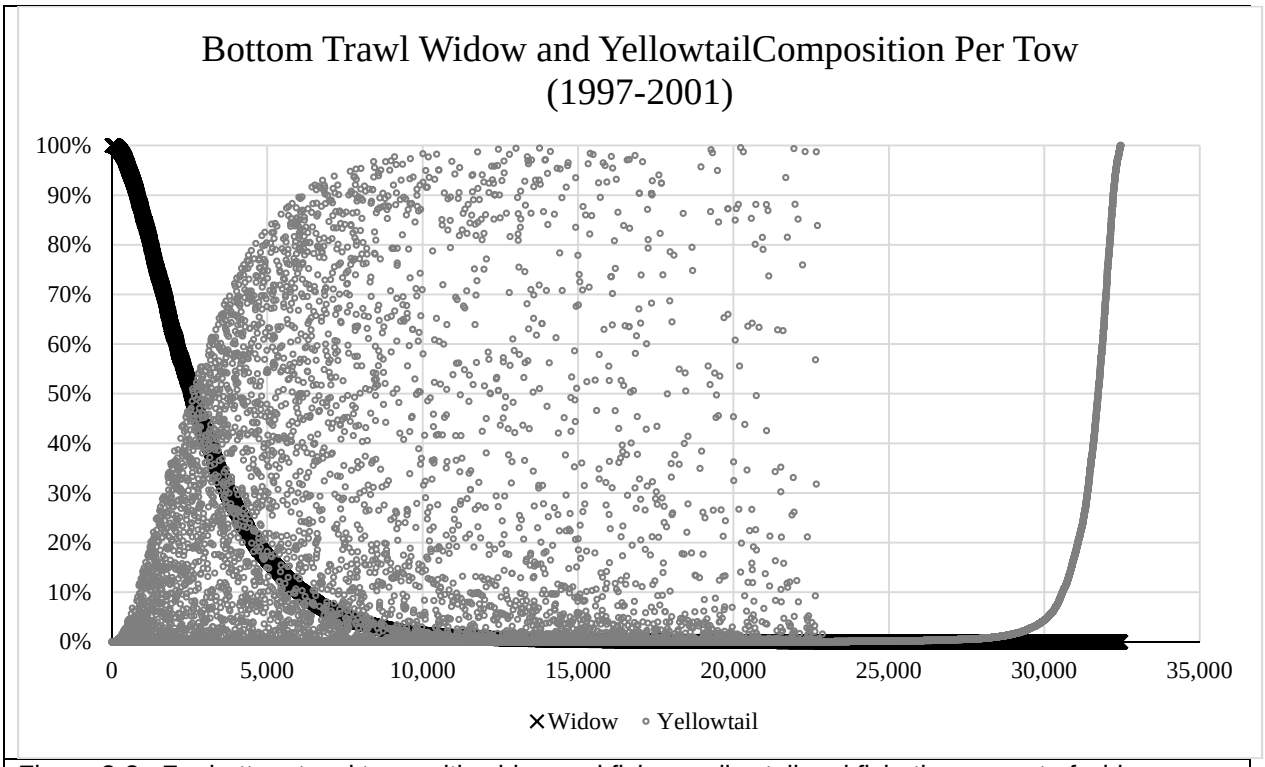

Figure 3-8. For bottom trawl tows with widow rockfish or yellowtail rockfish, the percent of widow rockfish and percent of yellowtail rockfish per tow (131,387 bottom trawl tows with no widow rockfish or yellowtail rockfish are not included in this graph).

3.3.1(c) *Captains and Crew*

Not including the captains, in 2012 trawl vessels in the whiting fishery averaged 2.8 crew members per vessels while those engaged in other groundfish trawl strategies averaged 2.1 crew members per vessel (Steiner, et. al., 2015). A 2012 survey of captain and crew members working on trawl vessels showed that an average age for survey participants of 51.1 years, with 27.2% 61 years of age or older, and likely approaching retirement age. Only 5.8 percent of respondents were less than 30 years of age (Russell, 2014). Over half the fishermen, 63.2 percent have been involved in fishing for over 30 years.

3.3.2 Tribal Sector

The reader is referred to the 2015-2016 biennial specifications EIS (PFMC 2015a) for a description of the tribal groundfish fisheries. For 2015 and 2016, 100 mt of widow rockfish is deducted from the ACLs in each year to account for mortality in tribal fisheries, primarily the Makah tribe, which requires 100 percent retention of rockfish catch.

3.3.3 Recreational Fishery

The reader is referred to the 2015-2016 biennial specifications EIS (PFMC 2015a) for a description of Council area recreational fisheries. Widow rockfish is neither a target nor a substantial bycatch species in the recreational fishery. Widow rockfish incidental catch is monitored but the fishery is not directly

constrained to meet management targets for widow rockfish. Catches from recreational fisheries ranged from less than 2 mt in 2003 to 375 mt in 1982, and has been minimal in recent years (He, et. al., 2011).

3.3.4 First Receivers and Processors

From 2011-2014 there were an average of 25 first receivers that received landings made under the trawl IFQ program; and an average of 36 that received widow rockfish landings from any vessels operating out of any commercial sectors. The following text and tables provide data summaries for first receivers with and without widow QS. Any first receiver with widow QS also received an initial allocation of QS for all other IFQ species. They are labeled "First Receivers with Widow QS" because of the primary focus of this document. There are some first receivers that received an initial allocation of whiting QS and no other QS species that are not included in the breakouts labeled "First Receivers with Widow QS." Additionally, in 2014, with the end of the QS trading moratorium for all species except widow in 2014, there may be some first receivers that have acquired QS more recently that would also not show up as "First Receivers with Widow QS." Those who were initially allocated only whiting QS or acquired their QS after trading started would not be impacted by the aggregate nonwhiting control limits.

The following two tables illustrate first receivers' dependence on widow rockfish and groundfish trawl fisheries. Table 3-14 illustrates first receivers' recent dependence on widow rockfish landings (not including the additional value of widow rockfish catch in leveraging landings of other species). In the table, first receivers are divided into two groups: (1) those that are controlled by businesses that have widow rockfish QS in their QS accounts, and (2) first receivers that are not controlled by businesses that have widow rockfish QS in their QS accounts. Preliminary analysis indicates there are four first receivers in group 1. Of these, the table shows three received landings of widow rockfish each year during 2011 – 2014. The number of first receivers in group 2 that received widow rockfish landings increased from 24 in 2011 to 39 in 2014. In general, the first receivers in Group 1 were relatively more dependent on landings of widow rockfish than those in Group 2. However in 2014 both groups saw large increases in the ratio of total widow rockfish purchases to purchases of all species. The downward trends in first receivers receiving IFQ deliveries may indicate some consolidation under the IFQ program, however, before reaching such a conclusion this trend would need to be explored further, in part, by comparing it to the pre-IFQ program trends.

Table 3-14. First receivers' annual purchases of widow rockfish and all other species, 2011-2014 (inflation adjusted exvessel value, thousands of 2014 dollars).

	First Re-ceiver Count	Widow Rockfish					All Other Species					Total all Species
		Midwater Trawl		Bot-tom Trawl	Other Gears	Total	Midwater Trawl		Bottom Trawl	Other Gears	Total	
		Whiting	Non-whiting				Whiting	Non-whiting				
First Receivers With Widow QS b/												
2011	3	69	a	11	a/	81	14,575	54	15,869	63,781	94,279	94,360
2012	3	45	10	29	a/	84	13,315	367	16,018	64,045	93,747	93,830
2013	3	93	232	44	a/	370	16,993	547	18,545	85,004	121,090	121,460
2014	3	170	264	46	a/	480	14,840	522	16,343	72,659	104,363	104,843
First Receivers Without Widow QS c/												
2011	24	31	11	5	a/	48	8,845	258	7,709	68,853	85,665	85,713
2012	28	47	a/	16	a/	63	8,056	121	6,587	71,245	86,010	86,073
2013	36	34	a/	7	a/	49	9,888	194	6,590	92,894	109,566	109,615
2014	39	81	36	28	a/	150	9,177	104	6,175	56,260	71,716	71,866

a/ Less than $5,000.
b/ First recievers that received an initial allocation of nonwhiting QS.
c/ First recievers that did not receive an initial allocation of nonwhiting QS

Table 3-15 illustrates first receivers' recent dependence on landings of all IFQ species compared with total receipts of all species. In this table, landings of "IFQ Species" include only those identified as IFQ landings on fish tickets. Note that the counts of first receivers receiving IFQ landings in Group 1 (those that are controlled by businesses that have widow rockfish QS in their QS accounts), and Group 2 (first receivers that are not controlled by businesses that have widow rockfish QS in their QS accounts) are different than in the prior table. The differences in the upper panels are because there is one first receiver In Group 1 that received IFQ landings but did not land widow rockfish. The differences between the lower panels of the two tables are due to first receivers that received widow rockfish that were not IFQ landings (i.e., landings of received from other fishery sectors and EFPs). In general, the first receivers in Group 1 were relatively more dependent on IFQ landings of whiting and non-whiting IFQ than those in Group 2. However in 2014, a somewhat smaller number of first receivers in Group 2 saw lower total landings but large increases in the ratios of purchases both IFQ whiting landings and IFQ non-whiting landings to their total purchases of all species.

Figure 3-9 compares dependence on IFQ landings with shares of total coastwide exvessel revenues for 22 first receivers that received IFQ landings during 2014. To avoid disclosing confidential information, each point in the graph represents an average of three, or in one case, four first receivers' data. The figure highlights one point (upper left) representing four first receivers that each had very high (~100 percent) dependence on IFQ purchases but very low shares of total coastwide revenues; and one point (lower right) representing three first receivers that had relatively low (~16 percent) average dependence on IFQ landings but very high shares of total coastwide revenues. The remaining 15 first receivers that received IFQ landings in 2014 are clustered near the origin of the figure, with IFQ landings dependence ratios below 25 percent and average coastwide landings shares under 3 percent.

Table 3-14. First receivers' annual purchases of widow rockfish and all other species, 2011-2014 (inflation adjusted exvessel value, thousands of 2014 dollars).

	First Re-ceiver Count	Widow Rockfish					All Other Species					Total all Species
		Midwater Trawl		Bot-tom Trawl	Other Gears	Total	Midwater Trawl		Bottom Trawl	Other Gears	Total	
		Whiting	Non-whiting				Whiting	Non-whiting				
First Receivers With Widow QS b/												
2011	3	69	a	11	a/	81	14,575	54	15,869	63,781	94,279	94,360
2012	3	45	10	29	a/	84	13,315	367	16,018	64,045	93,747	93,830
2013	3	93	232	44	a/	370	16,993	547	18,545	85,004	121,090	121,460
2014	3	170	264	46	a/	480	14,840	522	16,343	72,659	104,363	104,843
First Receivers Without Widow QS c/												
2011	24	31	11	5	a/	48	8,845	258	7,709	68,853	85,665	85,713
2012	28	47	a/	16	a/	63	8,056	121	6,587	71,245	86,010	86,073
2013	36	34	a/	7	a/	49	9,888	194	6,590	92,894	109,566	109,615
2014	39	81	36	28	a/	150	9,177	104	6,175	56,260	71,716	71,866

a/ Less than $5,000.
b/ First recievers that received an initial allocation of nonwhiting QS.
c/ First recievers that did not receive an initial allocation of nonwhiting QS

Table 3-15. First receivers' annual purchases of IFQ landings and all other species[a/], 2011-2014 (millions of inflation-adjusted 2014 dollars).

	First Receiver Count	IFQ Species		All Other Species Categories	Total All Species
		Whiting	Non-Whiting		
First Receivers with Widow QS that Received IFQ Species					
2011	4	14.1	21.8	68.8	104.7
2012	4	13.0	20.6	70.8	104.3
2013	4	16.9	21.0	92.5	130.3
2014	4	14.5	19.1	77.3	110.9
First Receivers without Widow QS that Received IFQ Species					
2011	23	8.7	12.8	80.0	101.4
2012	22	7.9	8.9	68.8	85.7
2013	20	9.9	8.0	84.1	101.9
2014	18	9.1	8.5	51.8	69.4

a/ Includes landings of species from non-PFMC areas.

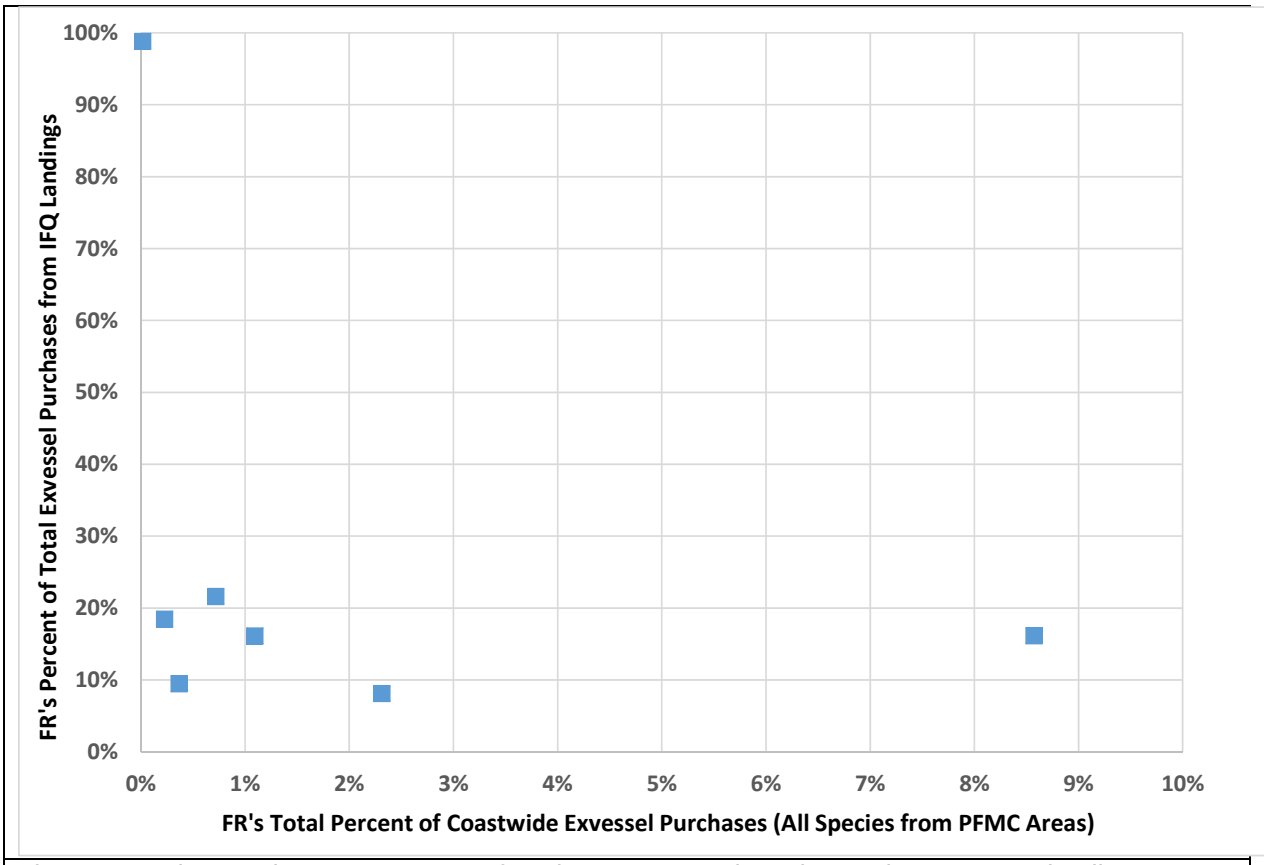

Figure 3-9. First receivers' percentage of total 2014 exvessel purchases that were IFQ landings compared with the percentage of 2014 coastwide purchases of all species from PFMC areas by all first receivers (Note: Points represent clusters of three or four FRs in order to preserve confidentiality).

3.3.5 Observer Providers and Other Support Sectors

Participants in the trawl rationalization program are required to have observers on their vessels during all fishing activities and a catch monitor must be present to observe offloading at first receivers. Observers and catch monitors are generally provided on contract through observer companies. In recent years, two companies have provided most of these services. Since 2015, there has also been an electronic monitoring exempted fishing permit program in place, with one company providing services.

In addition to observer providers there are numerous other companies that provide materials and labor for both harvesting and processing operations. Including at least 9 entities that provide sites at which other businesses locate their fish receiving operations (based on an analysis of license and ownership records provided by the NMFS West Coast Region Limited Entry Office, February, 2015).

3.3.6 Fishing Communities

The following five tables illustrate West Coast communities' dependence on landings of widow rockfish and other species. Data confidentiality limits the ability to report landings of widow rockfish for certain communities in Washington and also in California and Southern Oregon for some years. Therefore in

such cases, data is reported only for larger regional areas in order to avoid disclosing potentially confidential information.

Table 3-16 and Table 3-17 show average annual landings of widow rockfish and all other species by community (port areas) in terms of metric tons the during recent past (2011-2014 in Table 3-16) and more distant past (1996-1998 in Table 3-17). Table 3-18 and Table 3-19 report landings for those same corresponding periods but in terms of inflation-adjusted exvessel revenue. Comparing Table 3-16 and Table 3-17 shows while average total annual landings weights for the aggregated region from Coos Bay to Morro Bay were very similar between the two periods, although there were many fewer vessels and first receivers participating and also many fewer that landed widow rockfish during 2011-2014. In the Astoria-Newport and Bellingham-Ilwaco regions, total volumes landed were also larger on average during the latter period, although the total numbers of vessels and first receivers participating in the two regions were fairly similar during both periods. The average numbers of participating vessels and first receivers and their widow rockfish landings were considerably lower during the more recent period in all three regions.

Comparing Table 3-18 and Table 3-19 shows total inflation-adjusted annual exvessel revenues were considerably higher on average in 2011-2014 than in 1996-1998 in all three regions. Also, since exvessel revenues from widow rockfish landings were substantially lower in the more recent period in all three regions, total community dependence on widow rockfish landings was also lower. Table 3-18 shows dependence on revenue from widow rockfish landings to be very low during 2011-2014 in all three aggregated regions.

Instead of comparing communities' landings of widow rockfish with landings of all species, Table 3-20 shows average total IFQ landings revenues during 2011-2014 by community and aggregated region. Again, confidentially limits the ability to report IFQ landings for individual communities in Washington and also south of Newport Oregon. The table indicates total landings of both whiting and nonwhiting IFQ species are particularly concentrated in communities in the Astoria-Newport and Bellingham-Ilwaco regions, however nonwhiting IFQ landings are also very important in the Coos Bay-Morro Bay region.

Table 3-16. Landings of widow rockfish and all other species from PFMC areas by community during 2011-2014, annual averages (mt).

Communities	Widow Rockfish						All Other Species						Total all Species
	Vessel Count	First Receiver Count	Midwater Trawl		Bottom Trawl	Other Gears	Vessel Count	First Receiver Count	Midwater Trawl		Bottom Trawl	Other Gears	
			Whiting	Non-nwhiting					Whiting	Non-whiting			
Bellingham	confidential		confidential				66	19	a/	56	443	772	
Seattle							52	11	a/	a/	a/	165	
North Washington Coast							83	16	a/	a/	a/	642	
Grays Harbor							304	39	18,005	49	94	31,364	
Ilwaco-Willapa Bay							246	25	2,924	19	882	9,377	
Bellingham-Ilwaco Total	12	4	25	12	9	a/	539	105	20,929	123	1,419	42,320	64,838
Astoria	29	4	53	72	31	a/	257	36	32,837	765	6,728	30,117	70,602
Tillamook	-	-	a/	a/	a/	a/	143	32	a/	a/	a/	558	558
Newport	22	5	79	50	1	a/	362	78	34,009	137	1,299	12,338	47,912
Astoria - Newport Total	41	9	132	123	32	a/	643	120	66,846	902	8,027	43,012	119,072
Coos Bay	confidential		confidential				355	71	385	a/	1,881	13,317	
Brookings							206	33	a/	a/	1,179	3,688	
Crescent City							108	18	a/	a/	157	5,145	
Eureka							175	48	a/	a/	2,062	4,008	
Fort Bragg							311	55	a/	a/	1,351	2,654	
Bodega Bay							256	64	a/	a/	a/	1,711	
San Francisco							462	140	a/	a/	417	11,143	
Monterey							339	78	a/	a/	374	30,337	
Morro Bay							201	48	a/	a/	295	2,283	
Coos Bay - Morro Bay Total	44	21	1	b	3	a/	1,679	381	385	a/	7,716	74,285	82,390

a/ Less than 0.5 mt.

Table 3-17. Landings of widow rockfish and all other species from PFMC areas by community during 1996-1998, annual averages (mt).

Communities	Widow Rockfish						All Other Species						Total all Species
	Vessel Count	First Receiver Count	Midwater Trawl		Bottom Trawl	Other Gears	Vessel Count	First Receiver Count	Midwater Trawl		Bottom Trawl	Other Gears	
			Whiting	Nonwhiting					Whiting	Nonwhiting			
Bellingham							55	16	62	a/	2,178	358	
Seattle							67	22	a/	a/	a/	411	
North Washington Coast	confidential		confidential				136	13	a/	a/	975	574	
Grays Harbor							284	28	7,168	a/	2,030	7,183	
Ilwaco-Willapa Bay							218	33	2,807	a/	389	5,420	
Bellingham-Ilwaco Total	41	12	52	b	755	19	585	103	10,037	a/	5,573	13,946	30,381
Astoria	65	7	149	366	634	1	244	18	32,552	62	7,090	5,333	46,188
Tillamook	9	4	a/	14	10	1	141	26	1	1	202	825	1,053
Newport	91	8	147	568	701	7	409	69	41,005	21	3,231	5,837	51,517
Astoria - Newport Total	152	18	296	947	1,346	9	707	101	73,557	84	10,524	11,995	98,758
Coos Bay	71	10	1	5	623	19	302	58	55	7	4,848	3,775	9,333
Brookings	52	7	b	32	164	8	217	31	a/	2	1,092	3,548	4,845
Crescent City	65	21	15	45	190	3	274	56	4,596	28	2,175	5,189	12,241
Eureka	79	20	3	81	152	16	252	54	362	11	3,873	3,092	7,591
Fort Bragg	54	15	a/	13	199	3	271	53	a/	a/	3,019	2,618	5,853
Bodega Bay	39	19	a/	4	148	25	337	87	a/	12	903	1,262	2,355
San Francisco	41	24	a/	30	114	23	841	233	a/	108	2,409	9,190	11,875
Monterey	28	14	a/	a/	67	14	590	119	a/	6	2,254	22,664	25,005
Morro Bay	55	13	a/	a/	46	7	409	80	a/	a/	2,219	1,221	3,493
Coos Bay - Morro Bay Total	434	109	19	210	1,703	118	2,532	535	5,013	175	22,792	52,559	82,590

a/ Less than 0.5 mt.

Table 3-18. Landings of widow rockfish and all other species from PFMC areas by community during 2011-2014, annual averages (inflation adjusted exvessel value, thousands of 2014 dollars).

Communities	Widow Rockfish						All Other Species						Total all Species
	Vessel Count	First Receiver Count	Midwater Trawl		Bottom Trawl	Other Gears	Vessel Count	First Receiver Count	Midwater Trawl		Bottom Trawl	Other Gears	
			Whiting	Nonwhiting					Whiting	Nonwhiting			
Bellingham							66	19	a/	66	572	4,672	
Seattle							52	11	a/	a/	a/	1,466	
North Washington Coast	confidential		confidential				83	16	a/	a/	a/	3,238	
Grays Harbor							304	39	5,107	24	75	51,637	
Ilwaco-Willapa Bay							246	25	807	20	1,324	26,015	
Bellingham-Ilwaco Total	12	4	22	12	10	a/	539	105	5,914	111	1,971	87,027	95,068
Astoria	29	4	51	78	32	a/	257	36	8,873	396	8,268	27,360	45,057
Tillamook	-	-	a/	a/	a/	a/	143	32	a/	a/	a/	3,383	3,383
Newport	22	5	69	49	a	a/	362	78	9,046	36	2,020	37,089	48,309
Astoria - Newport Total	41	9	120	127	32	a/	643	120	17,919	431	10,288	67,832	96,750
Coos Bay							355	71	89	a/	2,695	33,580	
Brookings							206	33	a/	a/	1,767	14,806	
Crescent City							108	18	a/	a/	222	20,322	
Eureka							175	48	a/	a/	3,171	17,850	
Fort Bragg	confidential		confidential				311	55	a/	a/	2,247	12,184	
Bodega Bay							256	64	a/	a/	a/	11,529	
San Francisco							462	140	a/	a/	911	29,948	
Monterey							339	78	a/	a/	603	20,675	
Morro Bay							201	48	a/	a/	526	7,922	
Coos Bay - Morro Bay Total	44	21	a/	a/	a/	a/	1,679	381	89	a/	12,142	168,816	181,047

a/ Less than $5,000.

Table 3-19. Landings of widow rockfish and all other species from PFMC areas by community during 1996-1998, annual averages (inflation adjusted exvessel value, thousands of 2014 dollars).

	Widow Rockfish						All Other Species						
			Midwater Trawl						Midwater Trawl				
Communities	Vessel Count	First Receiver Count	Whiting	Nonwhiting	Bottom Trawl	Other Gears	Vessel Count	First Receiver Count	Whiting	Nonwhiting	Bottom Trawl	Other Gears	Total all Species
Bellingham							55	16	12	a/	1,959	1,497	
Seattle							67	22	a/	a/	a/	1,936	
North Washington Coast	confidential		confidential				136	13	a/	a/	1,165	1,929	
Grays Harbor							284	28	747	a/	2,443	24,188	
Ilwaco-Willapa Bay							218	33	279	a/	453	14,035	
Bellingham-Ilwaco Total	41	12	34	a/	697	9	585	103	1,038	a/	6,020	43,584	51,382
Astoria	65	7	113	345	602	a	244	18	3,246	44	8,896	15,273	28,519
Tillamook	9	4	a	12	9	a	141	26	a/	a/	258	2,070	2,349
Newport	91	8	90	518	651	8	409	69	3,382	21	4,563	16,632	25,865
Astoria - Newport Total	152	18	203	875	1,263	10	707	101	6,629	66	13,717	33,974	56,735
Coos Bay	71	10	a/	a/	577	19	302	58	7	5	6,924	9,492	17,024
Brookings	52	7	a/	29	158	10	217	31	a/	a/	1,734	9,229	11,160
Crescent City	65	21	16	40	180	a/	274	56	481	41	3,364	13,829	17,950
Eureka	79	20	a/	75	153	21	252	54	58	13	5,605	10,227	16,152
Fort Bragg	54	15	a/	12	189	a/	271	53	a/	a/	4,096	7,159	11,456
Bodega Bay	39	19	a/	a/	143	36	337	87	a/	14	1,154	4,952	6,299
San Francisco	41	24	a/	30	118	30	841	233	a/	144	3,102	26,922	30,345
Monterey	28	14	a/	a/	67	16	590	119	a/	a/	2,684	13,440	16,206
Morro Bay	55	13	a/	a/	52	10	409	80	a/	a/	2,986	5,443	8,490
Coos Bay - Morro Bay Total	434	109	20	196	1,637	150	2,532	535	545	221	31,648	100,692	135,110

a/ Less than $5,000.

Table 3-20. IFQ landings and landings of all species from PFMC areas by community during 2011-2014, annual averages (inflation adjusted exvessel value, thousands of 2014 dollars).

Communities	IFQ Landings							All Species Combined		
	Vessel Count	First Receiver Count	Midwater Trawl		Bottom Trawl	Other Gears	Total IFQ Landings	Vessel Count	First Receiver Count	Total All Species
			Whiting	Nonwhiting						
Bellingham	confidential		confidential					66	19	
Seattle								52	11	
North Washington Coast								83	16	
Grays Harbor								304	39	
Ilwaco-Willapa Bay								246	25	
Bellingham - Ilwaco Total	17	5	5,936	113	1,969	1,207	9,225	539	105	95,068
Astoria	34	5	8,924	330	8,294	770	18,318	257	36	45,057
Tillamook	-	-	a/	a/	a/	a/	a/	143	32	3,383
Newport	24	4	9,115	57	1,968	1,131	12,271	362	78	48,309
Astoria - Newport Total	47	8	18,039	387	10,262	1,901	30,589	643	120	96,750
Coos Bay	confidential		confidential					355	71	
Brookings								206	33	
Crescent City								108	18	
Eureka								175	48	
Fort Bragg								311	55	
Bodega Bay								256	64	
San Francisco								462	140	
Monterey								339	78	
Morro Bay								201	48	
Coos Bay - Morro Bay Total	57	21	90	a/	11,938	1,719	13,746	1,679	381	181,053

3.3.7 Government Entities

The National Marine Fisheries Service administers the trawl rationalization program and is the main governing body that will be directly impacted by an action alternative. No implementing actions are anticipated to be necessary by the coastal state fishery management agencies (WDFW, ODFW, and CDFW) and tribes, though there may be some minor indirect impacts on the states, as discussed in Chapter 4.

Chapter 4 Impacts on the Affected Environments

4.1 Direct and Indirect Impacts to the Physical Environment, including Essential Fish Habitat and Ecosystem

4.1.1 No Action (Alternative 1)

Under the No Action Alternative, impacts to the physical environment by the trawl fishery will continue, with its activities modified by other past, present, and reasonably foreseeable future actions (cumulative impacts) described in Section 4.5. Under the no action alternative, impacts to the physical environment would be expected with changes in gear used, total catch, changes in catcher per unit effort, or area fished (including opening new areas to fishing).

No substantial changes are expected with respect to the gears used. Widow rockfish is generally harvested by midwater trawl gear but is sometimes harvested in substantial amounts with bottom trawl gear, as described in Section 3.3.1(b). Trawl gears impact physical habitat primarily through bottom contact by the trawl doors and the sweep of the trawl net (NRC, 2002). Nets are generally designed so that the body of the net and codend fly above the bottom to minimize drag and net wear. Midwater trawl is the gear most likely to be used to target on widow rockfish (Table 3-1). Regulation require the midwater trawl gear be very lightly constructed such that contact with hard structures would likely cause damage to the net. Because of this, fishermen generally try to avoid contact with hard habitat structures but there may be more incidental contact with soft bottom. Bottom trawl gear is designed to withstand contact with soft and hard substrates.

With the increasing ACLs for widow rockfish and yellowtail rockfish, there have been increases in the amount of targeting of pelagic rockfish with midwater trawl gear in more recent years. Previously, when higher harvest levels of widow rockfish were allowed, widow rockfish was targeted with both midwater and bottom trawl gear (Figure 3-4 and Table 3-10). Substantial targeting of widow rockfish with bottom trawl gear has not occurred recently and is not expected in the near future. Widow rockfish are generally found on the shelf in the water column associated with hard habitat structures of the ocean shelf. These areas are currently closed to bottom trawling (within the boundaries of rockfish conservation areas). Under the individual accountability provided by the trawl rationalization program, the RCAs may be re-opened to bottom trawl gear at some time in the future; however, the amount of bottom trawling over hard habitat on the shelf is expected to remain low so long as there are highly constraining overfished species that might be caught in larger numbers on the shelf. Because of these regulations and disincentives it is unlikely that there will be substantial use of bottom trawl gear to harvest widow rockfish until overfished shelf rockfish species re rebuilt.

ACLs and the associated trawl allocations of widow rockfish and yellowtail rockfish are increasing further in 2015 and 2016 and those increases will likely result in increased fishing and associated impacts to the physical environment. These regulatory changes, along with other regulatory changes for the 2015-

2016 period, are covered as part of the actions taken in the biennial specifications (PFMC, 2015a). Harvest levels are expected to continue to fluctuate in future years based on natural stock and environmental fluctuations and because of uncertainties in stock assessments. As these harvest levels fluctuate impacts to the physical environment will fluctuate.

On the one hand, increasing ACLs could increase the total amount of gear interaction with the physical environment. On the other hand, to the degree that CPUE increases with increasing abundance, the total amount of effort, and therefore total amount of gear impacts, may increase less than the increases in the ACLs.

The main impact mechanism of concern in this action is the potential for geographic reallocation of harvest. Under the No Action Alternative, management under the trawl rationalization program would continue. The Amendment 20 evaluation of the trawl rationalization program determined that, over the long term, fishery and market conditions will largely determine the geographic distribution of harvest within the limits of the management context and that these conditions would not be altered by initial allocations. Quota is expected to be fished out of ports in which the highest profits can be generated. Such profits are expected to be a function of

- Port costs (e.g. fuel prices and dock space)
- Prices offered by buyers
- Distance to fishing grounds (affecting operation costs, risk, etc.)
- CPUE on the fishing grounds
- Species mixes on the fishing grounds (including probability of encountering overfished species)

Under this system, the geographic redistribution of harvest is expected to be limited by properties of the natural and socio-economic system. For example, localized depletion of a resource would encourage redistribution of effort to areas of the coast which have been fished less intensely, evening out the distribution of harvest. Excess supply of fish to a particular port might drive local exvessel fish prices down, or excess demand for port services might drive prices for those services up—encouraging redistribution of effort to other areas. Allowing the system to fluctuate in response to these environmental and price signals allows the fishery as a collective endeavor to take into account more information than would be possible through government data collection and direct management. However, at the same time, sideboards have been established to keep geographic fluctuation within bounds necessary to address conservation concerns, and fishery performance is monitored in order to determine whether additional limits are needed.

Two of the primary side-boards on geographic variation of harvest are stock units and protected habitat areas. Latitudinal management lines separate some stock units, and quota allocated for the stock in one area may not be used to harvest a different stock unit of the same species in another area. This ensures that any geographic concentration of harvest does not harm long term stock productivity and also achieves a measure of distribution of impacts across the physical environment. Additionally, the Council has conducted an evaluation of essential fish habitat for all of its fishery management plans, including consideration of those habitat areas which might be of particular concern (see Section 3.1.3(b)). As a result of that process, conservation measures have been established for habitat areas where it has been determined that additional protection is needed (see Section 3.1.3(c)).

One indicator of the likely geographic distribution of harvest is the geographic distribution of those who own the widow QS. Because the location of the QS owner does not determine where the associated QP will be fished, the utility of QS owner locations is limited. The nature of the relationship between QS owner location and likely fishing areas is described further in the following section on the impacts of the alternatives on the physical environment. Despite this shortcoming, an evaluation of the fluctuation in the geographic distribution of QS through market transactions across time provides an indicator of the degree of significance of changes in geographic distribution of QS imposed through direct reallocation under one of the action alternatives. Widow QS has been under a moratorium, therefore data on yellowtail QS transfers (a species often caught with widow rockfish) is provided to illustrate the amount of geographic shift that of that has occurred during the first year that trading has been allowed (Table 4-1). The geographic shift in the distribution of yellowtail rockfish QS was relatively small. For comparison Table 4-1 also shows the amount of between year fluctuation in the geographic distribution of yellowtail rockfish landings, comparing 2013 to 2014. These data show that despite a QS trading moratorium being in effect there was substantial fluctuation in the geographic distribution of landings. The harvest of widow rockfish over this same period has been more stable in the regions displayed in Table 4-2. The data in Table 4-2 was aggregated by regions to preserve confidentiality. Within those regions there was a swing of about 20 percent of the total coastwide landings from one port to another (not shows in the table). Thus, despite the fact that QS for widow rockfish is under an ongoing trading moratorium there has still been a substantial geographic fluctuation in the distribution of harvest.

Table 4-1. Yellowtail QS distribution of harvest in 2013 and 2014 and QS allocations based on registered community of residence as of the start of QS trading January 1, 2014 and changes in QS distribution as of the start of 2015 (whiting and nonwhiting landings).[a/]

Communities	2013		2014		Initial QS Allocations Balances a Start of 2014a/	Changes in Allocations QS Change (Percent Change) As of Start of 2015
	Share of Landing Shares	2013 Mt Landed	Share of Landings	Mt Landed		
Bellingham	38%	143	21%	241	1.7%	0.0%
Seattle					16.2%	1.3%
Grays Harbor					1.4%	0.0%
Ilwaco-Willapa Bay					3.8%	0.0%
Astoria	62%	234	79%	899	9.8%	0.0%
Tillamook					3.5%	0.0%
Newport					15.9%	-1.6%
Coos Bay	0%	1	2%	1	13.3%	0.0%
Brookings					4.2%	0.0%
Crescent City					0.4%	0.8%
Eureka					1.8%	0.0%
Fort Bragg	None	None			2.5%	0.0%
Bodega Bay			None	None	0.5%	0.0%
San Francisco					2.2%	0.0%
Monterey					3.5%	-1.4%
Morro Bay					2.1	1.4%
Other Non-Coastal	N/A	N/A	N/A	N/A	9.1	0.4%

a/ A trading moratorium was in place from 2011 through the end of 2013. During that period two QS accounts changed hands in response to court orders. Otherwise, QS did not move between account holders during this period.

Table 4-2. Widow rockfish distribution of harvest in 2013 and 2014 (whiting and nonwhiting landings).[a/]

Communities	2013		2014	
	Share of Landing Shares	2013 Mt Landed	Share of Landings	Mt Landed
Bellingham	16%	40	15%	91
Seattle				
Grays Harbor				
Ilwaco-Willapa Bay				
Astoria	82%	198	85%	530
Tillamook				
Newport				
Coos Bay	2%	5	0%	3
Brookings				
Crescent City				
Eureka				
Fort Bragg				
Bodega Bay				
San Francisco				
Monterey				
Morro Bay				
Other Non-Coastal	N/A	N/A	N/A	N/A

a/ The redistribution of landings among ports within the region is more substantial than the between region changes, with a **swing of up to about 20 percent** of the landings from one port to another.

This action will open no new areas to fishing. With geographic relocation, an effort increase in one area (and increases in associated impacts to the physical environment) would be largely offset by effort decreases in other areas (and decreases in associated impacts to the physical environment) such that total habitat impacts will not likely change with changes in geographic distribution.

The Council's groundfish FMP provides for monitoring and response to adverse impacts to habitat. Amendment 19 added a provision for ongoing data collection pertaining to habitat impacts and a five year review of its habitat policies.

Summary of Impacts

Under the No Action Alternative, physical impacts to the environment are expected to fluctuate with changing widow and yellowtail rockfish ACLs and changing geographic distributions of harvest. ACLs for widow and yellowtail rockfish have increased for the 2015-2016 management period and may increase further or decrease in the future. Geographic fluctuation in the distribution of harvest is possible, along with the attendant modifications to the impacts on the physical environment; however, the natural environment and market mechanisms are expected to limit the degree of geographic reallocation. With geographic relocation, an effort increase in one area (and increases in associated impacts to the physical environment) would be largely offset by effort decreases in other areas (and decreases in associated impacts to the physical environment) such that total habitat impacts will not likely change with changes in geographic distribution. Additionally, existing policy provides some sideboards to the impacts to the physical environment—through limits on allowable levels of harvest as well as ongoing monitoring of habitat impacts and the opportunity for adaptive response if problems arise. This action will open no new areas to fishing.

4.1.2 Action Alternatives - Reallocation

The final environmental impact statement (FEIS) for Amendment 20 (A-20) evaluated fishery impacts on the physical environment under the pre-trawl rationalization management regime (No Action) in comparison to those expected under trawl rationalization (action alternatives) with a variety of different program specifications, including different initial QS allocation formulas (Section 4.20.3). With respect to essential fish habitat and ecosystem impacts, it identified three impact mechanisms, relative to no action:

- Changes in catch that can be traced through the food web
- Shifts in location of catch
- Gear switching.

For the physical environment, the A-20 FEIS found that impacts would vary between the No Action and action alternatives but not among the action alternatives, i.e. that variations in QS allocation formulas and other administrative features of the program (e.g. control limits) would not result in variation in the impacts among the alternatives. The exception to this might be vessel QP limits, which varied between alternatives. Higher limits could result in greater consolidation within the fleet and could redistribute effort to intensify impacts in local areas that could differentially impact the physical environment.

The action alternatives covered in this document would change the QS allocation formulas for widow rockfish. Vessel QP limits would not be affected. As was the conclusion in the Amendment 20 FEIS, changing the distribution of QS is not expected to have a long-term impact on the geographic distribution of fishing (i.e. impact on where the QP are fished). Changing the distribution of widow QS is not expected to change overall harvest levels, effort levels, catch per unit effort, or the gears used, but could have some potential short term impacts on the geographic distribution of harvest, as compared to the No Action alternative. Over the long term, factors discussed above with respect to geographic fluctuation under the No Action Alternative would be expected to result in geographic distributions under any of the action alternatives that are similar to the No Action Alternative. Divestiture is not expected to noticeably impact the physical environment; divestiture is not expected to impact total harvest or gears used, and while it may have some impact on the geographic distribution of QS, this distribution may be only weakly associated with the distribution of harvest.

Over the short term, effort out of a particular port could increase (or decrease) depending on the initial allocation, increasing (or decreasing) the likelihood that the physical environment local to that port is impacted. The pattern observed for yellowtail trading in comparison to the shifts in yellowtail harvest indicates that the geographic redistribution of harvest as a result of the reallocation may be difficult to detect given other influences over the distribution of harvest (Table 4-1). Not only is it likely that the potential short term impact would be difficult to detect, the direction of the potential impacts are also difficult to predict. Each year QP are allocated to the holders of QS. That QP is then transferred to vessels which use it to cover their catch. QS owners that also own vessels are probably most likely to fish the QP on their own vessels. First receivers owning QS are also most likely to have the related QP delivered to their facilities (though first receives with facilities in multiple ports may shift deliveries among those ports). These vessel and first receiver ownership factors create an initial link between who owns the QS and where the associated QP is most likely to be fished. However, QS owners that own

vessels may choose not to fish their QP for a variety of reasons (e.g. distance to good fishing grounds or a surplus of QP for a particular species relative to the QP for other species caught in the same complex). First receivers may choose not to have QP landed at their own facilities for similar reasons. QS owners facing such circumstances and QS owners who do not own vessels or first receiver facilities might choose to transfer their QP to others with whom they have business relations (e.g. the vessel they lease their LE permit to or a vessel that delivers fish to them), to friends and family, or on the QP market. These transactions will likely entail a balancing of social and economic incentives and the geographic redistributions will depend on the geography of their relationships and the geographic locations of those willing to offer the highest prices.

While the short-term effect of the geographic redistribution cannot be predicted, we can provide some indicators of the degree of potential geographic redistribution that might be involved in the action alternatives. The first indicator of the amount of potential short term geographic shift in effort is the total amount of QS reallocated. The total amount of QS redistributed would be the most under Reallocation Alternative 2 (27.9 percent) and the least under Reallocation Alternative 4 (8.1 percent) (Table 4-3).

Table 4-3. Total amount of QS reallocated under each suboption, relative to no action.

		Total Amounts of Quota Reallocated				
	Reallocation Alt 2 Suboption a	Reallocation Alt 2 Suboption b	Reallocation Alt 3 Suboption a	Reallocation Alt 3 Suboption b	Reallocation Alt 4	Reallocation Alt 5
Total QS Reallocated	27.5%	29.1%	23.5%	25.7%	8.4%	28.2%

a/ Alternatives 3 and 4 are modelled using Alternative 2 Suboption a.

The second indicator is the geographic redistribution of QS among QS owners, based on the QS owners address of record. The largest change for a single port area is for the owners who reside in Monterey which would experience an aggregate reduction of nine percent QS under Alternative 2 (Table 4-20). Owners in Monterey are followed by owners residing in Newport and Coos Bay. Newport would experience an aggregate gain of up to 7 percent of the QS, under Alternative 3 and Coos Bay would experience an aggregate gain of up to about three and a half percent of the QS. These changes are larger than the geographic redistribution of yellowtail rockfish QS observed in its first year of trading but small relative to the types of between port fluctuations in landings occurring even in the absence of QS trading (Table 4-1 and Table 4-2).

For reasons discussed above, over the short term QS allocated to QS owners that are also first receivers might be more likely to stay within the geographic area than QS allocated to those who do not own such physical capital. Most of the QS going to first receivers goes to those that have multiple sites on the coast. How these entities choose to distribute changes in the QP they receive as a result of shifts in their QS holdings is not possible to predict. For the remainder, the total fluctuation in the amount of QS distributed under the alternatives is only 0.5% QS (Table 4-17).

4.1.3 Summary of Impacts on the Physical Environment

Over the long-term, geographic distribution of harvest is expected to be similar to No Action. It is not possible to discern a difference among the action alternatives with respect to the distribution of harvest

activities over the long term. Over the short term, based on the initial geographic distribution of QS there may be some differences in the geographic distribution of harvest, as compared to No Action, and therefore associated impacts to the physical environment. However, it is not possible to predict the geographic changes and shifts in harvest patterns due to other causes would likely swamp any changes resulting from the geographic reallocation of QS. The amounts of QS to be reallocated indicate that if there is a short term impact it would be lower under Alternative 4 but that the impact under the other action alternatives would be comparable. Any changes to impacts on physical environment would be limited by factors in the natural and economic environment that tend to balance out geographic distributions, by habitat conservation areas, and by ongoing monitoring which provides an opportunity for management response, as described for the No Action alternative. Divestiture is not expected to noticeably impact the physical environment; divestiture is not expected to impact total harvest or gears used, and while it may have some impact on the geographic distribution of QS, this distribution may be only weakly associated with the distribution of harvest.

Table 4-4. Summary of impacts of the reallocation alternatives on the physical environment.

Impacts of No Action	Impacts Relative to No Action			
Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Some geographic redistribution of impacts based on changing resource distribution and markets. Impacts changing as harvest levels fluctuate with changing ACLs.	Long-term – same as Alt 1 Short-term – minor potential for geographic redistribution associated with redistribution of QS.	Similar to Alt 2.	Similar to Alt 2 but a substantially lower potential for any short term impacts.	Similar to Alt 2

4.2 Direct and Indirect Impacts to the Biological Environment

In addition to groundfish, coastal pelagic species, highly migratory species, salmon, steelhead, green sturgeon, eulachon, marine mammals, and seabirds also use the waters where the fishery is prosecuted. These species, including ESA-listed and protected species are described briefly in Section 3.2 . The result of this assessment with respect to impacts to the biological environment is similar to the result for the impacts to the physical environment (Section 4.1).

4.2.1 No Action (Alternative 1)

Under Alternative 1 (no action), the fishery is expected to continue (as described in Chapter 3 and the first paragraphs of Section 4.1.1), as modified by other past, present, and reasonably foreseeable future actions (cumulative impacts) described in Section 4.5. Widow rockfish is expected to be taken primarily in the nonwhiting midwater trawl fishery, but also as incidental catch in the whiting midwater trawl fishery and the bottom trawl fishery. Widow rockfish and yellowtail rockfish are two pelagic rockfish species often caught together in the nonwhiting midwater trawl fishery, which generally targets pelagic rockfish. With the increasing ACLs for widow rockfish and yellowtail rockfish, there have been increases in the amount of targeting of pelagic rockfish with midwater trawl gear. With increased fishing, increased gear interaction with other species is expected. The increased ACLs for these species and the potential impacts on other species were taken into account in the EIS for the 2015-2016 groundfish specifications.

The potential for geographic redistribution of effort under status quo is described in Section 4.1.1. With such fluctuations, there may be some attendant shifts in the distributions of the interactions with the biological environment. In different fishing areas, target species may occur at different rates and there may be different mixes of bycatch species. Different geographic segments of populations may be affected but the net impacts of such differences will depend on stock species and stock mobility.

4.2.2 Action Alternatives - Reallocation

The analysis in the Amendment 20 final environmental impact statement (FEIS) provides a template for the important impact mechanisms for the action alternatives in this document. Amendment 20 evaluated fishery impacts on the biological environment under the pre-trawl rationalization management regime (Amendment 20 - no action) in comparison to those expected under trawl rationalization (Amendment 20 - Action Alternatives) with a variety of different program specifications, including different initial QS allocation formulas. These impacts were covered in Amendment 20 FEIS sections on fish resources (Section 4.17), ESA-listed salmon (Section 4.18), and other protected species (marine mammals and seabirds) (Section 4.19). With respect to the biological environment the following potential impact mechanisms were identified:

- Fish Resources
    - Increase in target species catch
    - Reduction in bycatch rates for overfished species
    - Increase/decrease in Pacific halibut bycatch
    - Improved monitoring leading to better specification of harvest levels

- ESA- Listed Salmon
    - Increase/decrease in Chinook salmon incidental take
    - Improved bycatch monitoring
- Other Protected Resources (Marine Mammals and Seabirds)
    - Increase/decrease in protected species incidental take
    - Improved bycatch monitoring

For the biological environment, the Amendment 20 FEIS found that impacts would vary between the Amendment 20 No Action and action alternatives but not among the Amendment 20 action alternatives, i.e. that variations in QS allocation formulas and other administrative features of the program (e.g. control limits) would not result in variation in the long-term impacts among the alternatives, with the exception of vessel QP limits. Vessel QP limits varied between alternatives and it was posited that greater consolidation within the fleet could redistribute effort to intensify impacts in local areas, which could differentially impact biological resources.

The action alternatives covered in this document would change the QS allocation formulas for widow rockfish. Vessel QP limits would not be affected.

Given the Amendment 20 conclusion that differences in trawl rationalization program details of this nature would not differentially impact the biological environment over the long term, and given that since then no previously unidentified impact mechanisms or results have been identified, no difference in biological environment impacts is expected between any of the alternatives considered in this document (including differences between the No Action and action alternatives). An increase in the targeting on pelagic rockfish is expected to continue with increasing ACLs regardless of whether or not there is a reallocation or modifications to other administrative provisions. Similarly, over the long-term the geographic fluctuations discussed for status quo are expected to be similar under the action alternatives.

Over the short-term there could be some geographic variation in the location of fishing but any shift is likely to be insignificant relative to interannual fluctuations caused by other factors, as described for the physical environment in Section 4.1. A geographic shift in the location of harvest could have some impact on the mix of species encountered incidentally, to the degree that encounter rates vary geographically. However, in general, fishing is likely to occur over similar substrates, at similar depths, and in areas of greater widow rockfish aggregations regardless of the area of the coast along which fishing occurs. As indicated by the data on shifts in the geographic distribution of yellowtail rockfish landings (Section 4.1.1), the distribution of harvest over the short term is difficult to predict and likely only loosely influenced by the geographic distribution of those who own the QS. See Section 4.1.2, for information on the expected geographic redistribution of widow QS. As described Section 4.1.1, the degree of variation in locations of fishing is limited by characteristics of the natural and economic systems as well as the monitoring and opportunity for adaptive response provided by the fishery management system.

While the conservation impacts of the alternatives are minimal, the allocation and trawl rationalization program itself is part of a system that mitigates the socio-economic impacts of the program of conservation measures implemented through the groundfish FMP and associated regulations.

4.2.3 Summary of Impacts on the Biological Environment

Reallocation of widow QS is not expected to impact the level of widow QS harvest. Over the short-term there may be some minor geographic variation in impacts and some attendant differences in incidentally encountered species are possible but the direction of these shifts are difficult to predict and influence of the geographic distribution of the QS owners is likely to be minor. A management system that includes 100 percent at-sea monitoring provides the opportunity for adaptive response if any changes in encounter levels become problematic. No measurable differences in impacts to the biological environment are expected under any of the action alternatives relative to one another or to the no action alternative over the long-term.

Table 4-5. Summary of the reallocation alternatives impacts on the biological environment.

Impacts of No Action	Impacts Relative to No Action			
Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Some geographic redistribution of impacts based on changing resource distribution and markets. Harvest fluctuations with ACLs.	Long-term – same as Alt 1 Short-term – minor potential for geographic redistribution associated with redistribution of QS.	Similar to Alt 2.	Similar to Alt 2 but a substantially lower potential for any short term impacts.	Similar to Alt 2.

4.3 Direct and Indirect Impacts to the Socio-Economic Environment

The following are considered in this assessment of impacts:

- Substantial participation in the fishery
- Current harvests
- Historical harvests
- Harvester dependence on the fishery
- Employment in the harvesting sector
- Employment in the processing sector
- Processor dependence on the fishery
- Geographic redistributions
- Community participation in the fishery
- Community dependence on the fishery
- Effects on excessive shares
- Impacts on small entities

Entry level opportunities were considered as part of the Amendment 20 deliberations. The reallocation of QS will not affect the features of Amendment 20 pertinent to those opportunities.

4.3.1 Commercial Harvest Sector (Non-Tribal, Including QS Owners)

The alternatives considered here directly affect QS owners and others own control QS through means other than direct ownership. Vessel owners, operators and crew members will be impacted to the degree that reallocation to QS owners results in the redistribution of fishing activity among vessels.

4.3.1(a) *Impacts on QS Owners*

In general, this section uses the term "QS owners" to reference those who control QS, though the quantitative information on QS control is limited to that revealed in quota and permit ownership records publicly available from NMFS.

4.3.1(a)(1) No Action on Reallocation (Alternative 1)

Under the No Action Alternative the amounts of widow QP available will continue to increase as the widow ACL increases. The formula which established the status quo allocations was designed to provide recipients with the amounts of widow QS they would need to cover bycatch while targeting on other IFQ species for which they received QS. As the amounts of widow QP issued annually increase, there will be increased widow targeting opportunity and it is likely that the QP issued to holders of QS will find its way through the market to harvest operations interested in targeting on widow, primarily with midwater gear (see discussion in Section 4.1.1), benefiting the owners of the QS, the vessel owners, and vessel operators and crew, as well as the processors receiving the fish (Section 4.3.4), residents of the communities that gain from the related activities (Section 4.3.6) and consumers. Once the QS trading moratorium is lifted it is expected that QS will tend to be acquired by those most motivated to secure benefits from the targeting of widow rockfish (most likely owners of harvest operations and processors desiring to reestablish widow target fisheries). At the same time, other factors such as bequeathal of heritage may also influence the distribution of QS.

4.3.1(a)(1)(i) *Status Quo Distribution of QS*

The existing allocations were made to those with substantial participation in the fishery as evidenced by the history of the LE permits held by the initial recipients at the time of initial allocation. Current harvesting and dependence was taken into account by the fact that these individuals were the current holders of the LE permit (providing an opportunity for even the most recent entrants to receive an initial allocation and return on their LE permit – a fishery dependent asset) and historic harvests and dependence were taken into account by basing QS allocations on the landing history of each individual LE permit. The original QS allocations were made based on each LE permit's history of whiting trips and nonwhiting trips. For whiting trips, widow rockfish QS was allocated pro rata in proportion to each LE permit's allocation of whiting QS. For nonwhiting trips, widow rockfish QS was allocated based on the nonoverfished species QS an LE permit was allocated, logbook information indicating where the LE permit had been fishing, and fleet average bycatch rates. This information was used to allocate to LE permits based on their expected need for widow rockfish QP to cover incidental harvest while targeting on other species. The bases for these allocations are extensively documented in the Amendment 20 FEIS (PFMC, 2010) and elaborated further in the EA produced for reconsideration of the whiting allocations (PFMC, 2013b). Those analyses also addressed other factors such as employment in the harvesting and

processing sectors, processor dependence, geographic redistributions, community participation and dependence, excessive shares and impacts on small entities.

The initial distribution of widow QS, as allocated to 164 individual LE permits, is displayed in Figure 4-1. In that figure it can be seen that one LE permit was allocated more than two percent of the widow QS and half received less than one half percent. In many cases where a single owner owned multiple LE permits, the allocations for individual LE permits were combined into a single QS account for that owner. Thus, after initial implementation, the 164 LE permits with catcher vessel history generated 128 initial QS accounts. There has been a moratorium on the trading of widow QS since the time of initial issuance but there have been two transfers of QS from one account to another in response to court orders. Since QS trading started at the beginning of 2014 additional accounts have been established, however, none of these accounts have widow QS because of the widow QS trading moratorium.

Much of this analysis focuses on the allocations to LE permits, in order to provide comparisons to the original basis and criteria for allocation under Amendment 20. In addition, an evaluation of QS ownership was conducted starting with the QS accounts. QS accounts were aggregated based on a comparison of the listed owners' addresses and business names, publically available from NMFS. In some cases, where there was correspondence between addresses but not the names of the listed owners, publically available corporate records were checked to determine whether the common address was happenstance (for example, a situation where two different QS owners use as a common bookkeeper and use that bookkeeper's mailing address for business purposes). Additionally, it was assumed that where two or more individuals owned separate QS accounts and also owned a joint QS account that all such accounts were effectively under a single ownership. On these bases, the 128 QS accounts were consolidated into 99 likely ownership entities. This approximation does not take into account cross ownership that is not reflected in business names or addresses or other forms of QS control. The results are provided in Figure 4-2. Based on the displayed approximations, it appears that one QS owner may own QS in excess of the 5.1 percent widow QS control limit, 7 exceed 2 percent of the widow QS, and just less than half hold less than one half percent. There may be additional entities above the 5.1 percent limit to the degree that there are business relationships which are not reflected in publically available information.

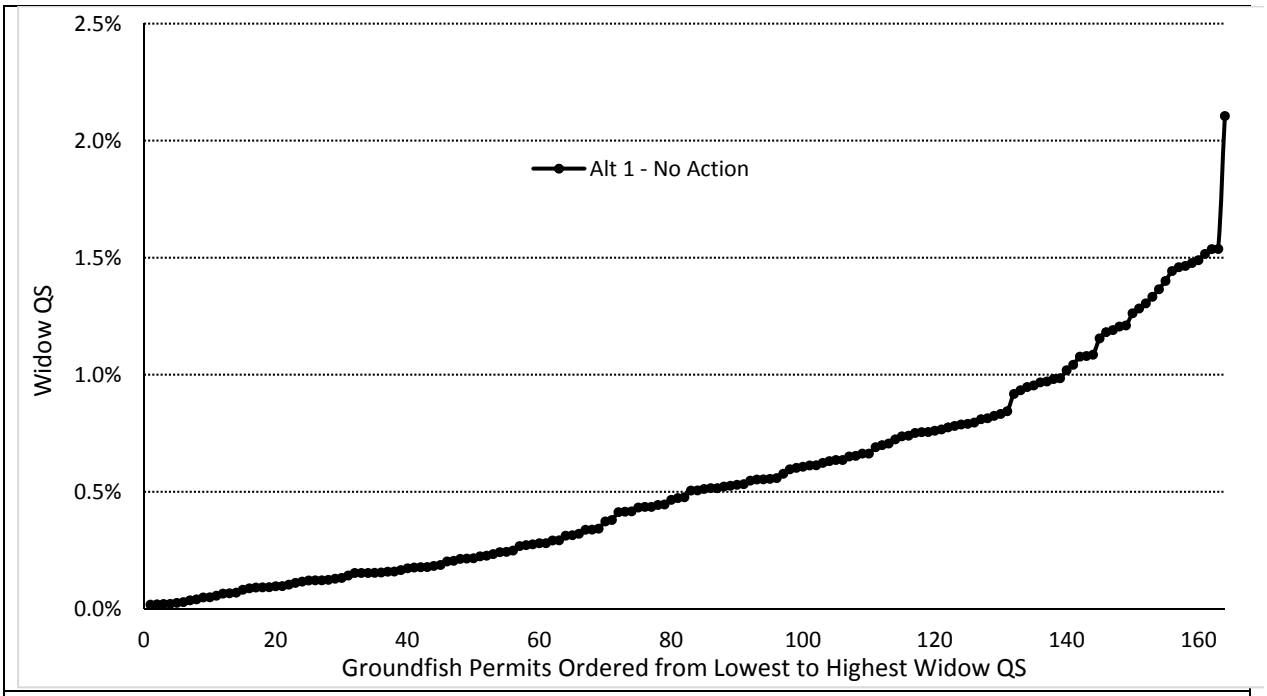

Figure 4-1. Allocation of widow QS among individual LE groundfish permits at the time of initial allocation (in 2010 for the start of the 2011 fishery).

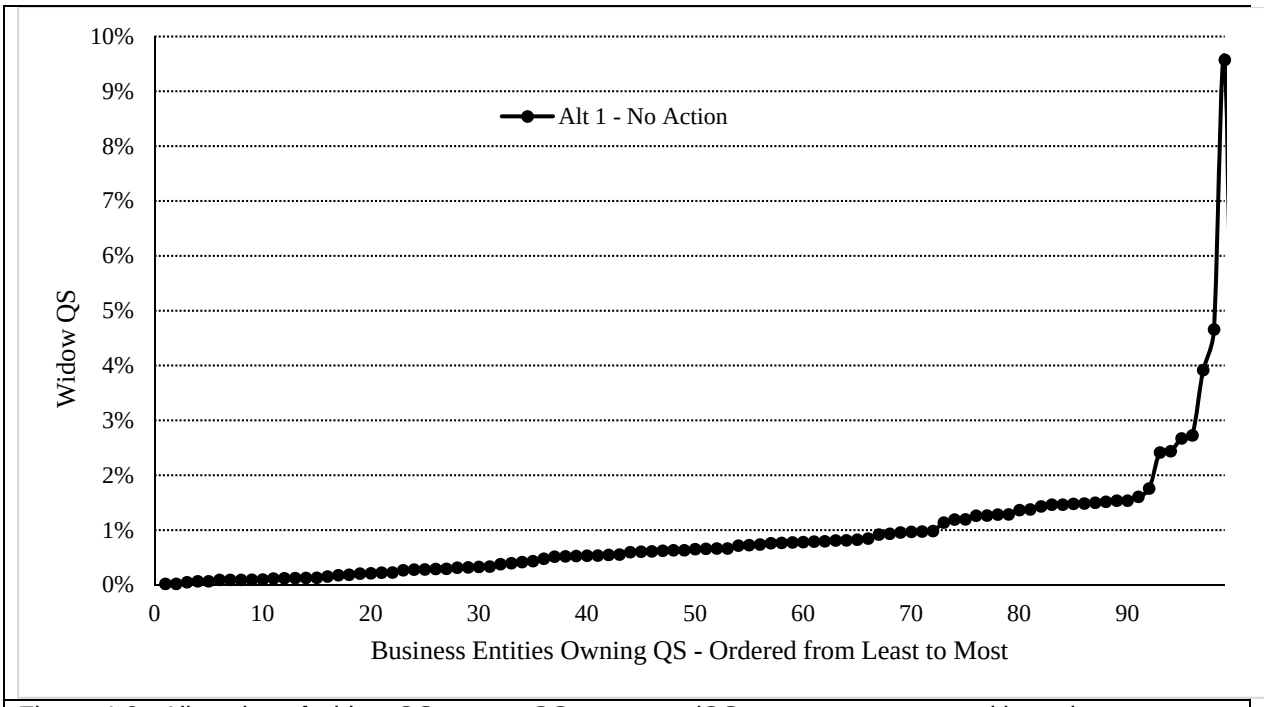

Figure 4-2. Allocation of widow QS among QS owners – (QS accounts aggregated based on a comparison of publically available information) (widow rockfish control limit is 5.1%).

4.3.1(a)(1)(ii) ***Dependence***

The initial allocations of widow rockfish QS was based on the expectation that initial recipients would be dependent on widow QS to access their target species allocations, rather than depend on it for the revenue generated by catching widow rockfish. With rebuilding there is an opportunity for businesses to develop an economic reliance on widow QS for direct revenue (rather than as an input needed to access other species). When converted to exvessel revenue equivalents, widow QS is a relatively minor portion of the QS portfolios held by business entities holding QS. An analysis was conducted to determine the portion that widow QS represented of each QS owner's holdings based on exvessel value equivalents, reduced to take into account under attainment of the harvest for most QS species (see Section 3.3.1(a) Figure 3-2 and Figure 3-3). On an adjusted exvessel value equivalent basis, widow QS comprised an average of 4.8 percent of total nonwhiting QS holdings and comprised less than 2.4 percent for about half the business entities. If both shoreside and at-sea mothership allocations of whiting are included, widow QS comprised an average of 2.7 percent of the exvessel value equivalent of total nonwhiting QS holdings and comprised less than 1.4 percent for about half the business entities.

Using the same method as just described for Figure 3-2 and Figure 3-3, a tabulation of results for the original 128 QS accounts is provided in Table 4-4. The focus here is on the 128 original accounts because these are the units to which the initial allocations were made. These data are not aggregated across business entities. Table 4-6 shows that at the time of initial issuance those QS permits most reliant on widow QS (those that rank in the 80+ percentile) tended to have lower total endowments of QS for all species. Those in the 20-40 percentile category (between about 1.5 and 1.6 percent reliance on average) also tended to have lower amount of total QS (less than 150 thousand dollars in exvessel revenue equivalents). While non-widow QS may have transferred out of some of these accounts after the start of widow QS trading (not reflected in the table), it is likely that the owners of the accounts received some compensation when the shares were traded.

Table 4-6. QS account reliance on widow QS based on adjusted [a/] exvessel revenue equivalents at time of initial issuance [nonwhiting only, adjusted to account for under-attainment of QP harvest (except widow) based on 2011-2013 QPs debited].

	Percentile Rank (Least to Most Dependence)					
	0-20 percentile	20- 40 percentile	40-60 percentile	60-80 percentile	80+ percentile	Totals
Number of QS Accounts	26	26	26	25	25	128
QS Account Exvessel Revenue Equivalent All Nonwhiting Species	Number QS Accounts / Average Percent Reliance on Widow QS					
< $150 thousand	2 / 0.9%	11 / 1.6%	2 / 2.6%	1 / 2.9%	3 / 5.8%	19
$150-$300 thousand	8 / 0.5%	5 / 1.5%	8 / 2.5%	8 / 3.5%	16 / 8.0%	45
$300-$450 thousand	12 / 0.4%	6 / 1.5%	9 / 2.4%	11 / 3.3%	6 / 5.2%	44
> $450 thousand	4 / 0.6%	4 / 1.5%	7 / 2.3%	5 / 3.4%	-	20

a/ To determine exvessel revenue equivalent, QS was converted to QP based on 2015 trawl allocations and multiplied by average 2013 exvessel prices (most recent information available at the time the analysis was developed). The resulting exvessel values were reduced based on average fleet attainment of harvest for species other than widow rockfish.

4.3.1(a)(1)(iii) ***Status Quo Allocations Relative to Widow Landing History***

Even though widow QS was allocated to cover expected bycatch needs, as indicated by the amount of target species QS allocated for the LE permit, for a few LE permits the resulting allocation turned out to be relatively close to proportional to their widow QS landing history. At the same time, many other LE

permits with no widow landings history received substantial widow QS allocations. In Figure 4-3 each LE permit receiving an allocation is represented by a single dot. The vertical axis (y-axis) represents the share of widow QS allocated and the horizontal axis (x-axis) represents each LE permits share of the fleet's widow landings history (i.e., relative history after dropping the three worst years for the individual LE permit). Dots that fall on or very near the y-axis represent LE permits that received widow QS allocations but had minimal widow landings history. The highest of these received more than 3 percent of the widow QS allocated for non-whiting trips. Dots that fall on or very near the x-axis represent LE permits with widow landings history but minimal widow QS allocations. The greatest of the points on the horizontal axis is at 2.5 percent of the fleet landing history. The diagonal line represents situations where LE permits would have received widow QS in direct proportion to their 1994-2002 widow landings history (with each LE permit's worst three years dropped from the average).

Among 164 LE permits eligible to receive allocations, there are 10 with zero values lying on the vertical axis (i.e. LE permits with no widow landings history receiving some widow allocation) and 77 LE permits with less than a 0.1% share of the fleet's historic landings. There were no LE permits with zero values lying exactly on the horizontal axis (i.e. LE permits that received zero widow QS for nonwhiting landings. Altogether there are 102 LE permits lying above the 45-degree line (widow QS allocated based on nonwhiting landings is greater than the LE permit's share of 1994-2002 widow landings), and 62 LE permits below the line (widow QS allocated based on nonwhiting landings is less than the LE permit's share of 1994-2002 widow landings).

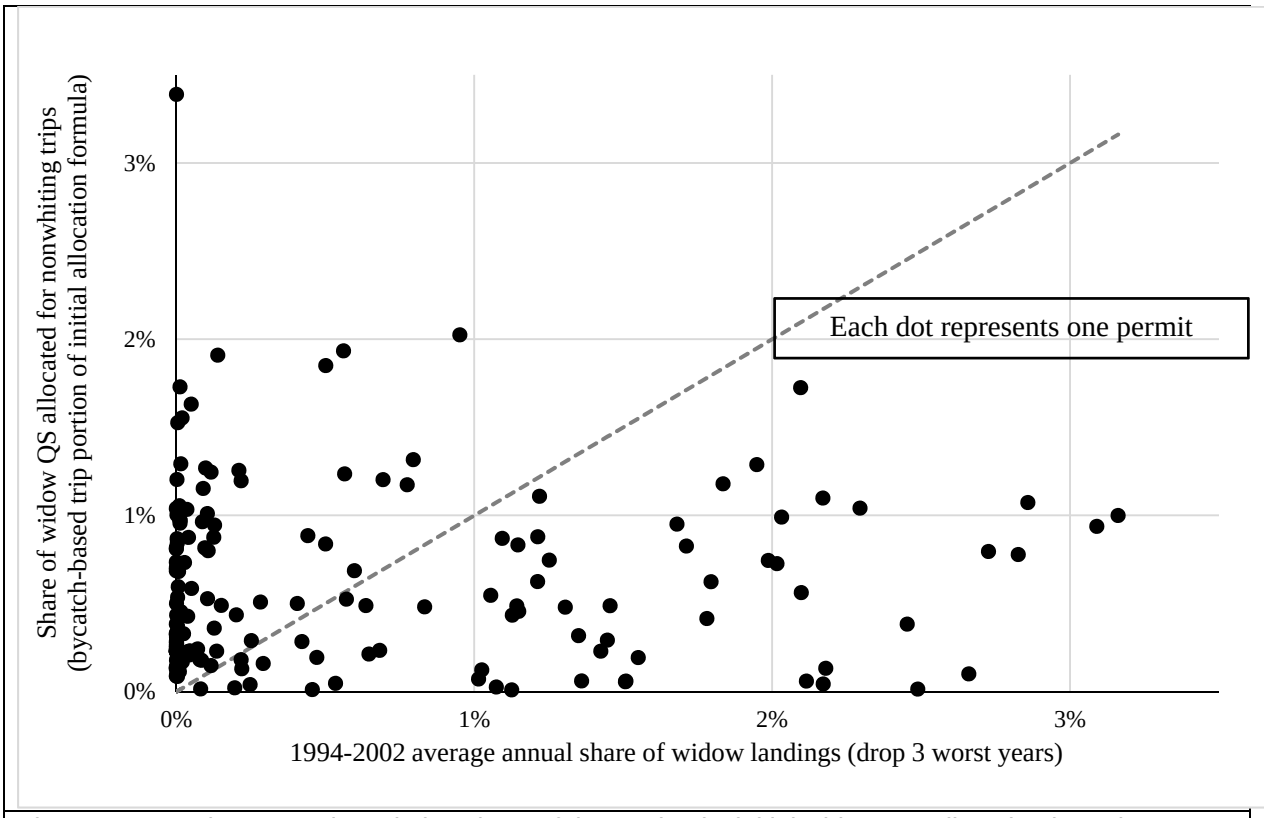

Figure 4-3. Each LE permit's relative share of the portion its initial widow QS allocation based on non-whiting trips (vertical axis) compared to its share of total 1994-2002 widow rockfish landings (horizontal axis).

While Figure 4-3 shows only the portion of the QS allocated for nonwhiting landings, Figure 4-4 contrasts landings history with the full widow QS allocations provided under status quo. Here again it can be seen that the status quo allocations diverge greatly from the historic widow rockfish landings—as would be expected given the criteria that were used to allocate QS for species that were overfished at the time of initial allocation, such as widow rockfish.

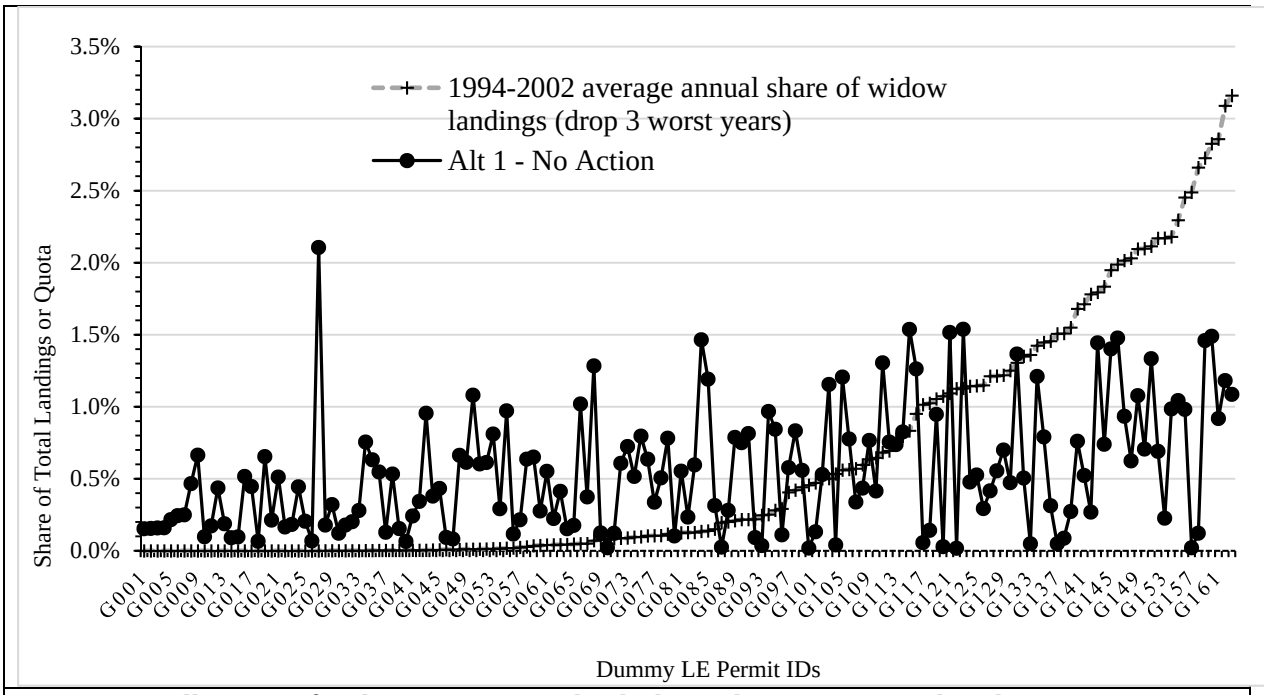

Figure 4-4. Allocation of widow QS among individual vessel **LE permits** under Alternative 1 – No Action compared with average relative widow rockfish landings during 1994-2002.

4.3.1(a)(1)(iv) ***Status Quo Allocations Relative to Recent Revenues***

This section looks at how the status quo allocation compares to more recent groundfish fishery participation measured by exvessel revenues. As with the 1994-2002 catch history, there are substantial differences between recent nonwhiting revenues and the status quo widow rockfish QS allocations that would remain in place under the no action alternative (Figure 4-5).

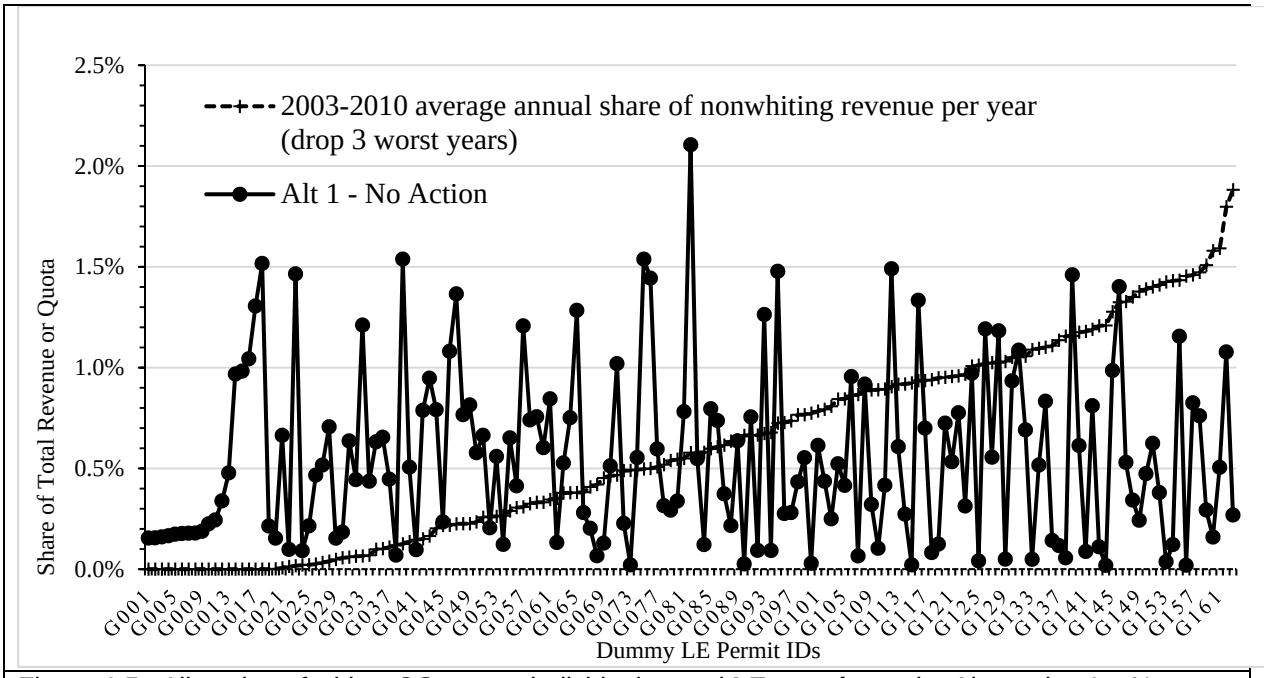

Figure 4-5. Allocation of widow QS among individual vessel **LE permits** under Alternative 1 – No Action compared with average relative nonwhiting groundfish exvessel revenue during 2003-2010.

4.3.1(a)(1)(v) ***1994-2002 Landings History Compared to 2003-2010 Landing History***

One of the more significant differences between the action alternatives is the contrast between allocating based on 1994-2002 widow landings history (Alternatives 2, 4, and 5) and allocating based on both widow landings history and 2003-2010 exvessel revenue from all nonwhiting groundfish (Alternative 3). Figure 4-6 contrasts these two allocational bases. As in Figure 4-3, each point represents one of the original LE permits receiving an allocation. The height relative to the vertical axis represents the share of revenue and the distance along the horizontal axis represents the share of widow rockfish landings history. Dots directly on the vertical axis represent LE permits with no widow landings history that, under Alternative 2(a) or 5, would receive only an equal allocation (plus an allocation in proportion to any whiting QS they might receive based on whiting landings history). Dots on or very near the horizontal axis represent LE permits with little or no recent revenue history that, under Alternative 2(a), would receive an equal allocation, an allocation based on their nonwhiting trip widow landing history, plus an allocation based on their whiting landing history but no allocation based on 2003-2010 nonwhiting exvessel revenue. LE permits with little or no widow landings history nor nonwhiting groundfish revenues during the respective qualification periods are clustered near the origin. The diagonal line represents situations where LE permits have similar shares of 1994-2002 widow landing history and more recent (2003-2010) nonwhiting revenue.

Among 164 LE permits eligible to receive allocations, there are 10 with zero values lying on the vertical axis (i.e., LE permits with no widow landings history) and 19 LE permits with zero values on the horizontal axis (i.e., LE permits with zero nonwhiting groundfish revenue history during 2003-2010). Of

the 10 and 19, 4 had no historic landings and no recent revenue and thus show up as a single point of overlapped dots at the origin. Of the 19, 6 had less than one hundredth of one percent of the historic widow landings history and thus overlap each other very close to the origin. There are 64 LE permits on or close to the vertical axis (LE permits with less than one tenth of one percent of the historic widow landings).

Altogether there are 95 LE permits lying above the 45-degree line (2003-2010 nonwhiting groundfish revenue share is greater than their share of 1994-2002 widow landings), and 65 LE permits below the line (2003-2010 nonwhiting groundfish revenue share is less than their share of 1994-2002 widow landings). Four LE permits had neither more recent revenue nor historic widow landings (represented at the origin).

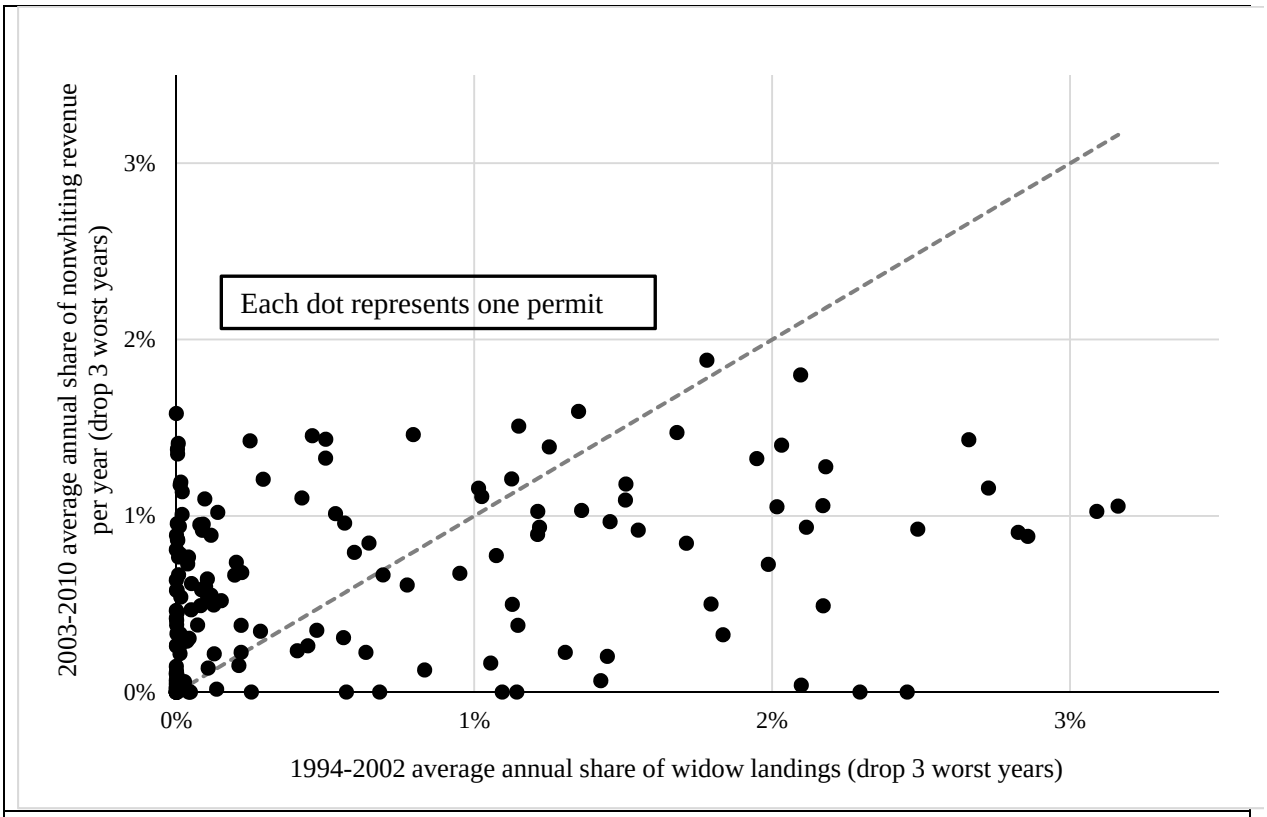

Figure 4-6. Each LE permit's average 2003-2010 nonwhiting groundfish exvessel revenue (vertical axis) compared with its share of total 1994-2002 widow rockfish landings (horizontal axis).

4.3.1(a)(1)(vi) ***General Results - Permit Level***

Allocations are examined at the LE permit level to provide a direct comparison between the basis of allocation under Amendment 20 and the results under the proposed reallocation alternatives. Any QS reallocated will not go to the LE permits but would instead go to the QS accounts generated by those LE permits as a result of the initial QS allocation.

Alternatives 2, 4 and 5 would reallocate based on the Amendment 20 allocation formula while Alternative 3 would also include exvessel revenue from 2003 through 2010. Results are compared here using suboption a for each alternative (Section 4.3.1(a)(1)(xi) provides a comparison of how results for each alternative vary by suboption). Results for Alternatives 1, 2(a) and 3(a) are compared in Figure 4-7. For

Alternative 2(a) and 3(a), as a result of the equal allocation portion of the allocation formulas, the minimum amount of widow QS an LE permit would receive is about 0.17% (indicated with an arrow in the figure). For about 35 LE permits, this minimum amount alone would be more than their status quo allocation. A number of LE permits at the lower end of the status quo allocation would end up at the higher end of the range for Alternative 2(a) and Alternative 3(a) allocations (LE permits with high allocation levels showing on the left-hand side of the figure). In general, those receiving the highest allocations under Alternative 2(a) would also receive the highest under Alternative 3(a), but at a lower level (see many of the pairs of values within the large oval). There are some exceptions to this (see boxes inside oval). Conversely, those receiving lower allocations under Alternative 2(a) (and in some cases the minimum amounts because they have no 1994-2002 widow landing history) would experience higher allocations under Alternative 3(a) (see boxes along bottom of the figure).

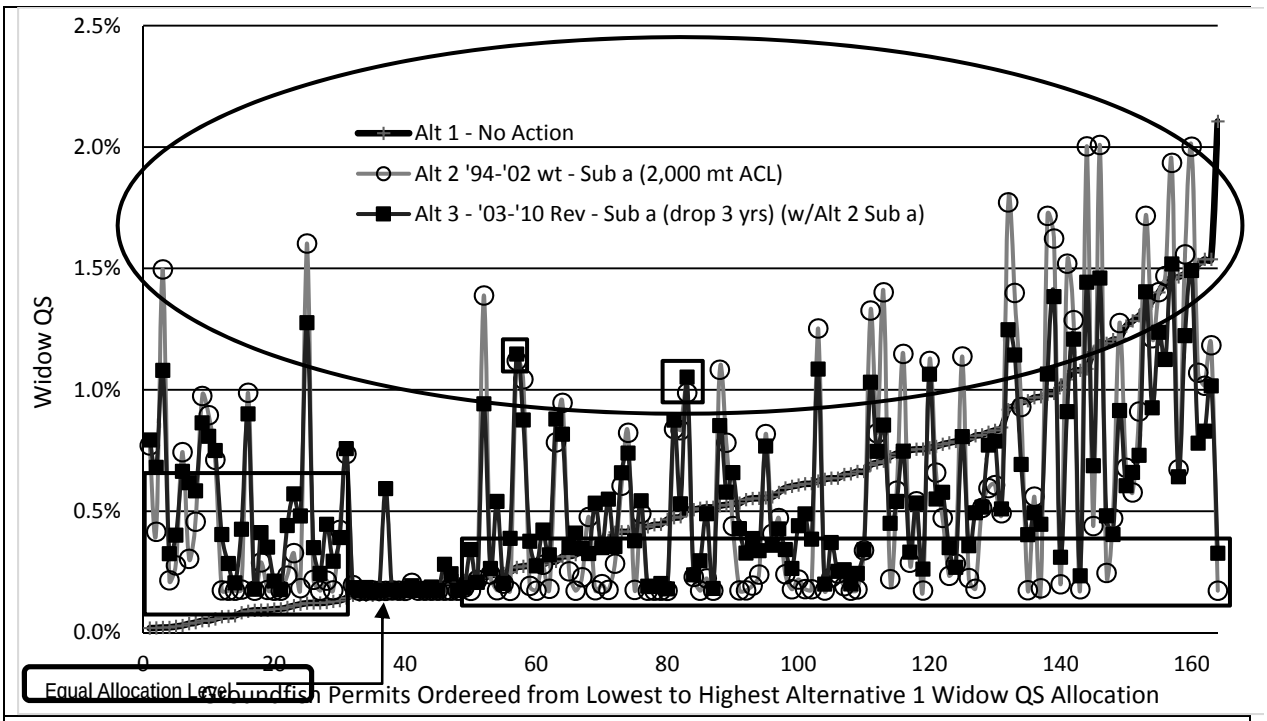

Figure 4-7. Allocation of widow QS among individual vessel **LE permits** at the time of initial allocation (in 2010) compared with allocations under Alternative 2(a) and Alternative 3(a) (for each LE permit there are three markers that line up vertically, one for each alternative).

The pattern of differences between Alternative 2(a) and Alternative 3(a) are similar to the pattern of differences between Alternative 5 and Alternative 3(a) (Figure 4-8). Figure 4-9 compares Alternative 5 to Alternative 2(a) and 2(b) showing that, as intended, Alternative 5 allocations are midpoints between Alternatives 2(a) and 2(b). The differences between Alternative 2(a) and 2(b) (and hence between Alternative 5 and the Alternative 2 suboptions) are greatest for the LE permits that received the highest allocations under status quo (Alternative 1) and for some of those that received low status quo allocation but would receive high allocations under the action alternatives—for the most part these are LE permits that received the most allocation based on whiting targeting history (see Section 4.3.1(a)(1)(xi), Figure 4-24, and Figure 4-25).

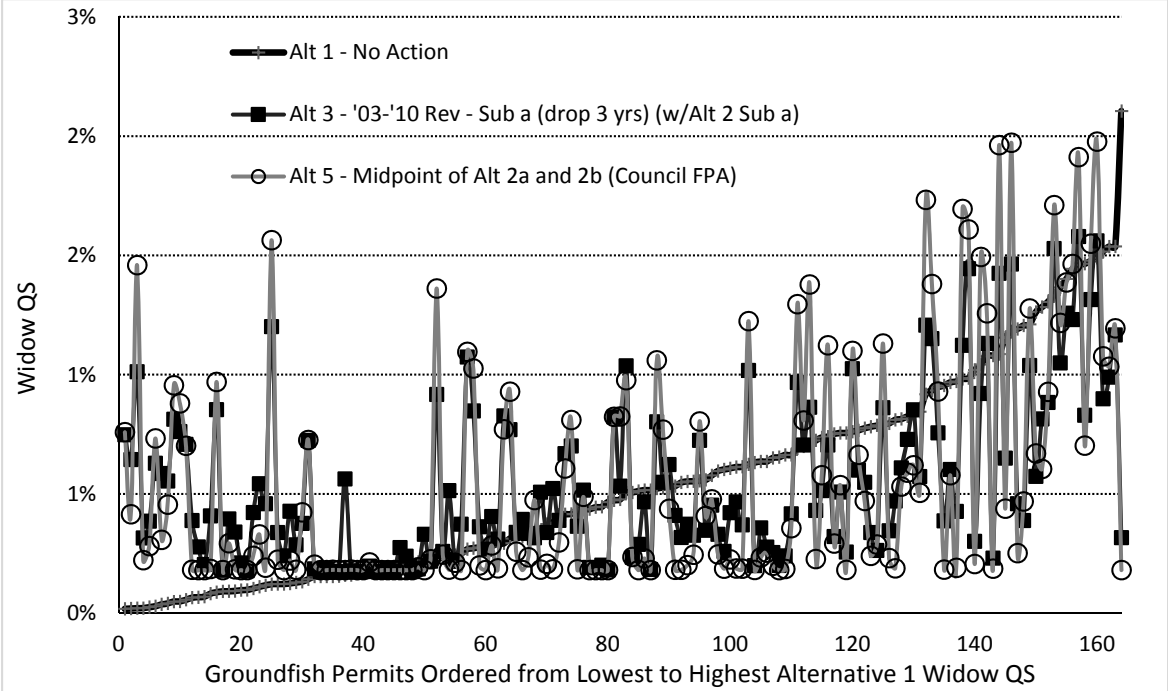

Figure 4-8. Allocation of widow QS among individual vessel **LE permits** at the time of initial allocation (in 2010) compared with allocations under Alternative 3(a) and Alternative 5 (for each LE permit there are three markers that line up vertically, one for each alternative).

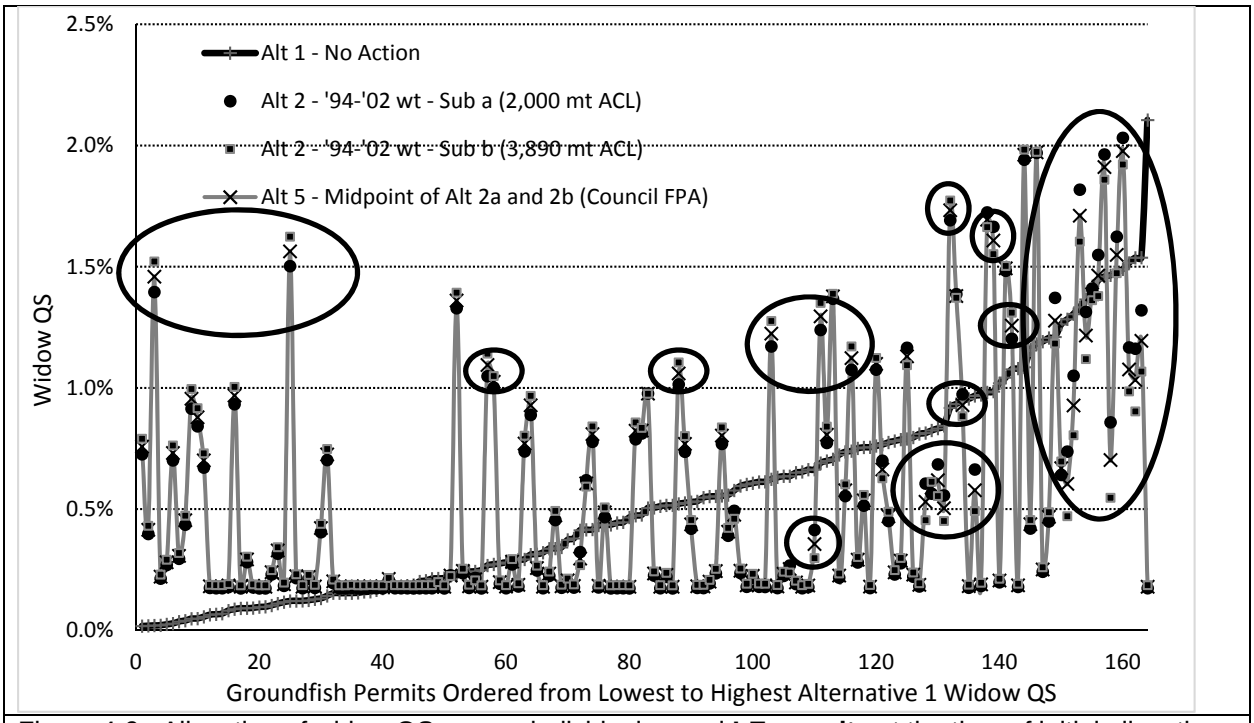

Figure 4-9. Allocation of widow QS among individual vessel **LE permits** at the time of initial allocation (in 2010) compared with allocations under Alternative 2(a), Alternative 2(b) and Alternative 5 (for each LE permit there are four markers that line up vertically, one for each alternative, LE permits are ordered from least to greatest initial allocation).

The pattern of allocations for Alternative 4 (relative to the no action allocations) are comparable to those of Alternative 2(a), with changes reduced in scale because of the smaller amount of the total QS that is reallocated under Alternative 4. For example, the two high LE permit allocations under Alternative 2(a) that shown up on the left side of Figure 4-7 also appear as high values (circled points) under Alternative 4 in Figure 4-10 (although their QS allocations are much lower under Alternative 4).

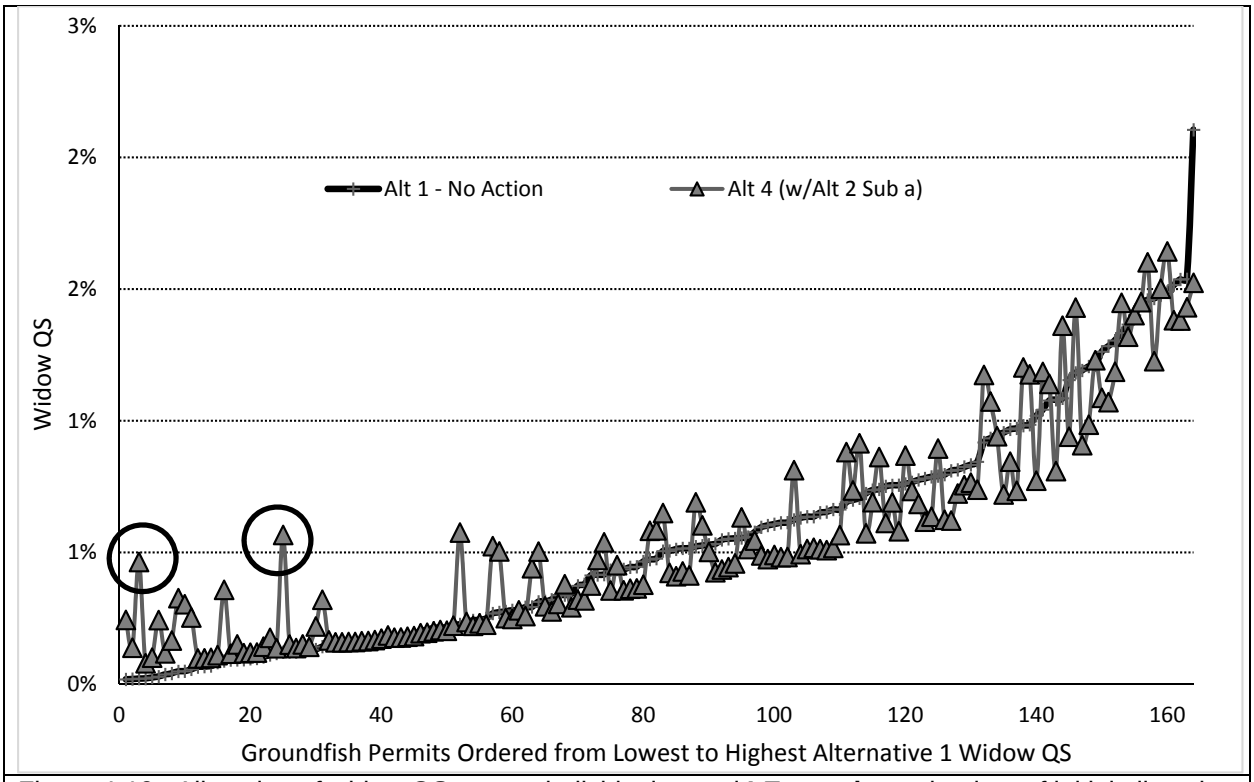

Figure 4-10. Allocation of widow QS among individual vessel **LE permits** at the time of initial allocation (in 2010) compared with allocations under Alternative 4.

Some statistics on the differences between the alternatives are provided in Table 4-7. In general, relative to no action, there are five or six more LE permits that would gain (and five or six fewer that would lose) under Alternative 3(a) than under the other three action alternatives summarized here (Alternatives 2(a), 4 with 2(a), and 5). Alternative 3(a) is between Alternatives 2(a)/5 and Alternative 4 with respect to all the other parameters listed in Table 4-7 except for the maximum allocations and the counts of numbers of LE permits gaining and losing (in total and relative to averages).

Table 4-7. Statistics on reallocation of widow QS among the original LE permits under the action alternatives.

	Alt 2(a): Landings History + 2,000 mt ACL Based	Alt 3(a): Landings History + Revenue (drop 3) Based[a/]	Alt 4: 2014 Pounds-Neutral[a/]	Alternative 5 (Midpoint of Alt 2 Suboptions)
QS Reallocated	27.5%	23.5%	8.4%	28.2%
Maximum Allocation (2.11% under no action)	2.03%	1.58%	1.65%	1.98%
Minimum Allocation (0.02% under no action)	0.17%	0.17%	0.08%	0.18%
Number with Increased QS	81	87	81	82
Avg QS Allocated	0.77%	0.62%	0.66%	0.67%
Average Increase	+0.34%	+0.27%	+0.10%	+0.34%
Number Increased More Than Average	33	38	33	35
Max Increase	+1.38%	+1.08%	+0.42%	+1.44%
Number with Reduced QS	83	77	83	82
Avg QS Allocated	+0.34%	+0.47%	+0.44%	+0.43%
Average Reduction	-0.33%	-0.31%	-0.10%	-0.34%
Number reduced More Than Average	47	47	47	46
Max Reduction	-1.93%	-1.79%	-0.59%	-1.92%

a/ Modelling of Alternative 3 and Alternative 4 assume Alternative 2 suboption a.

4.3.1(a)(1)(vii) ***General Results - Ownership Level***

As described in Section 4.3.1(a)(1) (page 82), publically available information was used to infer an association between QS accounts and to construct a data set to estimate the concentration of QS among QS permit owners. Alternatives were compared using these data. Alternatives 1, 2(a) and 3(a) are contrasted in Figure 4-11. Under these alternatives, the maximum widow QS held under one ownership would be expected to drop from above 9 percent under status quo down to about 5 percent. As was the pattern when results at the LE permit level were reviewed, in general, those with larger allocations tend to do better under Alternative 2(a) (highlighted in the circles) and those with smaller allocations tend to do better under Alternative 3(a) (in the box along the bottom), with the exception of a few at the top of the range of the allocations (shown in the boxes on the right hand side of the figure).

Alternatives 2(a), 2(b) and 5 are contrasted in Figure 4-12. As would be expected based on Figure 4-9, there are only relatively small differences in the allocation results for these alternatives such that the contrast between Alternative 3(a) and Alternative 5 would be very similar to the contrast between Alternative 2(a) and Alternative 3(a) provided in Figure 4-11.

Alternatives 1 and 4 are contrasted in Figure 4-13. Here again, under the action alternative the allocation to the top recipient is substantially reduced relative to no action, but only down to around 7.5 percent, compared with around 5 percent for the other action alternatives.

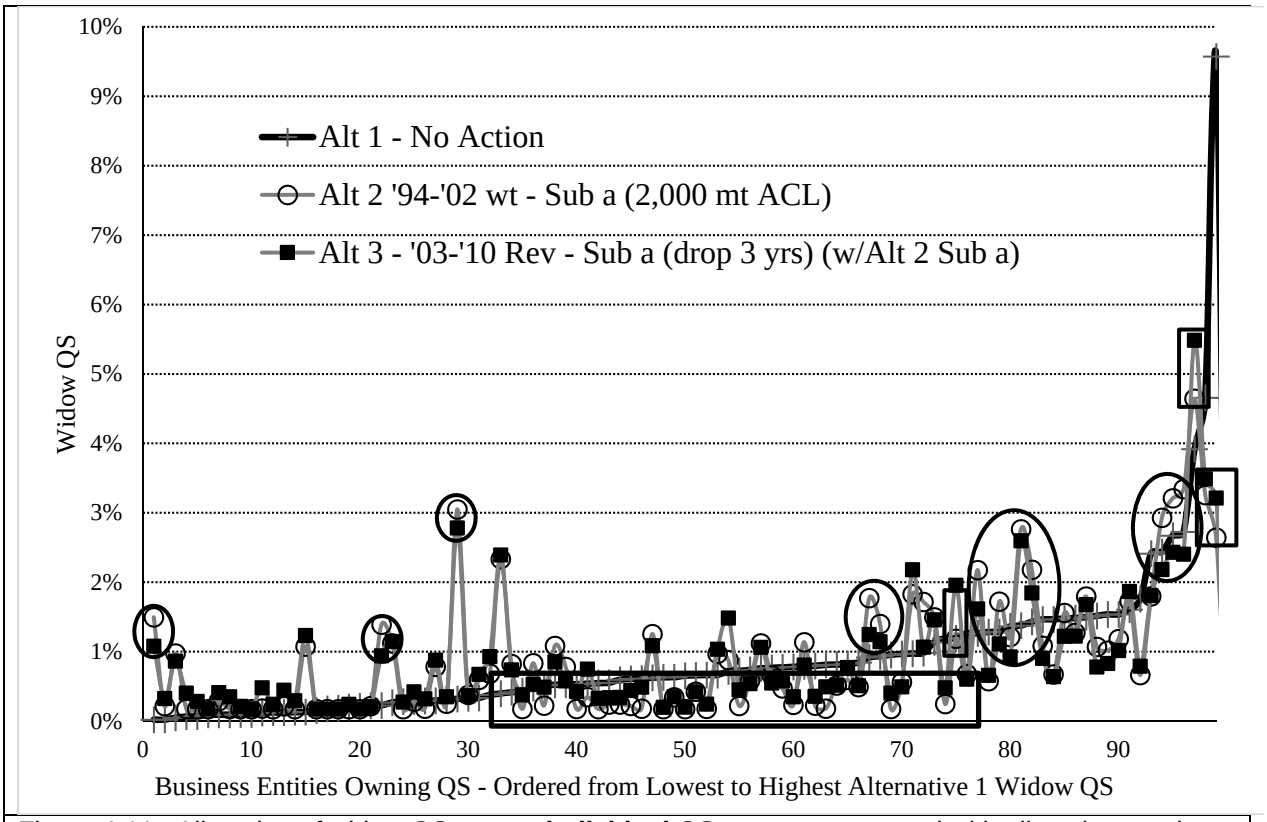

Figure 4-11. Allocation of widow QS among **individual QS owners** compared with allocations under Alternative 2(a), and Alternative 3(a) (boxes are drawn around some of the stronger gainers under Alternative 3(a) relative to Alternative 2(a), and circles are drawn around those who would receive less under Alt 3(a) than under Alt 2(a)).

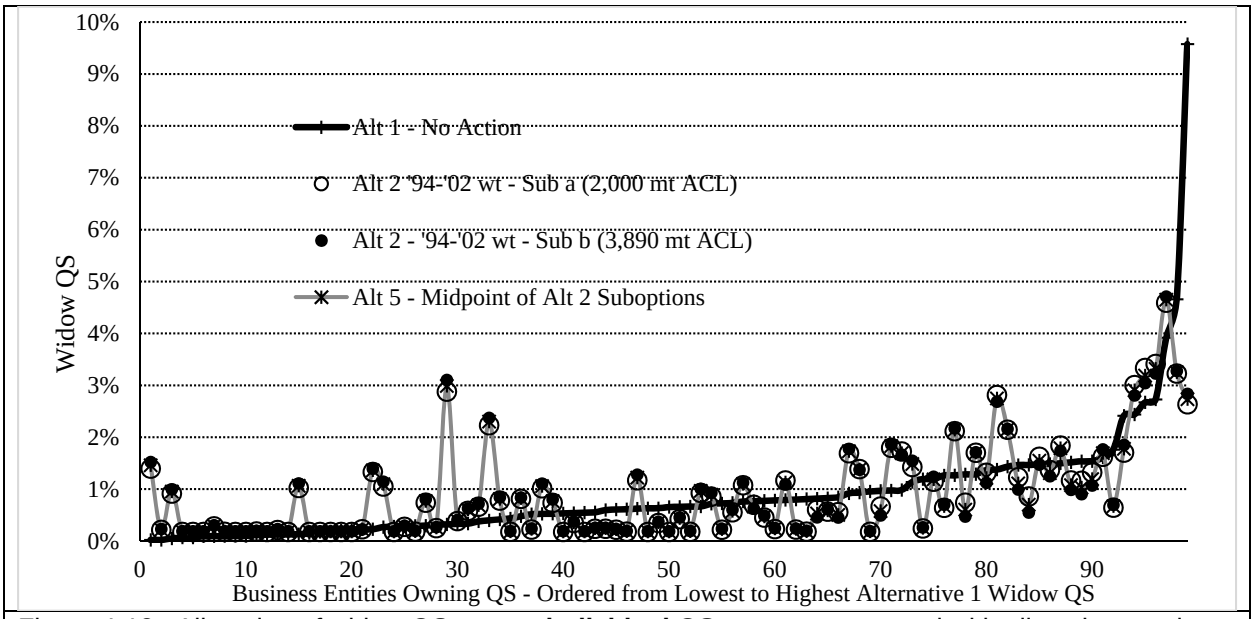

Figure 4-12. Allocation of widow QS among **individual QS owners** compared with allocations under Alternative 2(a), Alternative 2(b), and Alternative 5.

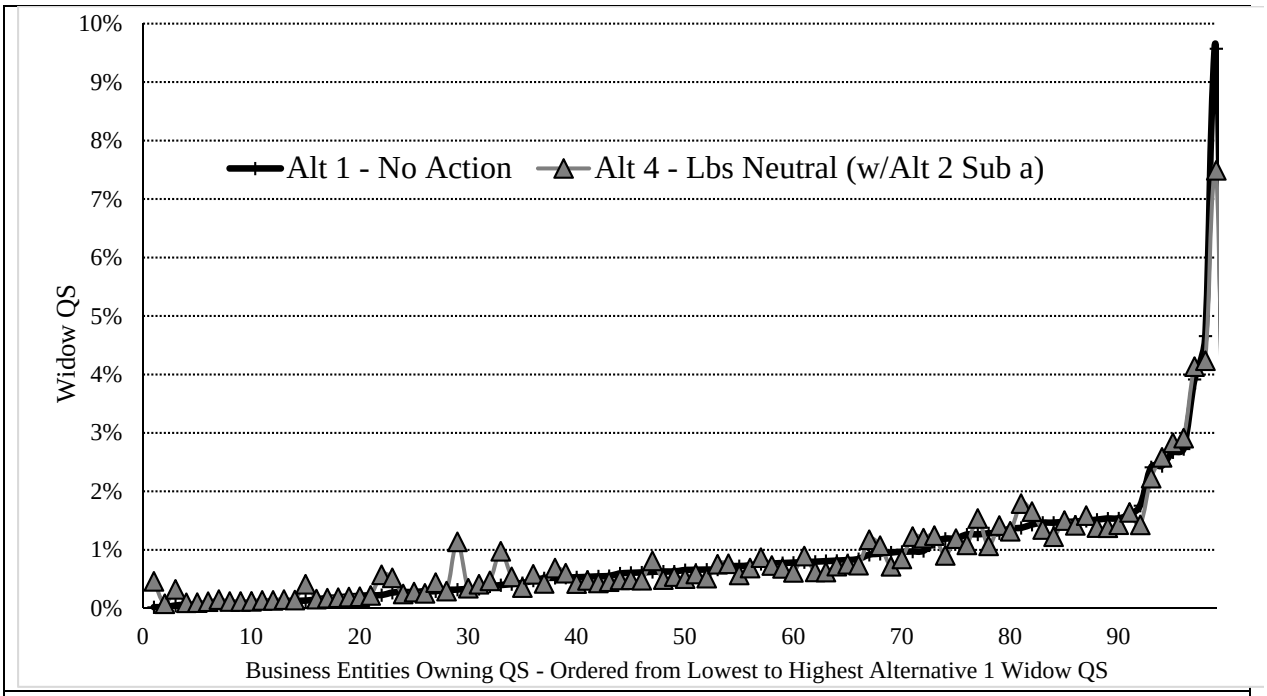

Figure 4-13. Allocation of widow QS among **individual QS owners** as of January 1, 2015 compared with allocations under Alternative 4.

4.3.1(a)(1)(viii)***Performance Relative to 1994-2002 Landings History***

One of the proposed allocation criteria is landings history. This section evaluates the performance of action alternatives relative to 1994-2002 widow rockfish landings history. The figures in this section array LE permits along the horizontal axis from least to most 1994-2002 landings history and show the corresponding allocation results under each alternative. Figure 4-4 provided this information for Alternative 1 (no action) and showed very little correspondence between no action and the 1994-2002 historic landings.

Alternative 5 allocation results are contrasted with 1994-2002 landings history in Figure 4-14. If Alternative 5 QS allocation were based only on the 1994-2002 landing history, the Alternative 5 results in Figure 4-14 would be appear as a line with constantly increasing values. Deviations from such a constant relationship are caused by the portion of the widow QS allocated proportional to whiting QS allocations. The pattern of the relationship between Alternative 5 and the 1994-2002 landings (Figure 4-14) is similar to that which would show for a comparison between Alternative 2(a) or 2(b) and the 1994-2002 landings because there is very little difference among Alternatives 2(a), 2(b) and 5, with Alternative 5 being a midpoints the Alternative 2(a) and 2(b), as was shown in Figure 4-9 and Figure 4-12.

Alternative 3(a) allocation results are contrasted with 1994-2002 landings history in Figure 4-15. In this figure the LE permits appear in the same order as in in Figure 4-14, but the Alternative 3(a) results jump around more because 2003-2010 exvessel revenue is also weighted into the allocation formula and those revenues do not correlate consistently with 1994-2002 landings history (as illustrated by Figure 4-6). Compared with Alternative 5, under Alternative 3(a) more LE permits with lower historic landings get larger allocations and the maximum allocations are lower. Figure 4-16 provides the same display for

Alternative 4. This figure shows substantially more variation from historic landings because under Alternative 4, approximately 70 percent of the allocation continues to be distributed on the basis of the status quo allocations (see Figure 4-4 for the comparison of status quo allocations to historic landings).

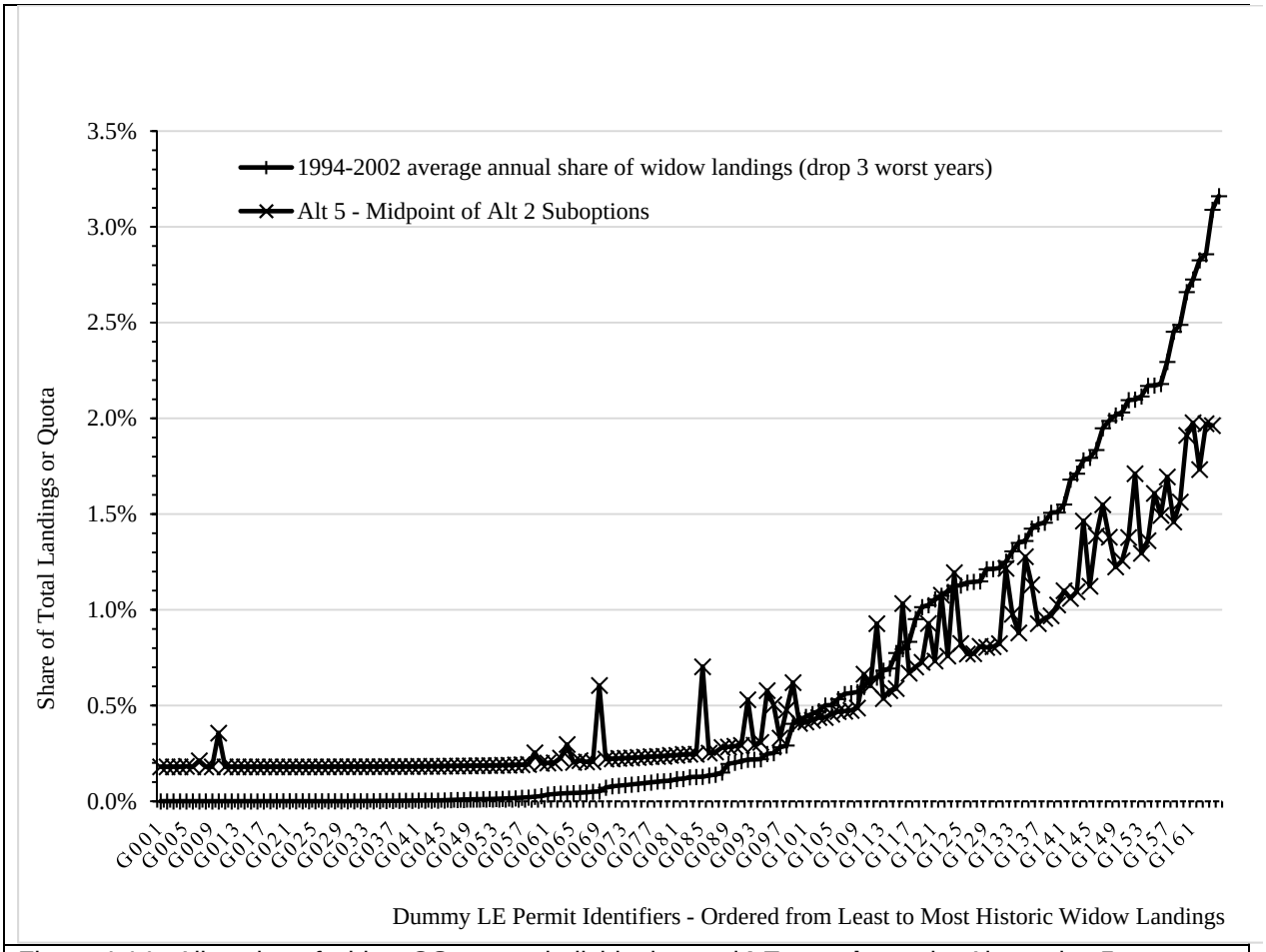

Figure 4-14. Allocation of widow QS among individual vessel **LE permits** under Alternative 5 compared with average relative widow rockfish landings during 1994-2002.

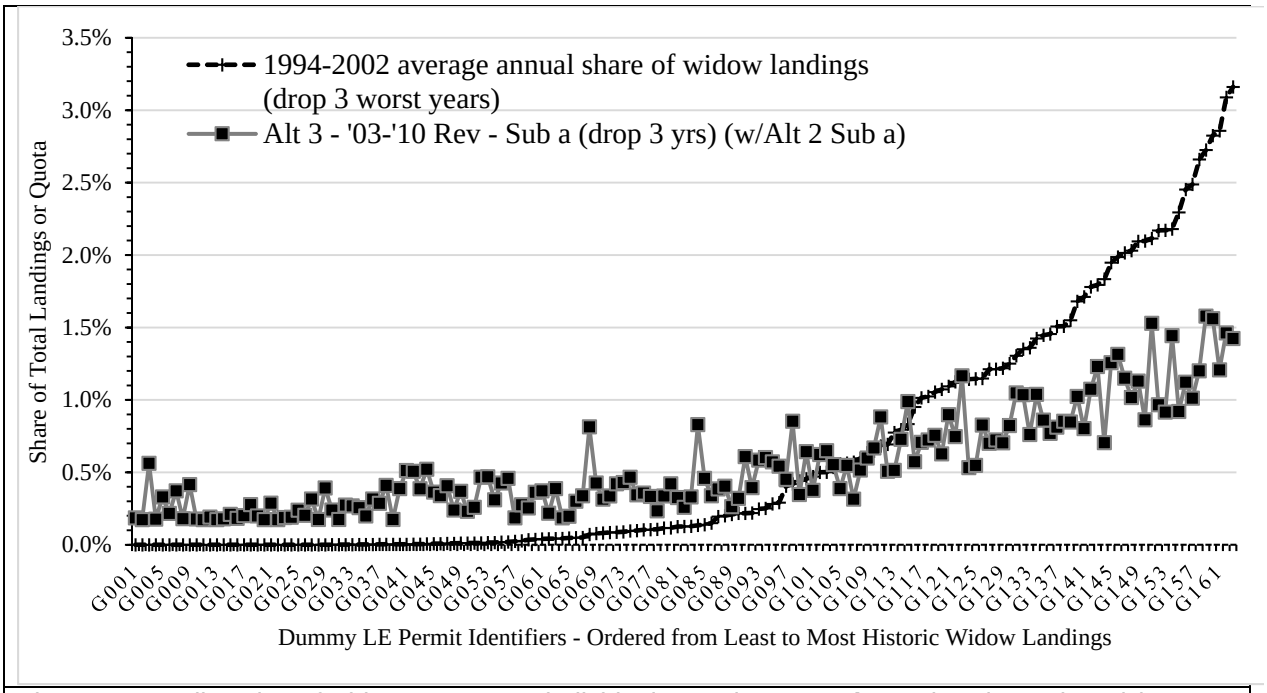

Figure 4-15. Allocation of widow QS among individual vessel **LE permits** under Alternative 3(a) compared with average relative widow rockfish landings during 1994-2002.

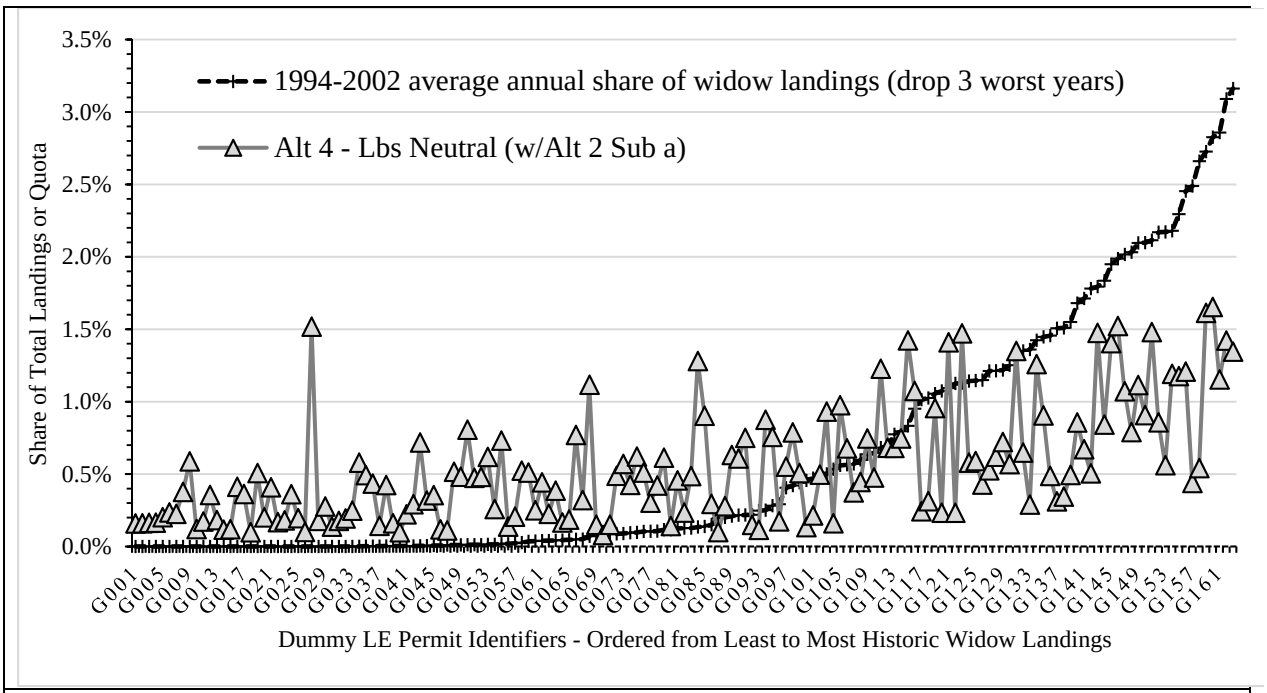

Figure 4-16. Allocation of widow QS among individual vessel **LE permits** under Alternative 4 compared with average relative widow rockfish landings during 1994-2002.

4.3.1(a)(1)(ix) ***Performance Relative to 2003-2010 ExVessel Revenue***

One of the proposed allocation criteria is more recent exvessel revenue. Figure 4-17, Figure 4-18 and Figure 4-19 in this section array LE permits along the horizontal axis from least to most 2003-2010 revenue and show the corresponding allocation results under the action alternatives. Figure 4-5 provided this information for Alternative 1 (no action) and showed very little correspondence between it and the 1994-2002 historic landings.

Because Alternatives 2(a), 2(b) and 5 are based on earlier lands history and there is not a strong correlation between earlier landings history and more recent revenue levels, as illustrated by

There are substantial deviations between the Alternative 5 allocations and the 2003-2010 exvessel revenue associated with each LE permit (Figure 4-17) and comparable results would be expected for Alternatives 2(a) and 2(b)—see Figure 4-9 and Figure 4-12 for the correspondence between Alternative 5 and Alternatives 2a and 2b. Each of these three alternatives rely on the 1994-2002 allocation period and it has been shown that there is only a limited correspondence between harvests in that period and exvessel revenues in the more recent 2003-2010 period. Alternative 3(a) includes the 2003-2010 allocation period as an additional criteria so there is a greater, but still limited, correlation between the Alternative 3(a) allocations and 2003-2010 revenues (Figure 4-18). Alternative 4 is based on a combination of the status quo formula, intended to meet bycatch needs, and Alternative 2 based on 1994-2002 widow landings history, neither of which show a strong correlation with 2003-2010 revenue history, therefore the Alternative 4 allocation results deviate substantially from 2003-2010 exvessel revenues (Figure 4-19). The minimum allocations are also lower under Alternative 4 than under any of the other alternatives.

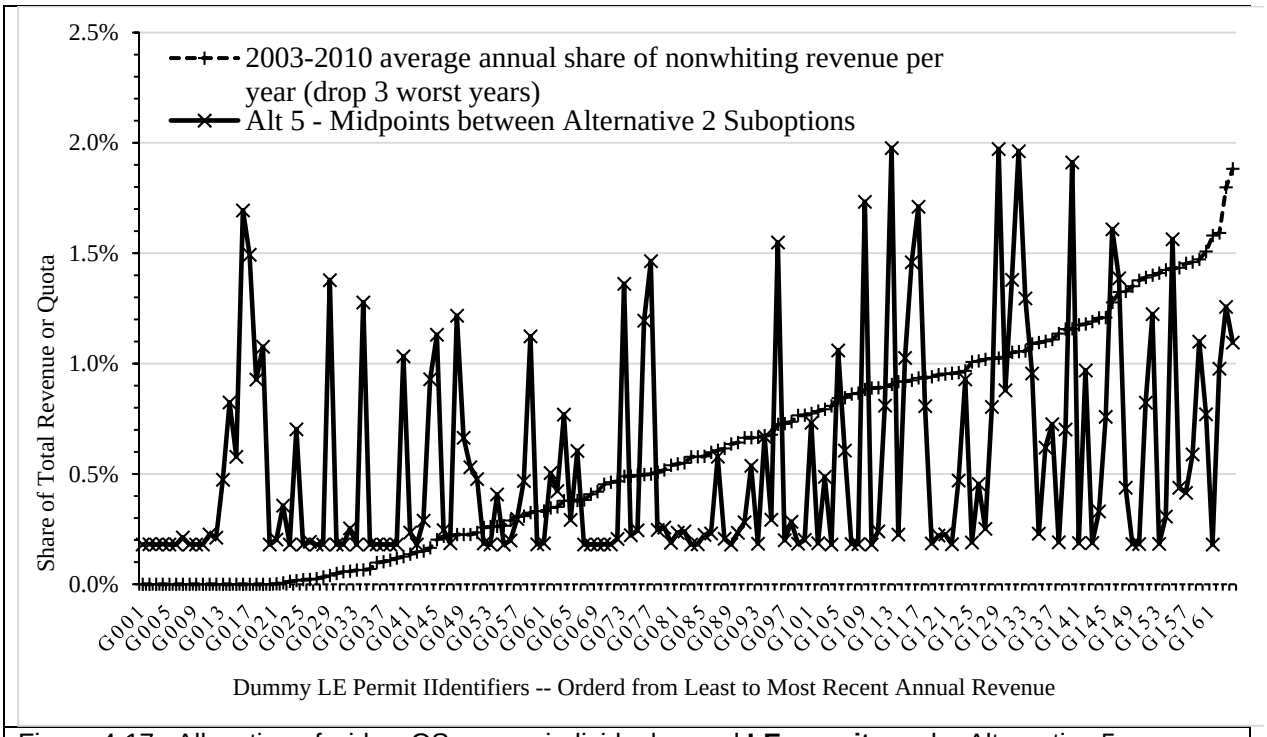

Figure 4-17. Allocation of widow QS among individual vessel **LE permits** under Alternative 5 compared with average relative nonwhiting groundfish exvessel revenue during 2003-2010.

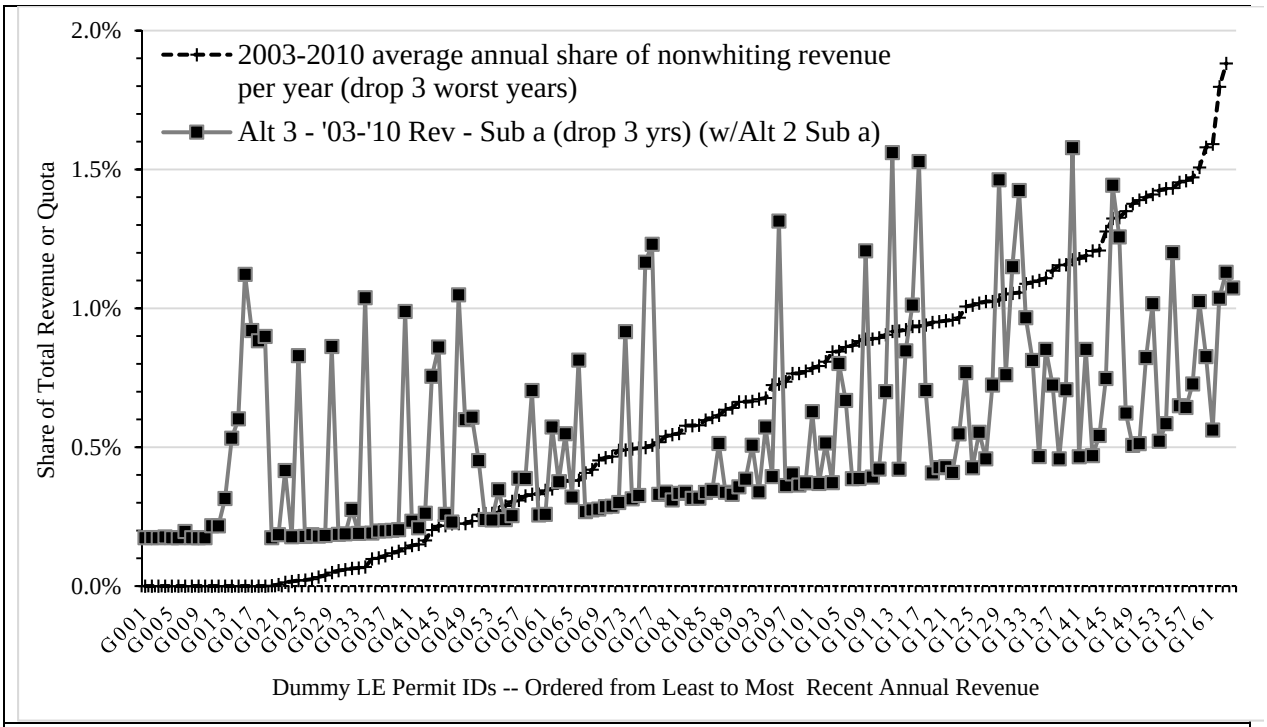

Figure 4-18. Allocation of widow QS among individual vessel **LE permits** under Alternative 3(a) compared with average relative nonwhiting groundfish exvessel revenue during 2003-2010.

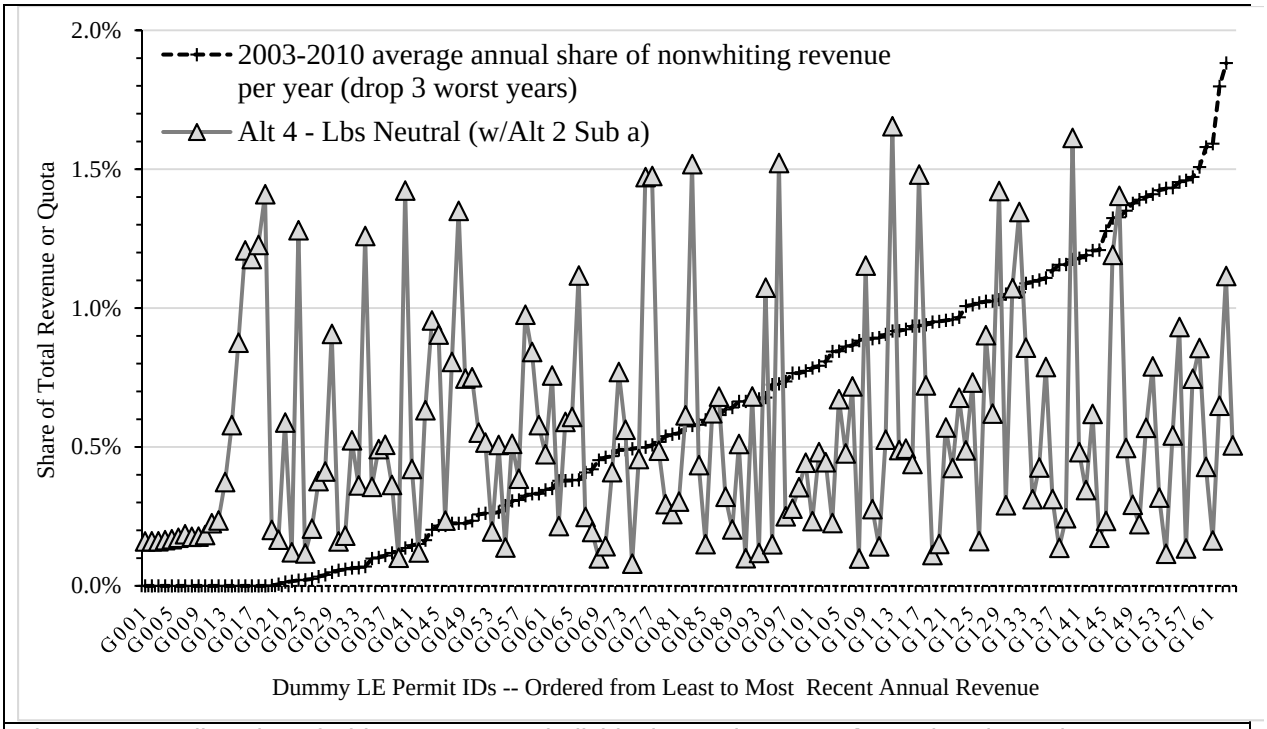

Figure 4-19. Allocation of widow QS among individual vessel **LE permits** under Alternative 4 compared with average relative nonwhiting groundfish exvessel revenue during 2003-2010.

4.3.1(a)(1)(x) ***Performance Relative to QP Allocations***

Alternative 4 was designed to ensure that no entity would receive less QP in 2016 than it did in 2014 under the lower 2014 trawl allocation. Figure 4-20 demonstrates that Alternative 4, as specified, achieves this objective. The QS allocations under Alternative 4 were converted to QP using the 2016 shoreside trawl allocation of widow, and the results are compared to the status quo QS allocations converted to QP using the 2012 and 2014 shoreside trawl allocations of widow. In all cases the resulting individual QP allocations under Alternative 4 are higher compared with results of status quo (initial) QS applied to the 2014 trawl sector allocation.

For 109 of 164 LE permits, Alternative 5 would provide more QP in 2016 than the status quo QS allocations provided in 2015 (Figure 4-21) and comparable results would be expected for Alternatives 2(a) and 2(b)—see Figure 4-9 and Figure 4-12 for the correspondence between Alternative 5 and Alternatives 2a and 2b. For 117 of 164 LE permits, Alternative 3(a) would provide more QP in 2016 than the status quo QS allocations provided in 2015 (Figure 4-21). While for both of these alternatives many LE permits would fail to receive QP allocation amounts at or above the amounts they were allocated in 2014, most would receive QP above the 2012 level. Under Alternative 5 eight LE permits would fall below the 2012 level, and under Alternative 3(a) two LE permit's QP would fall below the 2012 level. As mentioned previously, actual allocations would be to QS accounts but LE permits are being used to maintain a link to the original basis for the initial allocations. Similar results would be expected if the LE permits were aggregated into the QS accounts that were ultimately created.

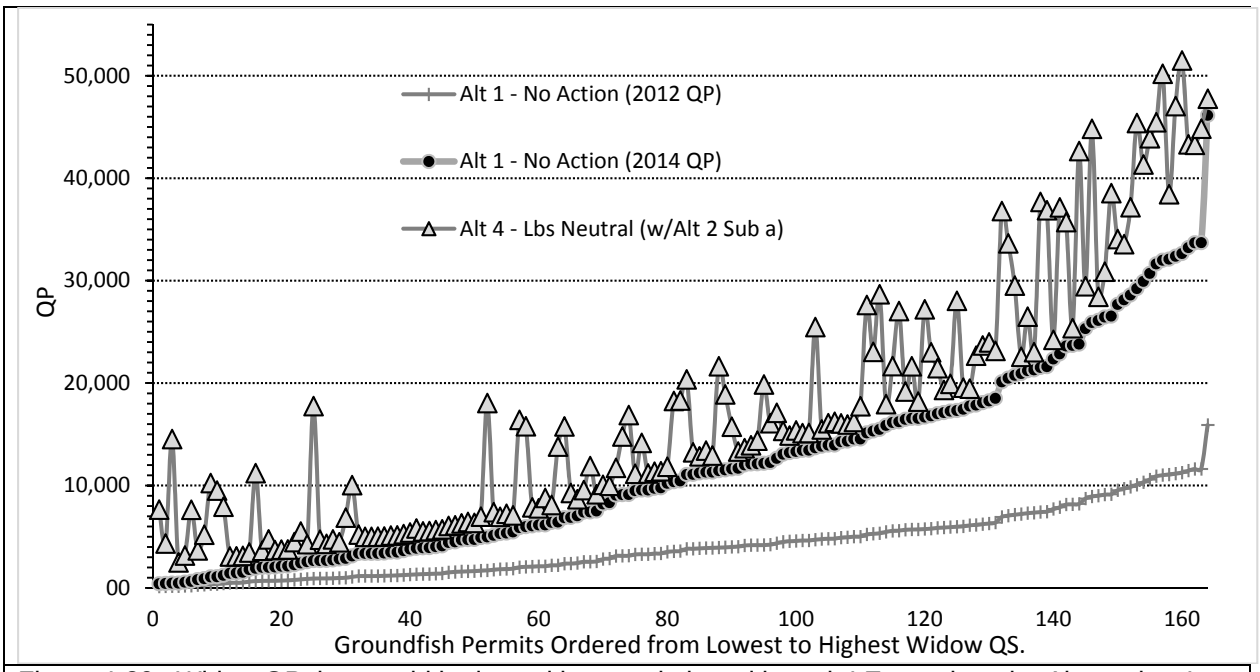

Figure 4-20. Widow QP that would be issued in association with each LE permit under Alternative 4 (based on the 2016 trawl allocation) compared with QP issued based on each LE permit's status quo QS allocations in 2012 and 2014.

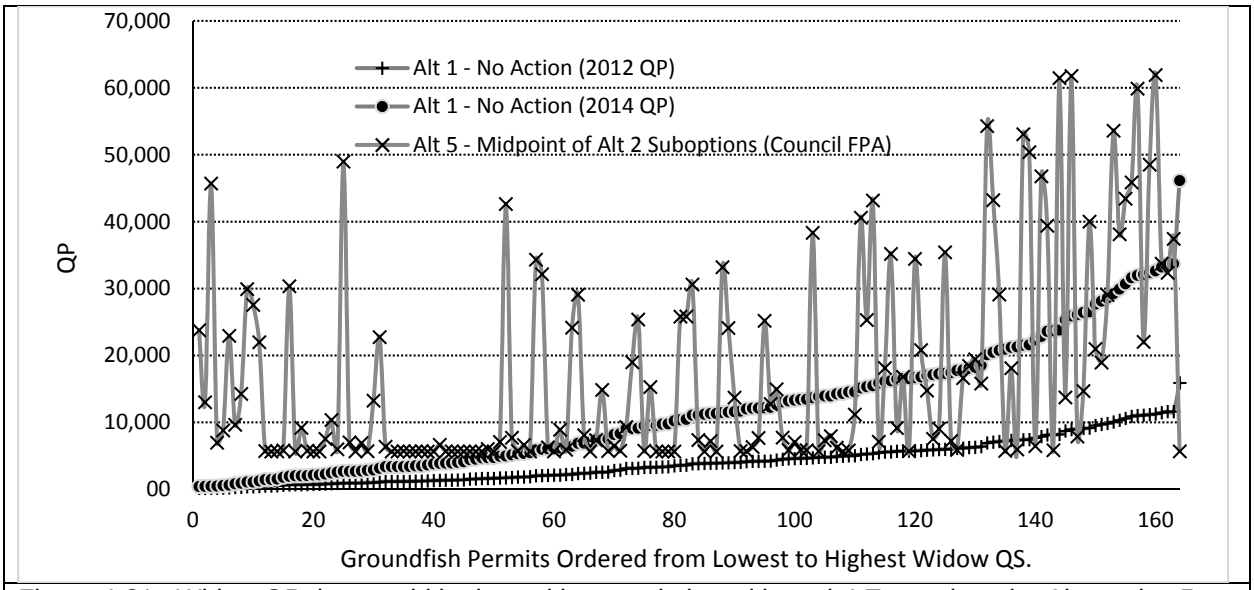

Figure 4-21. Widow QP that would be issued in association with each LE permit under Alternative 5 (based on the 2016 trawl allocation) compared with QP issued based on each LE permit's status quo QS allocations in 2012 and 2014.

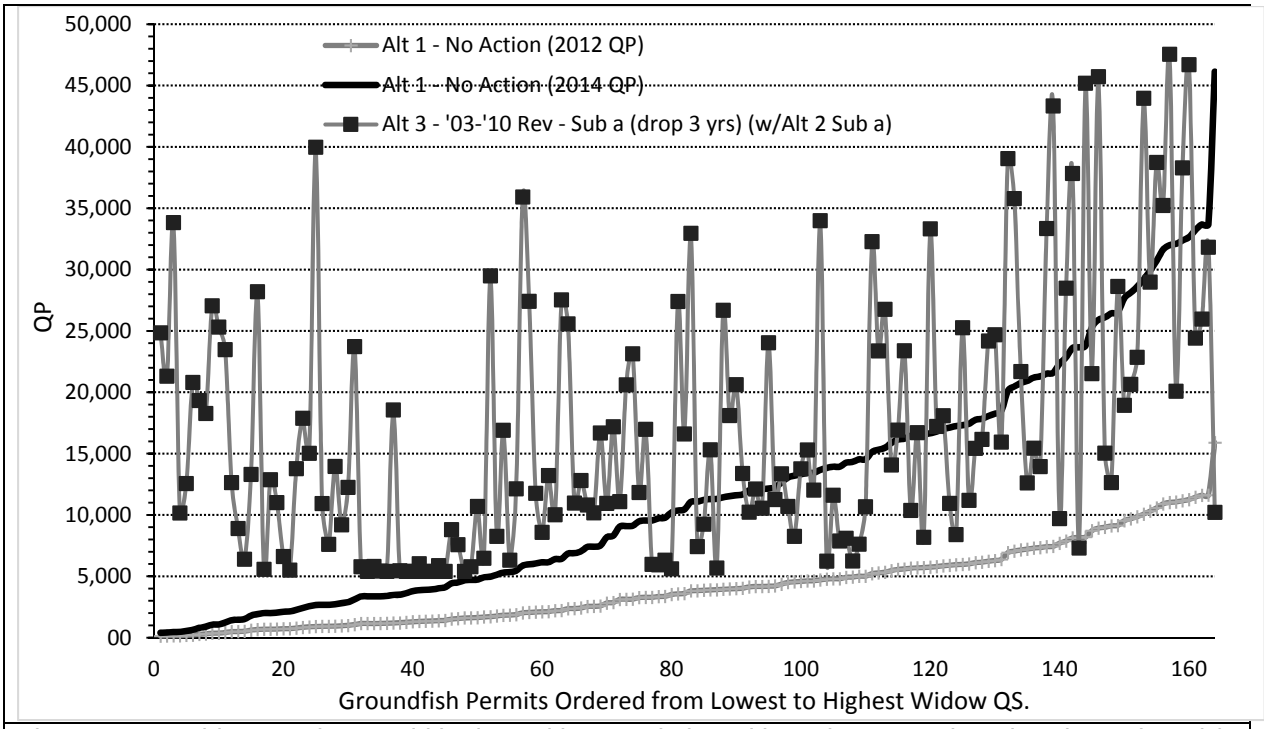

Figure 4-22. Widow QP that would be issued in association with each LE permit under Alternative 3(a) (based on the 2016 trawl allocation) compared with QP issued based on each LE permit's status quo QS allocations in 2012 and 2014.

4.3.1(a)(1)(xi) ***Action Alternatives – Allocation Suboptions***

This section provides information to indicate the influence of suboption choice on the allocation results. The Alternative 2 suboptions affect results not only for Alternative 2 but also Alternative 3 and

Alternative 4, which rely in part on Alternative 2. Table 4-8 lists the figures in this document in which alternatives and suboptions are contrasted.

Table 4-8. Guide to figures illustrating differences between the allocation alternative suboptions.

2-Way Comparisons		Figure in Which Results are Displayed For:		
First Alternative	Second Alternative	All LE permits	LE permits without Whiting History	LE permits with Whiting History
Alternative 2 **Suboption a**	Alternative 2 **Suboption b**	Figure 4-23	Figure 4-24	Figure 4-25
Alternative 3 **Suboption a** (Using Alt 2, Subopt a for base)	Alternative 3 **Suboption b** (Using Alt 2, Subopt a for base)	Figure 4-26	a/	a/
Alternative 3 Suboption a (Using Alt 2, **Subopt a** for base)	Alternative 3 Suboption a (Using Alt 2, **Subopt b** for base)	Figure 4-27	a/	a/
Alternative 4 (Using Alt 2, **Subopt a** for base)	Alternative 4 (Using Alt 2, **Subopt b** for base)	Figure 4-28	a/	a/

a/ Combination was omitted because differences are slight and can be inferred from other figures.

A statistical comparison of all the suboptions is provided in Table 4-10.

Alternative 2 – Comparison of Suboption (a) to Suboption (b)

Alternatives suboptions a and b vary in the relative emphasis that the allocation formula places on whiting and nonwhiting trips (Table 4-9).

Table 4-9. Amount of widow QS allocated under Alternative 2 on the basis of whiting and nonwhiting catch history.

	Alternative 2	
	Suboption a	Suboption b
Whiting allocation portion	12.3%	5.7%
Portion based on nonwhiting catch	49.1%	53.7%

Suboption a attaches more than twice as much weight to whiting history as suboption b. For most LE permits, allocating more QS on the basis of nonwhiting trips (suboption b) results in slightly higher allocations. The LE permits that receive higher allocations under suboption a tend to be those that received higher status quo allocations and a few LE permits that would receive the highest allocations under Alternative 2 (see circled points in Figure 4-23). Results are broken out separately for LE permits with whiting history and those without whiting history in Figure 4-24 and Figure 4-25. As would be expected, LE permits with whiting history were generally favored by suboption a, though a number would receive somewhat higher widow QS allocations under suboption b in (see circled points in Figure 4-24). These results are driven by each individual LE permit's balance of whiting and nonwhiting landings. For LE permits that have only non-whiting history, suboption b provides a consistent small bump in each LE permit's allocation compared with suboption a (Figure 4-25). The Council's FPA, Alternative 5, splits the difference between these two suboptions such that each LE permit receives its midpoint between the results for Suboption a and Suboption b (Figure 4-9).

Table 4-10. Statistics on widow QS reallocation among LE permits under the alternatives and suboptions.

	Alternative 1 (No Action)	Alternative 2 (Landings History)		Alternative 3 (Landings History and Recent Revenue)				Alternative 4 (Pounds Neutral)	
				Suboption a (drop three years)		Suboption b (no drop years)			
		Suboption a ACL Based [2(a)]	Suboption b: 3,790 mt ACL [2(b)]	With 2(a)	With 2(b)	With 2(a)	With 2(b)	With 2(a)	With 2(b)
QS Reallocated	-	27.5%	29.1%	23.5%	25.7%	23.8%	26.0%	8.4%	8.8%
Maximum Allocation	2.11%	2.03%	1.98%	1.58%	1.44%	1.61%	1.48%	1.65%	1.62%
Minimum Allocation	0.02%	0.17%	0.19%	0.17%	0.19%	0.17%	0.19%	0.08%	0.08%
Number with Increased QS	-	81	80	87	88	86	90	81	80
Avg QS Allocated	-	0.77%	0.72%	0.62%	0.60%	0.62%	0.61%	0.66%	0.00%
Average QS Increase	-	+0.34%	+0.36%	+0.27%	+0.29%	+0.28%	+0.29%	+0.10%	+0.11%
Number Increased More Than Average	-	33	33	38	38	38	39	33	33
Max Increase	-	+1.38%	+1.50%	+1.08%	+1.17%	+1.12%	+1.22%	+0.42%	+0.46%
Number with Reduced QS	-	83	84	77	76	78	74	83	84
Avg QS Allocated	-	+0.34%	+0.38%	+0.47%	+0.49%	+0.47%	+0.48%	+0.44%	+0.00%
Average Reduction	-	-0.33%	-0.35%	-0.31%	-0.34%	-0.30%	-0.35%	-0.10%	-0.11%
Number Reduced More Than Average	-	47	47	47	43	48	41	47	47
Max Reduction	-	-1.93%	-1.92%	-1.79%	-1.76%	-1.79%	-1.76%	-0.59%	-0.58%

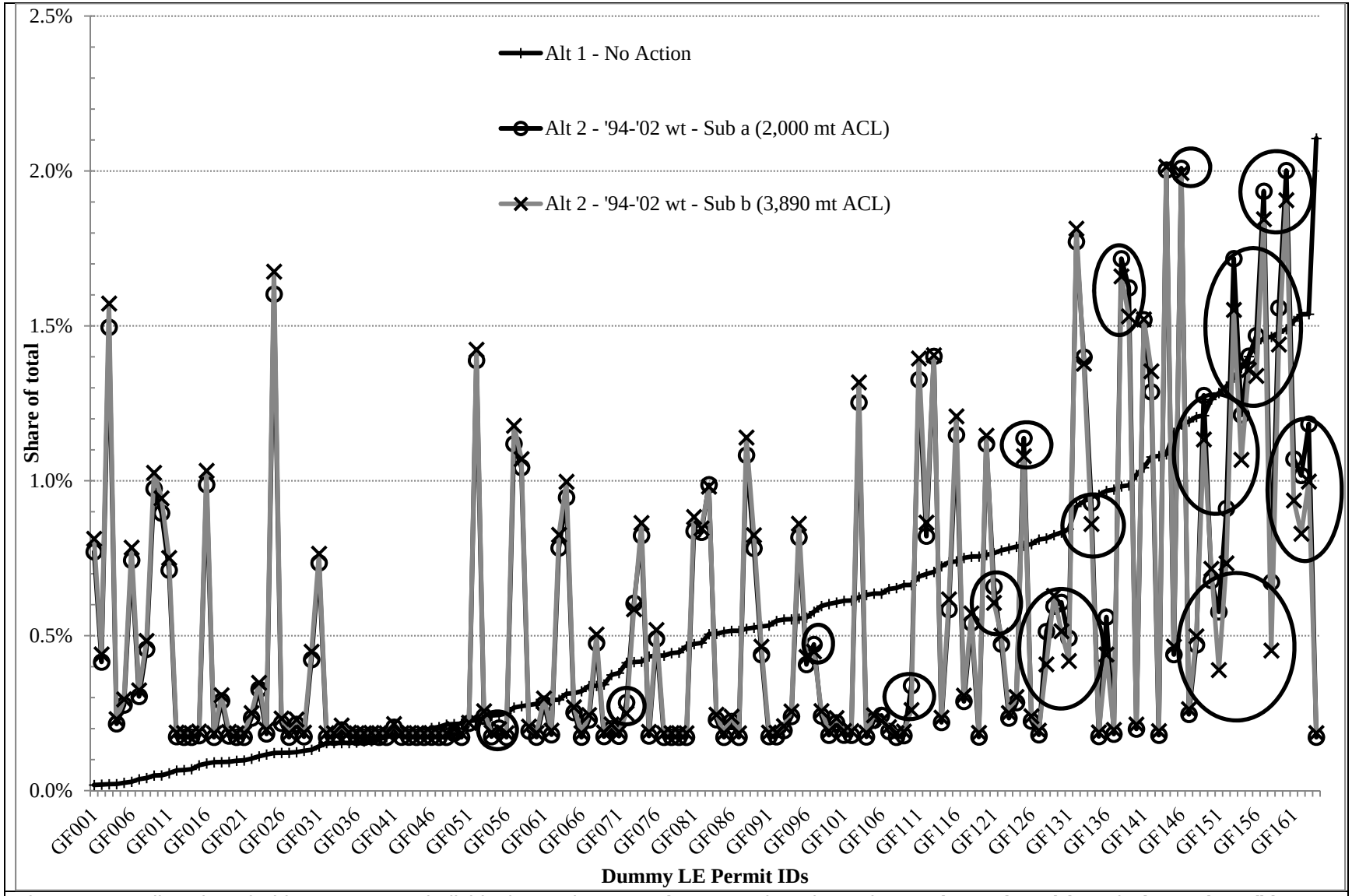

Figure 4-23. Allocation of widow QS among individual vessel **LE permits** comparing Alternative 1, **Alternative 2(a),** and **Alternative 2(b).**

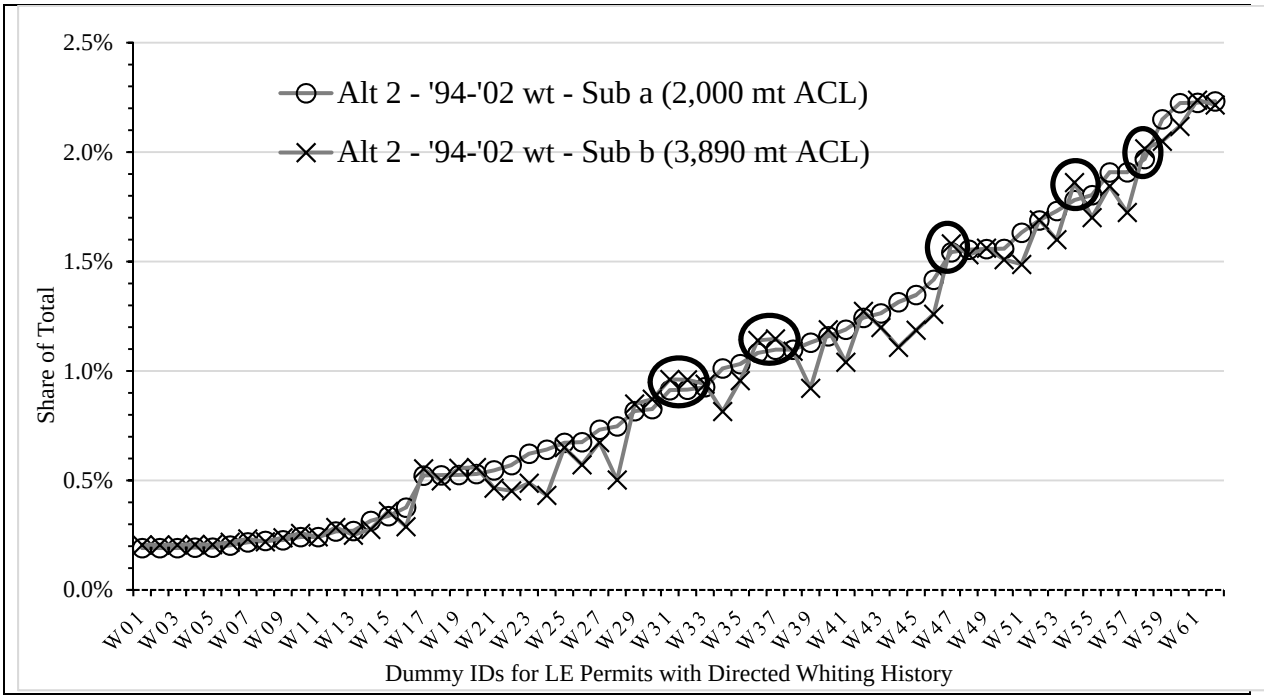

Figure 4-24. Allocation of widow QS among individual vessel **LE permits** comparing **Alternative 2(a)** with **Alternative 2(b)** for LE permits with **some directed whiting history** from 1994-2003.

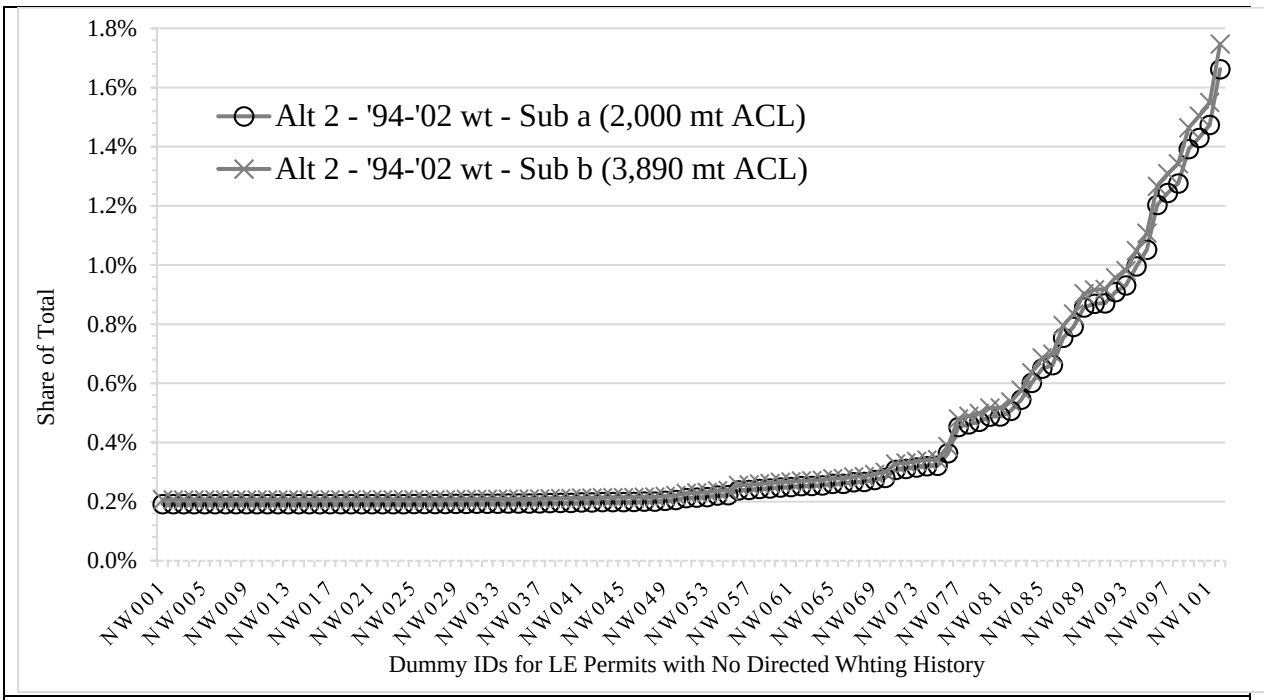

Figure 4-25. Allocation of widow QS among individual vessel **LE permits** comparing **Alternative 2(a)** with **Alternative 2(b)** for permits with **no directed whiting history** from 1994-2003.

Alternative 3 – Comparison of Suboption (a) to Suboption (b)

Alternative 3 suboption a drops each LE permits worst three years from calculation of the LE permit's nonwhiting revenue history. In general, this provision favors LE permits that have had some variability in their landings history. Such LE permits might be expected to experience a slight rise in allocation. LE permits that have been consistent performers across all the years (and thus would not gain much from dropping their worst years) would receive somewhat lower allocations because of the increased credit given to LE permits with more variable history. While the drop year provision was primarily intended to address hardship conditions that individual operators encountered, it also benefits harvesters whose history may vary for other reasons such as those who in some years participate less heavily in groundfish and more heavily in non-groundfish fisheries (or in Alaska). The differences in allocation results between these two alternative suboptions are relatively small (Figure 4-26).

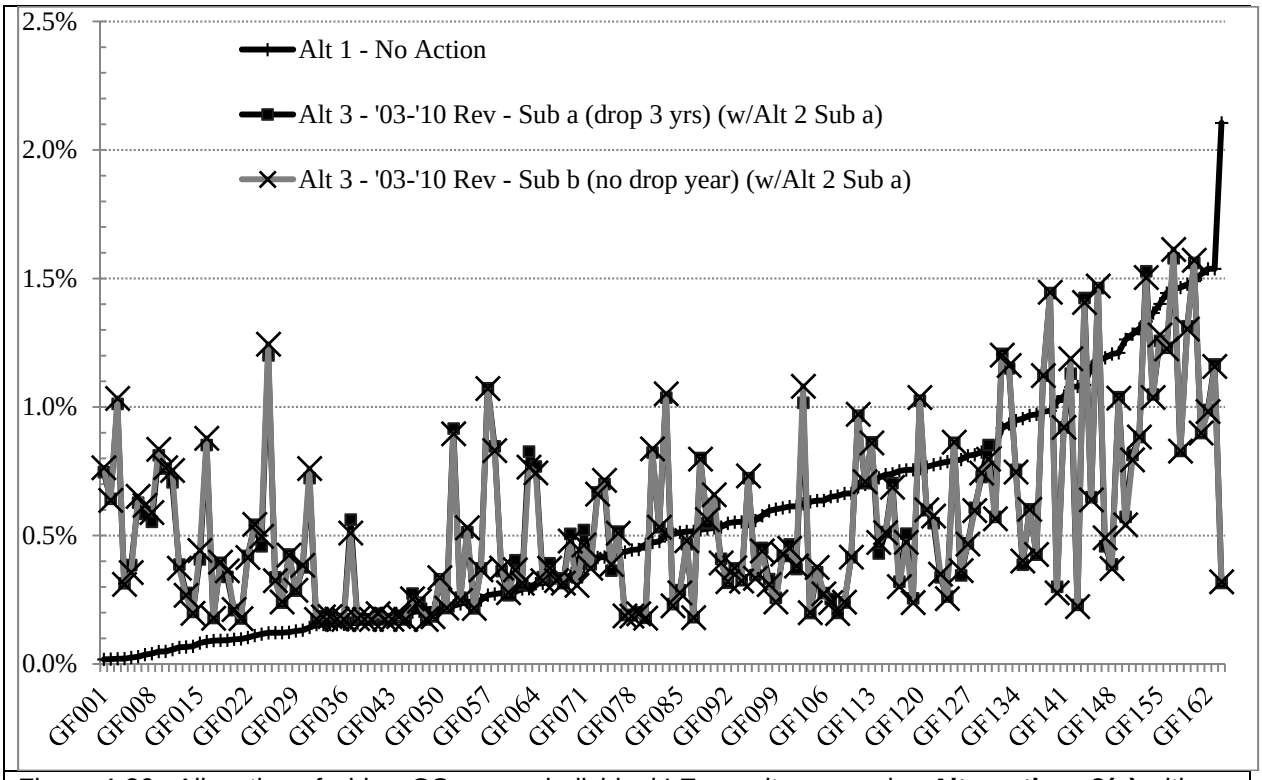

Figure 4-26. Allocation of widow QS among individual LE permits comparing **Alternatives 3(a)** with **Alternative 3(b)** (both with Alternative 2(a) allocations used for the widow landings-based portion).

Influence of Alternative 2 Suboption Choices on Alternative 3 Results

Since the Alternative 2 allocations are a component of Alternative 3, the Alternative 2 suboptions, which affect the amount of allocation credit given for whiting and nonwhiting trips, also influence the Alternative 3 results. However, the effect of the suboption choice on the amount of the allocation going for whiting trips is the same for both Alternative 2 and Alternative 3, i.e., under Alternative 2(a) the amount of widow QS allocated for whiting trips history is 12.3 percent and if Alternative 3 is selected in combination with Alternative 2(a), 12.3 percent will also be allocated based on whiting trip history. Similarly suboption b of Alternative 2 results in a 5.7 percent widow QS allocation based on whiting trips regardless of whether it is selected as part of Alternative 2 or selected as part of the specification under

Alternative 3. The effect of the Alternative 2 suboption choice on the results for Alternative 3 are depicted in Figure 4-27.

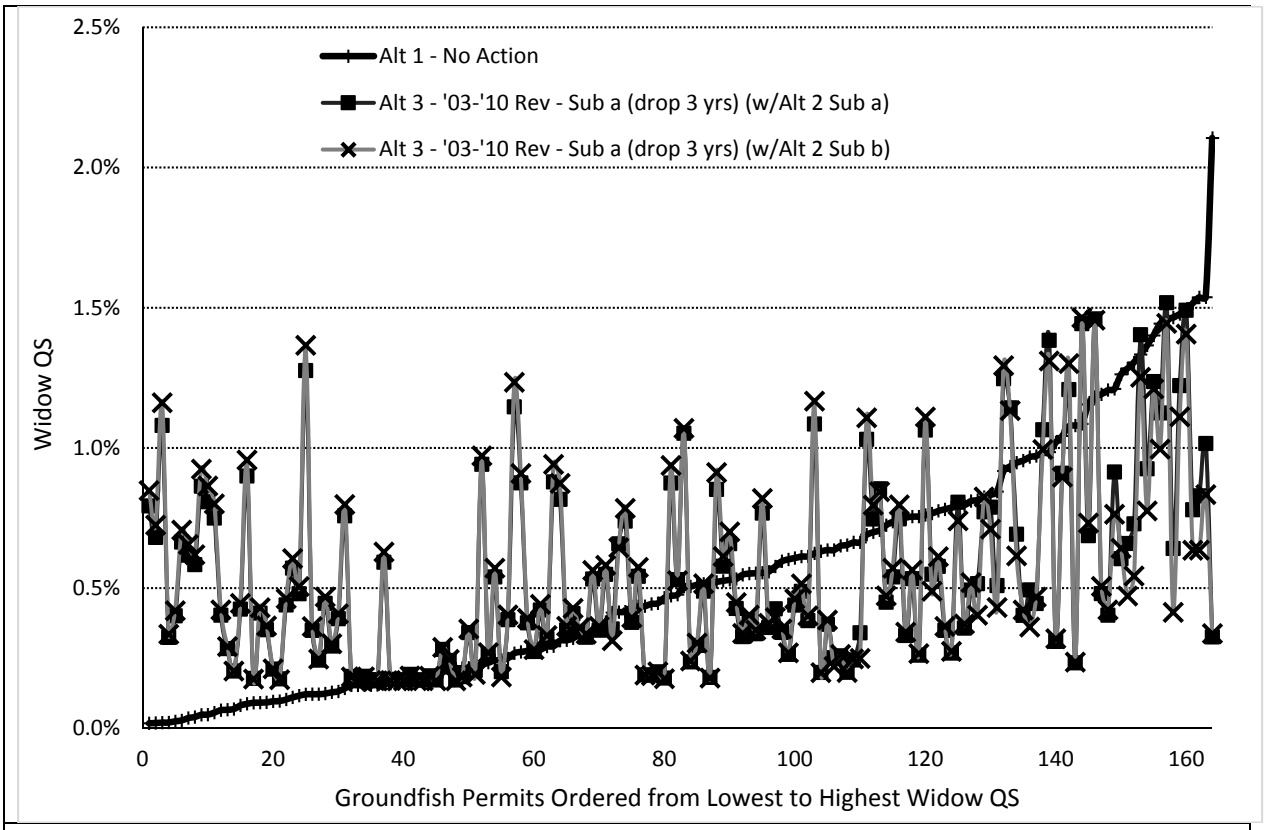

Figure 4-27. Allocation of widow QS among individual vessel **LE permits** comparing **Alternatives 3(a) (**with Alternative 2(a) as the base) to Alternative 3(a) (with Alternative 2(b) as the base).

Influence of Alternative 2 Suboption Choices on Alternative 4 Results

While the effect of the choice of Alternative 2 suboption on the whiting/nonwhiting split of the widow QS allocation is the same under Atlernative 2 or Alternative 3, under Alternative 4 the effect is different because the amount of QS being reallocated is only 30 percent of the total. The total amounts allocated based on whiting and nonwhiting history under the suboptions are displayed in Table 4-10. The pattern of difference in individual allocations between Alternative 4 with Alternative 2 suboption a and Alternative 4 with Alternative 2 suboption b is the same as the pattern of difference between Alternative 2 suboption a and Alternative 2 suboption b, but the amplitude of differences is less since only about 30% of the QS is being reallocated under Alternative 4 (compare Figure 4-28 to Figure 4-23).

Table 4-11. Amount of widow QS allocated under Alternative 4 on the basis of whiting and nonwhiting catch history (includes both the portion of the QS allocated under Alternative 1, No Action, and the portions of the QS to be reallocated under Alternative 2a).

	Alternative 4 combined with	
	Alternative 2 Suboption a	Alternative 2 Suboption b
Whiting allocation portion	23.3%	21.3%
Portion based on nonwhiting catch	58.1%	59.5%

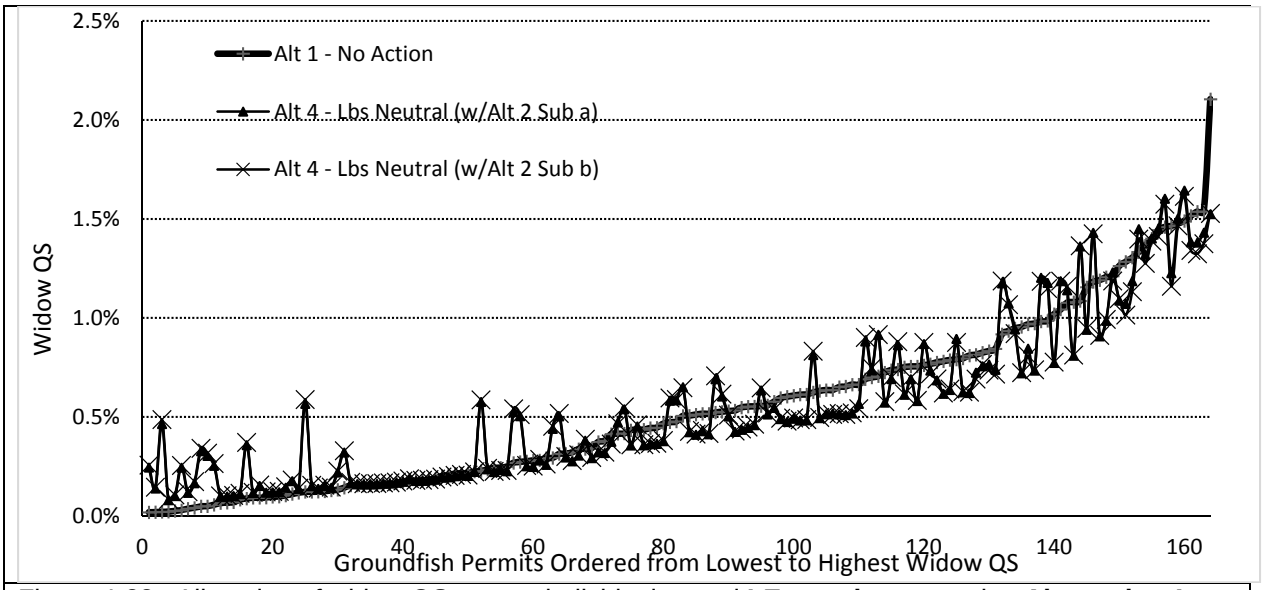

Figure 4-28. Allocation of widow QS among individual vessel **LE permits** comparing **Alternative 4 (**with Alternative 2(a) as the base) to **Alternative 4** (with Alternative 2(b) as the base).

4.3.1(a)(2) Summary of Impacts to Those Owning or Otherwise Controlling QS

The following tables provides a summary of impacts on those who own and control QS discussed in this section.

Table 4-12. Summary of impacts of the reallocation alternatives on those who own or control QS.

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
General	Current QS distribution maintained. QS redistribution in response to market forces or other values once trading moratorium is lifted. Benefits fluctuate with changing ACLs.	Direct redistribution through reallocation. Possible minor economic benefits related to reduction in transaction costs that would be incurred under No Action, to the degree that historic harvesters that receive additional QS would otherwise have sought to purchase it. QS redistribution in response to market forces or other values (e.g. life style benefits or bequeathal values) once trading moratorium is lifted. Assuming market factors are the dominant influence on QS, no efficiency impacts. If QS is not traded based on market factors, efficiency impacts uncertain. Main socio-economic effect a redistribution of wealth and impacts on fairness and equity objectives.			
Indicator of Relative Size of Impact (Total QS Reallocated)	QS Reallocated=0%	QS Reallocated=27.5% - 29.1% (depending on suboptions)	QS Reallocated=23.5% - 26.0% (depending on suboptions)	QS Reallocated=8.4% - 8.8% (depending on suboptions)	QS Reallocated=28.2%
Distribution (see Table 4-6 and Table 4-9 for additional statistics)	Minimum allocation for an LE Permit = 0.02%. Maximum allocation for an LE Permit = 2.11%.	Minimum allocation for an LE Permit = 0.17% - 0.19% Maximum allocation for an LE Permit = 1.98%-2.03% (depending on suboptions)	Minimum allocation for an LE Permit = 0.17 – 0.19% Maximum allocation for an LE Permit = 1.44-1.61% (depending on suboptions)	Minimum allocation for an LE Permit = 0.080% - 0.085. Maximum allocation for an LE Permit = 1.62-1.65% (depending on suboptions).	Minimum allocation for an LE Permit = 0.18%. Maximum allocation for an LE Permit = 1.98%
Dependence (see Figure 3-5 and Figure 3-6)	Widow QS comprises a relatively small portion of the exvessel value equivalent of all quota allocated.				
Recent and Historic Participation Factors (Amendment 20 provides detailed discussion of additional ways that the system accounts for recent and historic participation)	Allocation based on bycatch needs. Any correspondence between historic widow harvest and widow allocations is mainly coincidental	Distribution favoring those who have historically targeted and depended on widow. Suboption b favors those who historically targeted slightly more than Suboption a.	Distribution weighs in both historical targeting and dependence on widow and total nonwhiting groundfish revenue in more recent years	Distribution weighs in historical targeting and dependence on widow but amount of QS reallocated is reduced to provide everyone in 2016 with a QP distribution equal to what they received in 2014.	Distribution favoring those who have historically targeted widow (weighting is midpoint between Suboption a and b of Alternative 2).

Table 4-13. Summary of the effective emphasis given to each element of the reallocation alternatives.

Allocation Criteria	Alternative 1 (No Action)	Alternative 2 Suboption a	Alternative 2 Suboption b	Alternative 3 Suboption a (with Alt 2 Suboption a)	Alternative 4 Suboption a (with Alt 2 Suboption a)	Alternative 5
AMP	10%	10.0%	10.0%	10.0%	10.0%	10.0%
	Allocations for LE Permits (for distribution to the QS accounts generated by those permits)					
Equal Allocation	0%	28.6%	30.6%	28.6%	8.6%	29.6%
Whiting Trips	28%	12.3%	5.7%	12.3%	23.3%	9.0%
Nonwhiting Trips	62%	49.1%	53.7%	49.1%	58.1%	51.4%
For bycatch needs	62%	-		-	43.4%	-
Historic Landings	-	49.1%	53.7%	24.6%	14.8%	51.4%
Recent Revenue	-	-		24.6%	-	-

4.3.1(b) *Impacts on Vessel Owners*

4.3.1(b)(1) No Action on Reallocation (Alternative 1)

Under the no action alternative it is likely that the QP issued to holders of QS will find its way through various channels (including the market, see discussion in Section 4.1.1) to vessels that are most efficient in targeting on widow in the context of directed and multispecies harvest strategies.

Owners of vessels that participate in the trawl fishery rely on income from the fishery to sustain their businesses. That income may come either through leasing their vessels out to harvesting operations or using the vessels themselves as part of their own harvest operation.

There are 24 vessels registered to LE permits for which a direct link to a QS account with widow QS cannot be established by an examination of owner names, addresses, and other publically available information[8]—see fifth and seventh rows of of Table 3-9, page 50. These 24 vessels are owned by 18 business entities. Six of the 22 vessels are associated with new QS accounts which have no widow QS (likely because of the widow QS trading moratorium). These vessels are fully reliant on acquisition of widow QP on the market or through other arrangements with businesses that have QS accounts.

Of 140 QS accounts with widow QS, 117 appear to be associated with entities that also own vessels, 16 of these accounts are held by entities that are also first receivers (Table 3-9). An additional QS account with widow QS is associated with a first receiver for which an ownership link to a vessel is not apparent. This leaves 22 accounts that have widow QS and no apparent link to vessels or first receivers. These 22

[8] There may be other confidential information available which could be used to establish links but that information is not used in this analysis in order to avoid the possibility of its divulgence.

accounts and the first receiver account are the accounts most likely to be a source of QP for vessels not associated with QS accounts. About 25% of the widow QS is held in these accounts, which are controlled by 23 entities.

If the no action alternative were selected the trading moratorium would be lifted and it is likely that those harvesters that own vessels but not widow QS would either continue to acquire QP after it is issued each year or would acquire widow QS in order to secure long-term access to the QP. The most likely source of the QS for these vessels would be the QS held by entities that do not own vessels. Selection of the No Action alternative would not be expected to affect the aggregate operational efficiency of the fleet.

4.3.1(b)(2) Action Alternatives - Reallocation

Overall, the action alternatives will reduce the amount of QS held by entities that do not appear to be linked to vessels and increase allocations to entities linked to vessels (Table 4-). Under Alternative 5, the amount of QS held by entities with vessels would increase from 64.9 percent (under Alternative 1, No Action) to 71.9 percent, and increase by lesser amounts under the other action alternatives, except for Alternative 2(a) (Table 4-). The amount of QS held in accounts without a link to vessels or processors would decline by 28 percent under Alternative 5 compared to Alternative 1 (from 24.9% down to 17.9% under Alternative 5).

In general, harvesters with vessels that receive an increased allocation would be expected to experience an increase in wealth that may translate to a greater cash flow from their harvesting operations. The inverse would apply for harvesters that own vessels and receive lesser allocations than under status quo. The allocation changes would not be expected to alter efficiency or net economic value generated.

Harvesters that own vessels but not QS may be impacted if this shift results in a change in QP prices, however, the potential for and direction of such an impact is uncertain. On the one hand, the overall pool of QP will not be impacted and therefore market prices might not be affected, assuming effectively functioning markets. On the other hand, nonmarket factors may lead to a different result. For example, if QS is reallocated to harvesters that would otherwise not be able to afford the QS (e.g. their operations are not sufficiently efficient to survive economically after paying market price for QS) and those entities retain the QS due to non-pecuniary benefits from fishing (such as value placed on a lifestyle), the amount of QP available at market prices might be reduced, increasing QP prices paid by vessel owners without QS. Moving QS away from entities that own QS accounts and no other fishing assets (i.e. entities that are most likely to be motivated solely by financial return) and toward entities that also own vessels is likely to put more QS in the hands of those who value fishing for non-pecuniary reasons, potentially resulting in some upward influence on QP price over the short term. Such an increase would in turn have some negative impact on the profits for vessels owners which do not have their own QS (the 18 owners of 24 vessels that do not also own QS accounts with widow QS). However, the potential for an increase in price relative to the No Action is speculative and any impact would likely diminish over the long term.

Table 4-14. Widow QS allocations to QS accounts associated and not associated with vessels, by alternative.

Holdings of Business Entities	Number of Entities	Alt 1	Alt 2 SubOpt a	Alt 2 SubOpt b	Alt 3 SubOpt a (With Alt 2--SubOpt a)	Alt 4 (With Alt 2--SubOpt a)	Alt 5
QS Accounts and **Vessels**	73	58.9%	65.6%	65.0%	64.8%	61.0%	65.3%
QS Accounts, **Vessels**, First Receivers Licenses	3	6.0%	6.6%	6.6%	7.0%	6.2%	6.6%
QS Accounts First Receivers Licenses	1	0.1%	0.2%	0.2%	0.4%	0.2%	0.2%
QS Accounts Only	22	24.9%	17.6%	18.2%	17.7%	22.7%	17.9%
Vessels Only	16	n/a	n/a	n/a	n/a	n/a	n/a
First Receiver and **Vessel** Only	2	n/a	n/a	n/a	n/a	n/a	n/a

4.3.1(b)(3) Summary of Impacts on Vessel Owners

The following tables provides a summary of impacts on vessel owners discussed in this section.

Table 4-15. Summary of impacts of the reallocation alternatives on vessel owners.

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Vessel Owners (Section 4.3.1(a)(2))					
General	Some vessels owners have QS others do not. Harvest opportunities fluctuate with changing ACLs. Vessels tend to have a low direct dependence on widow (Table 3-12) but are somewhat more dependent when bycatch needs are taken into account.	Initially, the amount of QS held by vessel owners would increase. Decreases in QS held by non-vessel owners may reduce availability of QP for vessel owners that do not own QS. Impacts on QP market price are uncertain – may be neutral. For fleet as a whole, no impact on vessel efficiency.			
Amount of QS Held by Vessel Owners	64.9%	71.6% - 72.2% (depending on suboptions)	71.2%-72.0% (depending on suboptions)	67.0%-67.2% (depending on suboptions)	71.9%
Amount of QS Held by Non-Vessel Owners	25.0%	17.8%-18.4% (depending on suboptions)	18.0%-18.8% (depending on suboptions)	22.8%-23.0% (depending on suboptions)	18.1%

4.3.1(c) *Impacts on Captains and Crew*

4.3.1(c)(1) No Action on Reallocation (Alternative 1)

Captain and crew are generally paid shares based on vessel revenue. This is expected to continue under status quo, with those who are on vessels that target widow rockfish benefiting from the increased widow ACLs as QP is transferred to those vessels. If No Action is selected, once widow QS trading starts some of the harvest operations that do not currently own widow QS may acquire more secure access to QS through QS purchases. Vessels with more QS are likely to be more attractive to crew.

4.3.1(c)(2) Action Alternatives - Reallocation

Under the action alternatives, there would be some redistribution of QS and over the short term those working on vessels will likely be benefited or adversely affected depending on the QS allocated to the harvesting businesses that control the vessels on which they work. Under Alternatives 2 and 5, those most likely to be advantaged are those working on vessels associated with QS accounts that have a strong landing history in the 1994-2002 widow rockfish fishery (the accounts that were generated from LE permits having a strong history) or, under Alternative 3, a strong historic widow landing history and strong more recent (2002-2010) revenue. Under all action alternatives, those working on vessels associated with QS accounts are most likely to be benefited over the short term because of the increased proportion of the QS expected to go to QS accounts associated with vessels (Table 4-14). Crew members may tend to seek jobs on vessel with more QS, depending on a variety of other factors, including the other fisheries in which the vessel participates. The long-term impacts will depend on the degree to which the distribution of QS is driven by market forces as opposed to non-pecuniary forces (such as value placed on a lifestyle). To the degree that market forces determine distribution, over the long-term a difference among the alternatives would not be expected.

4.3.1(c)(3) Summary of Impacts on Captains and Crew

The following tables provides a summary of impacts on captains and crew discussed in this section.

Table 4-16. Summary of impacts of the reallocation alternatives on captains and crew.

Impacts of No Action	Impacts Relative to No Action			
Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Captain and crews benefit and attracted by vessels with more QS/QP. Income fluctuates with changing ACLs.	Overall, vessel owners with QS would be expected to have an increase in their initial allocation, providing some short-term benefit to crew members working for those vessels (see rows above on vessel owners). Crews working on vessels whose owners do not own QS may experience some short-term diminishment of the amount of QP available to them. To the degree that market forces impact QS distribution, over the long-term there will be less difference in the QS distribution results among the alternatives.			

4.3.2 Tribal Sector

The tribal fishery harvests widow rockfish, however, no mechanism has been identified by which tribal management, harvest, and marketing is not expected to be impacted by the any of the alternatives.

4.3.3 Recreational Fishery

As discussed briefly in Section 3.3.3, the recreational fishery takes only minimal amounts of widow rockfish and no mechanism has been identified by which the recreational fishery would be impacted by the alternatives.

4.3.4 First Receivers and Processors

4.3.4(a) *No Action on Reallocation (Alternative 1)*

Under the no action alternative there would continue to be a fluctuation in deliveries between ports and consequently, first receivers, as described in Section 4.1.2. First receivers with multiple sites are less likely to be impacted by these fluctuations. First receivers that owned LE permits at the time of initial allocation and hence received an initial QS allocation will be able to maintain their initial allocations. Once widow QS trading starts, those first receivers, and other first receivers, will be able to acquire additional widow QS or divest of their QS. The ability of all first receivers to acquire QS would begin to even out any competitive advantage gained by those first receivers receiving an initial QS allocation.

4.3.4(b) *Action Alternatives - Reallocation*

First receivers that received an initial allocation of widow QS will be directly impacted by the reallocation alternatives. Initial allocations and the change that would be expected under each alternative is provided in Table 4-17. The exvessel value equivalent of these QS allocation is provided in Table 4-18. Firms that receive an increased allocation would be expected to experience an increase in wealth that may translate to a greater cash flow. The inverse would apply for firms that receive lesser allocations than under status quo. The allocation changes would not be expected to alter efficiency or net economic value generated.

The reallocation of widow QS among entities that also own vessels may indirectly impact first receivers operating in the community to which those harvesters prefer to deliver; and first receivers with sites in only one port will likely be more impacted than those with sites in multiple ports. Geographic redistribution among ports and the exvessel value equivalent of those reallocations are provided in Table 4-20 and Table 4-21, respectively. Exvessel value equivalents will fluctuate as exvessel prices and the ACLs for widow rockfish fluctuate.

Table 4-17. Total amount of widow QS reallocated among first receivers under each alternative, relative to no action.

		Change in Allocations				
	Alt 1 (No Action)	Reallocation Alt 2 Suboption a	Reallocation Alt 2 Suboption b	Reallocation Alt 3 Suboption a[a/]	Reallocation Alt 4[a/]	Reallocation Alt 5
First Receivers with Single Sites (2 entities)	2.1%	-0.2%	-0.3%	-0.4%	0.0%	-0.2%
First Receivers with Multiple Sites (2 entities)	4.0%	0.8%	0.9%	1.8%	0.2%	0.8%
Total	6.2%	0.6%	0.6%	1.3%	0.2%	0.6%

a/ Alternatives 3 and 4 are modelled using Alternative 2 Suboption a.

Table 4-18. Exvessel value equivalent[a/] of allocations for first receivers for widow QS under status quo and projected changes under each alternative.

	Alt 1 (No Action)	Change in Allocations (Exvessel Value Equivalent of Change)				
		Reallocation Alt 2 Suboption a	Reallocation Alt 2 Suboption b	Reallocation Alt 3 Suboption a[b/]	Reallocation Alt 4[b/]	Reallocation Alt 5[b/]
First Receivers with Single Sites	25,389	-1,646	-3,154	-5,305	-500	-2,400
First Receivers with Multiple Sites	48,657	9,188	10,811	21,129	2,793	10,000
Total	74,046	7,542	7,657	15,824	2,293	7,600

a/ Calculated using 2013 average widow rockfish exvessel price and 2015 trawl allocation less the 10% AMP pass thru.
b/ Alternatives 3 and 4 are modelled using Alternative 2 Suboption a.

4.3.4(c) *Summary of Impacts on First Receivers*

The following tables provides a summary of impacts on first receivers discussed in this section.

Table 4-19. Summary of impacts of the reallocation alternatives on first receivers.

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
General	Some have an initial allocation of widow QS while most do not. Impacts from fluctuating redistribution of landings. QS redistribution in response to market forces or other values once trading moratorium is lifted.	Direct redistribution effects for a few first receivers that received initial QS allocations, followed by QS redistribution in response to market forces or other values once trading moratorium is lifted. Redistribution of QS among harvesters may indirectly impact first receivers depending on their relationships with those harvesters. Slight additional short-term advantage for first receivers with initial allocations.			
Amount of QS Allocated to First Receivers	6.2%	6.8% (minor variations depending on suboptions)	7.3-7.5% (depending on suboptions)	6.3% (minor variations depending on suboptions)	6.8%

4.3.5 Observer Providers and Other Support Sectors

No mechanism has been identified by which observer providers or other support sectors would be impacted by the alternatives.

4.3.6 Fishing Communities

4.3.6(a) *No Action on Reallocation (Alternative 1)*

As discussed in Section 4.1.2, substantial shifts in the distribution of landings are occurring under status quo. Such shifts are likely to continue to occur in response to changing ocean availability of the stock, market conditions, and distribution of infrastructure.

4.3.6(b) *Action Alternatives - Reallocation*

As discussed in Section 4.1.2, over the long term the reallocation of QS is not expected to substantially affect the distribution of landings relative to status quo but there may be some short term variations if those receiving the allocations run their own harvesting or processing operations (and hence are more likely to use the QS in the areas of their own operations). However, changes in the distribution of widow QS among ports as a result of reallocation are small (Table 4-20) relative to some of the inter port variations in landings observed to date (see Section 4.1.2). The allocations will directly impact the distribution of wealth among participants in various communities, indirectly impacting the communities. The geographic redistributions of QS based on addresses of the QS owners are provided in Table 4-20. The exvessel revenue equivalents are provided in Table 4-21. In the context of fishery activity and overall economic activity, the values represented in Table 4-21 are relatively small and more significant for the individual QS recipient than for the community as a whole (see Section 3.3.6, page 62 for information on port dependence on widow rockfish). Exvessel value equivalents will fluctuate as exvessel prices and the ACLs for widow rockfish fluctuate.

Table 4-20. Allocations based on registered community of residence for widow QS under status quo and projected changes under each alternative.

Communities	Reallocation Alt 1 (No Action)	Projected Changes in Allocations (QS Change)				
		Reallocation Alt 2 Suboption a	Reallocation Alt 2 Suboption b	Reallocation Alt 3 Suboption a[a/]	Reallocation Alt 4[a/]	Reallocation Alt 5
Bellingham	1.89%	+1.21%	+1.22%	+1.34%	+0.37%	+1.22%
Seattle	9.11%	+2.18%	+1.88%	+0.11%	+0.66%	+2.03%
Grays Harbor	2.76%	-0.40%	-0.82%	-0.63%	-0.12%	-0.61%
Ilwaco-Willapa Bay	1.85%	+0.43%	+0.62%	+0.95%	+0.13%	+0.52%
Astoria	7.56%	-2.13%	-1.68%	-0.40%	-0.65%	-1.91%
Tillamook	2.37%	+0.53%	+0.64%	+0.26%	+0.16%	+0.58%
Newport	20.92%	+0.27%	-1.57%	-2.84%	+0.08%	-0.65%
Coos Bay	6.28%	+5.91%	+6.59%	+6.94%	+1.80%	+6.25%
Brookings	2.66%	+3.53%	+3.60%	+3.44%	+1.07%	+3.56%
Crescent City	0.16%	+0.30%	+0.34%	+0.62%	+0.09%	+0.32%
Eureka	0.99%	+2.11%	+2.31%	+2.38%	+0.64%	+2.21%
Fort Bragg	6.30%	-2.96%	-2.69%	-1.98%	-0.90%	-2.82%
Bodega Bay	0.33%	+0.25%	+0.29%	+0.32%	+0.07%	+0.27%
San Francisco	3.94%	-1.85%	-1.68%	-1.58%	-0.56%	-1.77%
Monterey	12.60%	-8.67%	-8.37%	-8.10%	-2.64%	-8.52%
Morro Bay	0.81%	-0.63%	-0.62%	-0.34%	-0.19%	-0.62%
Other Non-Coastal	9.47%	-0.07%	-0.06%	-0.49%	-0.02%	-0.07%
Total Reallocation Among Ports		16.7%	17.5%	16.4%	5.1%	17.0%

a/ Alternatives 3 and 4 are modelled using Alternative 2 Suboption a.

Table 4-21. Exvessel value equivalent of allocations based on registered community of residence for widow QS under status quo and projected changes under each alternative.

Communities	Reallocation Alt 1 (No Action)	Projected Changes in Allocations (Exvessel Value Equivalent of Change)				
		Reallocation Alt 2 Suboption a	Reallocation Alt 2 Suboption b	Reallocation Alt 3 Suboption a[b/]	Reallocation Alt 4[b/]	Reallocation Alt 5[b]
Bellingham	25,908	25,268	16,190	16,316	17,936	4,922
Seattle	124,859	121,774	29,219	25,081	1,415	8,883
Grays Harbor	37,858	36,923	-5,334	-10,913	-8,468	-1,622
Ilwaco-Willapa Bay	25,418	24,790	5,726	8,267	12,730	1,741
Astoria	103,636	101,076	-28,526	-22,429	-5,400	-8,672
Tillamook	32,458	31,656	7,052	8,501	3,535	2,144
Newport	286,881	279,793	3,663	-21,054	-38,007	1,114
Coos Bay	86,099	83,972	79,076	88,164	92,787	24,039
Brookings	36,509	35,607	47,171	48,159	46,044	14,340
Crescent City	2,150	2,097	4,021	4,492	8,357	1,222
Eureka	13,629	13,293	28,194	30,941	31,869	8,571
Fort Bragg	86,410	84,275	-39,627	-35,921	-26,468	-12,047
Bodega Bay	4,579	4,466	3,289	3,912	4,229	1,000
San Francisco	53,991	52,657	-24,773	-22,532	-21,100	-7,531
Monterey	172,705	168,438	-116,007	-111,915	-108,340	-35,266
Morro Bay	11,113	10,838	-8,414	-8,237	-4,555	-2,558
Other Non-Coastal	129,869	126,660	-919	-833	-6,566	-280
Total	1,203,583					

a/ Calculated using 2013 average widow rockfish exvessel price and 2015 trawl allocation. AMP QP included in the calculations.
b/ Alternatives 3 and 4 are modelled using Alternative 2 Suboption a.

4.3.6(c) *Summary of Impacts on Fishing Communities*

The following tables provides a summary of impacts on fishing communities discussed in this section.

Table 4-22. Summary of impacts of the reallocation alternatives on fishing communities.

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
General	Normal fluctuations in harvest among communities (see Table 4-1 and footnote Table 4-2). QS redistribution in response to market forces or other values once trading moratorium is lifted.	Some reallocation of wealth and short term redistribution of economic activity among communities –low levels of change relative to overall community fishery and general economic activity. Over the long term, QS redistribution in response to market forces or other values once trading moratorium is lifted.			
Total QS Reallocated Among Ports		16.7%-17.5%	16.3%-18.1%	5.1%-5.3%	17%

4.3.7 Government Entities

4.3.7(a) *No Action on Reallocation (Alternative 1)*

If no action is taken to reallocate widow rockfish, it is likely that action would be taken to complete implementation of the trawl catch share program by lifting the trading moratorium on widow rockfish QS and establishing a divestiture deadline for compliance with the widow rockfish QS control limits. There would likely be minimal agency costs in relation to these actions.

4.3.7(b) *Action Alternatives - Reallocation*

All of the action alternatives will entail some additional Federal governing costs to promulgate regulations to reallocate widow rockfis. Additionally, the reallocation of widow rockfish will likely require computer programming, the cleanup of data sets, and an opportunity for appeals. Alternative 3 may involve more data cleanup than the other alternatives because it entails a time period not covered under the previous Amendment 20 allocation formula. States may receive requests from fishermen regarding their data. The action alternatives would also lift the trading moratorium on widow rockfish QS

and set a QS divestiture deadline, should the reallocation put any QS permit owner over a limit. The agencies are not likely to expend more money because of these tasks but rather other work will be deprioritized and delayed in order to implement the widow reallocation alternatives.

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4.3.7(c) *Summary of Impacts on Government Entities*

The following tables provides a summary of impacts on government entities discussed in this section.

Table 4-23. Summary of impacts of the reallocation alternatives on government entities.

Impacts of No Action	Impacts Relative to No Action			
Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Regulatory action to lift the widow QS trading moratorium.	Regulatory action to reallocate QS using some data previously compiled for use in QS allocation.	Regulatory action to reallocate QS using new data (2003-2010 data) may require somewhat more effort and more time to implement. QS account holders may turn to states for data and corrections.	Regulatory action to reallocate QS using some data previously compiled for use in QS allocation.	Regulatory action to reallocate QS using some data previously compiled for use in QS allocation.

4.4 Summary of Direct and Indirect Impacts

The following provides a summary of direction and indirect impacts on the physical, biological, and socio economic environment, as discussed in Sections 4.1, 4.2, and 4.3, respectively.

For this action, the main impacts would be the harvesting sector (Section 4.3.1), first receivers and processors (Section 4.3.4), communities (Section 4.3.6) and governmental entities (Section 4.3.7), with some impacts also possible for the physical (Section 4.1) and biological (Section 4.2) environments. No impacts would be expected for the tribal sector (Section 4.3.2), recreational fishery (Section 4.3.3), or observer providers and other support sectors (Section 4.3.5).

4.4.1 Widow QS Reallocation Alternatives

Each alternative places a different emphasis on different allocation criteria. Impacts of the action alternatives are assessed in Chapter 4 and summarized in Table 4-25.

Table 4-24. Summary of the effective emphasis given to each element of the reallocation alternatives.

Allocation Criteria	Alternative 1 (No Action)	Alternative 2 Suboption a	Alternative 2 Suboption b	Alternative 3 Suboption a (with Alt 2 Suboption a)	Alternative 4 Suboption a (with Alt 2 Suboption a)	Alternative 5
AMP	10%	10.0%	10.0%	10.0%	10.0%	10.0%
	Allocations for LE Permits (for distribution to the QS accounts generated by those permits)					
Equal Allocation	0%	28.6%	30.6%	28.6%	8.6%	29.6%
Whiting Trips	28%	12.3%	5.7%	12.3%	23.3%	9.0%
Nonwhiting Trips	62%	49.1%	53.7%	49.1%	58.1%	51.4%
For bycatch needs	62%	-		-	43.4%	-
Historic Landings	-	49.1%	53.7%	24.6%	14.8%	51.4%
Recent Revenue	-	-		24.6%	-	-

Table 4-25. Summary of impacts of the reallocation alternatives (impacts detailed in Chapter 4).

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Physical (Section 4.1)	Some geographic redistribution of impacts based on changing resource distribution and markets. Impacts changing as harvest levels fluctuate with changing ACLs.	Long-term – same as Alt 1 Short-term – minor potential for geographic redistribution associated with redistribution of QS.	Similar to Alt 2.	Similar to Alt 2 but a substantially lower potential for any short term impacts.	Similar to Alt 2
Biological (Section 4.2)	Some geographic redistribution of impacts based on changing resource distribution and markets. Harvest fluctuations with ACLs.	Long-term – same as Alt 1 Short-term – minor potential for geographic redistribution associated with redistribution of QS.	Similar to Alt 2.	Similar to Alt 2 but a substantially lower potential for any short term impacts.	Similar to Alt 2.
Socio-economic (Section 4.3)					
Harvesters (Section 4.3.1)					
QS Owners (Section 4.3.1(a))					
General	Current QS distribution maintained. QS redistribution in response to market forces or other values once trading moratorium is lifted. Benefits fluctuate with changing ACLs.	Direct redistribution through reallocation. Possible minor economic benefits related to reduction in transaction costs that would be incurred under No Action, to the degree that historic harvesters that receive additional QS would otherwise have sought to purchase it. QS redistribution in response to market forces or other values (e.g. life style benefits or bequeathal values) once trading moratorium is lifted. Assuming market factors are the dominant influence on QS, no efficiency impacts. If QS is not traded based on market factors, efficiency impacts uncertain. Main socio-economic effect a redistribution of wealth and impacts on fairness and equity objectives.			
Indicator of Relative Size of Impact (Total QS Reallocated)	QS Reallocated=0%	QS Reallocated=27.5% - 29.1% (depending on suboptions)	QS Reallocated=23.5% - 26.0% (depending on suboptions)	QS Reallocated=8.4% - 8.8% (depending on suboptions)	QS Reallocated=28.2%

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Distribution (see Table 4-6 and Table 4-9 for additional statistics)	Minimum allocation for an LE Permit = 0.02%. Maximum allocation for an LE Permit = 2.11%.	Minimum allocation for an LE Permit = 0.17% - 0.19% Maximum allocation for an LE Permit = 1.98%- 2.03% (depending on suboptions)	Minimum allocation for an LE Permit = 0.17 – 0.19% Maximum allocation for an LE Permit = 1.44-1.61% (depending on suboptions)	Minimum allocation for an LE Permit = 0.080% - 0.085. Maximum allocation for an LE Permit = 1.62-1.65% (depending on suboptions).	Minimum allocation for an LE Permit = 0.18%. Maximum allocation for an LE Permit = 1.98%
Dependence (see Figure 3-5 and Figure 3-6)	Widow QS comprises a relatively small portion of the exvessel value equivalent of all quota allocated.				
Recent and Historic Participation Factors (Amendment 20 provides detailed discussion of additional ways that the system accounts for recent and historic participation)	Allocation based on bycatch needs. Any correspondence between historic widow harvest and widow allocations is mainly coincidental	Distribution favoring those who have historically targeted and depended on widow. Suboption b favors those who historically targeted slightly more than Suboption a.	Distribution weighs in both historical targeting and dependence on widow and total nonwhiting groundfish revenue in more recent years	Distribution weighs in historical targeting and dependence on widow but amount of QS reallocated is reduced to provide everyone in 2016 with a QP distribution equal to what they received in 2014.	Distribution favoring those who have historically targeted widow (weighting is midpoint between Suboption a and b of Atlernative 2).
Vessel Owners (Section 4.3.1(b))					
General	Some vessels owners have QS others do not. Harvest opportunities fluctuate with changing ACLs. Vessels tend to have a low direct dependence on widow (Table 3-12) but are somewhat more dependent when bycatch needs are taken into account.	Initially, the amount of QS held by vessel owners would increase. Decreases in QS held by non-vessel owners may reduce availability of QP for vessel owners that do not own QS. Impacts on QP market price are uncertain – may be neutral. For fleet as a whole, no impact on vessel efficiency.			

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Amount of QS Held by Vessel Owners	64.9%	71.6% - 72.2% (depending on suboptions)	71.2%-72.0% (depending on suboptions)	67.0%-67.2% (depending on suboptions)	71.9%
Amount of QS Held by Non-Vessel Owners	25.0%	17.8%-18.4% (depending on suboptions)	18.0%-18.8% (depending on suboptions)	22.8%-23.0% (depending on suboptions)	18.1%
Captains and Crew (Section 4.3.1(c))					
General	Captain and crews benefit and attracted by vessels with more QS/QP. Income fluctuates with changing ACLs.	Overall, vessel owners with QS would be expected to have an increase in their initial allocation, providing some short-term benefit to crew members working for those vessels (see rows above on vessel owners). Crews working on vessels whose owners do not own QS may experience some short-term diminishment of the amount of QP available to them. To the degree that market forces impact QS distribution, over the long-term there will be less difference in the QS distribution results among the alternatives.			
First Receivers/Processors (Section 4.3.4)					
General	Some have an initial allocation of widow QS while most do not. Impacts from fluctuating redistribution of landings. QS redistribution in response to market forces or other values once trading moratorium is lifted.	Direct redistribution effects for a few first receivers that received initial QS allocations, followed by QS redistribution in response to market forces or other values once trading moratorium is lifted. Redistribution of QS among harvesters may indirectly impact first receivers depending on their relationships with those harvesters. Slight additional short-term advantage for first receivers with initial allocations.			
Amount of QS Allocated to First Receivers	6.2%	6.8% (minor variations depending on suboptions)	7.3-7.5% (depending on suboptions)	6.3% (minor variations depending on suboptions)	6.8%
Communities (Section 4.3.6)					

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
General	Normal fluctuations in harvest among communities (see Table 4-1 and footnote Table 4-2). QS redistribution in response to market forces or other values once trading moratorium is lifted.	Some reallocation of wealth and short term redistribution of economic activity among communities –low levels of change relative to overall community fishery and general economic activity. Over the long term, QS redistribution in response to market forces or other values once trading moratorium is lifted.			
Total QS Reallocated Among Ports		16.7%-17.5%	16.3%-18.1%	5.1%-5.3%	17%
Government Entities (Section 4.3.7)					
General	Regulatory action to lift the widow QS trading moratorium.	Regulatory action to reallocate QS using some data previously compiled for use in QS allocation.	Regulatory action to reallocate QS using new data (2003-2010 data) may require somewhat more effort and more time to implement. QS account holders may turn to states for data and corrections.	Regulatory action to reallocate QS using some data previously compiled for use in QS allocation.	Regulatory action to reallocate QS using some data previously compiled for use in QS allocation.

4.5 Cumulative Impacts

A cumulative effects analysis is required by the Council on Environmental Quality (CEQ) (40 CFR part 1508.7). The purpose of a cumulative effects analysis is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. Cumulative effects are the net result of the proposed action in addition to all past, present, and reasonably foreseeable future actions on the human environment over time. One could think of it as an equation where it is important to note that Past, Present, and Reasonably Foreseeable Future Actions include those that are Federal and non-Federal actions as well as those that are fishery (e.g., trawl rationalization trailing actions) related and non-fishing (e.g., non-point source pollution) related:

Proposed Action + Past Actions + Present Actions + Reasonably Foreseeable Future Actions = Cumulative Effects

CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective, but rather, the intent is to focus on those effects that are truly meaningful. A formal cumulative impact assessment is not necessarily required as part of an EA under NEPA as long as the significance of cumulative impacts has been considered (U.S. EPA 1999). The following addresses the significance of the expected cumulative impacts as they relate to the federally-managed groundfish fishery.

4.5.1 Consideration of the Affected Resources

In Chapter 3 (Description of the Affected Environment), the affected resources that exist within the fishery environment of Target and Non-Target species are identified. Therefore, the significance of the cumulative effects will be discussed in relation to these affected resources listed below.

1. Physical Environment, including EFH and Ecosystems.

2. Biological Resources, including:
- Groundfish Target Species,
- Non-target Fish Species,
- Protected Fish Species, including ESA, and
- Marine Mammals and Seabirds.

3. Socioeconomic Environment, including harvesters, first receivers, communities, observer providers and government.

4.5.2 Geographic Boundaries

The analysis of impacts focuses on actions related to the harvest of widow rockfish in directed midwater trawl fisheries and as bycatch in bottom trawl and the shorebased midwater trawl whiting fisheries. The core geographic scope for each of the affected resources listed above is focused on the Eastern Pacific Ocean (Chapter 3), and in particular within the range of widow rockfish described in Section 3.2.3(a) that is part of the EEZ and state waters off of Washington, Oregon, and California. The core geographic

scope for endangered and protected resources can be considered the overall range of these resources in the Eastern Pacific Ocean. For human communities, the core geographic boundaries are defined as those U.S. fishing communities directly involved in the harvest or processing of the managed resources, which were found to occur in coastal states.

4.5.3 Temporal Boundaries

The temporal scope of past and present actions for the affected resources is primarily focused on actions that have occurred after FMP implementation (1982) and more importantly, since implementation of the trawl rationalization program in 2011. For endangered species and other protected resources, the scope of past and present actions is on a species-by-species basis (Sections 3.2.7 and 3.2.10) and is largely focused on the 1980s and 1990s through the present, when NMFS began generating stock assessments for marine mammals and sea turtles that inhabit waters of the U.S. EEZ. The temporal scope of future actions for all affected resources extends about three years into the future. This period was chosen because the dynamic nature of resource management for this species and lack of information on projects that may occur in the future make it very difficult to predict impacts beyond this timeframe with any certainty.

4.5.4 Actions Other than the Proposed Action

4.5.4(a) *Past, Present, and Reasonably Foreseeable Future Actions*

4.5.4(a)(1) Fishery-related Actions

The historical management practices of the Council have resulted in positive impacts on the health of widow rockfish. Numerous actions have been taken to manage the fisheries for these species through amendment and specifications actions. In addition, the nature of the fishery management process is intended to provide the opportunity for the Council and NMFS to regularly assess the status of the fisheries and to make necessary adjustments to ensure that there is a reasonable expectation of meeting the objectives of the FMP and the targets associated with any rebuilding programs under the FMP. The statutory basis for Federal fisheries management is the Magnuson-Stevens Act. To the degree with which this regulatory regime is complied, the cumulative impacts of past, present, and reasonably foreseeable future Federal fishery management actions on the affected resources should generally be associated with positive long-term outcomes. Constraining fishing effort through regulatory actions can often have negative short-term socioeconomic impacts. These impacts are usually necessary to bring about long-term sustainability of a given resource, which should, in the long term, promote positive effects on human communities, especially those that are economically dependent upon widow rockfish as target species or as incidental catch in pursuit of other target fisheries (such as midwater whiting and bottom trawl fisheries).

In addition, NMFS has approved harvest specifications for 2015 and 2016 for groundfish stocks and the Council is currently developing harvest specifications for 2017 and 2018. In 2015 and 2016 ACLs for some pelagic rockfish species (yellowtail and widow rockfish) were increased, in particular for widow rockfish, since it has been declared recovered from overfishing. Whiting are a shorter lived species for which harvest levels fluctuate more widely on an interannual basis. NMFS has approved for 2015-2016 a 33 percent increase in the ACLs for widow rockfish and a 140 percent increase for yellowtail rockfish, the

two primary pelagic species targeted with midwater trawl gears. Changes to the whiting ACLs will not be recommended until the start of 2015.

The ACL levels recommended by the Council for the 2015-2016 harvest specifications are expected to bring an increase in benefits for the fishing industry. Widow rockfish ACLs are likely to increase further for the 2017-2018 biennial specifications. Additional actions are outlined in the following section. Together, they are expected to have a synergistic effect, contributing further to the original goals and objectives set out for the trawl rationalization program in Amendment 20.

Trawl Rationalization Trailing Actions

The Council and NMFS continue to work together on the trawl rationalization trailing actions. All of these actions are expected to increase benefits from the fishery. Details on each action are available on the Council website http://www.pcouncil.org/groundfish/fishery-management-plan/trailing-actions/. The main trailing actions are as follows:

Trawl/Fixed gear permit stacking. This action allows fixed gear and trawl LE permits to be registered to the same vessel at the same time. Implementation is expected in the fall of 2016.

Observer/Catch Monitoring Rule. At its April 2012 meeting, the Council approved the following additional NMFS-proposed trailing actions for implementation. NMFS published the final rule for these actions on April 21, 2015.

- Implementation of certification and de-certification requirements for observer providers
- Numerous revisions to details of the observer program provisions
- Revision to briefing periods in catch monitor certification requirements

Continue Adaptive Management Program Pass-through. The current pass-through of the QP allocated for the QS set-aside for the adaptive management program (10 percent of the nonwhiting QS) was set to expire at the end of 2014. The Council has recommended a rule to continue that pass-through until after the trawl catch share program review. The final rule published December 17, 2014 (79 FR 75070).

Trawl Catch Share Program Review. The Council decided that it will commence its first review of the catch share program in June 2016. As a result of this review, it is possible that control limits could be changed. At that time, if limits are reduced it is likely that new divestiture periods would be provided. If they are increased, those who divested down to the current limits will have an opportunity to acquire QS to bring them up to the new limits.

Elimination of the Prohibition on Whiting At-sea Processing South of 42º N. latitude. During its next EFP cycle, the Council may consider issuing EFPs to allow this activity.

Gear Issues (under Council consideration). Gear issues include multiple gears on a trip, gear modifications to increase efficiency, and restrictions on areas in which gears may be used. A final chafing gear regulation to allow for increased codend coverage on midwater trawl nets was published on December 2, 2014. The Council began consideration of a gear package at its September 2015 meeting.

NMFS published a notice of intent to prepare an environmental impact statement on March 3, 2016 (81 FR 11189).

Cost Recovery. Cost recovery was implemented in 2014, resulting in the collection of fees that may vary each year and are a percent of ex-vessel value of groundfish. The fees for 2016 are 3 percent of ex-vessel value for the shorebased fishery and lesser amounts for the at-sea fisheries. For details see: Compliance Guide Pacific Coast Groundfish Trawl Rationalization Program, Cost Recovery (http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/cost-recovery-compliance-guide.pdf). In the context of this additional cost, alternatives which alleviate production costs or allow for the generation of more net revenue may be more beneficial to stability in the industry than would be the case if costs were otherwise expected to remain stable.

Quota Share/Quota Pound (QS/QP) Control Rules – Safe Harbors for Risk Pools. At its September 2011 meeting, the Council recommended providing risk pools a safe harbor from the QS control rules. At its September 2013 meeting, the Council agreed that implementation of this recommendation could wait until the five-year program review.

Surplus QP Carryover. As part of its action on the 2013-2014 specifications, the Council adopted an interim solution to partially address full implementation of the surplus carryover provision for nonwhiting species. The Council requested further analysis and development of options to ensure that, in the long term, the surplus carryover provisions can be implemented with greater certainty. Whiting is scheduled to be addressed as part of the trawl catch share program review, which begins in June 2016.

Whiting Cleanup Rule. The cleanup rule is expected to define a whiting trip as any trip with more than 50 percent whiting by weight (consistent with Amendment 20), provide rules for the disposition of prohibited species retained in the maximized retention fishery, and restrict the use of midwater gear in the RCAs to the area north of 40° 10'. It will interact with this rule in that the season opening specified here as a whiting season opening that allows the use of midwater gear for any species will be re-specified as an opening for the use of midwater gear to target whiting and an opening for the use of midwater gear to target nonwhiting species (mainly pelagic rockfish). The dates for both of these openings will be changes to comport with the alternative adopted pursuant to the decision which this EA supports. The final whiting clean-up rule published in December 2015.

Electronic Monitoring. EM (cameras) may be proposed as a replacement for the 100-percent observer coverage requirement. This proposal is currently being evaluated for all shorebased sectors under exempted fishing permits (EFPs). The EFP program began in 2015. EM policy has been under Council development since 2011 (http://www.pcouncil.org/groundfish/trawl-catch-share-program-em/). Some participants in the IFQ program have reported difficulties in securing observers in a timely or consistent manner, so vessels may prefer the flexibility to turn on an EM (or video monitoring) system and leave port immediately versus waiting for an observer (ibid). The EM system would perform the function of monitoring compliance with IFQs. Therefore, EM is being explored as a flexible and economically viable substitute for the use of human observers in the trawl catch share program. EM was implemented on an experimental basis in all shorebased IFQ sectors in 2015

Vessel owners or their representatives were required to apply for and receive an EFP from NMFS, which will specify the conditions under with EM equipment may be used to monitor their fishing operations to

document fishery discards. At its September 2014 meeting, the Council selected its final preferred alternatives for an EM program EFP for the Pacific coast limited entry trawl groundfish fishery catch shares program beginning in 2015 (http://www.pcouncil.org/wp-content/uploads/blog_tables_Final_Preferred_Alts_FINAL.pdf).

A proposed EM rule for the whiting and fixed gear vessels participating in the trawl IFQ program are expected to publish in 2016. The EFPs for bottom trawl gear are being extended to allow continued development of policy and a rule for nonwhiting bottom and midwater trawl.

QS Divestiture. A QS divestiture deadline was specified for all species except widow rockfish (November 30, 2015). In 2015 NMFS published a rule to clarify how divestiture and revocation of excess quota shares would occur, and established procedures for the future if divestiture becomes necessary (80 FR 69138). All QS permit owners who held QS or IBQ in excess of the control limits divested of their excess by the deadline.

Fishery Ecosystem Plan

The Fishery Ecosystem Plan (FEP) is a living document, which means that the Council plans to regularly amend and update it. The current FEP was adopted by the Council in April 2013 (see: http://www.pcouncil.org/wp-content/uploads/FEP_FINAL.pdf). The FEP is meant to be an informational document. It is not meant to be prescriptive relative to Council fisheries management. Information in the FEP, results of the Integrated Ecosystem Assessment, and the Annual State of the California Ecosystem Report may be available for consideration during the routine management processes for fisheries managed in each FMP. How exactly these items will affect fishery management decisions is at the discretion of the Council.

At its March 2015 meeting the Council adopted an FEP and accompanying amendments to each of its FMPs, including Amendment 25 to the groundfish FMP. Amendment 25 will restrict future development of fisheries for the suite of ecosystem component species shared between all four FMPs (groundfish, salmon, CPS, and HMS) until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem. Those ecosystem component species shared between all four FMPs are as follows: round herring, thread herring, mesopelagic fishes (families: *Myctophidae, Bathylagidae, Paralepididae,* and *Gonostomatidae*), Pacific sand lance; Pacific saury, silversides, smelts, and pelagic squids (families: *Cranchiidae, Gonatidae, Histioteuthidae, Octopoteuthidae,Ommastrephidae* (except Humboldt squid, *Dosidicus gigas*),*Onychoteuthidae,* and *Thysanoteuthidae*).

Area Modifications (EFH and RCAs)

Starting at its April 2015 meeting, the Council began consideration of modifications to RCA lines and activity restrictions concurrent with its deliberations on an EFH amendment to the groundfish FMP.

4.5.4(a)(2) Non-fishing Actions

Non-fishing activities that introduce chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment pose a risk to all of the identified affected resources. Human-induced non-fishing activities tend to be localized in nearshore areas and marine project areas where they occur. Examples of these activities include, but are not limited to, agriculture, port maintenance, coastal development, marine transportation, marine mining, dredging, and the disposal of dredged material. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality, and may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these species to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities. The overall impact to the affected species and their habitats on a population level is unknown, but likely neutral to low negative, since a large portion of these species have a limited or minor exposure to these local non-fishing perturbations.

For many of the proposed non-fishing activities to be permitted under other Federal agencies (such as offshore energy facilities, etc.), those agencies would conduct examinations of potential impacts on the affected resources. The Magnuson-Stevens Act (50 CFR 600.930) imposes an obligation on other Federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH. The eight regional fishery management councils are engaged in this review process by making comments and recommendations on any Federal or state action that may affect habitat, including EFH, for their managed species, and by commenting on actions likely to substantially affect habitat, including EFH. In addition, under the Fish and Wildlife Coordination Act (Section 662), “whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the U.S., or by any public or private agency under Federal permit or license, such department or agency first shall consult with the U.S. Fish and Wildlife Service (USFWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular state wherein the” activity is taking place. This act provides another avenue for review of actions by other Federal and state agencies that may impact resources that NMFS manages in the reasonably foreseeable future. In addition, NMFS and the USFWS share responsibility for implementing the ESA. ESA requires NMFS to designate "critical habitat" for any species it lists under the ESA (i.e., areas that contain physical or biological features essential to conservation, which may require special management considerations or protection) and to develop and implement recovery plans for threatened and endangered species. The ESA provides another avenue for NMFS to review actions by other entities that may impact endangered and protected resources whose management units are under NMFS’ jurisdiction.

The effects of climate on the biota of the California Current ecosystem have been recognized for some time. The El Niño/Southern Oscillation (ENSO) is widely recognized to be the dominant mode of inter-annual variability in the equatorial Pacific, with impacts throughout the rest of the Pacific basin and the globe. During the negative (El Niño) phase of the ENSO cycle, jet stream winds are typically diverted northward, often resulting in increased exposure of the Pacific 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. Concurrently, top predators such as seabirds and pinnipeds often exhibit reproductive failure. In addition to inter-annual variability in ocean conditions, the North Pacific seems to exhibit substantial inter-decadal variability, which is referred to as the Pacific (inter) Decadal Oscillation.

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. Recent paleoecological studies from marine sediments have indicated that 20th century warming trends in the California Current have exceeded natural variability in ocean temperatures over the last 1,400 years. Statistical analyses of past climate data have improved our understanding of how climate has affected North Pacific ecosystems and associated marine species productivities. Our ability to predict future impacts on the ecosystem stemming from climate forcing events remains poor at best.

4.5.5 Magnitude and Direction of Past, Present, and Reasonably Foreseeable Future Actions

In determining the magnitude and significance of the cumulative effects, the additive and synergistic effects of the proposed action, as well as past, present, and future actions, must be taken into account. The following section first presents the effects of past, present, and reasonably foreseeable future actions on each of the managed resources. This is followed by a discussion on the synergistic effects of the proposed action, as well as past, present, and reasonably foreseeable future actions (Section 4.5.6).

4.5.5(a) *Physical Environment, including Habitat and Ecosystem*

Those past, present, and reasonably foreseeable future actions, whose effects may impact habitat (including EFH) and the direction of those potential impacts, are listed in Table 4-26, below. The direct and indirect negative impacts are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on habitat is expected to be limited (low) due to a lack of exposure to habitat at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude. However, away from the mouths of estuaries, impacts on habitat and EFH are likely to be diluted and are unquantifiable. As described above, NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS' managed resources and the habitat on which they rely prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of direct and indirect negative impacts those actions could have on habitat utilized by resources under NMFS' jurisdiction.

Table 4-26. Summary of the effects of past, present, and reasonably foreseeable future actions on habitat.

Action	**Past to the Present**		**Reasonably Foreseeable Future**
Original FMP and subsequent Amendments to the FMP	**Indirect Positive**		
Agricultural runoff	**Direct Negative - nearshore areas**		
Port maintenance	**Uncertain – Likely Direct Negative - nearshore areas**		
Offshore disposal of dredged materials	**Direct Negative - project area**		
Marine transportation	**Direct Negative - primarily in marine traffic corridors**		
Installation of pipelines, utility lines and cables	**Uncertain – Likely Direct Negative - project area**		
Offshore Energy Facilities (wind, tidal, etc.)			**Potentially Direct Negative - project area**
2015-2016 Biennial Harvest Specifications			**Positive**
Trawl Rationalization Trailing Actions			**Uncertain – Likely Direct and Positive**
Summary of past, present, and future actions excluding those proposed in this document	**While fishery management actions have had a positive influence, overall, actions have had, or will have, a slightly negative impact on habitat, including EFH**		

Past fishery management actions taken through the FMP process have had a positive overall effect on habitat and EFH. It is anticipated that the future management actions will result in additional direct or indirect positive effects on habitat through actions which protect EFH for federally-managed species and protect ecosystem services on which these species' productivity depends. These impacts could be broad in scope. All of the affected resources are interrelated; therefore, the linkages among habitat quality and EFH, managed resources and non-target species productivity, and associated fishery yields should be considered. For habitat and EFH, there are direct and indirect negative effects from actions which may be localized or broad in scope; however, positive actions that have broad implications have been, and it is anticipated will continue to be, taken to improve the condition of habitat. There are some actions such as coastal population growth and climate change (including related ocean acidification), which may indirectly adversely impact habitat and ecosystem productivity. Overall, the past, present, and reasonably foreseeable future actions affecting habitat have had a slightly negative effect.

4.5.5(b) *Biological Environment*

Those past, present, and reasonably foreseeable future actions, and the direction of those potential impacts, are summarized in Table 4-27 below. The indirectly negative actions described in this table are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on the managed resources is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude. However, away from the mouths of estuaries, impacts on productivity of the managed resources are likely to be diluted and are unquantifiable. As described above, NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS' managed resources prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources under NMFS' jurisdiction.

Table 4-27. Summary of the effects of past, present, and reasonably foreseeable future actions on biological resources.

Action	**Past to the Present**		**Reasonably Foreseeable Future**
Original FMP and subsequent Amendments to the FMP	**Indirect Positive**		
Agricultural runoff	**Indirect Negative - nearshore areas**		
Port maintenance	**Uncertain – Likely Indirect Negative - nearshore areas**		
Offshore disposal of dredged materials	**Indirect Negative - project area**		
Marine transportation	**Indirect Negative - primarily in marine traffic corridors**		
Installation of pipelines, utility lines and cables	**Uncertain – Likely Negative - project area**		
Offshore Energy Facilities (wind, tidal, etc.)			**Uncertain – Likely Indirect Negative - project area**
2015-2016 Biennial Harvest Specifications			**Indirect Positive**
Trawl Rationalization Trailing Actions			**Uncertain – mixed but most Indirect Positive**
Summary of past, present, and future actions excluding those proposed in this document	**While fishery management has had a positive influence, overall, actions have had, or will have, neutral impacts on the biological resources**		

Past fishery management actions taken through the FMP have had a positive effect on the managed resources. It is anticipated that the future management actions, described in Table 4-27, will result in additional indirect positive effects on the managed resources through actions which reduce and monitor bycatch, protect habitat, and protect ecosystem services on widow rockfish and associated species productivities depend. In addition, past fishery management actions taken through the FMP process have mitigated the additive effect on ESA-listed and MMPA-protected species through implementation of gear requirements and area closures, as needed. It is anticipated that future management actions will result in positive effects on protected resources. The impacts of these future actions could be broad in scope, and it should be noted the biological resources are often coupled, in that they utilize similar habitat areas and ecosystem resources on which they depend. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to the biological resources have had a neutral effect (high positive impact, relative to fishery management prevention of overexploitation).

4.5.5(c) *Socioeconomic Environment*

Those past, present, and reasonably foreseeable future actions, whose effects may impact the socioeconomic environment and the direction of those potential impacts, are summarized in Table 4-28 below. The indirectly negative actions described in this table are localized where they occur. Therefore, the magnitude of those impacts on the managed resources is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on productivity of the managed resources is unquantifiable. As described above, NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS' managed resources prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources under NMFS' jurisdiction.

Past fishery management actions taken through the FMP have had high positive and some high short-term negative effects on the socioeconomic environment. The short-term negative effects are generally believed to be offset by the longer-term positive overall effects related to having a healthy and productive ocean environment, as compared to the situation of depleted resources and low productivity that would have been expected without those actions. It is anticipated that the future management actions, described in Table 4-28, will result in additional indirect slight long-term positive effects to the socioeconomic environment through actions which achieve conservation objectives while providing a regulatory environment which allows the industry to maximize the socioeconomic value derivable from the resource.

Table 4-28. Summary of the effects of past, present, and reasonably foreseeable future actions on human communities.

Action	**Past to the Present**		**Reasonably Foreseeable Future**
Original FMP and subsequent Amendments to the FMP	**Indirect Positive**		
Agricultural runoff	**Indirect Negative - nearshore areas**		
Port maintenance	**Uncertain – Likely Mixed - nearshore areas**		
Offshore disposal of dredged materials	**Indirect Negative - project area**		
Marine transportation	**Mixed - primarily in marine traffic corridors**		
Installation of pipelines, utility lines and cables	**Uncertain – Likely Mixed - project area**		
Offshore Energy Facilities (wind, tidal, etc.)			**Uncertain – Likely Mixed project area**
2015-2016 Biennial Harvest Specifications			**Indirect Positive**
Trawl Rationalization Trailing Actions			**Uncertain – Likely Positive**
Summary of past, present, and future actions excluding those proposed in this document	**Overall, actions have had, or will have, slightly positive impacts on human communities**		

4.5.6 Action Alternative Impacts on all of the Affected Resources

The action alternatives are described in Section 2.1. The magnitude and significance of the cumulative effects, which include the additive and synergistic effects of the proposed action, as well as past, present, and reasonably foreseeable future actions, are discussed throughout this section.

A summary is provided at the end.

4.5.6(a) *Physical Environment*

- Under the No Action Alternative, there may be some increase in impacts to the physical environment associated with increasing ACLs for widow and yellowtail rockfish which are targeted primarily with midwater trawl gear. There may also be changing impacts associated with the whiting fishery depending on the ACLs for future years (the ACL for 2015 increased slightly over 2014).
- Relative to this, the reallocation of widow rockfish QS is not expected to increase impacts to the physical environment. Increased ACLs will expand allowable catches and therefore increase fishing opportunities. Any change in habitat impacts will be the result of geographic redistribution of the quota. Such impacts are expected to be short term and minor relative to the geographic fluctuations that seem to be induced by other influences.

4.5.6(b) *Biological Environment*

- Under the No Action Alternative, there may be some increase in impacts to the biological environment associated with recent increases in ACLs for yellowtail and widow rockfish, including those which were implemented for the 2015-2016 fishery. ACLs were also adjusted (both up and down) for other species as part of the 2015-2016 specifications. There may also be changing impacts associated with the whiting fishery depending on the ACLs for future years (the ACL for 2015 increased slightly over the 2014 ACL). ACL levels will also likely fluctuate when the 2017-2018 harvest specifications are implemented (the directions of such fluctuations will not be known until stock assessments are completed and policy choices made).
- Relative to this, the widow QS reallocations entailed in the Action Alternative are not expected to affect harvest of targeted species and hence not affect bycatch species. If there are some short-term geographic redistributions of harvest, bycatch rates might vary slightly. Catch and bycatch in the trawl fishery is carefully monitored. Total catch of IFQ species is controlled by the QS, the amounts of which will not be altered by the reallocation of QS. With respect to other bycatch adaptive response is possible if bycatch is greater than expected and becomes problematic from a conservation perspective.

4.5.6(c) *Socioeconomic Environment*

- Under the No Action Alternative, there are numerous trawl trailing actions in progress which are expected to enhance benefits from the rationalized fishery. This action is one of those. Together they are expected to have a synergistic effect contributing further to the original goals and objectives set out for the trawl rationalization program in Amendment 20.

- Relative to this, the trawl rationalization program implemented a system which achieved conservation objectives and included measures to mitigate any adverse socio-economic, impacts including impacts on fairness and equity. One of those measures included in Amendment 20 called for the Council to consider redistribution of QS when an overfished stock becomes rebuilt (as described in Section 1.3). Since widow rockfish is now rebuilt, an action alternative on widow QS reallocation is being considered pursuant to that equity consideration. The measure may also have some minor benefits in reducing transaction costs if QS is reallocated to those who would otherwise be buying the QS to re-establish their historic widow rockfish targeting strategies.

4.5.6(d) *Summary*

Impacts to the physical environment are projected to be neutral compared to the No Action Alternative (Table 4-29). The main impact of present actions that may affect the degree of impacts of the Action Alternative and the No Action Alternative is the increase in the ACLs for pelagic species for the 2015-2016 groundfish specifications recently approved by NMFS. Increases in these ACLs has been analyzed in the EIS accompanying those specifications (PFMC 2015). The increases in the ACLs may increase the overall impacts of midwater trawling activities on the physical environment (and possibly bottom trawl), but the reallocation of widow QS is not expected to noticeably add to or reduce those impacts (as discussed in Section 4.1).

Table 4-29. Magnitude and significance of the cumulative effects; the additive and synergistic effects of the proposed action, as well as past (P), present (Pr), and reasonably foreseeable future actions (RFF).

Affected Resources Affected Resources	**Status in 2013**	**Magnitude of Net Impact of P, Pr, and RFF Actions**	**Magnitude of the Impact of the Proposed Action**	**Significant Cumulative Effects**
Physical Resources, including Habitat	Complex and variable (Section 3.1)	Slightly negative Section 4.4.5	Neutral (Section 4.1)	**None**
Biological Resources	Complex and variable (Section 3.2)	Neutral Section 4.4.5	Neutral (Section 4.2)	**None**
Socioeconomic/ Human Communities	Complex and variable (Section 3.3)	Slightly positive Section 4.4.5	Slightly Positive (Section Section 4.3)	**None**

Impacts on the biological resources are primarily a function of the areas fished, gear types used, and level of effort, and of these, area fished is the only factor that might be affected. The levels of whiting harvests vary in the between years, but have been relatively stable over time (see 2013-2014 biennial specifications for the groundfish fishery (PFMC 2012), discussed in Section 3.2.1.1 of this EA). With a

reduced population size, there is reduced harvest opportunity for whiting by all fishers, which may shift effort to other fisheries to the degree that fishery or individual fisher quotas allow.

Processors and communities will also have reduced product and fishery income, respectively, from the whiting resource, and they too will have to depend on other fisheries or income sources to make up for the reduced landings. In the context of this downturn, alternatives which alleviate production costs may be more beneficial to stability in the industry than would be the case if harvest levels were expected to remain stable. When the whiting population increases, the effects are reversed.

In addition, Pacific Coast trawl vessels engage in other fisheries and derive substantial revenues from those fisheries. Notable ones include shrimp and albacore. The income that trawlers receive from these other fisheries is far from stable, and, as a result, can be expected to fluctuate in future years depending on the abundance or availability of these other resources to harvest. The availability of these other fishing opportunities somewhat diminishes the importance of any gain in economic efficiencies under the action alternative, as compared to a situation in which vessels relied only on the whiting or pelagic rockfish fisheries.

Therefore, when this action is considered in conjunction with all the other pressures placed on fisheries by past, present, and reasonably foreseeable future actions, it is not expected to result in any significant impacts, positive or negative. Based on the information and analyses presented in these past FMP documents and this document, there are no significant cumulative effects associated with the action proposed in this document.

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Chapter 6 Consistency with the West Coast Groundfish FMP and MSA National Standards and Requirements

The NOAA LAP program guidelines point out that "There are literally an infinite number of allocation formulae that are acceptable under the MSA" (Anderson and Holliday, 2007, p. 71). There are a variety of competing and conflicting criteria against which the allocation formulae must be assessed. These criteria are specified in the MSA and other applicable law. The management challenge is to select an alternative based on an appropriate balance of these criteria, given the expected performance of the fishery under each allocation alternative. Regardless of how the balance is ultimately drawn, the choice must be fair and equitable. The criteria to be assessed are primarily derived from the MSA, including those contained in the FMP. Those criteria include:

- MSA
- MSA National Standards
- NMFS National Standard Guidelines
- Goals and Objectives of FMP
- Goals and Objectives of Amendment 20 to the FMP (Trawl Rationalization)
- Other Council Statements of Intent.

In this chapter, impacts are summarized by the topic areas covered by these criteria. Many of the requirements of the MSA and National Standard Guidelines are already achieved by the trawl rationalization program as a whole and are not affected by the different alternatives considered here.

6.1 Conservation

6.1.1 Policy Guidance

The following are some of the main conservation criteria in the MSA that directly pertain to the establishment of a catch shares program.

> SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT. (a) . . . . national standards for fishery conservation and management: . . . . (4) If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be . . . (B) reasonably calculated to promote conservation…
>
> 303A (c) REQUIREMENTS FOR LIMITED ACCESS PRIVILEGES.— (1) IN GENERAL.— Any limited access privilege program to harvest fish submitted by a Council or approved by the Secretary under this section shall—(A) if established in a fishery that is overfished or subject to a rebuilding plan, assist in its rebuilding;. . . . (C) promote—. . . (ii) fishery conservation and management; . . .

With respect to conservation and management and the allocation of fishing privileges, the National Standard Guidelines state:

> Numerous methods of allocating fishing privileges are considered "conservation and management" measures under 303 of the Magnuson-Stevens Act. An allocation scheme may promote conservation by encouraging a rational, more easily managed use of the resource. Or, it may promote conservation (in the sense of wise use) by optimizing the yield in terms of size, value, market mix, price, or economic or social benefit of the product. (Section 600.325(c)(3)(ii))

The Council's Allocation Framework (Section 6.3.1 of the groundfish FMP) requires that when recommending the direct allocation of resources that the Council consider "Potential biological yield of any species or species complex affected by the allocation."

6.1.2 Relation of Rationalization Program Provisions to Policy

The trawl rationalization program assists the Council in meeting conservation and management objectives in a number of ways, including:

- providing a greater disincentive for harvest of overfished species.
- providing a disincentive for bycatch waste.
- rationalizing the fishery so it can support the costs of 100 percent monitoring of catch.
- eliminating the continual erosion of management measures based on input control, which occurs as fishers try to increase harvests by finding ways around the input controls.

6.1.3 Analysis of Effects of Alternatives

Modifying the trawl rationalization program by reallocating QS among recipients is not expected to change total removals; nor have a noticeable long-term impact on gears used, selectivity, harvest areas, or targeting strategies. There could be some relatively low level short term impacts on the geographic distribution of harvest but these changes are expected to be within the range of normal fluctuations in the fishery and not sufficient to generate conservation concerns (discussed in Section 4.1). On this basis, a change in allocations would likely not impact the performance of the management system in meeting conservation objectives.

Therefore we find the proposed action will have minimal short- or long-term impacts on the conservation

objectives of the MSA, FMP, and other applicable law.

6.2 Net Benefits and Efficiency

6.2.1 Policy Guidance

The following are some of the main economic benefit criteria in the MSA that directly pertain to establishing of a catch shares program.

> SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT. (a) . . . . national standards for fishery conservation and management: . . . . (5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

> 303A (c) REQUIREMENTS FOR LIMITED ACCESS PRIVILEGES.— (1) IN GENERAL.— (B) if established in a fishery that is determined by the Secretary or the Council to have over-capacity, contribute to reducing capacity; . . . . (C) promote— . . . . (iii) social and economic benefits;

The Council's Allocation Framework (Section 6.3.1 of the groundfish FMP) requires that, when recommending the direct allocation of resources, the action should achieve at least one of a number of benefits, among which is included: "increase economic yield."

In addition, the groundfish FMP includes the following related general goals and objectives.

> Goal 2 - Economics. Maximize the value of the groundfish resource as a whole.
>
> Objective 6. Within the constraints of the conservation goals and objectives of the FMP, attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

Similar goals and objectives were included in Amendment 20.

> Goal: Create and implement a capacity rationalization plan that **increases net economic benefits,** creates individual economic stability, provides for full utilization of the trawl sector allocation, considers environmental impacts, and achieves individual accountability of catch and bycatch.
>
> Objectives:
>
> 2. Provide for a viable, profitable, and efficient groundfish fishery.
>
> 6. Promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry.

6.2.2 Relation of Rationalization Program Provisions to Policy

Trawl rationalization program (Amendment 20) is designed to increase net benefits for the nation and increase industry efficiency while at the same time achieving management and conservation objectives.

6.2.3 Analysis of Effects of the Alternatives

The goals related to efficiency, net economic benefits, etc., discussed above will be achieved under any of the alternatives. The expectation is those quota shares allocated to the least-efficient harvesters will be traded to those who are able to generate greater profits from the QS. Some alternatives may achieve these goals more quickly than others if, for example, the majority of quota shares are allocated to those who are relatively more efficient as opposed to holders who are less efficient. However, given the absence of information on the relative efficiency of harvesters, there is no explicit way to determine which of the alternatives leads to the best long-term situation most quickly.

Therefore we find the proposed action will have no long-term effect on net benefits and efficiency. Information is not available to discern differences in short-term effects.

6.3 Excessive Shares

6.3.1 Policy Guidance

In a catch share program, control over an excessive proportion of shares by any one entity can have negative impacts on both net benefits to the nation, and fairness and equity. The following are the MSA criteria on excessive shares that directly pertain to the establishment of a catch shares program.

> SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT. (a) . . . . national standards for fishery conservation and management: . . . . (4) . . . . If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocations shall be .... (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
>
> 303A (c) REQUIREMENTS FOR LIMITED ACCESS PRIVILEGES.— (5) ALLOCATION.— In developing a limited access privilege program to harvest fish a Council or the Secretary shall— . . . . (B) consider the basic cultural and social framework of the fishery, especially through— . . . (ii) procedures to address concerns over excessive geographic or other consolidation in the harvesting or processing sectors of the fishery; . . . (D) ensure that limited access privilege holders do not acquire an excessive share of the total limited access privileges in the program by— (i) establishing a maximum share, expressed as a percentage of the total limited access privileges, that a limited access privilege holder is permitted to hold, acquire, or use; and (ii) establishing any other limitations or measures necessary to prevent an inequitable concentration of limited access privileges;…

Additionally, Amendment 20 specified as a program constraint in developing the program: “Avoid excessive quota concentration” (Constraint 6).

6.3.2 Relation of Rationalization Program Provisions to Policy

The Council has accumulation limits for QS (control limits) and QP (vessel limits) to prevent the acquisition of excessive shares in the fishery by any one entity. These limits are likely sufficiently constraining to prevent antitrust violations and achieve other socioeconomic goals related to the prevention of excessive concentration of shares. Individuals receiving QS in excess of the QS control limits are required to divest themselves down to those limits by a divestiture deadline.

6.3.3 Analysis of Effects of Alternatives

The reallocation alternatives considered here would not change the accumulation limits, but set a deadline for the divestiture of widow rockfish to comply with the control limits.

6.4 Fairness and Equity

Evaluating the fairness and equity involves weighing numerous countervailing criteria. Deriving measures for these factors and their relative importance is very difficult. Unlike the economic criterion of "efficiency," for which there are standard, generally agreed-upon, quantitative measures that can be objectively evaluated, there is little consensus regarding choice of criteria for evaluating fairness and equity, and even less agreement on yardsticks for measuring those criteria. The fairness and equity issue concerns decisions determining who is receives a valuable asset (initial allocations of QS) versus who must, like all other future entrants, lease or purchase quota in order to participate. Those receiving initial allocations may be placed at a competitive advantage over new entrants or existing participants who must purchase more QS if they desire to maintain their recent harvest levels.

The following contain the primary legal and policy guidance on fairness and equity.

The National Standards in the MSA address fairness and equity issues:

> SEC. 301. NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT. (a) . . . . national standards for fishery conservation and management: . . . **(4)** Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocations shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

Items (B) and (C) of this national standard are addressed in Sections 6.1 and 6.3, respectively. The remaining criterion (Item (A)) of this standard are addressed in this section.

The guidelines for National Standard 4 on fairness and equity state that

> An allocation of fishing privileges should be rationally connected to the achievement of OY or with the furtherance of legitimate FMP objectives. Inherent in an allocation is the advantaging of one group to the detriment of another. The motive for making a particular allocation should be justified in terms of the objectives of the FMP; otherwise, the disadvantaged user groups would suffer without cause. (600.325(c)(3)(i)(A)).

There is also an MSA requirement for the consideration of fairness and equity in the development of any limited access programs, which includes LAPPs such as the trawl rationalization program.

> 303 (b) DISCRETIONARY PROVISIONS.—Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, may—. . . (6) establish a limited access system for the fishery in order to achieve optimum yield if, in developing such system, the Council and the Secretary take into account— (A) present participation in the fishery; (B) historical fishing practices in, and dependence on, the fishery; (C) the economics of the fishery; (D) the capability of fishing vessels used in the fishery to engage in other fisheries; (E) the cultural and social framework relevant to the fishery and any affected fishing communities; **(F) the fair and equitable distribution of access privileges in the fishery;** and (G) any other relevant considerations.

With respect to LAP programs in particular, Section 303A of the MSA provides additional more specific guidance on factors to be considered to ensure that allocations are fair and equitable:

> (c)(5) ALLOCATION.—In developing a limited access privilege program to harvest fish a Council or the Secretary shall—
>
> > (A) establish procedures to ensure fair and equitable initial allocations, including consideration of—
> >
> > (i) current and historical harvests;
> > (ii) employment in the harvesting and processing sectors;
> > (iii) investments in, and dependence upon, the fishery; and
> > (iv) the current and historical participation of fishing communities;

Both 303(b)(6) and 303A(c)(5) include concepts such as harvests, participation, dependence, and current and historical activities as part of fairness and equity considerations. Other parts of the MSA (other parts of 303(b) in particular) also mention some of these concepts as considerations to be taken into account, without specifically linking them to fairness and equity.

Additionally, Section 303A includes the concept of participation specifically in the context of allocation.

> (c)(5) ALLOCATION.—In developing a limited access privilege program to harvest fish a Council or the Secretary shall— (E) authorize limited access privileges to harvest fish to be held, acquired, used by, or issued under the system to persons who substantially participate in the fishery, including in specific sectors of such fishery, as specified by the Council.

The objectives of the groundfish FMP re-enforce the importance of equity in the development of management measures:

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

Amendment 20 contains additional guidance in the form of a constraint on action related to fairness and equity: "Avoid provisions where the primary intent is a change in marketing power balance between harvesting and processing sectors" (Constraint 5).

6.4.1 Allocations and Imposition of Hardships

6.4.1(a) *Policy Guidance*

Guidelines for National Standard 4 state:

> An allocation may impose a hardship on one group if it is outweighed by the total benefit received by another group or groups. An allocation need not preserve the status quo in the fishery to qualify as "**fair and equitable,"** if a restructuring of fishing privileges would maximize overall benefits. The Council should make an initial estimate of the relative benefits and hardships imposed by the allocation, and compare its consequences with those of alternative allocation schemes, including the status quo. (Section **600.325**(c)(3)(i)(B))

6.4.1(b) *Relation of Rationalization Program Provisions to Policy*

The program as a whole is expected to generate substantial conservation and economic benefits for the nation (PFMC 2010), and some initial allocation must be in place in order to continue to achieve those benefits. As described in the National Standard Guidelines at CFR 50 600.325(c)(3)(i)(B): "Inherent in an allocation is the advantaging of one group to the detriment of another."

6.4.1(c) *Analysis of Effects of the Alternatives*

The analysis in Section 6.2 indicates that there is no substantial difference between the alternatives with respect to the expected generation of net benefits. Regardless of which alternative is selected, there will be some group that is advantaged over another. Those who are advantaged and disadvantaged by the alternatives are described in Chapter 4. Overall, the benefits of the program are sufficient to justify an allocation that may impose relative hardships on certain participants.

We find that all the alternatives considered here are part of and an essential element of a program that generates sufficient benefits to warrant the imposition of unavoidable hardships on one group over another in order to achieve the greater overall benefit.

6.4.2 Investment and Dependence

6.4.2(a) *Policy Guidance*

In the development of LAP programs, the MSA relates investment and dependence to fairness and equity (303A(c)(5)(A)(iii), see page 149). With respect to investment and dependence and the development of limited access systems (of which a LAPP is a type), the MSA requires that the Council take into account historical fishing practices in, and dependence on, the fishery as well as the capability of fishing vessels used in the fishery to engage in other fisheries 303(b)(6)(B)&(D) , see page 149). The NOAA LAPP guidelines (Anderson and Holliday, 2007) include among the attributes that may be used in allocation formulas:

> various measures of dependence on the fishery including percent of revenue or opportunities to participate in other fisheries, and inter-relations with other fishery related business especially with respect to employment. (p. 62)

Prior to the most recent reauthorization of the MSA, formal allocations to fishing communities (FCs) and participation by regional fishing associations (RFAs) were not covered in the MSA. NOAA LAPP guidelines begin to address the allocation complexities potentially created by adding FCs and RFAs into the mix of participants by first outlining the factors considered in initial allocations. The following discussion from the NOAA LAPP guidelines addresses issues related to investment and dependence and relates them to disruption.

> Given the laws and accepted views on who were potential recipients, historically the main concern was to set up an allocation that would change the fishery from the *status quo* to an IFQ fishery with a *minimum disruption of the current distribution* between the recipients. When that was the goal, the question became what sorts of things could be used to quantitatively compare allocations among the potential recipients? Looking at participation characteristics was a good way to do this. *Catch histories are a way to compare the relative success of various participants. Comparing the financial investments shows, albeit imperfectly, relative commitments to a fishery,* and at the same time, relative differences in amounts that will have to be earned to support the capital equipment. It is interesting to note that the two measures will provide different rankings. A smaller older boat operated by a high-liner could have a very good catch record but could be way low on the financial investment ladder. Which measure is best? That is a judgment call. At the same time, others may not like either of these measures and would argue for years of participation. Finally, others would suggest that the notion of maintaining the existing distribution is not appropriate and would argue for an equal distribution. The allocation formulae actually used in U.S IFQ programs were usually based on more than one of these measures. (Emphasis added, Anderson and Holliday, 2007, pp. 63-64)

This discussion indicates that consideration of investment and dependence is a way to minimize disruption, but that the balance of emphasis between investment and dependence is a judgment call. While not explicitly evaluating amounts of financial investment, the allocation formulas do take financial investments and related dependence into account as described below. After describing in general how investment and dependence are taken into account (Section 6.4.2(b)), the analysis will assess how the alternatives may vary in terms of the weight placed on dependence and investment (Section 6.4.2(c)).

6.4.2(b) *Relation of Rationalization Program Provisions to Policy*

6.4.2(b)(1) Harvesters: Allocation to Vessel Limited Entry Permits

6.4.2(b)(1)(i) *Harvesters in the Shoreside Whiting Fishery*

In the Amendment 20 analysis of the decision to allocate QS to harvesters on the basis of LE permit activity (rather than allocating on the basis of vessels or other types of investments in harvesting) it was noted that “limited entry permits are highly specific assets, the value of which is likely to decline substantially with the implementation of an IFQ program” (PFMC, 2010, p. A-74). Because LE permits only have value when used in the limited entry groundfish fishery, the owners of the LE permits are entirely dependent on that fishery for recovery of their investment. Other harvesting capital assets, such as vessels, usually have some degree of mobility and alternative uses in other fisheries, though in worst

case scenarios that alternative use might be only for scrap metal. The decision to allocate QS assignments to LE permit owners emphasizes the specificity of these investments and their dependence on the fishery. The equal allocation component of the shoreside QS allocation formula ensured some protection of that investment in that current ownership of the LE permit alone (without regard to its level of participation) was be sufficient to garner a substantial portion of the allocation based on the equal sharing of the buyback history (43 percent of the nonwhiting QS and 7 percent of the whiting QS is shared equally among all LE permits), regardless of the level of fishing activity associated with the LE permit.[9]

6.4.2(b)(2) Length of Allocation Period and Level of Participation

One indicator of the degree to which a fishing operation is dependent on a particular fishery is its level of participation on a continuing basis. Fishing operations that participate sporadically and/or at low levels are likely to be less dependent on the fishery than ones participating at higher levels over long periods. Moreover, major investments are generally made and based on long-term participation levels rather than temporary fluctuations that occur over the course of a few years. Therefore, counting participation over a longer allocation period tended to provide a better, albeit imperfect, measure of dependence than focusing on shorter allocation periods does.[10] However, a long allocation period did not address the investment and dependence that may have been established by entities entering toward the end of or after the allocation period but before implementation of the initial allocation. As the number of years between the end of the allocation period and implementation of the initial allocation increased, the degree to which the allocation period alone gave weight to current participation and harvests diminishes. As discussed above, there were other program provisions that addressed current participation.

6.4.2(b)(3) Investment and Dependence of Recent Entrants - Harvesters

Longer allocation periods may fail to measure dependence for fishing operations that have very recently invested in and entered the fishery. For harvesters, Amendment 20 compensated for this by allocating to current participants who recently purchased trawl LE permits, and thereby made a highly specific investment in the groundfish fishery. As discussed above, just by virtue of owning an LE permit, harvesters received an equal share of a significant portion of the total QS allocated: roughly 43 percent of nonwhiting groundfish QS and 7 percent of whiting QS. The equal share allocation provided substantial value to all those who had invested in an LE permit, regardless of the participation of the LE permit owner or the landings history underlying the LE permit. Even though the equally-divided portion of whiting QS was relatively small, LE permits that participated primarily in the whiting fishery also received a substantial allocation of nonwhiting species QS. Equally-allocated QS provided substantial value to all participants which can be used to tailor QS portfolios for their particular operations.

The remainder of the QS was allocated based on LE permit landings history and projected bycatch needs. Amendment 20's use of LE permit history as the basis for the allocations rather than a fisherman's or a vessel's history provided a second means by which the investments of recent entrants were taken into account. The requirement to hold an LE permit meant that any new entrant must displace an existing

[9] Permits that participate primarily or only in the at-sea whiting fishery also receive a portion of the shoreside equal allocation of QS, providing value to the permit owner which may be sold or traded to acquire allocations in the sector in which it participates.

[10] The drop year provision (e.g., drop two or three worst years) was intended to take into account operations which, due to mechanical or personal difficulties, may have had low levels of participation for a limited period of time.

participant. This creates a chain of events by which a recent entrant in the fishery could be linked back to the history of the entity it displaced, and the new entrant assumed credit for the historical landings of the displaced entity. Using LE permits as the basis for allocation thus placed some weight on investment and dependence by entities that recently entered the fishery just before or after the end of the allocation history period and up until the time of initial allocation (in 2010).

Finally, the Council's precedent of allocating quota based on LE permit history (e.g., the fixed gear sablefish program, (PFMC, 1996) and the allocation options developed early on in the Amendment 20 process, which were also based on LE permit history (PFMC, 2010), resulted in LE permit prices in the years leading up to the implementation of the program being affected by LE permits' landings histories. Thus, following through with the allocation to LE permits based on LE permit landings history also took some account of investment and dependence by current participants in the fishery (including recent entrants) up through the time the initial allocation process started in mid-2010.

Another way to account for more recent entry (current harvest) is to allocate based on periods that include years very close to the year the initial allocation is made. However, even including in the allocation period the year immediately prior to when the allocation was implemented may not place much emphasis on recent investment and dependence without the additional provisions that take into account recent investments (the purchase of LE permits). For example, absent opportunity to acquire credit for earlier years of harvest through acquisition of an existing LE permit, a harvester entering in the last year of the allocation period would receive credit for only one out of the many years of the allocation period. Nevertheless, including more recent years of harvest history would tend to scale the allocations toward the level of harvest of a more recent entrant (whether that level is greater or lesser than that of the harvester the new entrant displaced).

6.4.2(c) *Analysis of Effects of Alternatives*

As discussed above, the alternative allocation formulas take into account dependence and investment by crediting LE permit ownership and historical landings and by taking into account LE permit transfers throughout the allocation period. The action alternatives vary in the number and recency of the years included in the allocation formulas.

Under all alternatives considered here, the decision to allocate based on LE permit ownership would remain unchanged. However, allocations would go to the QS accounts based on the history of the LE permits which generated those accounts. Thus, the allocations would be among those who originally owned the LE permits at the time of initial allocation for the 2011 start of the program rather than the current owners of the LE permits.

Widow QS was originally allocated to cover bycatch needs based on target species (non-overfished species) QS allocations and that widow allocation was influenced only indirectly by the equal allocation of QS provided for target species. Under the action alternatives a portion of the widow QS would be allocated equally, since it is no longer overfished. Calculation of the allocation made to LE permits based on their landing history varies by the alternatives being considered and is discussed below.

Another alternative would have been to reallocate a portion of the QS to current LE permit holders (as was done for the original implementation of Amendment 20). However, once the QS allocations were

distributed in 2010, LE permit trading started such that the current QS account holders might no longer hold the LE permits for which the allocations were originally issued. Therefore, such an allocation would entail allocating away from one class of participants and to another class, rather than reallocating among existing members of the class of QS holders. This would be inconsistent with past Council actions which have attributed catch history to a particular asset for purposes of allocation and then considered the catch history to be associated with that asset from then on. Vessel history generated LE permits and the LE permits were then considered to be the vehicle for transferring catch history among fishermen from that time forward as the limited entry fixed gear tier program was developed and then the trawl rationalization program. Similarly, LE permit history generated QS accounts and the QS is now the effective vehicle for transferring that history among fishermen. To switch unexpectedly to another allocational basis, allocating to an entirely different class of participants would likely not be considered fair and equitable. For example, LE permits that were sold relatively cheaply with the expectations that the QS allocations were completed and that the value of the LE permits was no longer related to catch history of QS species would see the value of that LE permit inflated—there would be an unexpected windfall for those purchasing the LE permits at the expense of those who had retained their QS but sold their LE permits. Thus, unlike prior to Amendment 20, in the current system investments in LE permits and LE permit prices are no longer dependent on the access rights generated by the trawl rationalization program but have been deflated based on the splitting of those access privileges off into QS. It is now investments in the QS which are dependent on the continuation of the fishery access they provide. However, since widow QS has not yet been traded, no direct investments have been made in widow QS but rather the investments being acknowledged by the initial allocation are those which were made in the LE permits that were held as of the initial allocations in 2010.

Given an allocation based on participation levels and a period of sufficient length to demonstrate reliance on the fishery, the more recent the years of harvest included in the allocation formula, the more likely it is that allocations will reflect current dependence on the fishery. Inclusion of more recent years' landings in the allocation formula (Alternative 3) would substantially alter the allocations as reflected in Table 4-9 and Table 4-10. One of the questions at issue is the "fishery" for which dependence should be assessed. A purpose of the reallocation is to take into account dependence on the targeted widow rockfish fishery. This fishery effectively ended in 2003 when measures severely restricted harvest in order to rebuild the fishery. Those who were dependent on that fishery did not receive allocations reflecting that dependence (Figure 4-3 and Figure 4-4) because in 2010 widow rockfish was still considered overfished and widow QS was allocated to meet bycatch needs in other fisheries. Therefore, consideration of more recent years (Alternative 3's inclusion of 2003 through 2010 activity) would not take into account more recent years of activity in the targeted widow fishery but the more recent participation in the groundfish fishery in general.

6.4.3 Harvests and Participants – Current and Historic

6.4.3(a) *Policy Guidance*

The MSA provides the following direction regarding considering current and historical participation and harvests when developing a limited access program, including limited access privilege programs.

> **[**Any FMP may] establish a limited access system for the fishery in order to achieve optimum yield if, in developing such a system, the Council and the Secretary take into account—
>
> (A) present participation in the fishery;
> (B) historical fishing practices in, and dependence on, the fishery;
>
> (MSA Section 303(b)(6))
>
> (c)(5) ALLOCATION.—In developing a limited access privilege program to harvest fish a Council or the Secretary shall—
> (A) **establish procedures to ensure fair and equitable initial allocations, including consideration of**—
> **(i) current and historical harvests;**
> **(iv) the current and historical participation of fishing communities;**
> (E) authorize limited access privileges to harvest fish to be held, acquired, used by, or issued under the system to persons who substantially participate in the fishery, including in specific sector of such fishery, as specified by the Council.
>
> (MSA Section 303A)

6.4.3(b) *Relation of Rationalization Program Provisions to Policy*

In subsections below, current and historic harvests and participation are considered separately. A determination must be made as to the manner and degree of emphasis that each will be given in the approach to allocation. The following excerpt from the Amendment 20 EIS discusses the consideration of current and historic participation, the trade-offs between the two, and mitigating provisions of the shoreside IFQ program.

> This section [of the Amendment 20 EIS] will focus on the relevance of history during the allocation period to the current needs of participants in the fishery and customary standards for establishing resource allocations. To the degree that the QS allocation deviates from the current needs of participants, there is likely to be more disruption, which may also affect the distribution of job opportunities on vessels and possibly the distribution of activity among communities. Greater disruption decreases the likelihood that the allocation will be considered fair and equitable. At the same time, longtime participants in the fishery may view it as appropriately fair and equitable that they should receive recognition for the seniority of their participation and thus claim the privilege to use the resource. Seniority of use is often a factor considered in deliberation over who should have claim to future use of a resource (e.g., issues of “beneficial use” and “first-in-time” related to how surface and ground water use rights are assigned) (NRC, 1999) Additionally, the MSA requires consideration of both current and historic harvests in determining the initial allocation of QS (MSA 303A(c)(5)(A)(i) and (iv).
>
> Longer allocation periods take more account of seniority and reduce the need for consideration of hardship provisions. At the same time, use of a longer allocation period implies reliance on long-term averages. If there has been a trend in the change from the start to the end of the allocation period, then the average will not reflect recent conditions in the fishery as well as would a shorter period of more recent years. Additionally, in a changing fishery, the amount of change that the initial allocation will induce will increase as the time between the allocation period and the actual

allocation increases. Certain features of the IFQ program will mitigate some of these concerns. They include dropping worst years to address hardship (Section A-2.1.3.a, "Drop Years Provision"), using relative history to address changing fishery conditions across time (Section A-2.1.3.a, Relative History"), and the attribution of landing history to an LE permit to facilitate entry and exit and reduce the disruption that might otherwise occur through the initial allocation (Section A-2.1.1.b).

Longer allocation periods help to address hardships. Temporary circumstances may interfere with a particular vessel's operations such that its harvests over a certain period do not reflect its level of investment and dependence on the fishery. There are number of ways to deal with such hardship circumstances. One is to provide hardship exceptions and an appeals process, another is to allow vessels to drop their worst years, and a third is to provide a longer period of time over which level of involvement and dependence is determined. The Council's [F]PA relies on a combination of the latter two mechanisms (the opportunity to drop worst performance years and a long period across which to demonstrate performance).

In the context of a longer allocation period, relative history helps adjust for the variation in fishing opportunity among years. When a longer allocation period is used, it is more likely that it will encompass changes in the fishery such that conditions at the end of the period may vary substantially from those at the start as well as from the average over the period. The use of "relative history" is intended to adjust for changes in the fleet harvest opportunity by measuring each year's landing history for an LE permit as a percent or share of the total for the fleet rather than in pounds caught (also termed "catch over catch"). This compensates for changing opportunity across time but does not address changes in participants.

The long allocation period and associating the allocation with the LE permit provides for "seniority" of use, while at the same time new entrants receive an allocation that helps protect their more recent investment. By attributing and accruing landing history to an LE permit, those who have made investments to enter the fishery more recently do not necessarily lose out to those who made their investments earlier in time. This also allows longtime participants to receive more value for the business that they have built, if they choose to leave the fishery before a privilege system such as IFQs has been developed.

A shorter allocation period would provide less credit for seniority in use while still allocating to those who have invested more recently, according to their level of participation. A shorter period would potentially raise more issues of hardship by making it more difficult to allow an entity to drop enough years to cover hardship issues. Some may experience no hardships during the allocation period while others may have circumstances that affect production for a number of years. Allowing LE permits to drop any more than their one worst year from a four year allocation period would substantially dampen the amount of QS received by those with a consistent participation history (evening out the allocation). On the other hand dropping the worst 2 or 3 years from an 11-year allocation period can be done with much less impact on the allocation to those with consistent participation. (PFMC, 2010, pp. A-150 – A-151).

6.4.3(c) *Current Harvest, Current Community Participation, and Disruption*

6.4.3(c)(1) Policy Guidance

Current harvest level is one of several participation criteria which must be considered and may be used in the initial allocation of quota shares. Other participation-related criteria that must be considered includes historic harvests, employment, and investment and dependence (MSA Section 303A(c)(5)).

The NOAA LAPP guidelines do not discuss "current harvest" very much in relation to allocation.[11] However, they make passing reference to current harvest distribution with respect to LAP programs that do not include FCs and RFAs:

> ... the main concern was to set up an allocation that would change the fishery from the *status quo* to an IFQ fishery with a minimum ***disruption of the current distribution*** between the recipients. When that was the goal, the question became what sorts of things could be used to quantitatively compare allocations among the potential recipients? Looking at participation characteristics was a good way to do this. Catch histories are a way to compare the relative success of various participants. (Anderson and Holliday, p. 63, emphasis added)

Here, it is inferred that the goal of taking current harvest levels into account is to minimize disruption in the fishery as measured against the current distribution of harvest among participants.

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

6.4.3(c)(2) Relation of Rationalization Program Provisions to Policy

The allocation formulas directly reflect the distribution of current harvests to the degree that more recent years are included in the allocation formula (years that are reasonably construed to be "current" for purposes of allocation).

6.4.3(c)(2)(i) *Harvesters*

Current *participation* of harvesters was taken into account by the allocation to current owners of LE permits (as of 2010) based on the assumption that current LE permit owners are current participants. Current *harvest* was taken into account indirectly, again based on the assumptions that those with LE permits are currently harvesting in the fishery (see Section 6.4.2 for a detailed description of the link between LE permit ownership and the QS allocation that an individual will receive under widow QS reallocation). While some current LE permit owners may not have been taking part in the fishery when Amendment 20 was implemented, based on the assumption of economically rationale actors, the expectation is that, on average, those owning LE permits will have sought to use them in order to earn a return on their investments. At the same time, the scale of an entity's current harvest directly determines the initial allocation only to the degree that current years are included in the allocation formulas.

[11] Twice when directly quoting the act and once when discussing an auction approach to initial allocation and the need to take into consideration current harvests. (Anderson and Holliday, 2007, p. 65).

One of the substantial changes occurring in the fishery in more recent years is the imposition of management measures to eliminate targeting on overfished species. Trip limits were reduced substantially in 2000 when five stocks were declared overfished. By 2002, a total of seven stocks were declared overfished. In that year, rockfish conservation areas were implemented to close the continental shelf to bottom trawling. This substantially altered harvest patterns beginning in 2002.

To address these changes, the program included an allocation adjustment based on post-2002 harvests, but only with respect to the allocation of QS for overfished species. The post-2002 data used was geographic harvest pattern data, not data on actual harvest levels. LE permit harvest level information from 1994 through 2003 was used to determine the allocations for all non-overfished species, including the amounts allocated equally (shapes 1 and 2 in Figure 6-1). QS for overfished species was allocated proportionally to the allocation of non-overfished species QS (shape 3). The proportional allocation was achieved using fleet average bycatch rates by area for 2003-2006 (shape 4). The average rates used for any particular LE permit were determined based on the areas where that LE permit fished during 2003-2006 (shape 5). These elements of the allocation formula then combine (shape 6) to result in the QS allocation for overfished species (Shape 7). Widow rockfish was one of the species y allocated on this basis.

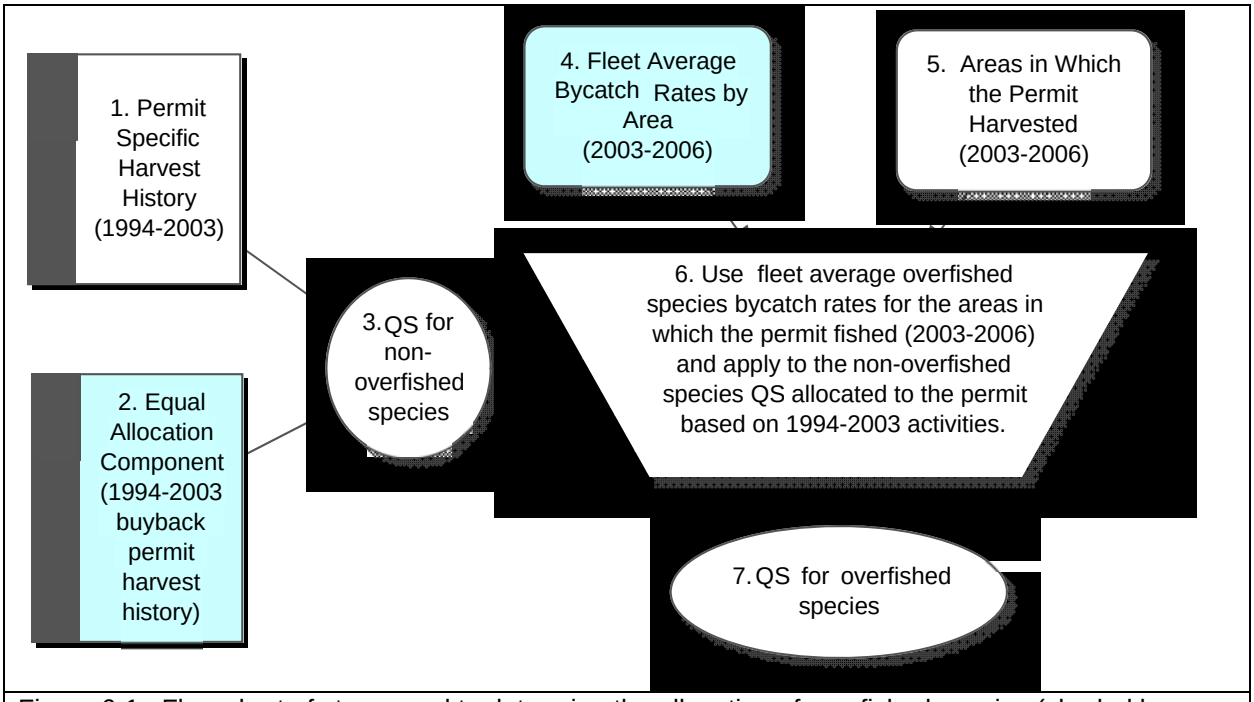

Figure 6-1. Flow chart of steps used to determine the allocation of overfished species (shaded boxes indicate the use of fleet-wide data, unshaded boxes indicate LE permit-specific data and calculations.

The Amendment 20 EIS also discusses the fact that the buyback program implemented in 2003 would have substantial effects on patterns of harvest in the fishery, which would not be picked up in allocation formulas that did not take into account harvest levels after 2003.

> One of the major factors that will result in differences between the pattern of initial QS allocation and the patterns of fishery harvest in more recent years will be the effects of the buyback program. The buyback program occurred just after the 2003 control date. It substantially

> expanded fishing opportunity for all vessels, as reflected by higher trip limits, and initially resulted in a change in the proportional distribution of permits along the coast. The most effective way to address these changes would be to include years after 2003 in the allocation period. However, doing so would reward those who disregarded the control date announcement, create perceptions of inequity, and encourage fishermen to ignore such dates in the future, negatively affecting the Council's ability to credibly use control dates. (PFMC, 2010, A-151)

As indicated in this paragraph, at that time, the Council considered the post-2003 conditions created by the buyback program but chose not to make a change to the allocation period for the indicated reasons.

6.4.3(c)(2)(ii) ***Communities***

No separate allocation is made to communities. Current community participation is taken into account via the allocations to harvesters and processors that are community members. In the Chapter 4 analysis, information is presented on the initial allocations to entities in the communities, in order to allow decision-makers to assess the likely impacts of the initial allocations on currently-participating communities. The dependence of communities on the viability of the entities receiving the initial allocations is indicated by displaying widow and groundfish exvessel revenues in the context of all exvessel revenues in Section 3.3.6.

6.4.3(c)(3) Analysis of Effects of Alternatives

As was discussed in Section 6.4.2 on investment and dependence, as the time between the end of the allocation period and the initial allocation increases, there is increased potential for disconnect between the distribution of activity in years immediately prior to the allocation and the distribution of the initial allocation. This disconnect creates a potential for disruption of current activities. There were two program features that helped to reduce the degree of disruption that occurred as a result of the initial allocation (whether the time between the end of the allocation period and the distribution wpiwould have been a few months or many years): (1) the January 2004 advance notice of proposed rulemaking announcing the November 6, 2003 control date, and (2) allocation to current owners of LE permits based on history of the LE permit. Opportunities to acquire a share of the initial allocation through acquisition of an LE permit provided all participants with an opportunity to plan and adjust for the initial allocation.[12] Similarly, the Council intent to consider reallocation of widow rockfish QS has been well noticed including by the fact that there is an ongoing moratorium on the trading of widow QS. These mitigating factors affect the amount of potential disruption of current activities; nevertheless, the amount of potential disruption would decrease as more recent (current) years are included in the initial allocation.

The potential amount of disruption is primarily limited to the amount of QS that might be reallocated under each alternative. These amounts of QS potentially reallocated are displayed in Table 4-3. At most just over one quarter of the total widow QS would be reallocated under the action alternatives. Minimization of disruption must be assessed against the degree of disruption necessary to achieve the purpose of the action.

[12] This opportunity is similar to that afforded new entrants after the program is implemented (the opportunity to buy quota).

6.4.3(d) *Historic Harvests and Historic Community Participation*

6.4.3(d)(1) Policy Guidance

At the start of Section 6.4.3, the MSA provisions relevant to historic participation are listed. Historic fishing practices and dependence are relevant in the development of limited access systems (MSA 303(b)(6), see page 149) and with respect to LAP programs, historical harvests and historical participation by communities are cited as being particularly relevant to the fairness and equity of the programs (MSA 303A(c)(5)(A)(i) and (iv), see page 149). One reason for the pertinence of historic harvest to fairness and equity may be our culture's historic reliance on "seniority of use" as "a factor considered in deliberation over who should have claim to future use of a resource (e.g., issues of 'beneficial use' and 'first-in-time' related to how surface and ground water use rights are assigned)" (NRC, 1999 as cited in PFMC, 2010, p. A-150).

Historic harvests and participation are also important from other economic and social perspectives. From an economic perspective, fishing handling and support businesses and infrastructure are developed and positioned based on long-term patterns of activity. Concurrent with the development of the economic relations and infrastructure are the development of the social networks and infrastructure. Historic patterns are therefore an indicator of structures in the human environment which are deeply embedded and difficult to evaluate but nevertheless important to the quality of human life.

6.4.3(d)(2) Relation of Rationalization Program Provisions to Policy

The existing allocation formulas give a weight to historic participation by extending the allocation period back to 1994 for vessels and to 1998 for processors. The period goes back to 1994 for LE permits because it is the first year of the license limitation period, which started a new era, changing related delivery patterns and who was able to participate in the fishery (see PFMC, 2010, p. 148).

With respect to the importance of historic harvest from other social and economic perspectives, on the one hand, allocation formulas that rely on longer time periods may better-reflect some of the patterns within the industry and communities that are established based on long-term conditions in the fishery. On the other hand, recent developments in the fishery may cause major disruptions in those patterns. If policy adjustments are made that incorporate recent developments, then short-term patterns may be able to survive over the long term; or they may disappear, and attempts to support them may result in further disruption. Assessing these patterns and their dynamics is difficult. The existence of physical infrastructure is amenable to some degree of documentation, but the economic and social relations built around the fishery are difficult to document and summarize in a manner and with timeliness that is helpful to decision-makers. Further, the effects of a particular allocation on relational patterns and infrastructure that are indirectly related to fishing are difficult to project in the context of other constantly changing social and economic conditions. This paucity of information creates a challenge in assessing the appropriate balance of emphasis between current and historical participation and harvests in developing allocation formulas.

6.4.3(d)(3) Analysis of Effects of Alternatives

The widow QS reallocation alternatives include the following elements: historic widow landings, more

recent groundfish revenue, equal allocation, and adaptive management. The weight given to each of these criteria is provided in Table 4-24, on page 121.

Community historic participation for the widow rockfish and groundfish fisheries is documented in Section 3.3.6, starting on page 62. Section 4.3.6, starting on page 116, provides estimates of how widow QS may be distributed among communities if it is reallocated.

6.4.3(e) *Employment (processing and harvesting)*

The MSA requires consideration of employment in the harvesting and processing sectors when establishing initial allocations for LAP programs. In general, the provisions have been developed to account for current and historic participation in the fishery, while at the same time transitioning to a rationalized fishery. Rationalization inevitably implies a change in the nature and patterns of employment in the processing and harvesting sectors. There is no reason to believe that allocation to certain harvesters or certain processors is more likely to result in more stable or higher employment than would allocating to other harvesters or processors. Consequently, account is taken of processing and harvesting labor by distributing allocations based on the current and historic harvest patterns in the fishery. As discussed in the previous sections, both current and historic harvest patterns are relevant to existing economic and social networks, and the labor force is positioned within these networks. It is also difficult to predict the effect on labor because of the post-implementation quota trading and consolidation that is likely to occur under rationalization. Overall, as discussed in previous sections, it is likely that allocations that are least disruptive to harvesters and processors would also be the least disruptive to employment.

6.4.4 Discrimination between Residents of Different States

MSA National Standard 4 requires that management measures not discriminate between residents of different states. While the alternatives may result in differing distribution of initial allocations among the states (see Section 6.4.3), none of the allocations explicitly discriminate in favor of or against residents of a particular state.

6.5 Stability and Minimizing Disruption – Other Considerations

6.5.1 Policy Guidance

Objective 14 to the groundfish FMP addresses stability from the standpoint of minimizing disruption: "When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures, and the environment." The goal of Amendment 20 includes "create individual economic stability." While an objective in itself, stability (minimizing disruption) contributes to other FMP objectives related to total economic benefits and community and sector health, as well as equity (discussed in the previous section).

6.5.2 Relation of Rationalization Program Provisions to Policy

With respect to stability and minimizing disruptions, the effects pertaining to the current action discussed here relate to adopting an allocation period that does not rely on the control date. Other issues related to

stability and minimizing disruption, such as changes imposed on the fishery in 2011 relative to conditions just prior to program implementation and changes from the 2011 allocation (No Action) to a different allocation (Alternatives 2-5) are addressed in the section on current participation and harvest (Section 6.4.3(c)).

As discussed in the previous section, not using a control date may create more potential for future disruptions in this and other fisheries if the development of additional limited access systems are considered. These disruptions are not only important with respect to the fairness and equity considerations previously discussed but may have other adverse effects as well, depending on the management system in place. In general, conservation objectives will be met regardless of the amount of fishing effort, but in the absence of a credible control date an influx or increase of effort may require increased attention on the part of fishery managers, thereby detracting from the resources available to consider proposals for new limited access systems or to address other needs of the management system. Additionally, constantly changing and increasingly restrictive management measures could have adverse affects on the industry and communities. For programs where effort is controlled primarily through two-month cumulative limits (such as the open access groundfish fishery), heightened fleet effort would be economically disruptive, with the increased effort reducing cumulative limits and thereby reducing profitability of current participants. For a program controlled with season closures, safety concerns might arise with shorter seasons and increased crowding on the fishing grounds. Product quality could suffer as well. Instability and disruptive impacts in the harvest sector would affect overall sector health and reverberate to processors and communities.

6.5.3 Analysis of Effects of Alternatives

As discussed in the previous section, only Alternative 1 incorporates the control date into the qualifying periods for all participants. No Action incorporates the control date for harvesters but not for processors, for which the end of the allocation period is 2004. Alternatives 3, 4, and 5 do not incorporate the control date in the allocations periods and are differentiated based on other factors having to do with the recency of the years included. These effects are described above in Section 6.4.3. The effects of not incorporating the control date into the allocation period are discussed in Section 6.5.2.

6.6 Sector Health

6.6.1 Policy Guidance

The following objectives from the groundfish FMP have been categorized as relating to sector health.

> Provide for a viable, profitable . . . groundfish fishery (Amendment 20, Objective 2)
>
> Promote measurable economic . . . benefits through the seafood catching, processing, distribution elements, and support sectors of the industry (Amendment 20, Objective 6)
>
> Maximize the value of the groundfish resource as a whole (Groundfish FMP Goal 2)
>
> Promote year-round marketing opportunities and extend those opportunities as long as practicable during the fishing year (Groundfish FMP Objective 7)

> Avoid unnecessary adverse impacts on small entities (Groundfish FMP Objective 15)
>
> Include measures to assist… entry-level and small vessel owner-operators, … through set-asides of allocations… or economic assistance in the purchase of quota. (MSA - 303A(c)(5)(C))

6.6.2 Relation of Rationalization Program Provisions to Policy

Overall, the trawl rationalization program was expected to stabilize the fishery and provide increased operational flexibility that would benefit harvesters and ultimately processors. Some shift in the balance of market power toward QS holders (initial recipients in particular) was expected but in general, market factors would work to ensure that on average the industry is healthy.

6.6.3 Analysis of Effects of Alternatives

In general, long-term overall health of the sectors is not expected to be substantially affected by a redistribution of QS within the ranges considered here.

6.7 Labor

6.7.1 Policy Guidance

The following MSA sections and objectives from the groundfish FMP have been categorized as relating to labor interests.

> Include measures to assist… captains, crew… through set-asides of allocations… or economic assistance in the purchase of quota. (MSA - 303A(c)(5)(C))
>
> Amendment 20. Promote measurable… employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry (Amendment 20, Objective 6)
>
> Promote the safety of human life at sea (MSA - National Standard 10,
>
> Groundfish FMP Objective 17)

6.7.2 Relation of Rationalization Program Provisions to Policy

The trawl rationalization program was expected to result in fewer but more stable job opportunities and a possible shift in the nature of compensation to crew members (traditionally compensation is based on crew shares). Additionally, a number of new jobs were generated for observers. Safety in the shoreside non-whiting trawl fishery was not expected to be substantially affected (because that segment of the fishery was previously managed under two month cumulative limits), but a safety benefit for the whiting components of the fishery was expected (since those fisheries were managed as a “derby” or a race to catch fish). Some safety benefits were also expected to the degree that the fishery is more profitable and more money is put into vessel maintenance. The ultimate geographic distribution of jobs is uncertain given the tradability of quota and uncertainty about which ports and vessels the quota will flow toward over time.

6.7.3 Analysis of Effects of Alternatives

The initial allocations might impact the geographic distribution of processing employment opportunities over the short term and could have some impact on the income available from employment on vessels (increasing income opportunity on some vessels while decreasing opportunity on others). See sections on harvesters, processors, and communities for a description of the expected distributional effects. The total number of jobs and total levels of payments to labor are not expected to be affected by the alternatives for reallocation of quota. The reallocation of quota initial recipients is not expected to impact safety.

6.8 Communities

6.8.1 Policy Guidance

The following MSA sections and objectives from the groundfish FMP have been categorized as relating to community interests.

> Consider importance of fishing to communities in order to provide sustained participation and to minimize adverse impacts (MSA - National Standard 8, Groundfish FMP Objective 16, Amendment 20 Objective 5)
>
> (B) Consider basic cultural and social framework of the fishery through
> (i) the development of policies to promote sustained participation of… fishing communities that depend on the fisheries, including regional or port-specific landing and delivery requirement;
> (ii) procedures to address concerns over excessive geographic or other consolidation in the harvesting or processing sectors of the fishery
> (C) Include measures to assist, when necessary and appropriate… fishing communities through set-asides of harvesting allocations… or economic assistance in the purchase of quota (MSA, 303A(c)(5))
>
> Minimize negative impacts resulting from localized concentrations of fishing effort (this constraint is also listed under "Conservation") Groundfish FMP, Amendment 20 Constraint 3

6.8.2 Relation of Rationalization Program Provisions to Policy

The trawl rationalization program affects communities through a variety of mechanisms. On the one hand, it is expected to make the fishing and processing activities associated with communities more stable and safe. On the other hand, the commoditization of fishing opportunities into tradable harvesting privileges was expected to result in increased flexibility, and there has been much uncertainty about where the quota would eventually be landed. A number of provisions are intended to encourage a broader geographic distribution (accumulation limits) and allow communities to participate to a greater degree in their own economic futures (e.g., communities are allowed to own quota). Additionally, 10 percent of the nonwhiting QS for the shoreside fishery is set aside for use in possible incentive programs (the Adaptive Management Program) to compensate for any unexpected undesirable consequences of the program; and 20 percent of the QS was allocated to whiting processors, in part because of the higher levels of overcapitalization in that sector due to the fact that the fishery was managed as a derby. Because 20 percent of whiting QS was allocated to processors, which tend to be more tied to specific communities

than are harvesters, there was not a set aside of shoreside whiting QS for the adaptive management program.

6.8.3 Analysis of Effects of the Alternatives

The effects of the initial allocations on the distribution of fishing among communities over the short- and long-term are difficult to predict. Quota is tradable and highly divisible, giving it a fluidity such that it will likely move toward those ports in which profit margins tend to be the highest, regardless of the initial allocations. However, in the first years of the program landings have fluctuated substantially among communities even when QS has not traded (Table 4-1 and footnote to Table 4-2).

Effects on communities will depend on how those not receiving increases and decreases in allocation respond to the changes in allocations. Thus there are two significant considerations in determining the effects of the shifts in allocation on communities. First, "What actions will members of the communities take if they receive lesser allocations?" Would processors and harvesters in a particular community cease or reduce their activity, continue at a similar level but at lower profitability (i.e., buy QP every year), or acquire QS on the market to make up for shortfalls (also reducing profitability when the cost of the QS is taken into account). In the case of those buying QP, the impact on the communities might be the reduction in profit and spending in the community amounting to at most the cost of the QS/QP purchased to maintain production. For those buying QS, the impact on communities will depend on the residence of the QS owners. QS owners are not necessarily residents of the community in which the QP they receive are used. The second closely related consideration is "What is the effect of QS trading on the geographic distribution of QS and landings?" While QS may be initially distributed in one geographic pattern it is very likely that market forces will affect its distribution over the long-term, relatively independent of the initial allocation. At the same time there is likely to be some "stickiness" in the initial allocations (i.e., a tendency for allocations to stay put until incentives to trade are great enough to cause movement). This stickiness is due to factors such as sunk costs (costs that are not recoverable by an existing entity that a new entity will also have to incur), transaction costs (costs and risks of seeking exchange partners and executing QS transactions), and nonpecuniary values (values placed on the fishing lifestyle or bequethal of QS).

Chapter 7 Other Applicable Law

7.1 CONSISTENCY WITH OTHER APPLICABLE LAWS

7.1.1 Endangered Species Act

The ESA of 1973 (ESA) was signed on December 28, 1973, and provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend. The ESA replaced the Endangered Species Conservation Act of 1969; it has been amended several times.

A "species" is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. A species is considered threatened if it is likely to become an endangered species within the foreseeable future.

Federal agencies are directed, under section 7(a)(1) of the ESA, to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Federal agencies must also consult with NMFS or USFWS, under section 7(a)(2) of the ESA, on activities that may affect a listed species. These interagency consultations, or section 7 consultations, are designed to assist Federal agencies in fulfilling their duty to ensure Federal actions do not jeopardize the continued existence of a species or destroy or adversely modify critical habitat. Should an action be determined to jeopardize a species or result in the destruction or adverse modification of critical habitat, NMFS or USFWS will suggest Reasonable and Prudent Alternatives (RPAs) that would not violate section 7(a)(2).

Biological opinions document whether the Federal action is likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of critical habitat. Where appropriate, biological opinions provide an exemption for the "take" of listed species while specifying the extent of take anticipated, the Reasonable and Prudent Measures (RPMs) necessary to minimize impacts from the take, and the Terms and Conditions with which the action agency must comply.

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 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 concluded that implementation of the groundfish FMP is not expected to jeopardize the continued existence of any endangered or threatened salmonids species under the jurisdiction of NMFS, or result in the destruction or adverse modification of critical habitat.

NMFS issued a supplemental biological opinion on March 11, 2006 concluding that neither the higher observed bycatch of Chinook in the 2005 whiting fishery nor new data regarding salmon bycatch in the groundfish bottom trawl fishery required a reconsideration of its prior ‘‘no jeopardy’’ conclusion. NMFS also reaffirmed its prior determination that implementation of the groundfish 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) 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.

On January 22, 2013, NMFS requested the reinitiation of the biological opinion for listed salmonids to address changes in the fishery, including the trawl rationalization program and the emerging midwater trawl fishery. The consultation will not be completed prior to publication of the proposed rule to modify the midwater trawl season opening regulations (Action Alternative) for the Pacific whiting fishery. NMFS has considered the likely impacts on listed salmonids for the period of time between the proposed rule and, if appropriate, final rule and the completion of the reinitiated consultation relative to sections 7(a)(2) and 7(d) of the ESA. NMFS has reinitiated section 7 consultation on the Pacific Coast Groundfish FMP with respect to its effects on listed salmonids. In the event the consultation identifies either reasonable and prudent alternatives to address jeopardy concerns or RPMs to minimize incidental take, NMFS would exercise necessary authorities, in coordination with the Council, to put such additional alternatives or measures into place. After reviewing the available information, NMFS has concluded that, consistent with sections 7(a)(2) and 7(d) of the ESA, this action will not jeopardize any listed species, would not adversely modify any designated critical habitat, and will 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.

On November 21, 2012, the U.S. Fish and Wildlife Service (FWS) issued a biological opinion concluding that the groundfish fishery will not jeopardize the continued existence of the short-tailed albatross. The (FWS) also concurred that the fishery is not likely to adversely affect the marbled murrelet, California least tern, southern sea otter, bull trout, nor bull trout critical habitat.

On December 7, 2012, NMFS completed a biological opinion concluding that the groundfish fishery is not likely to jeopardize non-salmonid marine species including listed eulachon, the southern DPS of green sturgeon, humpback whales, the eastern DPS of Steller sea lions, and leatherback sea turtles. The opinion also concludes that the fishery is not likely to adversely modify critical habitat for green sturgeon and leatherback sea turtles. An analysis included in the same document as the opinion concludes that the fishery is not likely to adversely affect green sea turtles, olive ridley sea turtles, loggerhead sea turtles, sei whales, North Pacific right whales, blue whales, fin whales, sperm whales, SRKWs, Guadalupe fur seals, or the critical habitat for Steller sea lions. Since that biological opinion, the eastern DPS of Steller sea lions was delisted on November 4, 2013 (78 FR 66140); however, this delisting did not change the designation of the codified critical habitat for the eastern DPS of Steller sea lions. NMFS informally consulted on eulachon on January 21, 2013, to consider whether the 2012 opinion should be reconsidered for eulachon in light of new information from the 2011 fishery and the proposed chafing gear modifications and determined that information about the eulachon bycatch in 2011 and chafing gear

regulations did not change the anticipated extent of effects of the action, or provide any other basis to reinitiate the December 7, 2012 biological opinion.

As Steller sea lions and humpback whales are also protected under the Marine Mammal Protection Act, incidental take of these species from the groundfish fishery must be addressed under MMPA section 101(a)(5)(E). On February 27, 2012, NMFS published notice that the incidental taking of Steller sea lions in the West Coast groundfish fisheries is addressed in NMFS' December 29, 2010 Negligible Impact Determination (NID) and this fishery has been added to the list of fisheries authorized to take Steller sea lions (77 FR 11493, Feb. 27, 2012). NMFS is currently developing MMPA authorization for the incidental take of humpback whales in the fishery.

7.1.2 Marine Mammal Protection Act

The MMPA of 1972 is the principal 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 USFWS 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.

Pursuant to the MMPA, the List of Fisheries (LOF) classifies U.S. commercial fisheries into one of three Categories according to the level of incidental mortality or serious injury of marine mammals:

I. Frequent incidental mortality or serious injury of marine mammals
II. Occasional incidental mortality or serious injury of marine mammals
III. Remote likelihood of/no known incidental mortality or serious injury of marine mammals

The Marine Mammal Protection Act (MMPA) mandates that each fishery be classified by the level of serious injury and mortality of marine mammals that occurs incidental to each fishery, as reported in the annual Marine Mammal Stock Assessment Reports for each stock. On the 2012 List of Fisheries, the WA/OR/CA sablefish pot fishery is listed as a category II fishery due to interactions with humpback whales. All other west coast groundfish fisheries are listed as category III fisheries. (See http://www.nmfs.noaa.gov/pr/interactions/lof/final2012.htm.)

Commercial fishing vessels participating in Category I or II fisheries must be covered by a Federal permit under the MMPA. For most fisheries, including all west coast fisheries, a blanket permit is issued for all Federal or state permits authorizing participation in the fishery.

Section 3.2.10 describes the incidental take of marine mammals and 4.2.2 assesses the effects of the proposed action on marine mammals. Steller sea lions and humpback whales are protected under the

ESA and the MMPA. Incidental take of these species from the groundfish fishery must be addressed under MMPA section 101(a)(5)(E). On February 27, 2012, NMFS published notice that the incidental taking of Steller sea lions in the West Coast groundfish fisheries is addressed in NMFS' December 29, 2010 Negligible Impact Determination (NID) and this fishery has been added to the list of fisheries authorized to take Steller sea lions 77 FR 11493 (Feb. 27, 2012). NMFS is currently developing MMPA authorization for the incidental take of humpback whales in the fishery. There is no projected change in the trawl fishery impacts over what was previously considered in the 2013-2014 and 2014-2016 proposed harvest specifications and management measures, EISs. The fishery will continue to be subject to 100 percent at-sea monitoring, and data will be available post season for use in an adaptive management response, if incidental take rates turn out to be higher than expected and problematic.

7.1.3 Migratory Bird Treaty Act and Executive Order 13186

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.

EO 13186 supplements the MBTA (above) by requiring Federal agencies to work with the USFWS to develop memoranda of understanding 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.

The proposed action is unlikely to cause the incidental take of seabirds protected by the Migratory Bird Treaty Act to differ substantially from levels previously considered in the 2013-2014 and 2014-2016 proposed harvest specifications and management measures, EISs. (Section 4.2.2 evaluated impacts of the proposed action on protected species, including seabirds).

7.1.4 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. A determination as to whether the proposed action is 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 will be 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.

7.1.5 Paperwork Reduction Act

The Paperwork Reduction Act requires that agency information collections minimize duplication and burden on the public, have practical utility, and support the proper performance of the agency's mission. There will likely be a no Paperwork Reduction Act collection associated with this action.

7.2 Executive Order 12866

This action is not significant under E.O. 12866. This action will not have a cumulative effect on the economy of $100 million or more, nor will it result in a major increase in costs to consumers, industries, government agencies, or geographical regions. No significant adverse impacts are anticipated on competition, employment, investments, productivity, innovation, or competitiveness of U.S.-based enterprises.

7.3 Executive Order 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 proposed action will not result in disproportionate adverse impacts to low income and minority communities.

7.4 Executive Order 13175 (*Tribal government)*

Executive Order 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 proposed action was developed after meaningful consultation and collaboration with Tribal officials from the area covered by the FMP. Under the Magnuson-Stevens Act at 16 U.S.C. 1852(b)(5), one of the voting members of the Council must be a representative of an Indian Tribe with federally-recognized fishing rights from the area of Council's jurisdiction.

7.5 Executive Order 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 proposed action does not have federalism implications subject to EO 13132.

7.6 Administrative Procedure Act

The Administrative Procedure Act, or APA, governs the Federal regulatory process and establishes standards for judicial review of Federal regulatory activities. Most Federal rulemaking, including regulations promulgated pursuant to the MSA, are considered "informal," which is determined by the controlling legislation. Provisions at 5 U.S.C. 553 establish rulemaking procedures applicable to the proposed action. The FMP requires a 'full notice-and-comment rulemaking' to implement the regulations necessary to implement the Council recommendation. The rulemaking associated with this proposed action will be conducted in accordance with the APA and procedures identified in section 304 of the MSA.

7.7 Regulatory Flexibility Act

The Regulatory Flexibility Act requires government agencies to assess the effects that regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those effects. A fish-harvesting business is considered a "small" business by the Small Business Administration if it has annual receipts not in excess of $4.0 million. For related fish-processing businesses, a small business is one that employs 500 or fewer persons. For wholesale businesses, a small business is one that employs not more than 100 people. For marinas and charter/party boats, a small business is one with annual receipts not in excess of $6.5 million. If the projected impact of the regulation exceeds $100 million, it may be subject to additional scrutiny by the Office of Management and Budget

Regulatory Impact Review (Executive Order 12866) - EO 12866, Regulatory Planning and Review, covers a variety of regulatory policy considerations and establishes procedural requirements for analysis of the benefits and costs of regulatory actions. It directs agencies to choose those approaches that maximize net benefits to society, unless a statute requires another regulatory approach. The agency must assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only after reasoned determination the benefits of the intended regulation justify the costs. In reaching its decision, the agency must use the best reasonably obtainable information, including scientific, technical and economic data, about the need for and consequences of the intended regulation. NMFS requires the preparation of a regulatory impact review (RIR) for all regulatory actions of public interest. The purpose of the analysis is to ensure the regulatory agency systematically and comprehensively considers all available alternatives, so the public welfare can be enhanced in the most efficient and cost-effective way. The RIR addresses many of the items in the regulatory philosophy and principles of EO 12866.

Regulatory Impact Review and the Regulatory Flexibility Act Analysis- NMFS develops the necessary analysis and documentation needed to address these mandates as part of the Federal rulemaking process implementing groundfish harvest specifications and management measures. These analyses rely substantially on the contents of this EA and the socioeconomic impact evaluation in Chapter 4 and baseline information in Chapter 3, which have been developed in conjunction with NMFS West Coast

Region staff to provide information needed for the Regulatory Impact Review and Regulatory Flexibility Act analyses. A separate Regulatory Impact Review and regulatory Flexibility Act Analyses will be prepared for the rulemaking to implement the FPA.

Chapter 8 Persons and Agencies Consulted

This action is a Council-recommended action that includes all interested and potential cooperating agencies, such as the United States Fish and Wildlife Service, tribal government representatives, and state representatives for Washington, Oregon and California.

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