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 at three miles to a distance of 200 nautical miles from shore.

In addition to addressing MSA mandates, this document serves as an 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), proposed 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 physical, biological, and socio-economic impacts.

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 is 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 non-treaty 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 and allocations to the shorebased trawl fishery were increased for the 2015-2016 biennial period (Figure 1-1). Subsequently, the widow rockfish ACLs and allocations to the shorebased trawl fishery were further increased for the 2017-2018 biennial period. The increase in ACLs and allocations to the shorebased trawl fishery were analyzed under the Final Environmental Assessment for Amendment 27 to the Pacific Coast Groundfish Fishery Management Plan and 2017-2018 Harvest Specifications and Management Measures (NMFS 2016) and are not modified by this action.

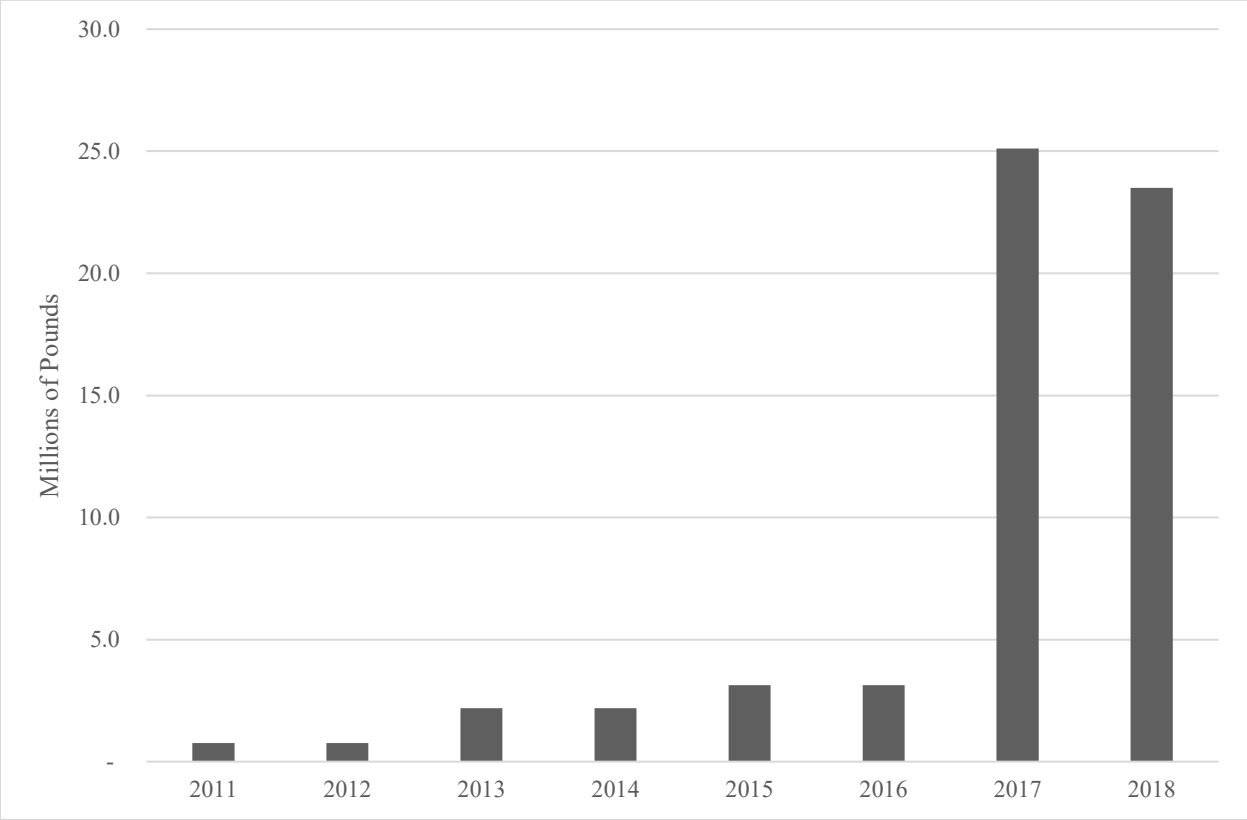

Figure 1-2. Allocations of widow rockfish to the shorebased trawl fishery, 2010 through 2018.

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.

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 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. 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 potential impacts would be to the harvesting sector (Section 4.4.1), first receivers and processors (Section 4.4.2), communities (Section 4.4.3) and governmental entities (Section 4.4.4). This action does not modify the amount of widow rockfish available to catch, nor the overall fishing behavior (Section 4.4.1(b)(2)). No impacts would be expected to endangered species, overfished species, marine mammals, or seabirds (Section 7.1).

1.6 Changes from the Draft Environmental Assessment

NMFS published the draft proposed EA with the proposed rule on June 29, 2016 (81 FR 42295). The comment period on the proposed rule ended on July 29, 2016. NMFS received two comment letters. The public also had the opportunity to comment on the proposed action through the Pacific Fishery Management Council process, including at the September 2014, November 2014, and April 2015 meetings. Due to the time between the publication of the proposed rule and the completion of the final rule, parts of this EA have been updated with the most recent available data. Where possible, more recent data was pulled from the original source to maintain the integrity of the analysis.

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 that 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[1]. 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.*

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

[1] 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.

Reallocation Alternative 4: *Use a Pounds Neutral Reallocation* (leave a base amount of QS unreallocated, such that in 2016 every QS account would have 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 (FINAL PREFERRED ALTERNATIVE): *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[2] of widow QS for whiting trips

Nonwhiting Trips: 62 percent[Error! Bookmark not defined.] of the widow QS for nonwhiting trips

[2] The percent widow QS allocated for shorebased whiting and nonwhiting trips for initial allocation was derived based on the following formula: 52 percent of the total limited entry trawl allocation of widow rockfish went to the whiting sector (the stock was under rebuilding) and 48 percent to the nonwhiting sector. Of the 52 percent that went to the whiting sector, 42 percent went to the shorebased whiting sector. 10 percent of the QS went to adaptive management. Therefore, the portion of the QS allocated for each type of trip (shorebased whiting and nonwhiting) was 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 of widow = [0.22 T + 0.48 T] = 0.7 T
- Shorebased trawl whiting share of shorebased widow = [0.22T/0.7T] = 0.31
- Shorebased trawl nonwhiting share of shorebased widow = [0.48T/.7T] = 0.69
- Multiply both values by 0.9 to reduce result for the 10 percent AMP set aside.
- [0.31 x 0.9] = 0.28 whiting share of shorebased widow; [0.69 x 0.9] = 0.62 nonwhiting share of shorebased widow

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.

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: 28.6% under suboption a, 30.6% under suboption b, 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.

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,[3] 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**Error! Bookmark not defined.** 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**Error! Bookmark not defined.** 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 2018 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 the 2016 ABC instead of the ACL.

[3] 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).

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.

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 of 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[Error! Bookmark not defined.] 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 of the other half of the widow QS to be distributed for nonwhiting trips as follows:

For each LE permit,[Error! Bookmark not defined.] 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 2.4. 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][4]

Remainder: Allocate the remaining 30 percent among LE permits[Error! Bookmark not defined.] 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%

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

[4] 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.

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 (Final Preferred Alternative): Midpoint of Alternative 2 Suboptions

The Council developed the Final Preferred Alternative (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 10.833 percent for whiting trips and 89.167 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[Error! Bookmark not defined.] 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 29.558 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 10.833 percent for nonwhiting trips and 89.167 percent for nonwhiting trips. (see Table 2) 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: 9.062 percent of all widow QS will be allocated for whiting trips

Nonwhiting Trips: 51.381 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[Error! Bookmark not defined.] 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[Error! Bookmark not defined.] 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%.

Table 2. Calculations used to determine percentages used.

	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
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

	Step	Alt 2 Suboption a	Alt 2 Suboption b	Simple Avg of SubOpt a & b Results	Alt 5, ACL Equivalent Back Calculated
	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%

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 10.833 percent for whiting trips and 89.167 percent for nonwhiting trips. The assumption of these proportions is the equivalent of assuming an ACL of 2569 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 **Error! Bookmark not defined.**). The ACL equivalent that achieves the midpoints of these two suboptions for each LE permit (2569 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 Comparison of Alternatives

		Comparison of Alternatives						
Alternative	**1**	**2a**	**2b**	**3a**	**3b**	**4a**	**4b**	**5**
	Bycatch	**Historic**	**Historic**	**Historic&Recent**	**Historic& Recent**	**2016 Pounds +Alt 2**	**2016 Pounds +Alt 2**	**Alt 2 Midpoint**
Key Features								
Suboption ACL		2000	3790	2000	3790	2000	3790	
Non-whiting trip years		1994-2002	1994-2002	1994-2002	1994-2002	1994-2002	1994-2002	1994-2002
Whiting Trip Years		1994-2003	1994-2003	1994-2003	1994-2003	1994-2003	1994-2003	1994-2003
Target Fishery Years	1994-2003							
Non-whiting Revenue Years				2003-2010	2003-2010			
Allocation Shares								
Adaptive Management	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Equal Division of Widow Buyback History	0.0%	28.6%	30.6%	28.6%	30.6%	8.6%	9.2%	29.6%
Whiting Trip Share	28.0%	12.3%	5.7%	12.3%	5.7%	23.4%	21.4%	9.0%
Non-Whiting Trip Share	62.0%	49.1%	53.7%	24.6%	28.8%	58.0%	59.4%	51.4%
Total percentage	100%	100%	100%	100.0%	100.0%	100.0%	100.0%	100.0%
Allocation Shares by Ownership								
Vessel Owners	64.9%	72%	72%	71.2%	72.0%	67.0%	67.2%	71.9%
non Vessel owners	25.0%	18%	18%	18.0%	18.8%	22.8%	23.0%	18.1%
Adaptive Management	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Total percentage	100%	100%	100%	100.0%	100.0%	100.0%	100.0%	100.0%
Processor/First Receiver	6%	7%	7%	7.3%	7.5%	6.3%	6.3%	6.8%
Total QS Reallocated								
QS Shareholders	0.0%	27.5%	29.1%	23.5%	25.7%	8.4%	8.9%	28.2%
Among Ports	0.0%	16.7%	17.5%	16.3%	18.1%	5.1%	5.3%	17.0%

2.3 Rationale for Council Final Preferred Alternative (FPA)

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 an overfished species is rebuilt…there may be a change in the QS allocation within a sector… 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 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[5] and using the ABC as the ACL would 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

[5] 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.

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. 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.

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 4.4.1 for a discussion of impacts on vessel labor, Section 4.4.2 for a discussion of impacts on processors and processor labor, and Section 4.4.3 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 significant because widow comprises a small portion of the trawl groundfish fishery (Table 3-4 and Figure 3-1) and would be a small portion of the groundfish landings in any particular geographic area. 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.

2.4 Alternatives Considered But Rejected from Detailed Analysis

The alternatives considered but ultimately rejected from detailed analysis fall into two different categories: those that arose and were rejected during the original development of the allocation qualifying

years under Amendment 20 and those that arose and were rejected during the specific development of this widow rockfish reallocation action.

2.4.1 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 and that discussion and conclusion is incorporated by reference here.

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 and that discussion and conclusion is incorporated by reference here.

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 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 and that discussion and conclusion is incorporated by reference here.

2.4.2 Widow Rockfish Reallocation Deliberations

2.4.2(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.

2.4.2(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 original QS permits/accounts (keeping the LE permit to QS permit relationship static). Once the QS allocations were distributed in 2011, LE permit trading started such that the current QS permit/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 trawl permit history generated QS permits/accounts and the QS is now the effective vehicle for transferring that history among fishermen. To switch unexpectedly to another allocation 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.

2.4.2(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

3.1 Physical Environment, including Essential Fish Habitat and Ecosystem

This action will make changes affecting the shorebased trawl fishery.

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

3.1.1(a) Marine Protected Areas

There are numerous Federal and state-managed Marine Protected Areas (MPAs) distributed throughout the fishing 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, and that analysis is incorporated by reference here. 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 fishing 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.

3.1.1(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.

3.1.1(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 4.3.2).

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

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. Under the trawl rationalization program, fishers have to cover their groundfish catches of individual fishing quota (IFQ) species with quota pounds (QP) and an observer is required onboard the vessel to document total fishery impacts, unless the vessel participates in the electronic monitoring program. Trip limits are in place for most non-IFQ species. Individual bycatch quota is 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. Widow rockfish is managed as a single stock coastwide. 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.

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 2015, the observer program reported the species caught on nonwhiting midwater trawl trips both observed and unobserved (under the electronic monitoring program). Including retained and discarded catch, these trips predominantly caught widow rockfish (479 mt) and yellowtail rockfish (1,194 mt) (Somers et al. 2016). For 2015, 15 different non-groundfish species were landed in the non-whiting midwater trawl fishery, all in amounts less than 1 percent of the total catch except for Pacific whiting (3 percent; 57 mt) and spiny dogfish (3 percent; 54 mt). In 2016, the retained and discarded catch in the nonwhiting midwater trawl fishery was widow rockfish (552 mt) and yellowtail rockfish (527 mt) (Somers et al. 2017). The only other species that accounted for more than 1 percent of the catch was Pacific whiting (7 percent of catch; 78 mt).

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.

For purposes of this analysis, whiting midwater trawl trips are those in which midwater trawl gear was used and more than 50 percent of the catch was Pacific whiting. The observer program reported the species caught on whiting midwater trawl trips both observed and unobserved (under the electronic monitoring program). In 2015, the retained and discarded catch in the whiting midwater trawl fishery was 57,901 mt of Pacific whiting. The next most abundant species was widow rockfish (323 mt), then spiny dogfish (190 mt), and yellowtail rockfish (130 mt) (Somers et al. 2016). In 2016, these trips predominantly caught whiting (85,757 mt). The next most common species caught was yellowtail rockfish (490 mt) and then widow rockfish (240 mt) (Somers et al. 2017).

3.2.1(c) Species Caught in the Bottom Trawl Fishery

The observer program reported the species caught and discarded on bottom trawl trips both observed and unobserved (under the electronic monitoring program). Bottom trawl trips caught a wider variety of species than the midwater whiting and nonwhiting trips. In 2015, bottom trawl trips predominantly landed dover sole (6,226 mt), petrale sole (2,465 mt), arrowtooth flounder (1,401 mt), and sablefish (1,457 mt). All other species accounted for less than 5 percent of the catch (Somers et al. 2016). In 2016, the catch in the bottom trawl fishery was dover sole (7,153 mt), petrale sole (2,498 mt), arrowtooth flounder (1,659 mt), and sablefish (1,443 mt). All other species accounted for less than 5 percent of the catch (Somers et al. 2017).

3.2.1(d) Widow Rockfish

Stock Status (Hicks and Wetzel 2015): The most recent widow rockfish assessment was completed in 2015 and 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 stock was declared rebuilt in 2011. The most recent stock assessment showed that the stock had rebuilt to a depletion level of 75 percent and a spawning stock size of 60,608 mt.

Management Performance (Hicks and Wetzel 2015 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. In 2014, approximately 48 percent of the ACL was landed (Hicks and Wetzel 2015).

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.

3.3.1 Commercial Harvest Sector

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 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.

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 140 QS accounts (Table 3-1). 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; 3 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. Due to the moratorium on trading widow QS, the only changes from 2015 to 2017 in those that hold widow QS were due to deaths, and the number of entities holding QS did not change as a result.

Table 3-1. 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. Data was rechecked on August 4, 2017.

For most QS owners, widow QS holdings are a relatively small amount of their total nonwhiting QS holdings. For Figure 3-1, 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 3-2 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.

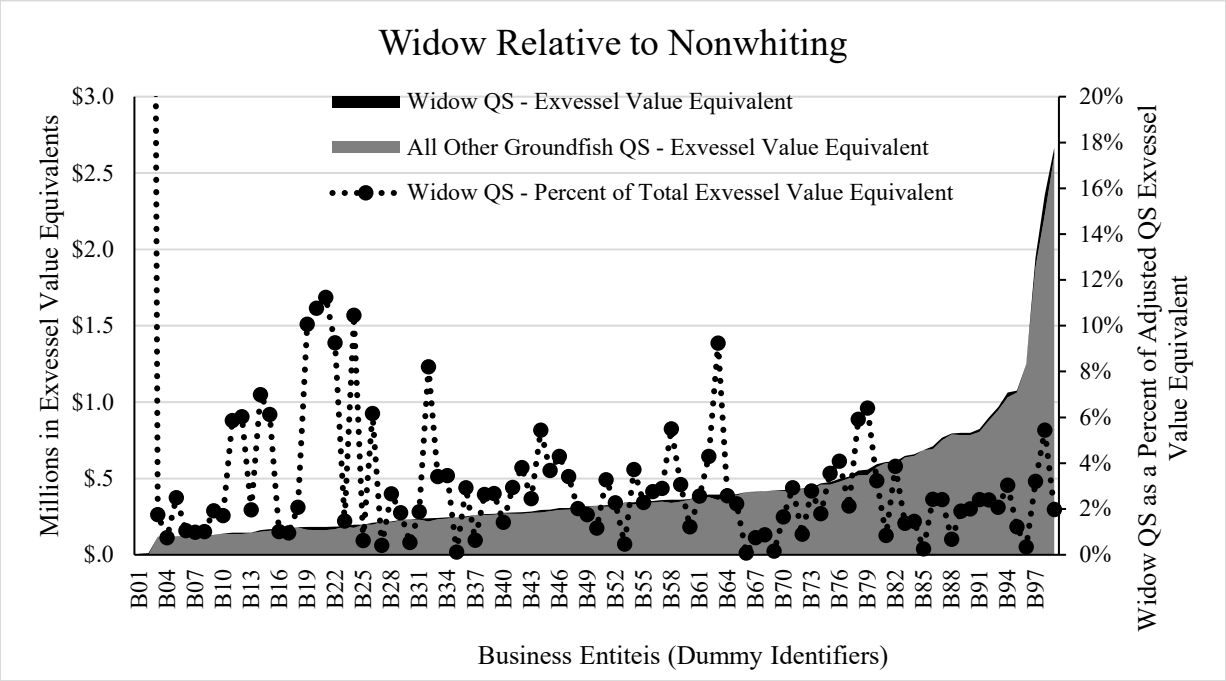

Figure 3-2. Revenue equivalents for nonwhiting QS and widow QS by QS owner (revenue equivalents have been adjusted to account for the fleet's under-harvest of available QP for most species, except for the value of widow QP, 100% of which are assumed caught); and the percent of owners' total QS value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

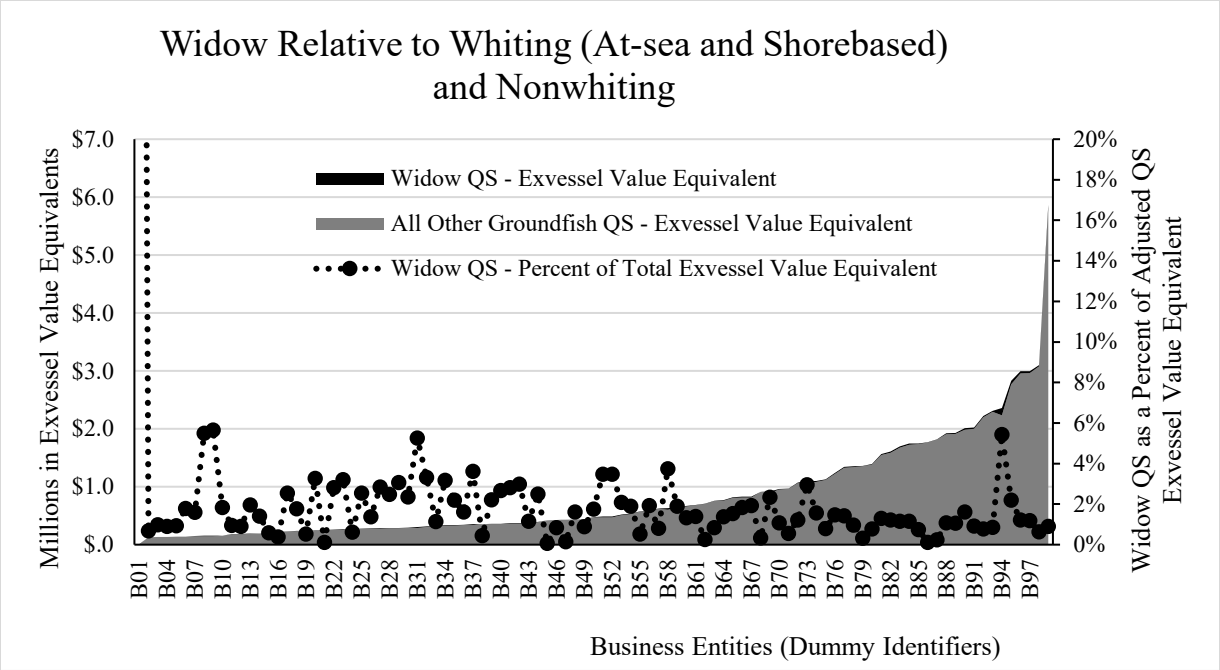

Figure 3-3. Revenue equivalents for whiting and nonwhiting QS and at-sea mothership history relative to widow QS, by QS owner (revenue equivalents have been adjusted to account for the fleet's under-harvest of available QP for most species, except for the value of widow QP, 100% of which are assumed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

3.3.1(b) Vessel Owners

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 3-2). 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. For current records, 99 entities hold widow QS, 76 of which are 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 3-1).

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 3-2 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 3-2. 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, 1994-2016.

	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	Midwater Trawl		Bottom	Midwater Trawl		Bottom			Bottom
	Whiting	Nonwhiting	Trawl	Whiting	Nonwhiting	Trawl	Whiting	Nonwhiting	Trawl	Whiting	Nonwhiting	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
2011-2016 (avg)	167	333	41	66,614	1,046	4,822	24	9.6	41	29	9.8	55

Source: PacFIN Answers data query, June 2015. Updated in September 2017.

Table 3-3. Widow landings (exvessel revenue), total exvessel revenue for landings on **trips** that included widow, 1994-2016, 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	Midwater Trawl		Bottom Trawl
	Whiting	Nonwhiting		Whiting	Nonwhiting	Trawl	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%
2011-2016 (avg)	0.16	0.32	0.04	17.39	0.86	6.20	1%	37%	1%

Source: PacFIN Answers data query, June 2015. Updated in August 2017.

Table 3-4. Widow landings (exvessel revenue), total exvessel revenue for **vessels** that landed widow, 1994-2016, 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			Midwater Trawl		
	Whiting	Nonwhiting	Bottom Trawl	Whiting	Nonwhiting	Bottom Trawl	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%
2011-2016 (avg)	0.16	0.32	0.04	23.21	16.30	33.23	0%	2%	0%

Source: PacFIN Answers data query, June 2015. Updated in August 2017.

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 3-4).

3.3.1(b)(1) Vessels that Fish Purchased Widow Rockfish QP

A separate class of vessel owners are those that purchase widow rockfish QP. Using the NMFS Permit Data, as of August 7, 2017, there have been 224 transfers of widow rockfish QP. The majority of QP transferred (62 percent) was QS holders transferring the QP to their own vessel account. However, 13 percent (3,229,541 pounds) of the widow rockfish QP transferred was in cash sales from one QS account holder to a different vessel account holder. Of this QP that was sold to a different vessel account, 35 percent was sold to vessel owners in California, 35 percent to vessel owners in Oregon, and 30 percent to vessel owners in Washington. An additional 24 percent of the QP (5,883,116) was categorized as other and was likely sold to a different vessel account holder.

3.3.2 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. In 2016, there were 17 first receivers that took trawl IFQ; 14 of which took widow rockfish landings. For the first half of 2017, there were a total of 16 first receivers that received landings made under the trawl IFQ program; and a total of 12 that took trawl IFQ widow rockfish landings. 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.

Table 3-5 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 – 2016. In general, the first receivers in Group 1 were relatively more dependent on landings of widow rockfish than those in Group 2.

Table 3-5. First receivers' annual purchases of widow rockfish, IFQ landings and all other species[a/], 2011-2016 (millions of inflation-adjusted 2015 dollars).

	Widow rockfish				Other IFQ				Other						
	Bottom trawl	Whiting	Midwater	Other	Bottom trawl	Midwater	Other	Whiting	Bottom trawl	Whiting	Midwater	Other	**Grand Total**	**Estimated Number of Businesses/ Affiliated Entities**	**Number of First Receiver Site Licenses**
2011	0.02	0.06	0.00	0.00	19.41	0.00	15.91	15.09	0.82	0.06	0.00	82.58	**133.96**	**5**	**17**
2012	0.03	0.05	0.01	0.00	17.28	0.31	11.39	13.71	0.97	0.04	0.00	83.93	**127.71**	**6**	**18**
2013	0.05	0.10	0.24	0.01	19.68	0.46	7.65	17.44	0.78	0.05	0.00	122.33	**168.78**	**6**	**18**
2014	0.05	0.16	0.28	0.00	17.59	0.54	6.78	15.10	0.93	0.08	0.00	104.58	**146.10**	**6**	**18**
2015	0.01	0.20	0.40	0.00	20.43	1.32	10.64	6.00	0.91	0.09	0.03	58.98	**99.01**	**6**	**18**
2016	0.01	0.05	0.56	0.00	19.88	0.72	12.46	7.35	1.00	0.03	0.00	81.24	**123.30**	**5**	**17**
2011	0.01	0.03	0.00	0.00	6.16	0.00	13.85	9.49	0.23	0.01	0.00	69.34	**99.12**	**16**	**23**
2012	0.00	0.05	0.00	0.00	3.81	0.00	4.83	8.39	0.30	0.00	0.00	72.41	**89.79**	**14**	**21**
2013	0.01	0.04	0.00	0.00	5.29	0.00	4.31	10.34	0.42	0.00	0.00	90.14	**110.54**	**16**	**23**
2014	0.03	0.08	0.04	0.00	5.38	0.08	6.81	9.45	0.21	0.01	0.00	50.86	**72.96**	**18**	**25**
2015	0.00	0.08	0.05	0.00	3.95	0.04	6.46	4.05	0.07	0.01	0.00	26.83	**41.53**	**17**	**24**
2016	0.00	0.09	0.01	0.00	2.57	0.05	6.24	5.58	0.03	0.01	0.00	61.90	**76.48**	**15**	**22**

3.3.3 Fishing Communities

The following 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 3-6 shows average annual landings of widow rockfish and all other species by community (port areas) in terms of inflation-adjusted exvessel revenue for 2011-2016. This table shows that the two top communities with widow landings far outstrip other West Coast communities in terms of the revenue they receive for widow rockfish. On average between 2011 and 2016, Astoria brought in $215,000 and Newport reported $198,000. The next highest earning area was the south and central WA coast, which reported an average of $55,000 in revenue from widow rockfish. Comparatively, Table 3-7 shows average annual landings of IFQ species and all other species by community (port areas) in terms of inflation-adjusted exvessel revenue for 2011-2016. For Astoria, average total revenue from IFQ species and all other species was $18,271,000 and for Newport was $11,623,000.

Table 3-6. Landings of widow rockfish and all other species from PFMC areas by community during 2011-2016, annual averages (inflation adjusted ex-vessel value, thousands of 2015 dollars).

	Ex-vessel widow revenue (2011-2016 annual average, $2016)	Vessels	Processors
Astoria	$215	44	5
Bodega Bay	--	--	--
Brookings	Conf.	<3	<3
Coos Bay	$1	13	3
Crescent City	Conf.	<3	<3
Eureka	$0	9	3
Fort Bragg	$2	7	4
Monterey	$1	4	8
Morro Bay	Conf.	3	<3
Newport	$198	27	4
Puget Sound	Conf.	8	<3
San Francisco	$0	7	6
Santa Barbara	--	--	--
South and central WA coast	$55	19	3

Table 3-7. IFQ landings and landings of all species from PFMC areas by community during 2011-2016, annual averages (inflation adjusted exvessel value, thousands of 2015 dollars).

	Ex-vessel IFQ revenue (2011-2016 annual average, $2016)	Vessels	Processors
Astoria	$18,271	54	6
Bodega Bay	Conf.	<3	<3
Brookings	$2,042	14	4
Coos Bay	$2,721	28	3
Crescent City	$221	7	3
Eureka	$3,604	11	8
Fort Bragg	$2,438	9	6
Monterey	$559	12	10
Morro Bay	$1,639	23	16
Newport	$11,623	35	6
Puget Sound	Conf.	14	<3
San Francisco	$787	13	12
Santa Barbara	Conf.	4	<3
South and central WA coast	$7,385	29	4

3.3.4 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 Impact Methodology

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.)
- Catch per unit effort 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 sideboards 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 3.1.1(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.

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 has occurred during the first year that trading has been allowed. The geographic shift in the distribution of yellowtail rockfish QS was relatively small. Table 4-1 shows the amount of between year fluctuation in the geographic distribution of yellowtail rockfish landings, comparing 2013 to 2014.

According to fish ticket data, for 2016, the geographic distribution remained largely the same, with further concentration in landings occurring in Oregon. Overall, 0.1 percent of the yellowtail was landed in California (1.14 mt), 85 percent was landed in Oregon (974.88 mt), and 14.8 percent was landed in Washington (169.18 mt). From the start of QS trading on January 1, 2014 to the start of the 2017 season, a total of 28 entities divested of yellowtail rockfish QS, with 17 of those entities divesting down to zero yellowtail rockfish QS. Alternatively, over the same period, 24 entities acquired yellowtail QS, 20 of which previously had no yellowtail QS.

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 shown in the table). According to fish ticket data, for 2016, the geographic distribution remained largely the same, with further concentration in landings occurring in Oregon. Overall, 0.05 percent of the widow rockfish landings were in California, 93.05 percent were in Oregon, and 6.9 percent were in Washington. 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 Share of Landing Shares	2013 Mt Landed	2014 Share of Landings	2014 Mt Landed	Initial QS Allocations Balances a Start of 2014a/	Changes in Allocations QS Change (Percent Change) As of Start of 2015
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	None	None	2.5%	0.0%
Bodega Bay					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 Share of Landing Shares	2013 Mt Landed	2014 Share of Landings	2014 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.

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

4.2.1 No Action (Alternative 1)

Under the No Action Alternative, impacts to the physical environment by the trawl fishery will continue. The impacts to the physical environmental of the trawl fishery and the impacts associated with the increase in ACLs for widow rockfish and yellowtail rockfish beginning in 2017 are described under the 2017-2018 harvest specifications (NMFS, 2017). 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).

ACLs and the associated trawl allocations of widow rockfish and yellowtail rockfish increased in 2015 and 2016 and even further in 2017; these increases have resulted in increased fishing and associated impacts to the physical environment. However, these regulatory changes, along with other regulatory changes for the 2017-2018 period, are covered as part of the actions taken in the biennial specifications and are not affected by this action (NMFS, 2017). 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 independent of this action.

Summary of Impacts

Under the No Action Alternative, physical impacts to the environment are expected to insignificant. There may be minor changes to the geographic distributions of harvest. 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.

4.2.2 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. With respect to essential fish habitat and ecosystem impacts, it identified three impact mechanisms, relative to no action, however only one is relevant to this action:

- Shifts in location of catch

The physical environment is generally 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. However, as noted below, this action is not expected to appreciably alter fishing activity, therefore is not expected to alter impacts to the physical environment.

For the physical environment, the Amendment 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 insignificant 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. 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 receivers 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.

Therefore, while there may be some geographic redistribution of fishing effort due to the reallocation of widow rockfish QS, it is difficult to predict the nature and extent of such a change.

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.

	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). 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).

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).

4.2.3 Summary of Impacts on the Physical Environment

Over the long-term, geographic distribution of harvest under all action alternatives is expected to be insignificant, 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 because other causes would likely minimize 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 relative to no action.

Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Some short-term geographic redistribution of impacts based on changing resource distribution and markets.	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 Biological Environment

4.3.1 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 4.2.1), as modified by other past, present, and reasonably foreseeable future actions (cumulative impacts) described in Section 4.6. 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, however these impacts are not included under this action. The increased ACLs for these species and the potential impacts on other species were taken into account in the EA for the 2017–18 groundfish specifications.

The potential for geographic redistribution of effort under status quo is described in Section 4.2.1. 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.

4.3.2 Action Alternatives - Reallocation

As noted in Section 4.1, 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, and to the extent relevant that discussion and those conclusions are incorporated by reference here.

As with the physical environment, the Amendment 20 FEIS found that impacts to the biological environment 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. 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, and this effect is not included under this action but rather is analyzed under the 2017-2018 harvest specifications (NMFS 2016). 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 4.2.1), 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. As described in Section 4.2.1, 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.

4.3.3 Summary of Impacts on the Biological Environment

Reallocation of widow QS is not expected to impact the level of widow QS harvest and is therefore expected to have insignificant impacts on the biological environment. 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.

4.4 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
- Geographic redistributions
- Community engagement in the fishery
- Community dependence on the fishery

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.

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

The alternatives considered here directly affect QS owners and others who 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.

4.4.1(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.

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

Under the No Action Alternative the amounts of widow QP available will continue to increase if the widow ACL increases, as was analyzed under the 2017-2018 harvest specifications (NMFS 2016). 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. If 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 4.2.1), benefiting the owners of the QS, the vessel owners, and vessel operators and crew, as well as the processors receiving the fish (Section 4.4.2), residents of the communities that gain from the related activities (Section 4.4.3). 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.

4.4.1(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 a few transfers of QS from one account to another in response to court orders and the death of QS holders. 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.

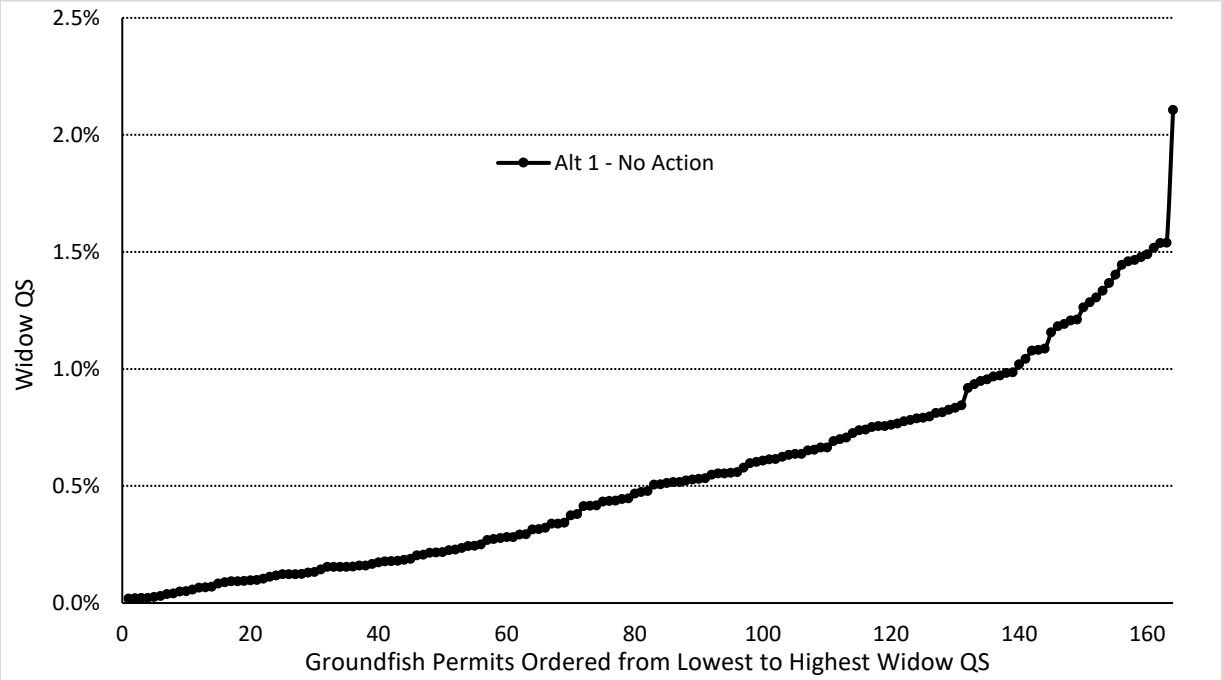

Figure 4-2. Allocation of widow QS among individual LE groundfish permits at the time of initial allocation (in 2010 for the start of the 2011 fishery).

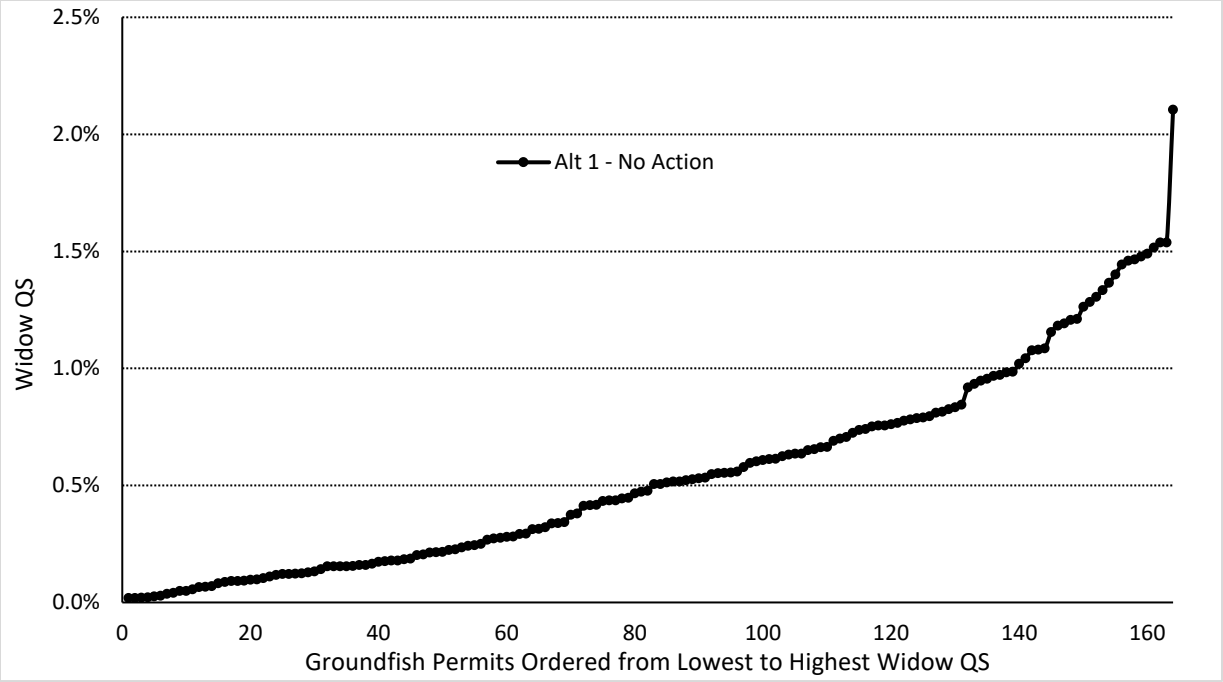

Figure 4-3. Allocation of widow QS among individual LE groundfish permits at the time of initial allocation (in 2010 for the start of the 2011 fishery).

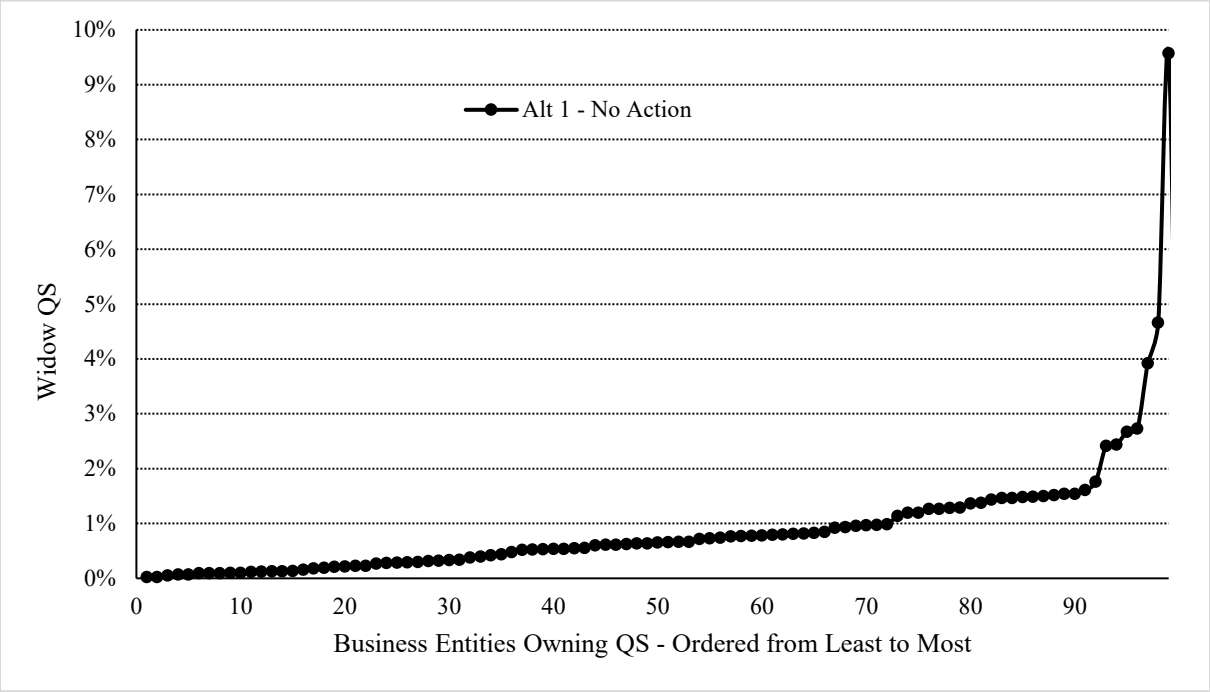

Figure 4-4. Allocation of widow QS among QS owners – (QS accounts aggregated based on a comparison of publically available information) (widow rockfish control limit is 5.1%).

4.4.1(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 (Figure 3-1 and Figure 3-2). 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 3-1 and Figure 3-2, 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.

4.4.1(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).

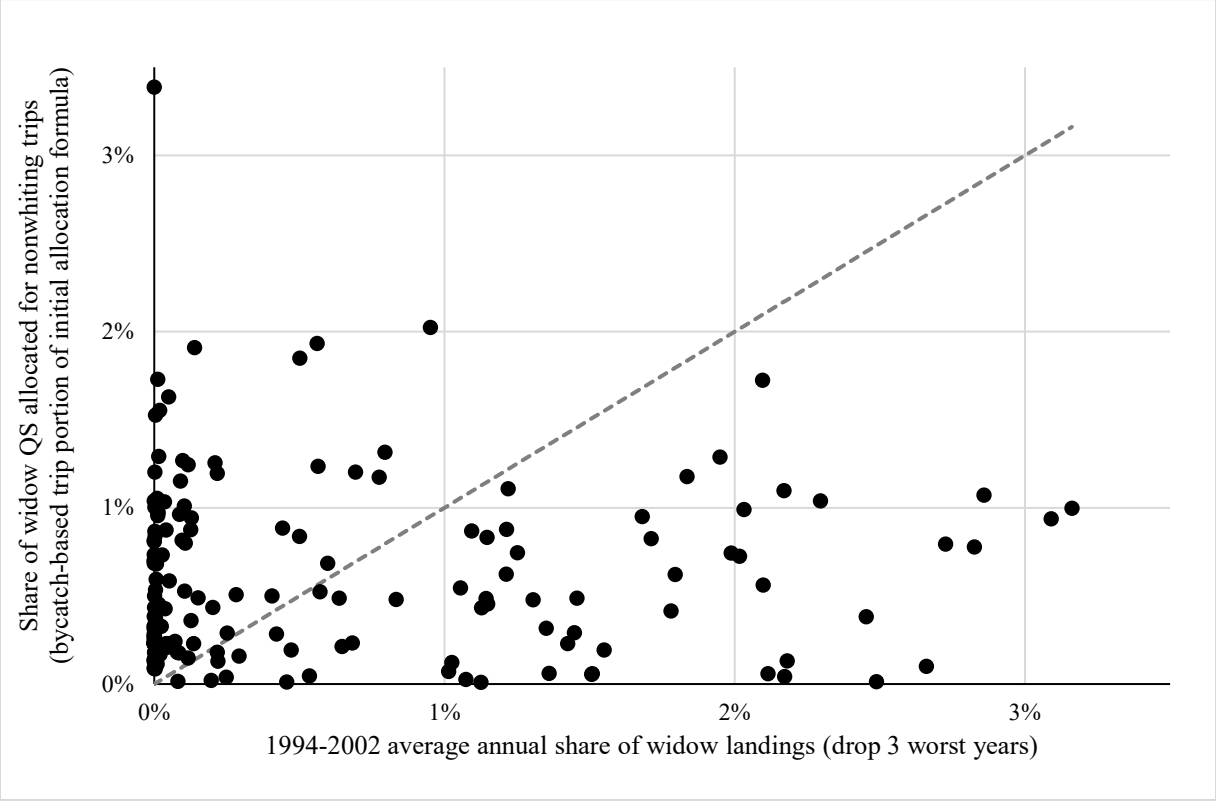

Figure 5. Each LE permit's relative share of the portion its initial widow QS allocation based on non-whiting trips (vertical axis) compared to its share of total 1994-2002 widow rockfish landings (horizontal axis).

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.

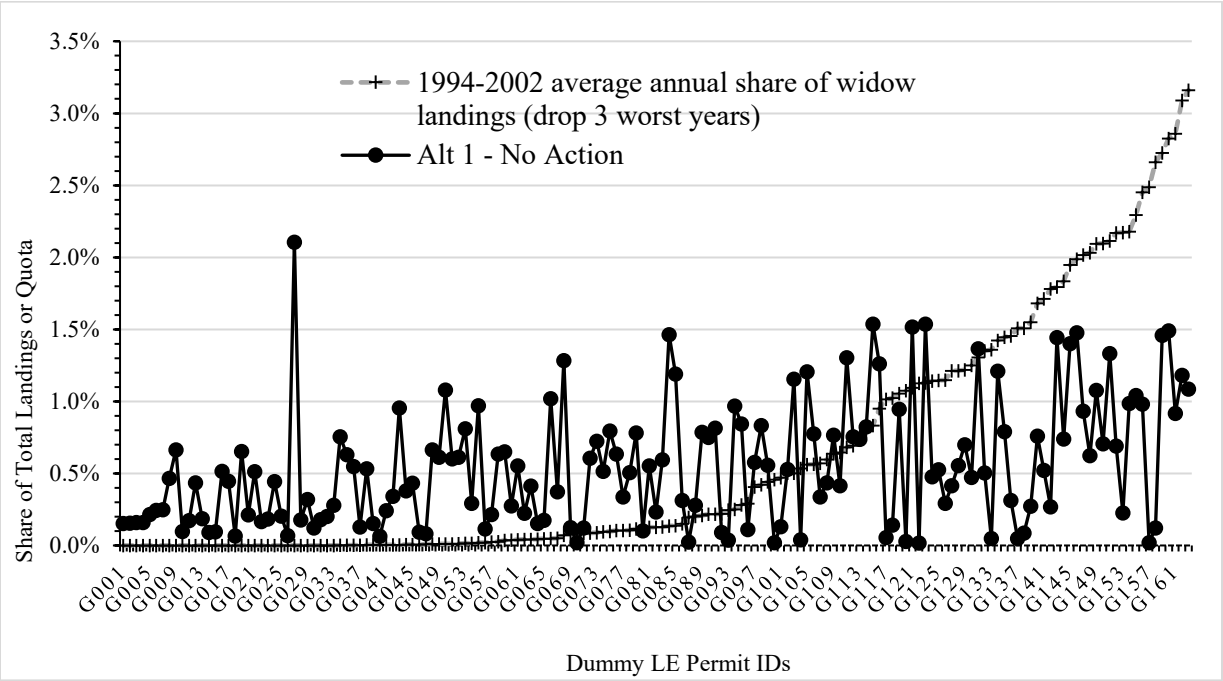

Figure 6. Allocation of widow QS among individual vessel **LE permits** under Alternative 1 – No Action compared with average relative widow rockfish landings during 1994-2002.

4.4.1(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).

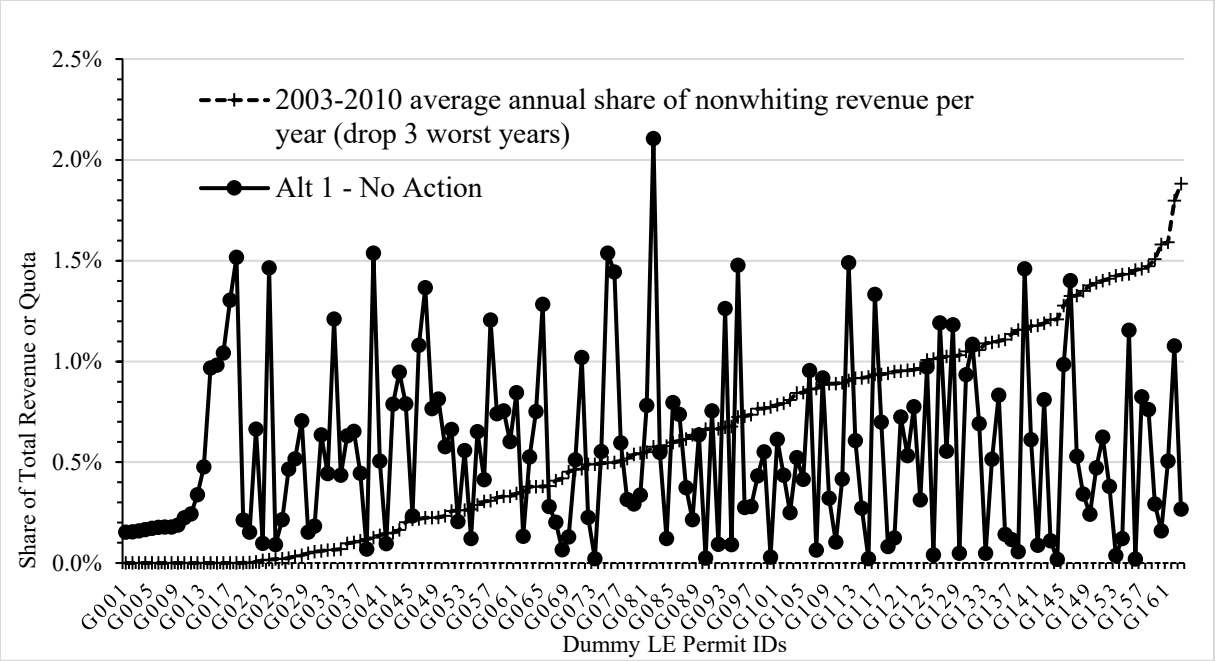

Figure 7. Allocation of widow QS among individual vessel **LE permits** under Alternative 1 – No Action compared with average relative nonwhiting groundfish exvessel revenue during 2003-2010.

4.4.1(a)(2) Action Alternatives

The following sections describe the difference in impacts between the various action alternatives. One impact that would not be different between the action alternatives but would differ from the no action alternative is the effect of divestiture. Under all of the action alternatives, after reallocation some QS holders may be over either the individual species accumulation limit or the cumulative accumulation limit. This would require those QS holders to divest of QS in order to be compliant with the accumulation limits. Under all action alternatives, QS holders would be able to sell their excess widow rockfish QS, which was initially allocated at no cost to the participant, thereby, allowing the participant to make a profit on the divestiture. While the divestiture transaction may require some time investment on the part of the QS holder, selling QS that was allocated freely will only serve to provide a profit for the QS holder, thereby minimizing any costs associated.

4.4.1(a)(2)(i) 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).

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).

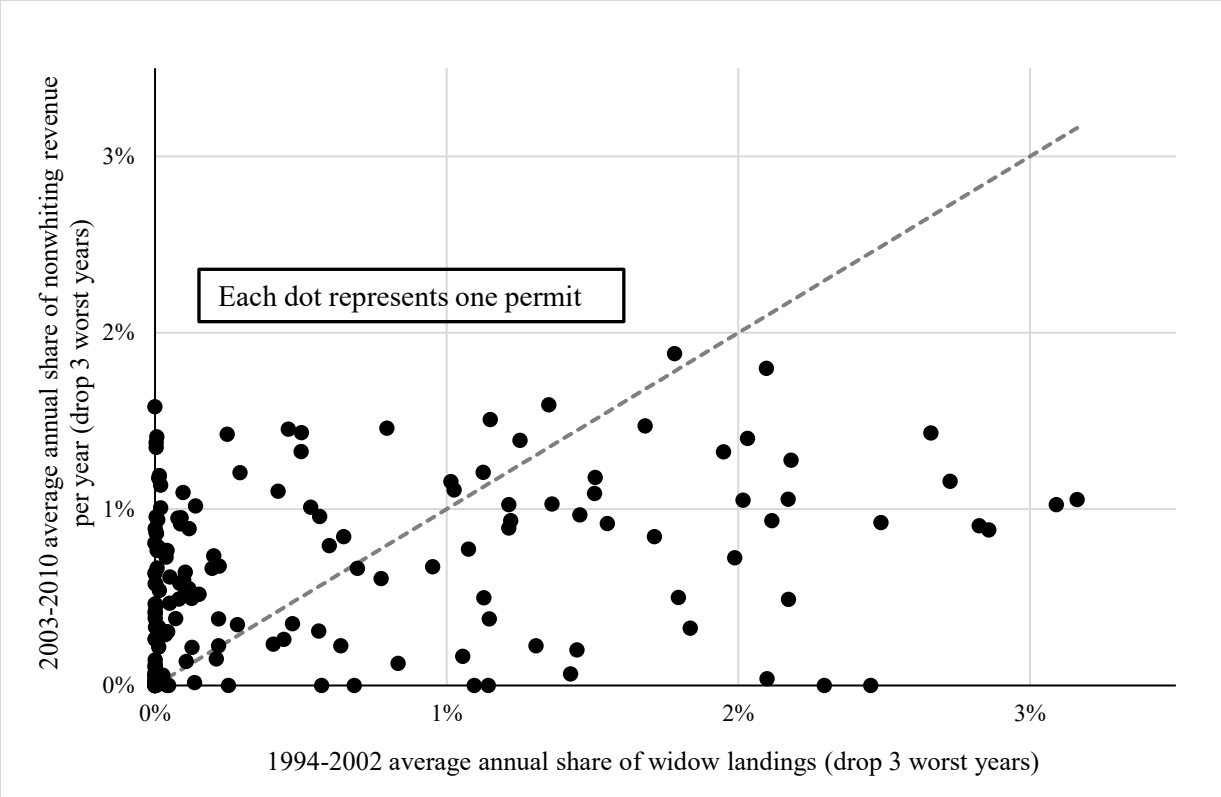

Figure 8. Each LE permit's average 2003-2010 nonwhiting groundfish exvessel revenue (vertical axis) compared with its share of total 1994-2002 widow rockfish landings (horizontal axis).

4.4.1(a)(2)(ii) 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 4.4.1(a)(2)(vii) 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).

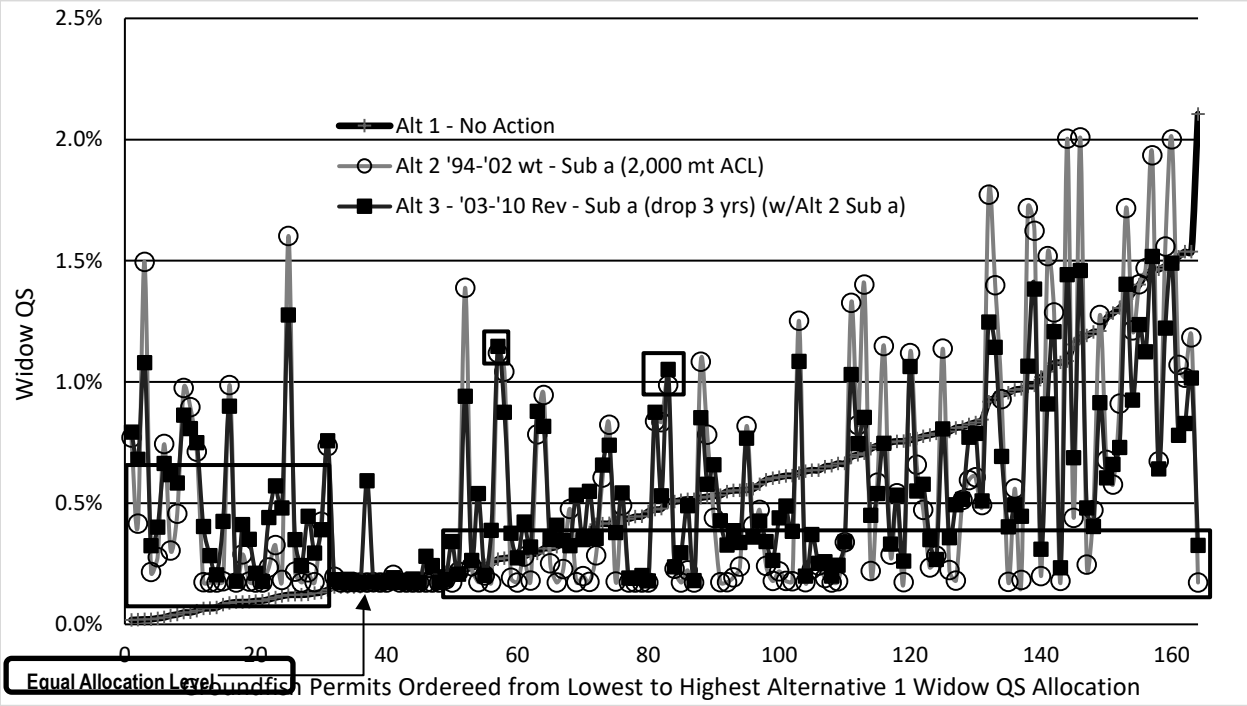

Figure 9. Allocation of widow QS among individual vessel **LE permits** at the time of initial allocation (in 2010) compared with allocations under Alternative 2(a) and Alternative 3(a) (for each LE permit there are three markers that line up vertically, one for each alternative).

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 4.4.1(a)(2)(vii), Figure 4-24, and Figure 4-25).

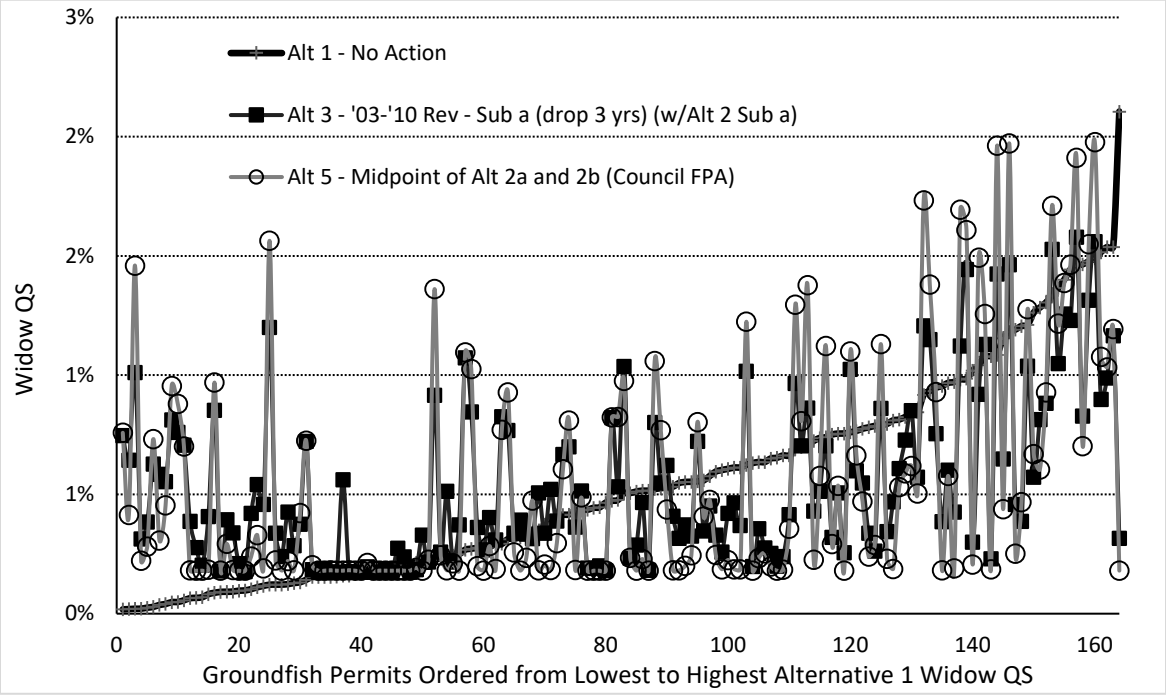

Figure 10. Allocation of widow QS among individual vessel **LE permits** at the time of initial allocation (in 2010) compared with allocations under Alternative 3(a) and Alternative 5 (for each LE permit there are three markers that line up vertically, one for each alternative).

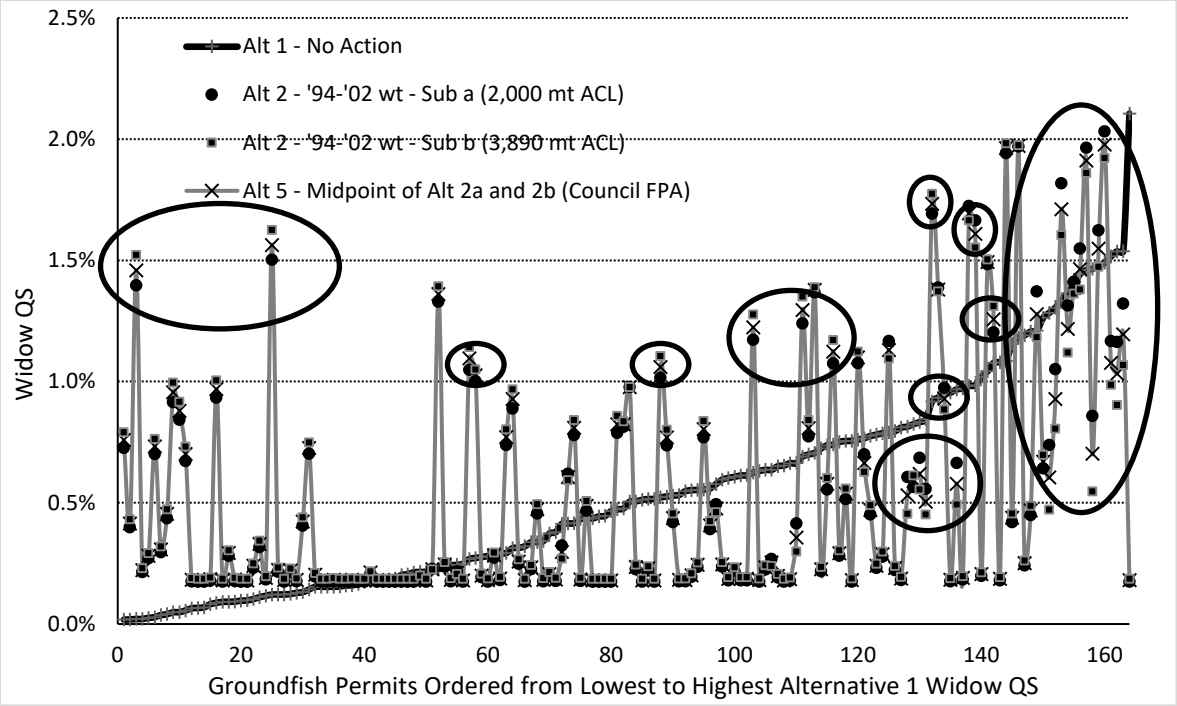

Figure 11. Allocation of widow QS among individual vessel **LE permits** at the time of initial allocation (in 2010) compared with allocations under Alternative 2(a), Alternative 2(b) and Alternative 5 (for each LE permit there are four markers that line up vertically, one for each alternative, LE permits 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).

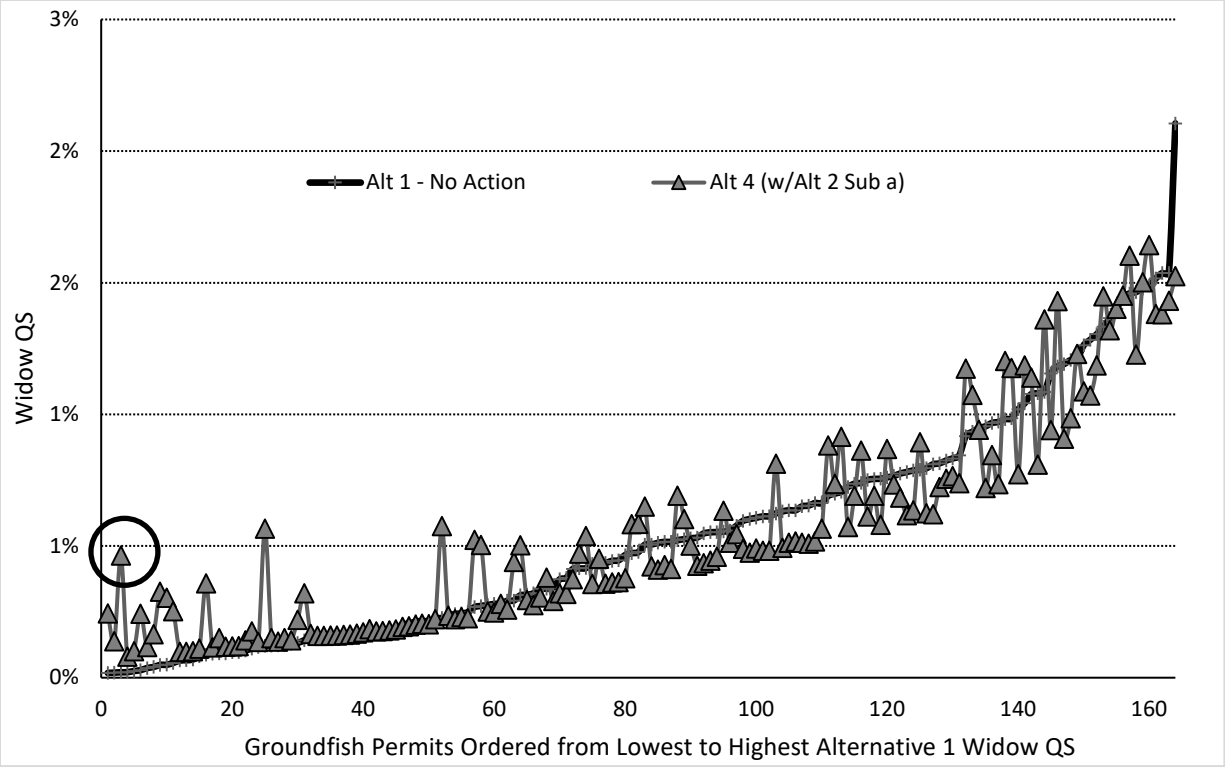

Figure 12. Allocation of widow QS among individual vessel **LE permits** at the time of initial allocation (in 2010) compared with allocations under Alternative 4.

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.

4.4.1(a)(2)(iii) General Results - Ownership Level

As described in Section 4.4.1(a)(1), 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.

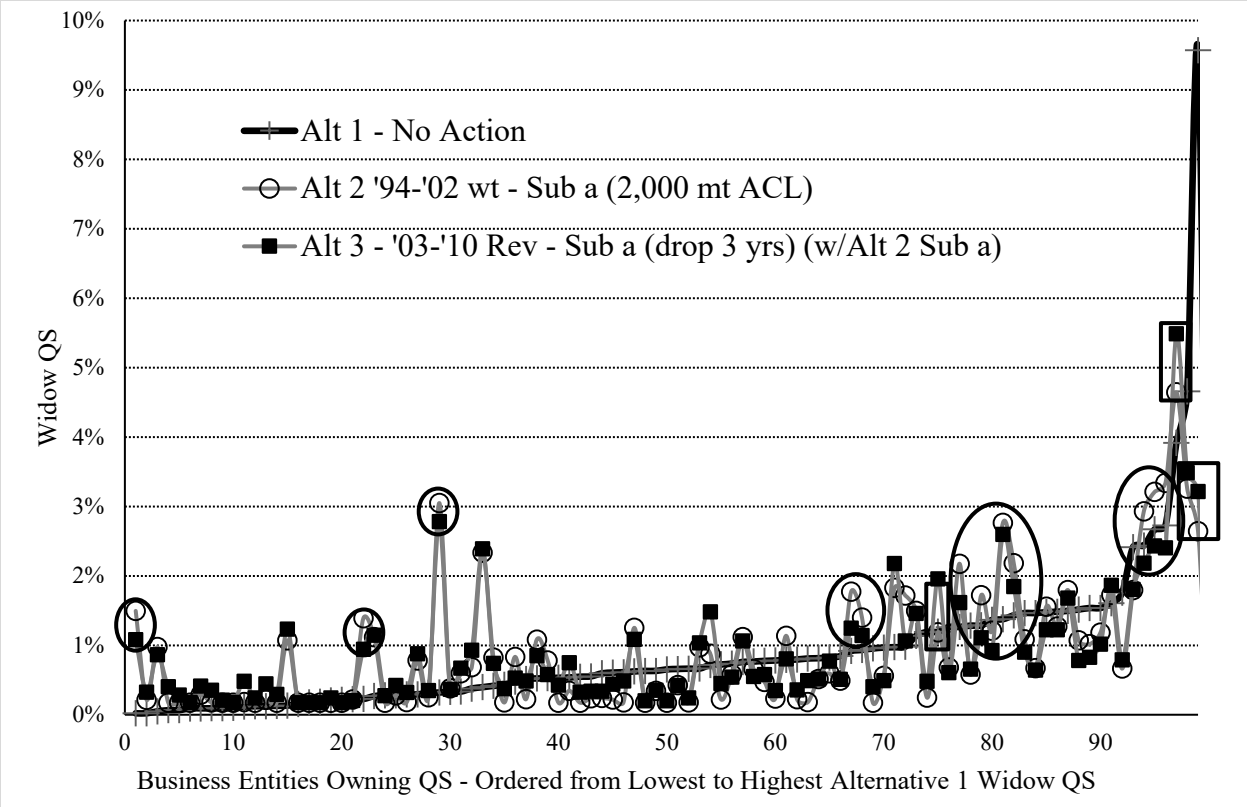

Figure 13. Allocation of widow QS among **individual QS owners** compared with allocations under Alternative 2(a), and Alternative 3(a) (boxes are drawn around some of the stronger gainers under Alternative 3(a) relative to Alternative 2(a), and circles are drawn around those who would receive less under Alt 3(a) than under Alt 2(a)).

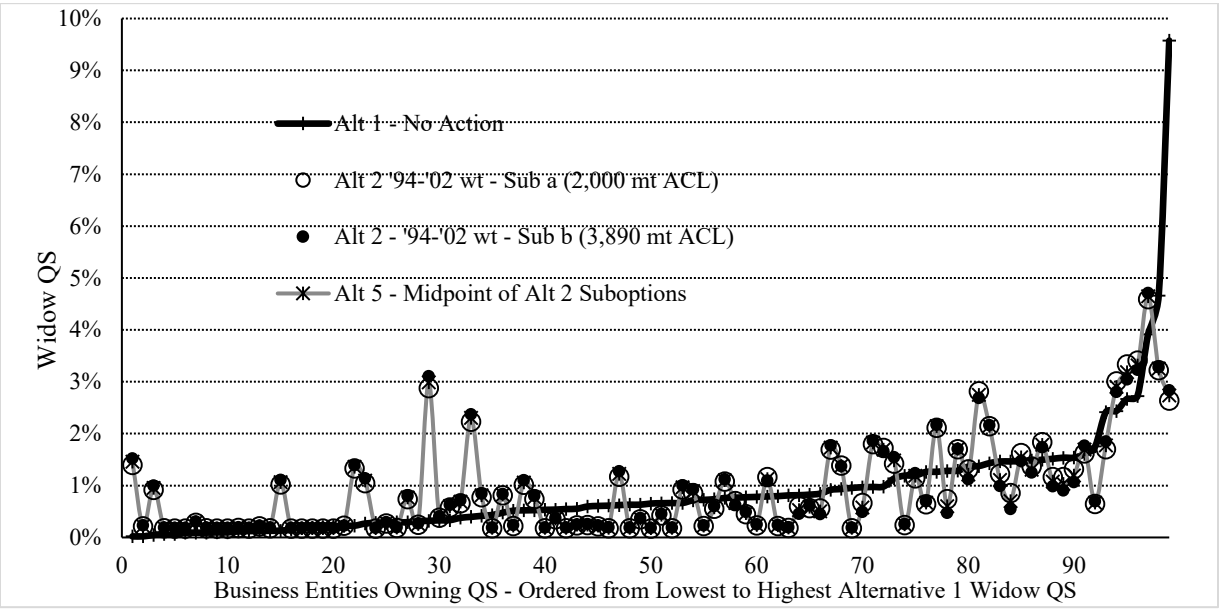

Figure 14. Allocation of widow QS among **individual QS owners** compared with allocations under Alternative 2(a), Alternative 2(b), and Alternative 5.

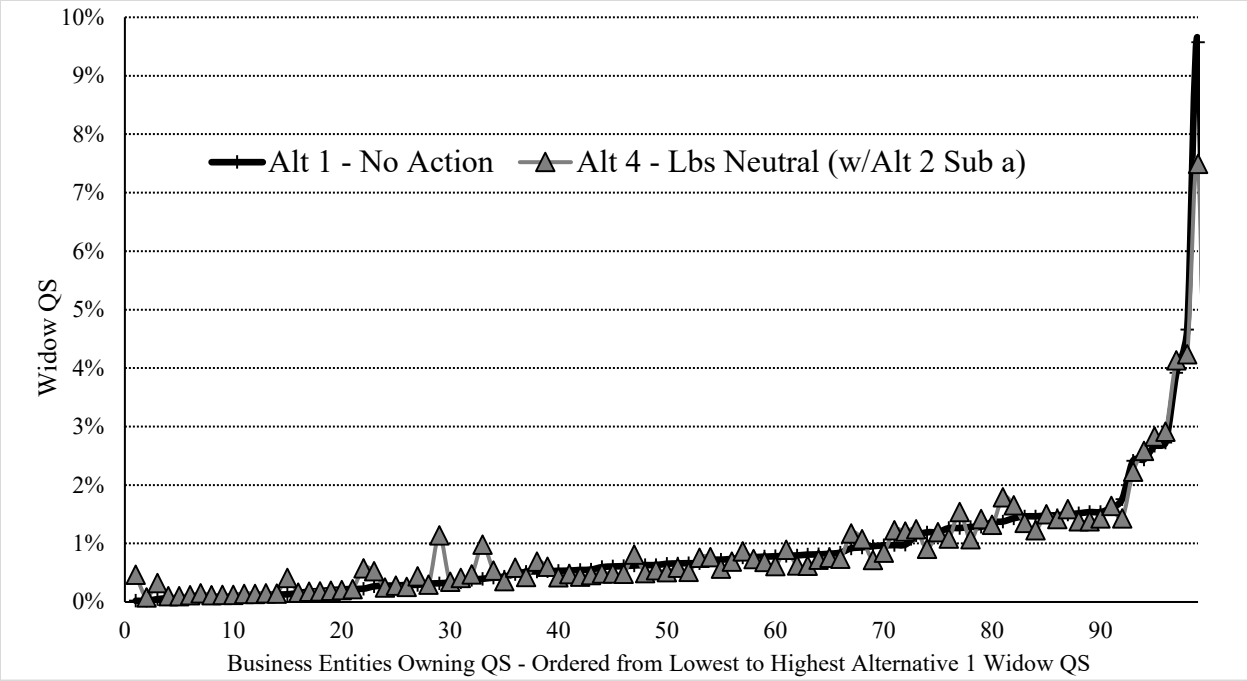

Figure 15. Allocation of widow QS among **individual QS owners** as of January 1, 2015 compared with allocations under Alternative 4.

4.4.1(a)(2)(iv) 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).

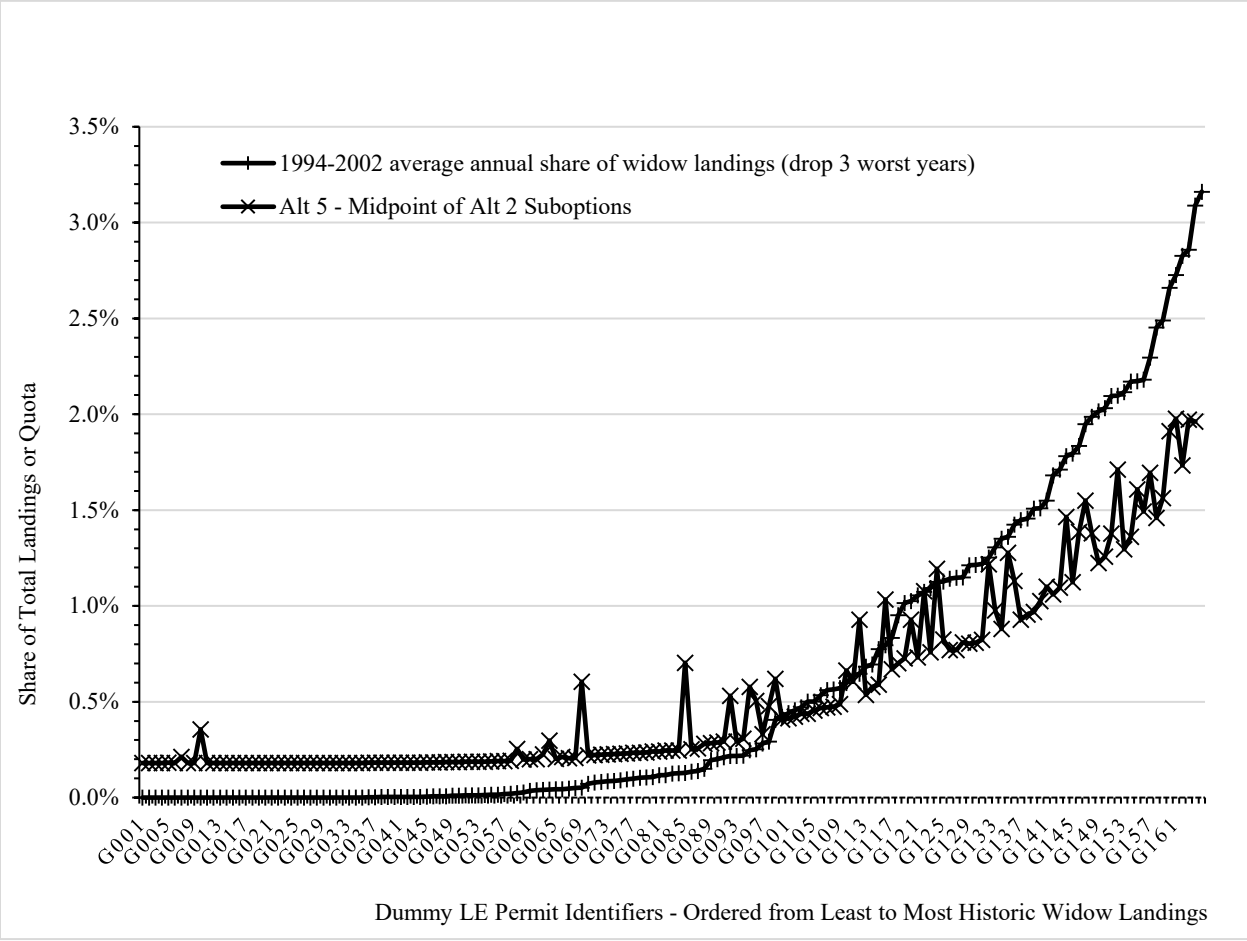

Figure 16. Allocation of widow QS among individual vessel **LE permits** under Alternative 5 compared with average relative widow rockfish landings during 1994-2002.

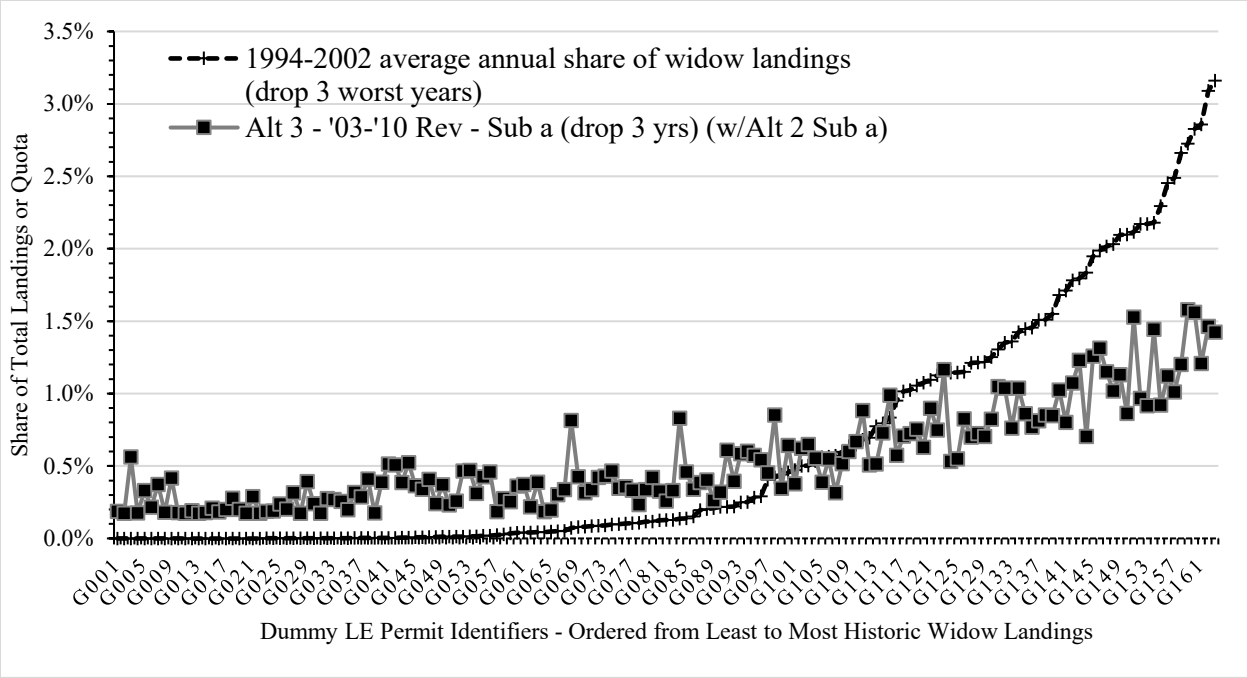

Figure 17. Allocation of widow QS among individual vessel **LE permits** under Alternative 3(a) compared with average relative widow rockfish landings during 1994-2002.

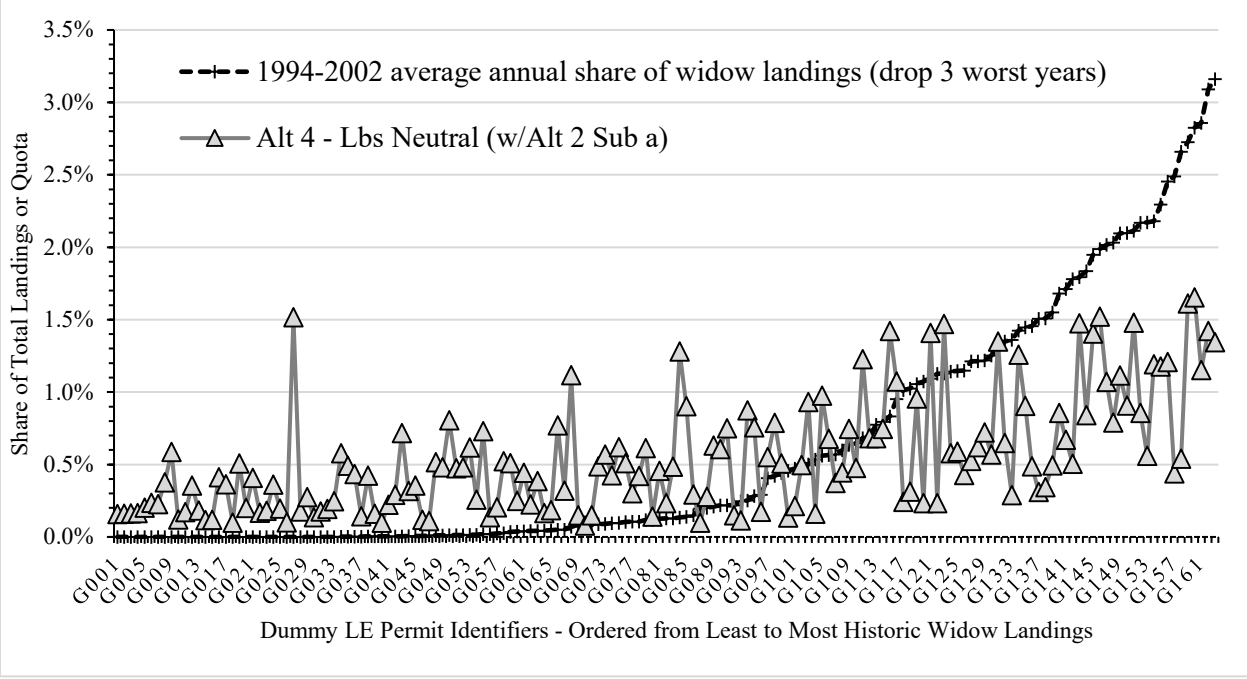

Figure 18. Allocation of widow QS among individual vessel **LE permits** under Alternative 4 compared with average relative widow rockfish landings during 1994-2002.

4.4.1(a)(2)(v) 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.

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.

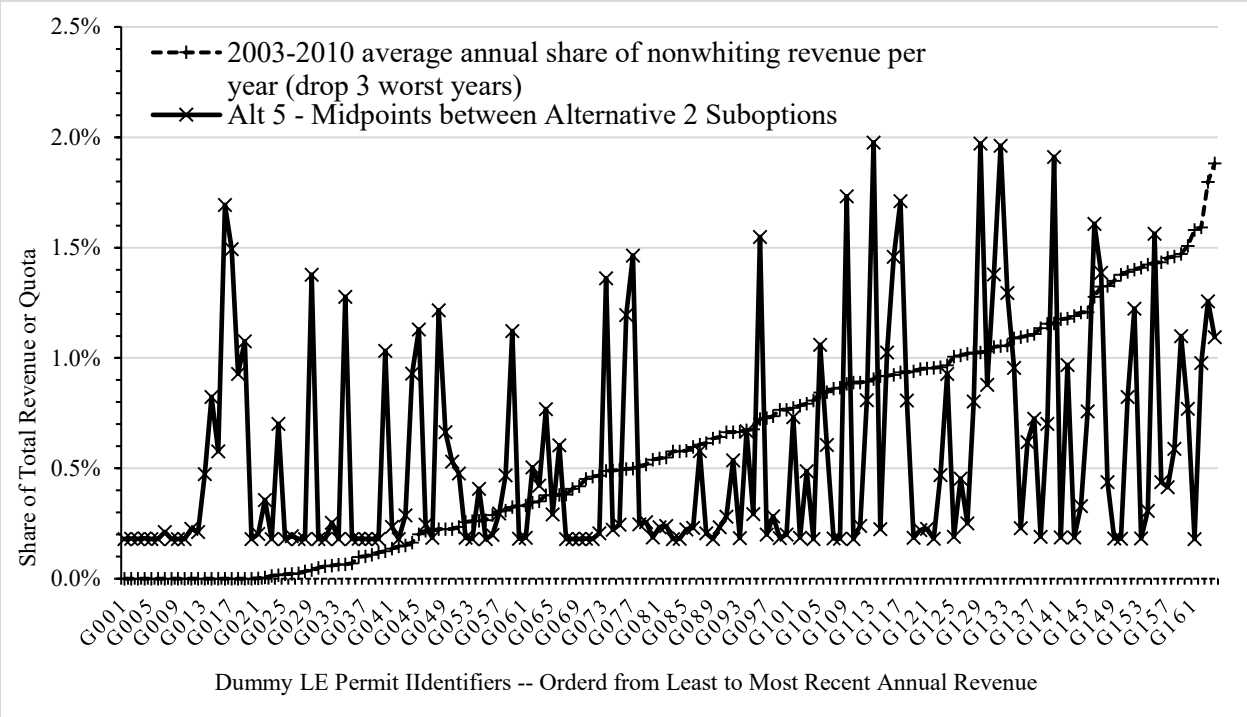

Figure 19. Allocation of widow QS among individual vessel **LE permits** under Alternative 5 compared with average relative nonwhiting groundfish exvessel revenue during 2003-2010.

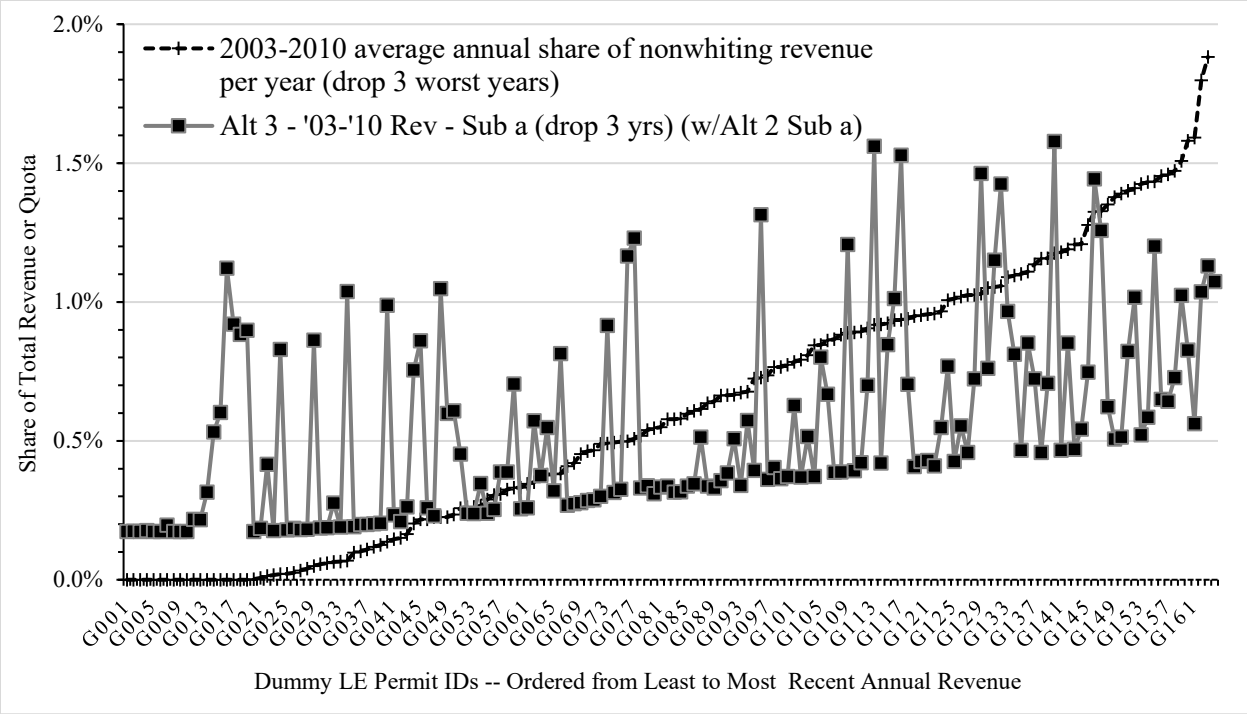

Figure 20. Allocation of widow QS among individual vessel **LE permits** under Alternative 3(a) compared with average relative nonwhiting groundfish exvessel revenue during 2003-2010.

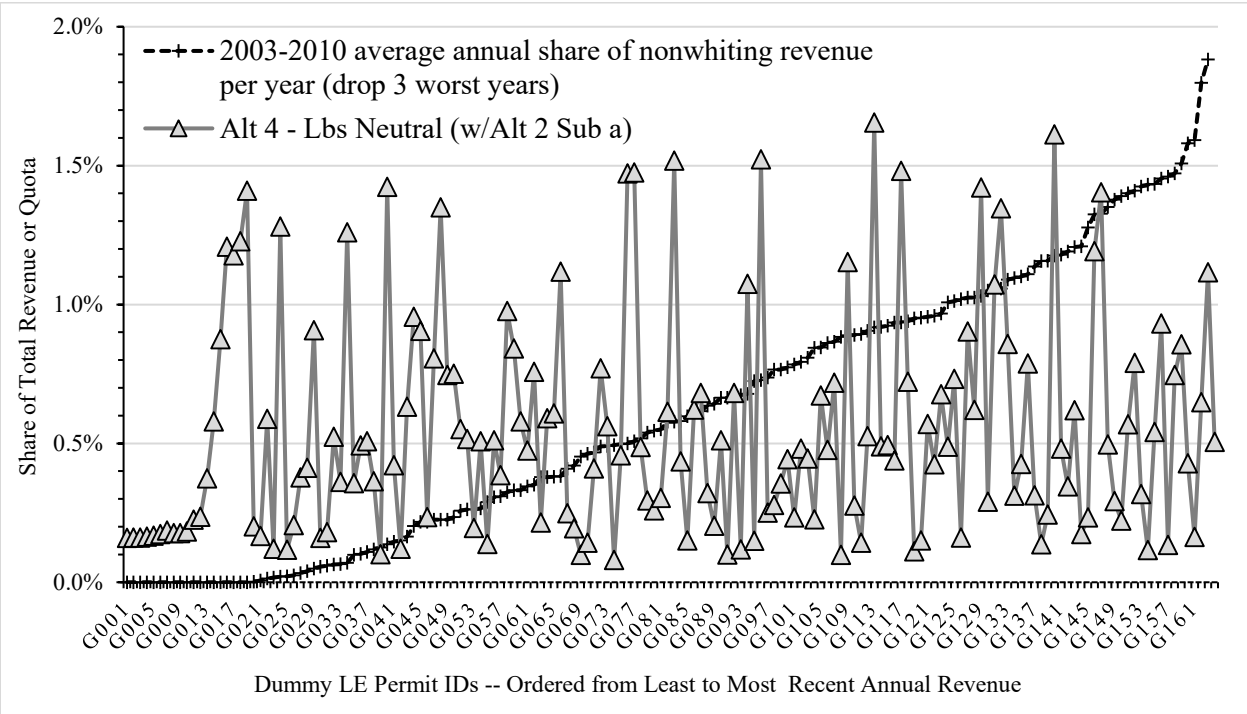

Figure 21. Allocation of widow QS among individual vessel **LE permits** under Alternative 4 compared with average relative nonwhiting groundfish exvessel revenue during 2003-2010.

4.4.1(a)(2)(vi) 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.

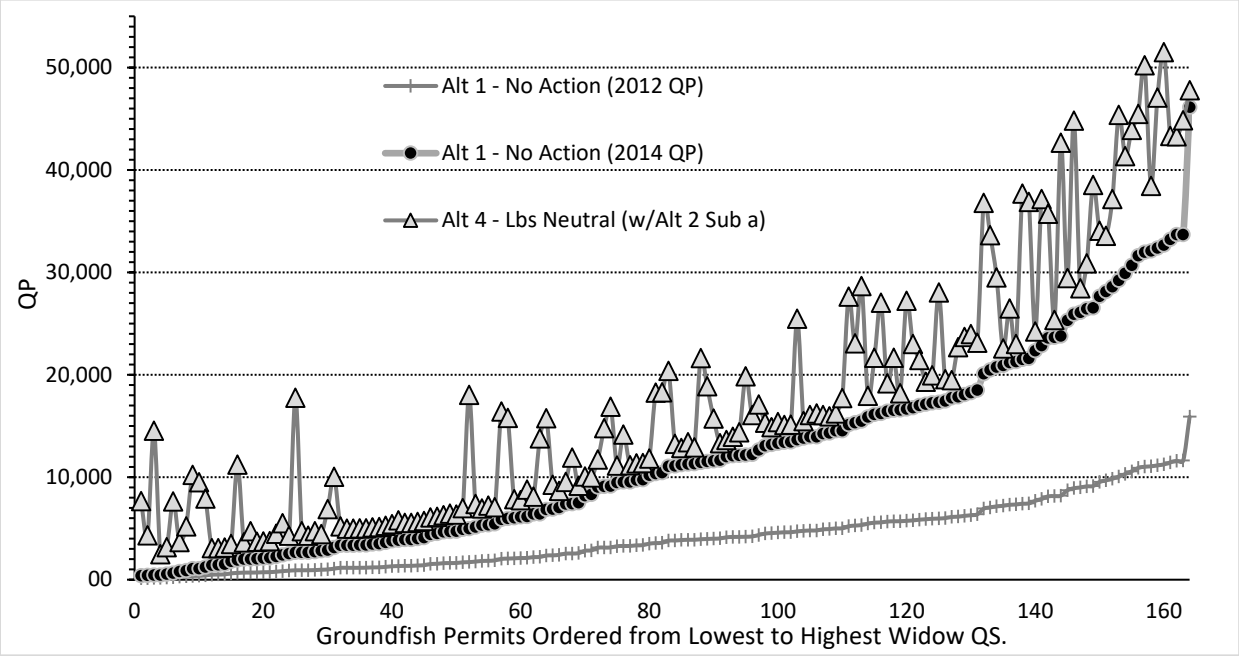

Figure 22. Widow QP that would be issued in association with each LE permit under Alternative 4 (based on the 2016 trawl allocation) compared with QP issued based on each LE permit's status quo QS allocations in 2012 and 2014.

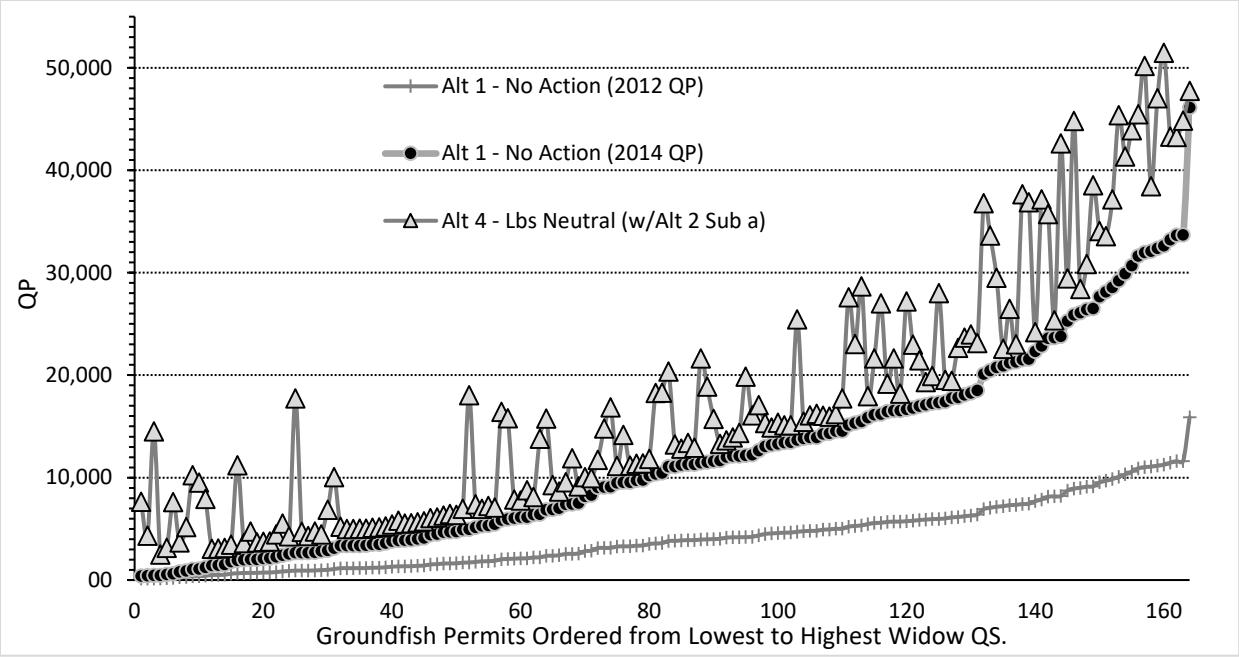

Figure 23. Widow QP that would be issued in association with each LE permit under Alternative 4 (based on the 2016 trawl allocation) compared with QP issued based on each LE permit's status quo QS allocations in 2012 and 2014.

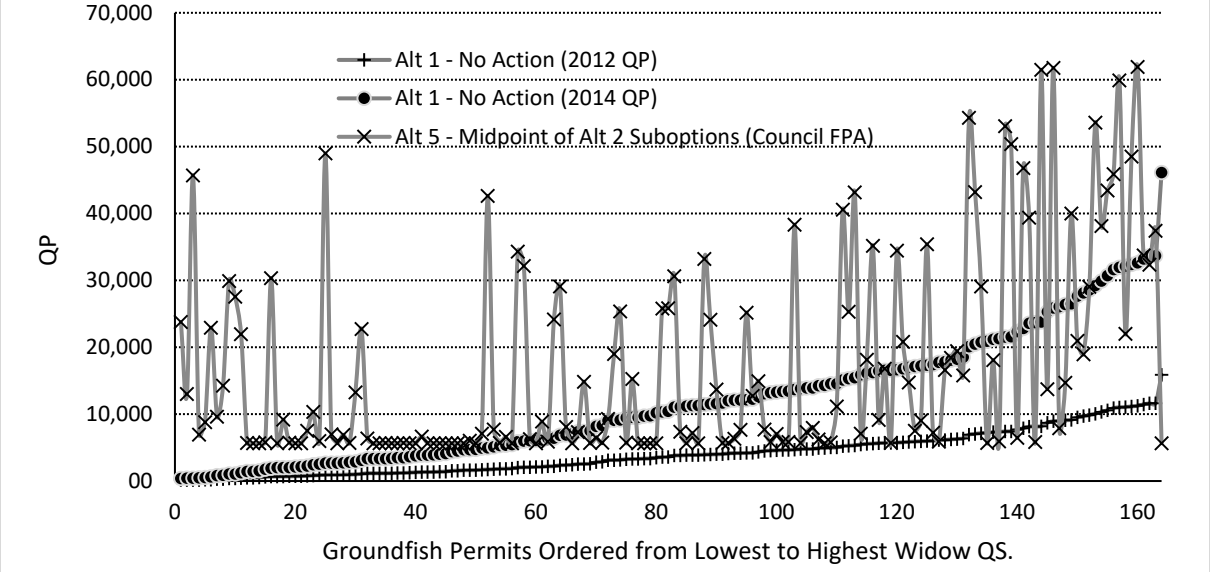

Figure 24. Widow QP that would be issued in association with each LE permit under Alternative 5 (based on the 2016 trawl allocation) compared with QP issued based on each LE permit's status quo QS allocations in 2012 and 2014.

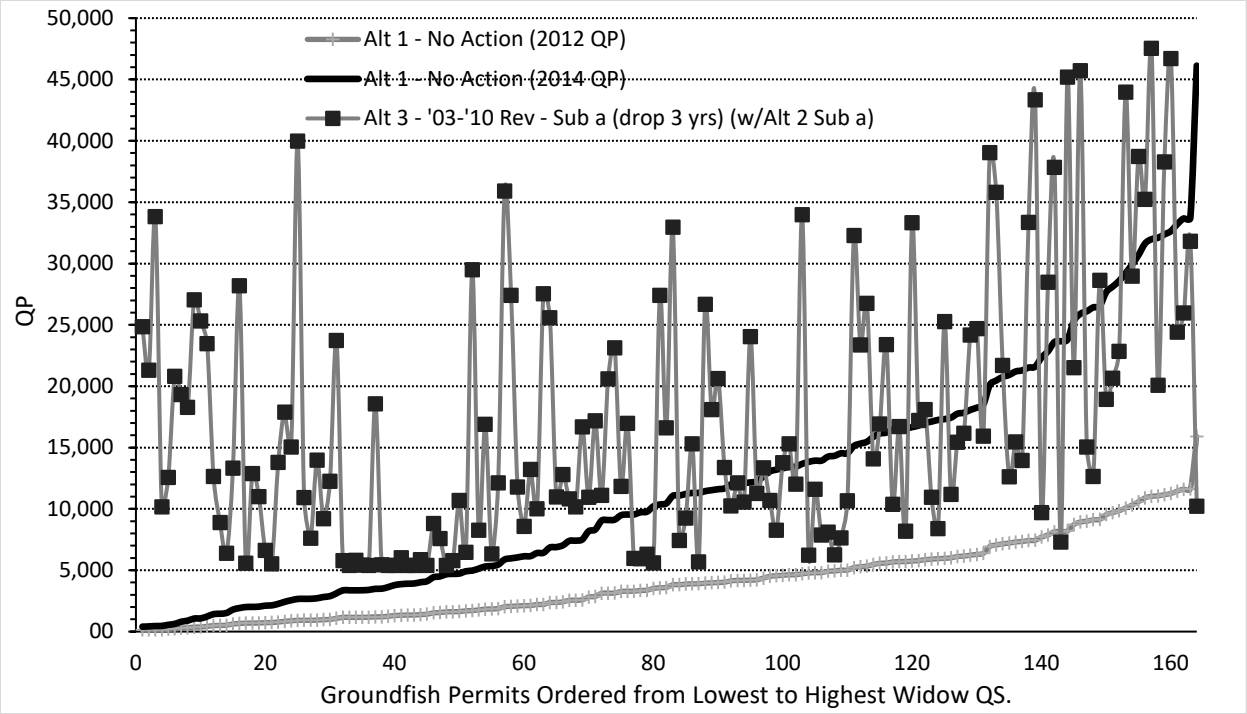

Figure 25. Widow QP that would be issued in association with each LE permit under Alternative 3(a) (based on the 2016 trawl allocation) compared with QP issued based on each LE permit's status quo QS allocations in 2012 and 2014.

4.4.1(a)(2)(vii) 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 (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%

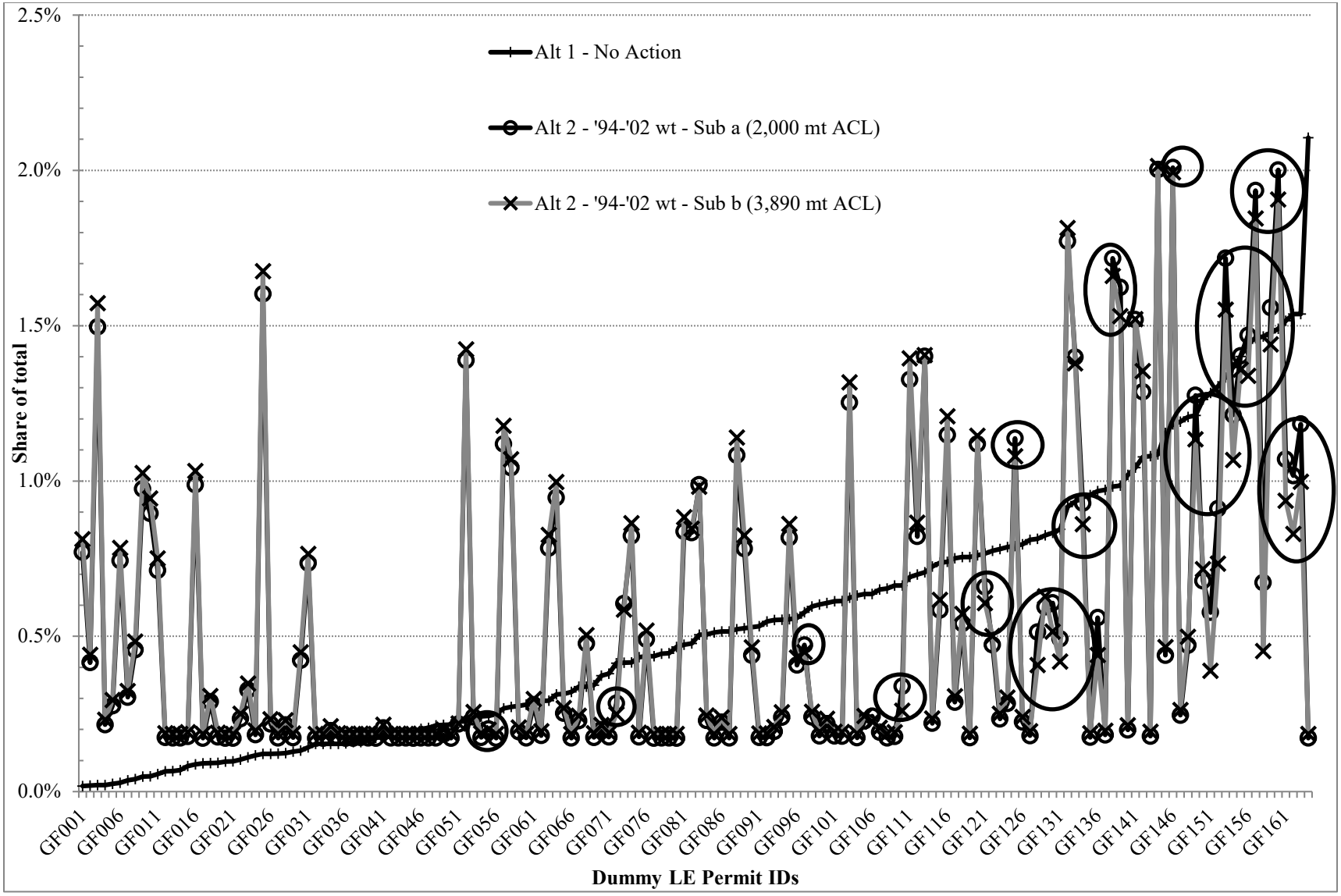

Figure 26. Allocation of widow QS among individual vessel **LE permits** comparing Alternative 1, **Alternative 2(a),** and **Alternative 2(b).**

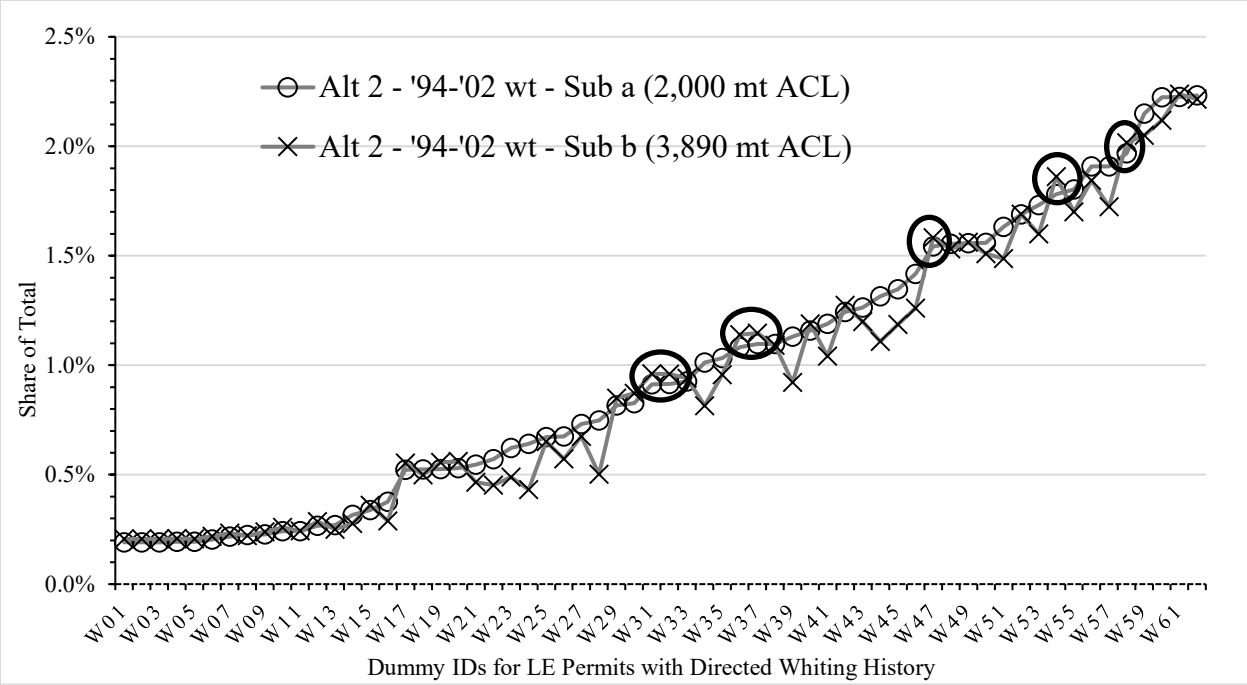

Figure 27. Allocation of widow QS among individual vessel **LE permits** comparing **Alternative 2(a)** with **Alternative 2(b)** for LE permits with **some directed whiting history** from 1994-2003.

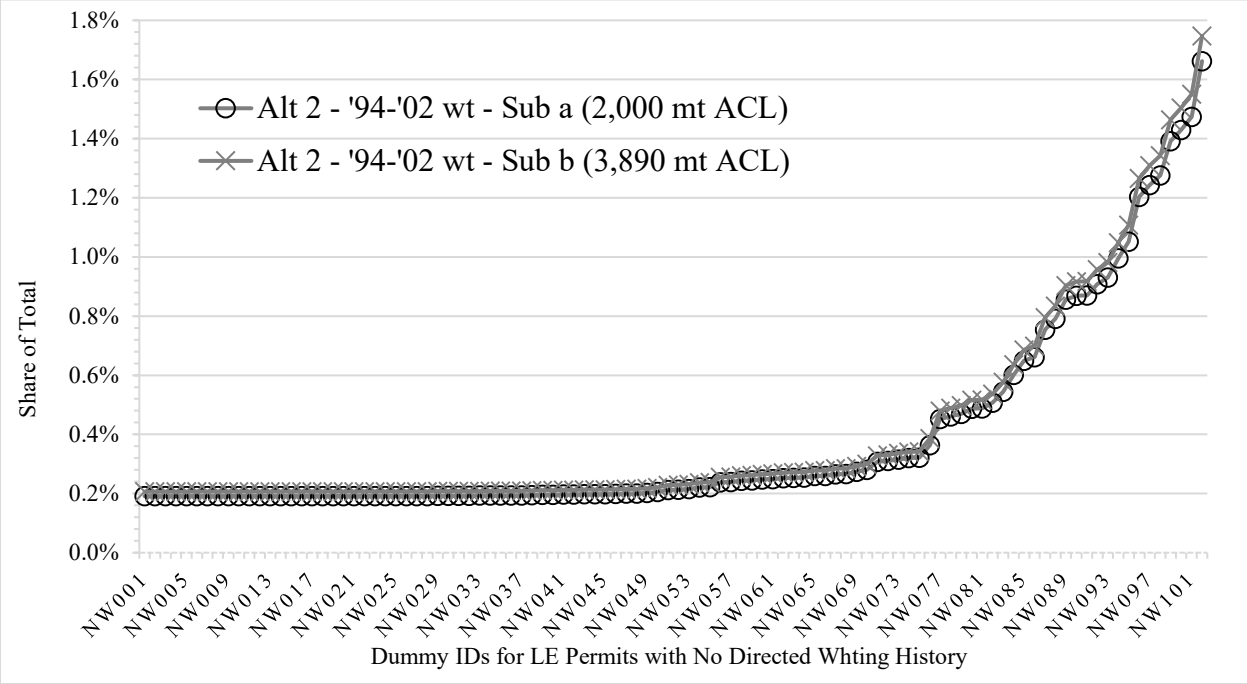

Figure 28. Allocation of widow QS among individual vessel **LE permits** comparing **Alternative 2(a)** with **Alternative 2(b)** for permits with **no directed whiting history** from 1994-2003.

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).

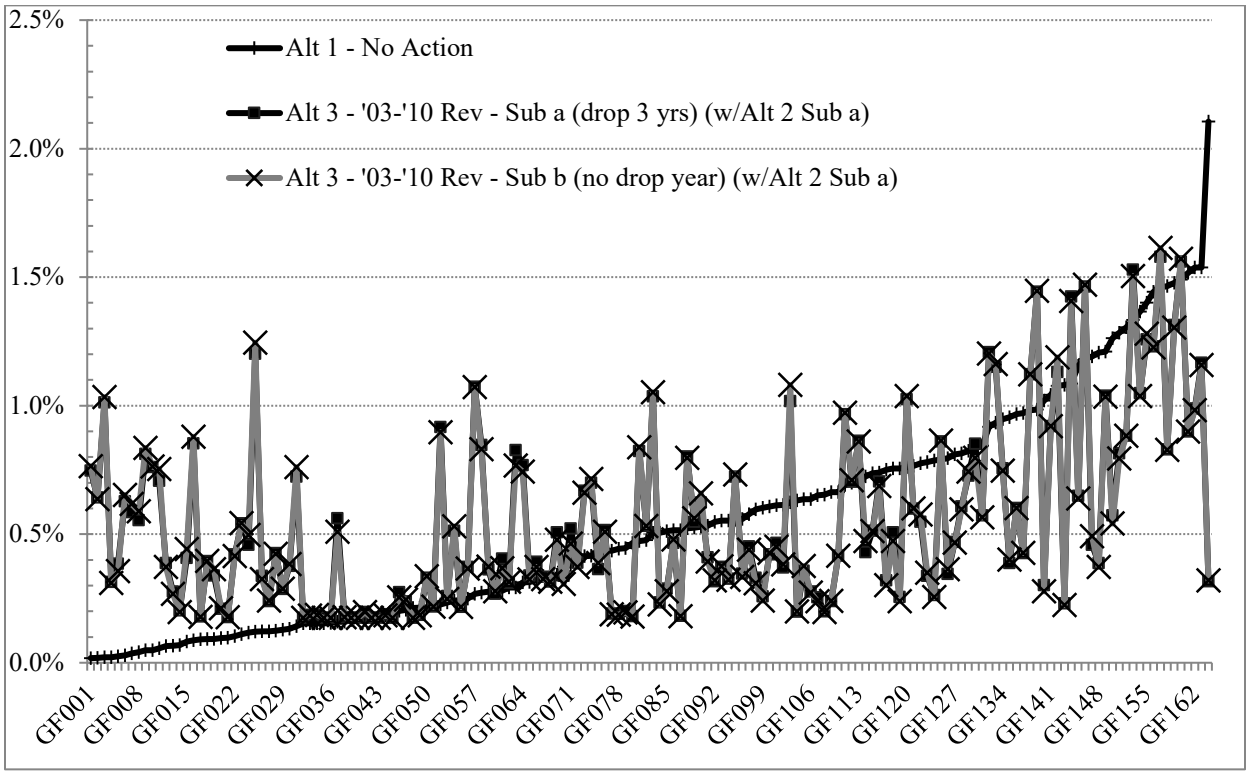

Figure 29. Allocation of widow QS among individual LE permits comparing **Alternatives 3(a)** with **Alternative 3(b)** (both with Alternative 2(a) allocations used for the widow landings-based portion).

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.

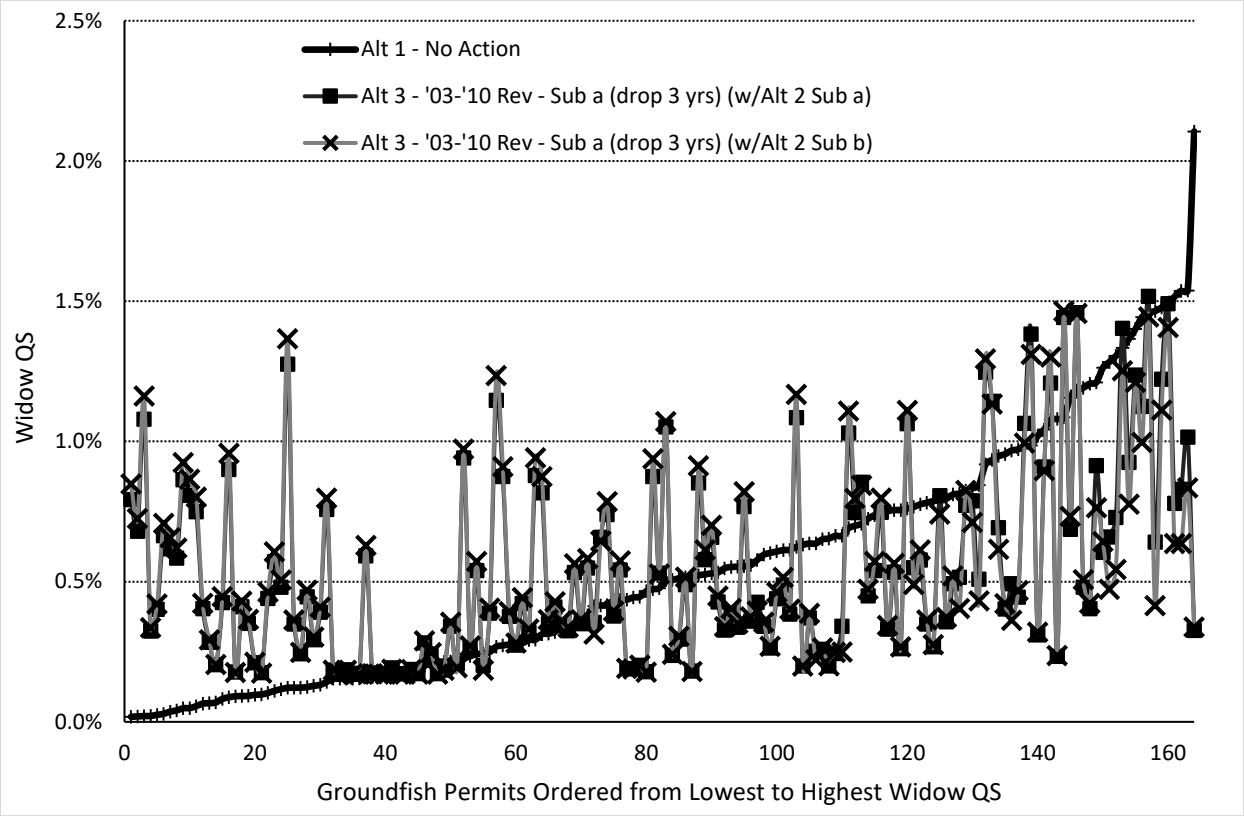

Figure 30. Allocation of widow QS among individual vessel **LE permits** comparing **Alternatives 3(a) (**with Alternative 2(a) as the base) to Alternative 3(a) (with Alternative 2(b) as the base).

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%

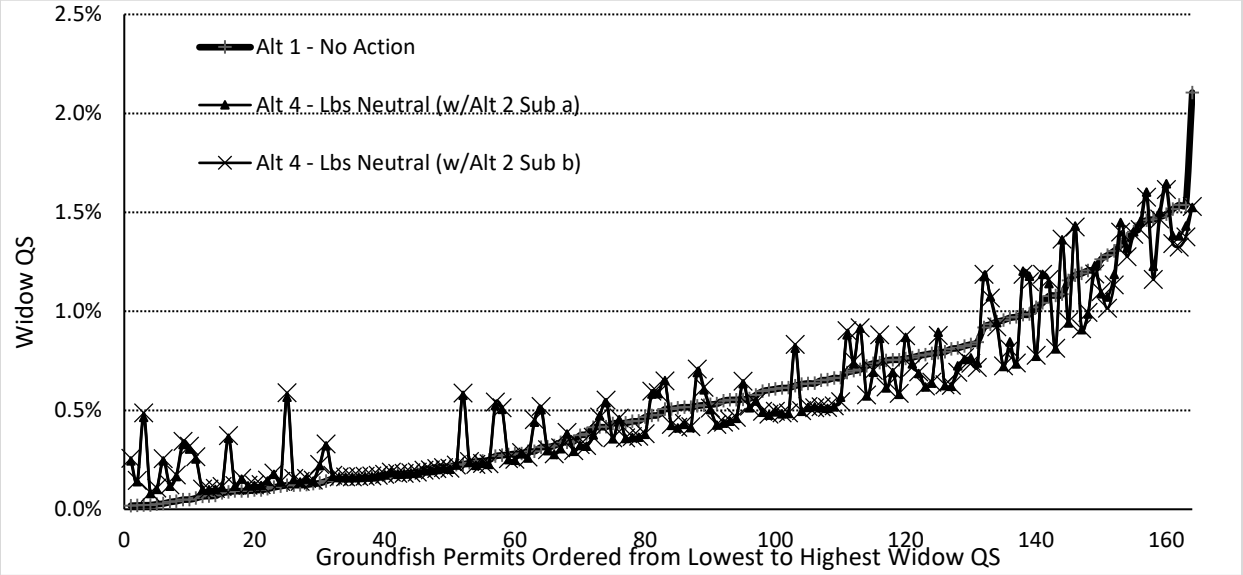

Figure 31. Allocation of widow QS among individual vessel **LE permits** comparing **Alternative 4 (**with Alternative 2(a) as the base) to **Alternative 4** (with Alternative 2(b) as the base).

4.4.1(a)(3) 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%	-	-

4.4.1(b) Impacts on Vessel Owners

4.4.1(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 4.2.1) 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[6]—see fifth and seventh rows of Table 3-1, page 38. 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 3-1. 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 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.

[6] 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.

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.

4.4.1(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 4-14). 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 4-14). 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 as market forces independent of the action described above took shape.

It is not expected that any of the action alternatives will directly alter fishing behavior. This is because there are no requirements to modify gear use, areas fished, or any other changes to direct controls on fishing effort. There may be some indirect effects on fishing behavior due to use of widow rockfish QP by vessels that do not currently target widow rockfish. However, it is impossible to predict how and to what extent the movement of QP among participants may alter the overall effort in the fishery. The most significant influence on fishing behavior is the increase in the widow rockfish ACL, which is not a component of this action and rather, was analyzed under the 2017-2018 harvest specifications (NMFS 2016).

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

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

The following tables provides a summary of impacts on vessel owners discussed in this section. Overall, impacts are expected to be insignificant.

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 4.4.1(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.			
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%

4.4.1(c) Impacts on Captains and Crew

4.4.1(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.

4.4.1(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.

4.4.1(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. Impacts are generally expected to be insignificant.

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.			

4.4.2 First Receivers and Processors

4.4.2(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 4.2.1. 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.

4.4.2(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 relative to no action.

		Change in Allocations (Exvessel Value Equivalent of Change)				
	Alt 1 (No Action)	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.

4.4.2(c) Summary of Impacts on First Receivers

The following tables provides a summary of impacts on first receivers discussed in this section. Impacts are expected to be insignificant.

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%

4.4.3 Fishing Communities

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

As discussed in Section 4.1, shifts in the distribution of landings may occur 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.

4.4.3(b) Action Alternatives - Reallocation

As discussed in Section 4.4, 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. 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 3.3.3, 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.

4.4.3(c) Summary of Impacts on Fishing Communities

The following tables provides a summary of impacts on fishing communities discussed in this section. The impacts are expected to be insignificant.

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%

4.4.4 Government Entities

The following sections provide a summary of impacts on government entities discussed in this section. The impacts are expected to be insignificant.

4.4.4(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.

4.4.4(b) Action Alternatives - Reallocation

All of the action alternatives will entail some additional Federal governing costs to promulgate regulations to reallocate widow rockfish. 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. If any entity does not divest by the deadline, NMFS would need to reallocate that amount to the rest of the participant pool 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.

4.4.4(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.

4.5 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, 4.3, and 4.4, respectively.

In general, NMFS does not expect any significant impacts from this action.

4.5.1 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 (FPA)
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 4.2)	Some geographic redistribution of impacts based on changing resource distribution and markets	Long-term – same as Alt 1 Short-term – insignificant. Minor potential for short-term geographic redistribution associated with redistribution of QS.	Similar to Alt 2.	Similar to Alt 2 but a substantially lower potential for any minor short term impacts.	Similar to Alt 2
Biological (Section 4.3)	Some geographic redistribution of impacts based on changing resource distribution and markets. Harvest fluctuations with ACLs.	Long-term – same as Alt 1 Short-term – insignificant. Minor potential for short-term geographic redistribution associated with redistribution of QS.	Similar to Alt 2.	Similar to Alt 2 but a substantially lower potential for any minor short term impacts.	Similar to Alt 2.
Socio-economic (Section 4.4)					
Harvesters (Section 4.4.1)					
QS Owners (Section 4.4.1(a))					
General	Current QS distribution maintained. QS redistribution in response to market forces or other values once trading moratorium is lifted.	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. No negative impact on low-income, minority, and Indian Tribe populations.			
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	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	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 4.4.1(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.			
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%

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
Captains and Crew (Section 4.4.1(c))					
General	Captain and crews benefit and attracted by vessels with more QS/QP	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 due to market forces independent of this action.			
First Receivers/Processors (Section 4.4.2)					
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% (minor variations depending on suboptions)	6.3% (minor variations depending on suboptions)	6.8%
Communities (Section 4.3.6)					
General	Normal fluctuations in harvest among communities. 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 – insignificant 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. No negative impact on low-income, minority, and Indian Tribe populations.			
Total QS Reallocated Among Ports		16.7%-17.5%	16.3%-18.1%	5.1%-5.3%	17%
Government Entities (Section 4.4.4)					

	Impacts of No Action	Impacts Relative to No Action			
	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5 (Council FPA)
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.

4.6 Cumulative Impacts

4.6.1 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—EFH.
2. Biological Resources—Groundfish target species.
3. Socioeconomic Environment—harvesters, first receivers, communities, and government.

4.6.2 Geographic Boundaries

The analysis of impacts focuses on actions related to the reallocation 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 3.2.1(d) that is part of the EEZ off of Washington, Oregon, and California (see Chapter 1). The geographic boundaries of this analysis do not include the nearshore, as that is outside the range of widow rockfish. 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.

4.6.3 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. Future actions account for all known and anticipated actions the Council may take and are discussed in the following section. For more information on anticipated upcoming Council actions and decisions, see the briefing book[7].

4.6.4 Actions Other than the Proposed Action

4.6.4(a) Past, Present, and Reasonably Foreseeable Future Actions

4.6.4(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

[7] https://www.pcouncil.org/council-operations/briefing-books/

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 2017 and 2018 for groundfish stocks. In 2017 and 2018 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 approved for 2017-2018 an increase in the ACL for widow rockfish of 11,290 mt (25 million pounds), one of the two primary pelagic species targeted with midwater trawl gears. The whiting total allowable catch for 2017 was set at 441,433 mt (973 million pounds) (82 FR 21317; May 8, 2017).

The ACL levels in the 2017-2018 harvest specifications are expected to bring an increase in benefits for the fishing industry. 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. This rule was effective on January 1, 2017 (81 FR 84419).

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 commenced 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 increased, those who divested down to the current limits will have an opportunity to acquire QS to bring them up to the new limits.

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) with implementation expected in 2019. In the interim before rulemaking, NMFS approved an EFP for 2017 that allows the elimination of a minimum mesh size and elimination of the requirement for use of selective flatfish trawl shoreward of the Rockfish Conservation Areas (RCAs) north of 40° 10' N. latitude. Under the EFP, vessels are able to target midwater pelagic rockfish (primarily widow rockfish and yellowtail rockfish) using modified bottom trawl gear.

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 2017 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 began 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 was published in December 2015.

Electronic Monitoring. EM (cameras) are being 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. 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 published in September 2016 (81 FR 61161). 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. This package is being developed as Amendment 28 to the FMP. Selection of a preferred alternative is tentatively scheduled for March 2018.

4.6.4(a)(2) Non-fishing Actions

Human-induced non-fishing activities, which tend to be localized in nearshore areas and marine project areas where they occur, have no measurable effect on the resources addressed in this EA and therefore are not discussed further in this section.

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.

4.6.5 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. As noted above in Section 4.6.4(a)(2), non-fishing actions have no measurable effect on resources addressed in this EA. Therefore, only fishery management actions are considered. The following section first presents the effects of past, present, and reasonably foreseeable future fishery management actions on

each of the managed resources as compared to unregulated use of these resources. This is followed by a discussion on the synergistic effects of the proposed action, as well as past, present, and reasonably foreseeable future fishery management actions (Section 4.6.6).

4.6.5(a) Physical Environment, including Habitat and Ecosystem

Those past, present, and reasonably foreseeable future fishery management actions, whose effects may impact habitat (including EFH) and the direction of those potential impacts, are listed in

Table 4-26, below. NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS's 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 that other developments could have on habitat utilized by resources under NMFS's 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	**Direct Positive**		
2017-2018 Biennial Harvest Specifications			**Positive**
Trawl Rationalization Trailing Actions			**Uncertain – Likely Direct and Positive**

Past fishery management actions taken through the FMP process have had a positive overall effect on habitat and EFH compared to prior management or lack thereof. 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 influences such as climate change (including related ocean acidification), which may indirectly adversely impact habitat and ecosystem productivity. Overall, the past, present, and reasonably foreseeable future fishery management actions affecting habitat have had a slightly positive effect as compared to unregulated fishing activity.

4.6.5(b) Biological Environment

Those past, present, and reasonably foreseeable future fishery management actions, and the direction of those potential impacts, are summarized in

Table 4-27 below. NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS's 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's 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**		
2017-2018 Biennial Harvest Specifications			**Indirect Positive**
Trawl Rationalization Trailing Actions			**Uncertain – mixed but most Indirect Positive**

Past fishery management actions taken through the FMP have had a positive effect on the managed biological 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 positive effect (high positive impact, relative to fishery management prevention of overexploitation).

4.6.5(c) Socioeconomic Environment

Those past, present, and reasonably foreseeable future fishery management actions, whose effects may impact the socioeconomic environment and the direction of those potential impacts, are summarized in Table 4-28 below.

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**		
2017-2018 Biennial Harvest Specifications			**Indirect Positive**
Trawl Rationalization Trailing Actions			**Uncertain – Likely Positive**

4.6.6 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 fishery management actions, are discussed throughout this section.

A summary is provided at the end.

4.6.6(a) Physical Environment

The no action alterative and the action alternatives are not expected to change impacts to the physical environment, therefore, they do not contribute to the slight positive cumulative effect of other past, present, and reasonably foreseeable future fishery management actions discussed in 4.6.5(a). While increased ACLs will expand allowable catches and therefore increase fishing opportunities, these impacts were analyzed under the 2017-2018 harvest specifications (NMFS 2016) and are independent of this action. 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.

4.6.6(b) Biological Environment

The no action alternative and the action alternatives are not expected to affect harvest of targeted species and hence not affect bycatch species, therefore, they do not contribute to the positive cumulative effect of other past, present, and reasonably foreseeable future fishery management actions. While increased ACLs will expand allowable catches and therefore increase fishing opportunities, these impacts to the biological environment were analyzed under the 2017-2018 harvest specifications (NMFS 2016) and are independent of this action.

4.6.6(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.

4.6.6(d) Summary

Impacts to the physical environment are projected to be positive compared to the No Action Alternative (Table 4-29). Impacts to the biological environment are projected to be positive compared to the No Action Alternative (Table 4-29). And impacts to the socioeconomic environment are projected to be positive compared to the No Action Alternative (Table 4-29). The main cumulative impact independent of the present action is the increase in the ACLs for pelagic species for the 2017-2018 groundfish specifications approved by NMFS. Increases in these ACLs have been analyzed in the EA accompanying those specifications (NMFS 2016). 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	**Status in 2016**	**Magnitude of Net Impact of P, Pr, and RFF Actions**	**Magnitude of the Impact of the Proposed Action**	**Contribution to Cumulative Effects**
Physical Resources, including Habitat	Complex and variable (Section 3.1)	Slightly positive Section 4.6.5	Neutral (Section 4.1)	**None**
Biological Resources	Complex and variable (Section 3.2)	Positive Section 4.6.5	Neutral (Section 4.2)	**None**
Socioeconomic/ Human Communities	Complex and variable (Section 3.3)	Slightly positive Section 4.6.5	Slightly Positive (Section 4.3)	**None**

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 widow 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 that were set under Amendment 20, but would 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:

> Objective 12. 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. However, the Council determined that the final preferred alternative most appropriately met their stated purpose and need for the action, to reestablish a targeted widow rockfish fishery by recognizing the fishing history of participants for the historical time period during which there was a target fishery.

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 122). 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 121). 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 to 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.[8]

[8] 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.

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.[9] 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 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.

[9] 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.

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, which was considered but rejected, 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.[10] 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*

[10] 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).

> 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.

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.

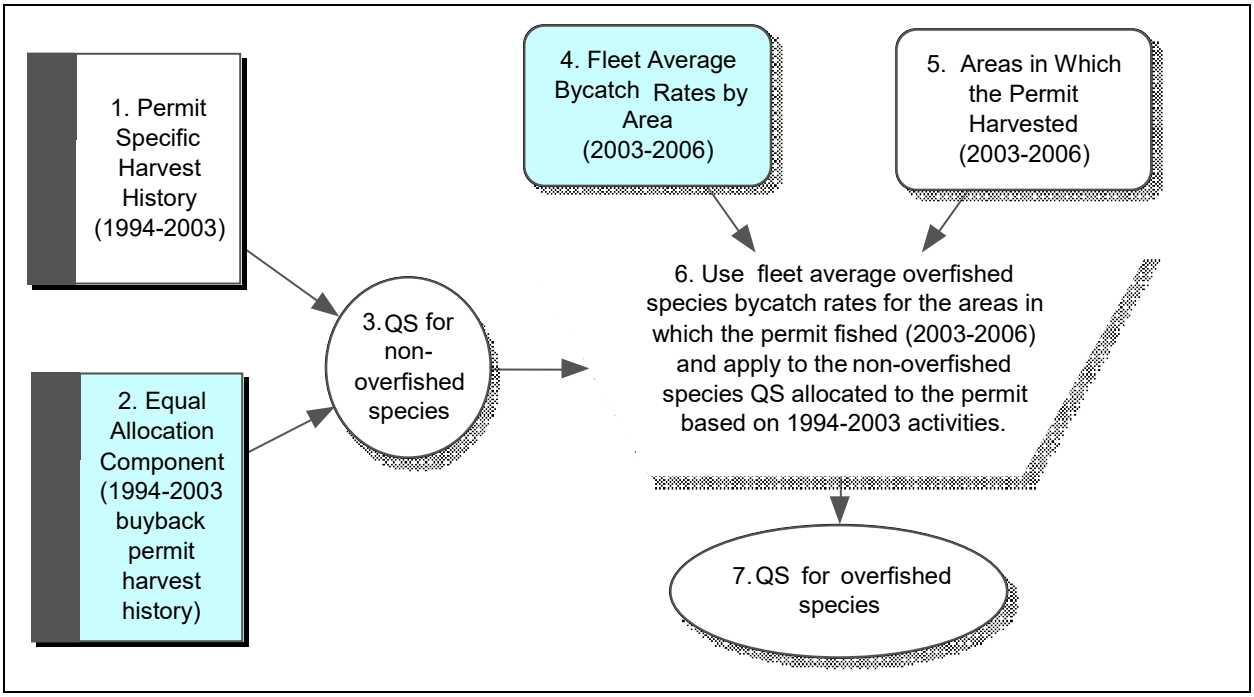

Figure 32. Flow chart of steps used to determine the allocation of overfished species (shaded boxes indicate the use of fleet-wide data, unshaded boxes indicate LE permit-specific data and calculations.

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 3.3.3.

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 would 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.[11] Similarly, the Council's 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.

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 121) 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 122). 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

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

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 98.

Community historic participation for the widow rockfish and groundfish fisheries is documented in Section 3.3.3, starting on page 48. Section 4.4.3, starting on page 94, 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.

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 bequeathal 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.

This action is expected to have no effects on listed species because it affects only the allocation of fish, and is not expected to change the fishery in terms of its effects on listed species. The effects of the groundfish fishery, which this action is part of, on listed species and critical habitat has been analyzed in the consultations described below.

NMFS issued biological opinions under the ESA on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999, pertaining to the effects of the Pacific Coast Groundfish FMP fisheries on Chinook salmon (Puget Sound, Snake River spring/summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley spring, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal), chum salmon (Hood Canal summer, Columbia River), sockeye salmon (Snake River, Ozette Lake), and steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south/central California, northern California,

southern California). These biological opinions have concluded that implementation of the Pacific Coast Groundfish FMP is not expected to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS or result in the destruction or adverse modification of their critical habitat designated 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; and concluded that the impacts on listed Chinook evolutionarily significant units (ESUs) were not expected to jeopardize the continued existence of any of those ESUs. That opinion described an amount of take for the whiting fishery as 11,000 Chinook per year, and 6,000 to 9,000 Chinook for the bottom trawl fishery.

Following exceedances of those take thresholds, NMFS issued a supplemental biological opinion on March 11, 2006, concluding that neither the higher observed bycatch of Chinook salmon in the 2005 whiting fishery nor new data regarding salmon bycatch in the groundfish bottom trawl fishery required a reconsideration of NMFS's prior "no jeopardy" conclusion. NMFS also reaffirmed its prior determination that implementation of the Pacific Coast 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.

In October 2014, NMFS reinitiated ESA section 7 consultation on the Pacific Coast Groundfish FMP with respect to its effects on ESA-listed salmonids to consider changes to the fishery and further exceedance of the take threshold for the whiting fishery. In the event the consultation identifies either reasonable and prudent alternatives to address jeopardy concerns or reasonable and prudent measures to minimize incidental take, NMFS will exercise necessary authorities, in coordination with the Council, to put such additional alternatives or measures into place.

Because the reinitiated consultation has not been concluded, NMFS considered the effects of the 2017–2018 groundfish harvest specifications and management measures on listed salmonids in a December 19, 2016 memo, and concluded that, consistent with sections 7(a)(2) and 7(d) of the ESA, management of the ongoing groundfish fishery in accordance with the 2017–2018 groundfish harvest specifications will not jeopardize listed salmonid 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 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 distinct population segment (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, Southern Resident killer whales, Guadalupe fur seals, or the critical habitat for Steller sea lions.

Since that biological opinion was issued, 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. At the Pacific Fishery Management Council's June 2015 meeting, new estimates of eulachon take from fishing activity under the FMP indicated that the incidental take threshold in the 2012 biological opinion was exceeded in 2013. The increased bycatch may be due to increased eulachon abundance. In light of the new fishery and abundance information, NMFS has reinitiated consultation on eulachon.

Because the reinitiated consultation has not been concluded, NMFS considered the effects of the 2017–2018 groundfish harvest specifications and management measures on listed eulachon in a December 19, 2016, memo, and concluded that, consistent with sections 7(a)(2) and 7(d) of the ESA, the 2017-2018 Specifications and Management Measures for the Pacific Coast Groundfish Fishery (82 FR 9634, February 7, 2017) would not jeopardize listed eulachon, 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. In the event the consultation identifies either: reasonable and prudent alternatives to address jeopardy concerns, or reasonable and prudent measures to minimize incidental take, NMFS would coordinate with the Council to put additional measures into place, as required.

On May 2, 2017, 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, or bull trout critical habitat. NMFS is coordinating with the Council to put additional alternatives or measures into place as required under the reasonable and prudent measures to minimize incidental take.

After reviewing the available information, NMFS has concluded that this action is administrative in nature and will not affect the take of any ESA-listed species, including short-tailed albatross. The action will reallocate, or modify, the amount of widow QS that each original QS permit holds, but will not change how much or how likely the fleet is to encounter listed species.

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.

As noted under Section 1.5.2, this action is administrative in nature, and will therefore not affect marine mammals or change in any way the effects of the groundfish fisheries on marine mammals. The West Coast groundfish trawl fisheries are considered Category III fisheries under the MMPA, indicating a remote likelihood of or no known serious injuries or mortalities to marine mammals.

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 2017-2018 proposed harvest specifications and management measures (NMFS 2016). As noted under Section 1.5.2, no effects to seabirds are expected under this action.

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 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. This action contains a collection-of-information requirement for purposes of the PRA which was approved by the Office of Management and Budget (OMB) under OMB Control No. 0648-0620. NMFS amended the supporting statement for the Pacific Coast Groundfish Trawl Rationalization Program permit and license information collection to include an application form for widow rockfish reallocation.

7.2 Executive Order 12866

This action is not significant under Executive Order 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*)

Executive Order 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. The proposed action will not result in disproportionate adverse impacts to low income and minority communities because the action in general will not result in any adverse effects on communities as described in Chapter 4.

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)

Executive Order 13132, which revoked Executive Order 12612, an earlier federalism order, 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 Executive Order 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 Executive Order 13132 because it does not alter the existing federal management of the groundfish fisheries.

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) – Executive Order 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 Executive Order 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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