

INITIAL REVIEW DRAFT

Regulatory Impact Review for Proposed Regulatory Amendment Endangered Species Act Salmon Bycatch Mitigation Measures under the Pacific Coast Groundfish Fishery Management Plan

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Abstract: The proposed actions address the requirements of the National Marine Fishery Service biological opinion *Reinitiation of Section 7 Consultation Regarding the Pacific Fisheries Management Council's Groundfish Fishery Management Plan*. The biological opinion required the Council to consider new mitigation measures to address incidental salmon bycatch in the whiting and non-whiting sectors of the fishery. The mitigation measures considered in this document are block area closures, extension of the block area closures for all trawl gear to the western edge of the exclusive economic zone, selective flatfish trawl net requirement, and potential adoption of whiting sector cooperative rules for salmon mitigation. Also considered in this document is a proposal to examine the automatic authority closure levels for trawl fisheries in the whiting and non-whiting sectors and to potentially adjust them. The biological opinion additionally required the Council to specify a process for how a sector could access the Reserve. This process is addressed in this document.

List of Acronyms and Abbreviations

BAC	Block Area Closure
BiOp	Biological Opinion
BRA	Bycatch Reduction Area
CFR	Code of Federal Regulations
Council	Pacific Fishery Management Council
CP	Catcher Processor
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESU	Evolutionary Significant Units
fm	fathom
FMP	Fishery Management Plan
FR	<i>Federal Register</i>
GAP	Groundfish Advisory Subpanel
GMT	Groundfish Management Team
IOPAC	Input/output Pacific Coast Model
IPA	Incentive Plan Agreement
IRFA	Initial Regulatory Flexibility Analysis
ITS	Incidental Take Statement
LE	Limited Entry
lb	Pound
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MMPA	Marine Mammal Protection Act
MSCV	Mothership/Catcher Vessel
NAICS	North American Industry Classification System
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NMFS	National Marine Fishery Service

NOAA	National Oceanic and Atmospheric Administration
PCGFMP	Pacific Coast Groundfish Management Plan
PFMC	Pacific Fishery Management Council
OA	Open Access
OLE	Office of Law Enforcement
OMB	Office of Management and Budget
PPA	Preliminary Preferred Alternative
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
ROA	Range of Alternatives
RIR	Regulatory Impact Review
RPM	Reasonable and Prudent Alternative
SAFE	Stock Assessment and Fishery Evaluation
SBA	Small Business Act
Secretary	Secretary of Commerce
SFFT	Selective Flatfish Trawl (net)
SMP	Salmon Mitigation Plan
TAC	Total Allowable Catch
U.S.	United States
USD	United States Dollar
VMS	Vessel Monitoring System

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Executive Summary

This document analyzes proposed management measures that would apply exclusively to the Pacific Coast groundfish fishery. The measures under consideration include: additional measures to minimize incidental Chinook and coho salmon bycatch to keep fishery sectors within guidelines, development of a process for access to the Chinook salmon Reserve, and changes to the total amount of Chinook salmon bycatch allowed by the trawl sectors.

The proposed action is to address the remaining terms and conditions (T&C) in which a Pacific Fishery Management Council (Council) role was specified in the 2017 National Marine Fishery Service (NMFS) biological opinion (BiOp) *Reinitiation of Section 7 Consultation Regarding the Pacific Fisheries Management Council's Groundfish Fishery Management Plan*. This action will amend current Federal regulations to minimize, to the extent practicable, the amount or extent of incidental take of endangered evolutionary species units (ESU) of Chinook salmon (*Oncorhynchus tshawytscha*) and coho salmon (*Oncorhynchus kisutch*) in the West Coast groundfish fishery as identified in the BiOp.

The proposed action is necessary to comply with the non-discretionary reasonable and prudent measures (RPM), and the associated T&Cs, of the incidental take statement (ITS) of BiOp. The two T&Cs addressed in this action are T&C 2.b and 3.a. Under T&C 2.b, the Council is required to consider developing new mitigation management tools to allow for timely inseason management to keep the sectors from exceeding their salmon bycatch guidelines. Under T&C 3.a, the Council is to develop regulations regarding the Reserve and its use. The Reserve is a set amount of fish reserved for addressing unexpected high bycatch levels when a sector exceeds their bycatch guideline. This amount is not; however, available as a matter of course to allow the sectors to exceed their bycatch guidelines

Purpose and Need

The purpose and need for this proposed action address the requirements T&C 2.b and 3.a of the BiOp.

- The purpose of the proposed action is to develop mitigation tools to reduce bycatch of Chinook and coho salmon in the groundfish fisheries and establish a process for accessing the Reserve.
- The proposed action is needed to comply with the 2017 Biological Opinion, notably Term and Condition 2.b and 3.a and to prevent sectors from exceeding their bycatch guidelines and minimize the risk of accessing the Reserve.

Alternatives

In April 2019, the Council adopted the following action alternatives to address T&C 2.b and 3.a:

Block Area Closures

No Action: Status quo. Block Area Closures (BAC) would not be available to the Council as mitigation tool for midwater trawl fisheries. Only the mitigation measures in regulation could be used to address salmon bycatch.

Alternative 1: BACs would be developed as a routine inseason mitigation tool for salmon bycatch in the midwater trawl fisheries in the whiting and non-whiting sectors.

Extension of Block Area Closure for All Trawl Gears to the Western Boundary of the Exclusive Economic Zone

No Action: Status quo. The Council would not be able to extend any block area beyond the 250 fm boundary line, as currently defined at 50 CFR 660.71-74, to the Exclusive Economic Zone (EEZ).

Alternative 1: Develop regulation to allow for the extension of any block area closure seaward for all trawl gears to the western boundary of the EEZ.

Selective Flatfish Trawl Net requirement

No Action: Status quo. Council would not create an option to require bottom trawl vessels to use SFFT nets as a salmon mitigation tool except as described at 660.130(c) (i and iii).

Alternative 1: SFFT nets would be available for use as a routine inseason mitigation tool to address salmon bycatch in the groundfish bottom trawl fisheries.

Pacific Whiting Cooperative Operational Rules

No Action: The Council does not recommend Pacific whiting cooperative operational rules as a mitigation measure for salmon bycatch.

Alternative 1: Develop automatic actions that requires NMFS to close a specific area to the whiting fishery, or a specific whiting sector fishery, based on information provided to the Regional Administrator, or designee, by the executive director of each whiting cooperative.

Alternative 2: Develop regulations to allow the whiting sector co-ops to develop salmon mitigation plans.

Automatic Authority for NMFS to Close Trawl Sectors and Preserve 500 Chinook salmon for Fixed Gear and Recreational Fisheries

No Action. The Council will not develop an action to preserve 500 Chinook salmon for the fixed-gear and recreational sectors. Instead, only automatic action authority in regulation would be the one which would close, one or both, the whiting and the non-whiting sector of the groundfish fishery upon that sector having exceeded its annual Chinook salmon bycatch guideline and the Reserve. – As described at §660.60(d)(1)(v). The whiting sector would close at 14,500 Chinook salmon, the non-whiting sector would close at 9,000 Chinook salmon, and all fisheries would close at 20,000 Chinook salmon.

Alternative 1: Develop an automatic action authority that would close the trawl sectors as follows:

1. Close the bottom and mid-water trawl sectors upon attainment of 8,500 Chinook salmon
2. Close the whiting sectors upon attainment of 14,000 Chinook salmon
3. Close all trawl fisheries upon attainment of 19,500 Chinook salmon

Development of Reserve rule provision

No Action. The Council does not recommend a process for accessing the Reserve be developed in regulation. This alternative would be out of compliance with T&C 3.c of the Incidental Take Statement in the 2017 BiOp.

Alternative 1: A sector may only access the Reserve if the Council or NMFS has taken action to minimize Chinook salmon bycatch in that sector prior to it reaching its Chinook salmon bycatch guideline.

Comparison of Alternatives

Alternative	Description/Key differences	Effects on Salmon Bycatch	Impact to Industry
Block Area Closure			
No Action	<p>Council could only use existing mitigation measures for vessels using midwater trawl gear. See 1.2.5</p> <p>The comparable mitigation measure to Alternative 1 is the 200 fm BRA.</p> <p>This BRA duration can be adjusted but size is fixed, shore to 200 fm, coastwide.</p> <p>BRAs can be implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure.</p>	<p>Salmon bycatch in the 200fm BRA could not occur while the BRA was implemented</p> <p>Salmon in waters outside the 200fm depth contour could be caught incidentally.</p>	<p>Majority of midwater trawl effort is within the 200fm BRA.</p> <p>Total impact to the sector(s) affected could be high, refer to Table 3.7 for estimations of monthly revenue by sector</p> <p>Impacts to vessels that can fish in deeper than 200fm would relate to the presence/absence of target species in those depths at the time of year a BRA was implemented, etc.</p>
Alternative 1	<p>Council could develop specific area closures based on depth and latitude lines found in existing regulation</p> <p>BACs implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure</p> <p>Areas of known bycatch could be closed rather than the entire coast like the 200fm BRA.</p> <p>Multiple BACs could be implemented</p>	<p>Salmon bycatch in the specified BAC could not occur while the BAC was implemented.</p> <p>Salmon outside the BAC could be caught incidentally.</p> <p>BACs may close ‘hot spot’ areas, thus reducing risk of bycatch where salmon presence is highest.</p>	<p>Areas outside the BAC could be fished, potentially offsetting impacts.</p> <p>Any potential offset of impacts would be relative to factors such as the presence/absence of target species in non BACs, the ability of the vessel to travel to open areas, market demand for species in open areas, etc.</p>

Extension of Block Areas Closures for all Trawl Gear to the Western Boundary of the Exclusive Economic Zone			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Effects on Salmon Bycatch</i>	<i>Impact to Industry</i>
No Action	<p>BACs, for all trawl gear, would be limited to a depth of 250 fm.</p> <p>Vessels could fish beyond the seaward edge of any BAC to the EEZ</p> <p>Unexpected high bycatch events (i.e., lightning strikes) in depths greater than 250 fm could not be addressed through BAC</p>	<p>Salmon found in depths greater than 250 fm could still be subject to incidental bycatch</p>	<p>Vessel effort in depths greater than 250fm at present.</p> <p>Vessels that cannot fish in those depths would not be impacted.</p>
Alternative 1	<p>BACs for all trawl gear sectors could be extended to the western boundary of the EEZ.</p> <p>Extension of a BAC would be implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure.</p>	<p>Salmon bycatch in the specified BAC could not occur while the BAC was implemented.</p> <p>Salmon outside the BAC could be caught incidentally.</p> <p>BACs may close ‘hot spot’ areas, thus reducing risk of bycatch where salmon presence is highest.</p>	<p>Extension of a BAC to the EEZ would impact those vessels that can fish in depths greater than 250 fm.</p> <p>However, as described above in the BAC section, vessels impacted by the extended BAC could elect to fish in other areas that remained open.</p> <p>Moving to other fishing grounds could increase operational cost to vessel, however, those costs could be mitigated by resulting opportunities in different fishing grounds.</p>
Selective Flatfish Trawls (SFFT) for the Bottom Trawl Sector			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Salmon bycatch effects</i>	<i>Impact to Industry</i>
No Action	<p>Council could not require SFFT in areas not specified at §660.130(c) (i and iii) – <i>SFFT nets are required for bottom trawl vessels fishing shoreward of the current trawl Rockfish Conservation Area (RCA) – 100 fathom depth contour– between 40°10’ and 42° N lat. and inside the Klamath and Columbia Salmon Conservation Areas.</i></p>	<p>No benefit to salmon in areas not specified at §660.130(c) (i and iii).</p>	<p>Economic impact would remain as a cost of net purchase and operational use for those vessels that fish in areas specified at §660.130(c) (i and iii) as well as any vessel that voluntarily elected to purchase a net.</p> <p>However, vessels that fish where SFFT nets are required are likely to own them</p>

	Voluntary SFFT use could continue in areas not specified		
Alternative 1	<p>Council could require use of SFFT inseason, as a stand-alone fishery-wide measure or in conjunction with and area closure, such as a BAC.</p> <p>SFFT nets are gear-specific to bottom trawl.</p> <p>SFFTs could be implemented via routine groundfish inseason action</p>	<p>Potentially reduce incidental salmon bycatch by bottom trawl vessels.</p> <p>Benefits could vary depending on the overall effectiveness of the SFFT net in reducing salmon bycatch, location, area size, and duration of the requirement.</p>	<p>Impact on vessels that possess a SFFT net would be low</p> <p>Vessels needing an SFFT would be impacted by the cost (>\$10,000)/net), revenue lost due to not fishing, etc.</p> <p>Communities (net builders) would be positively impacted by purchases of SFFTs.</p>
Pacific Whiting Cooperative Agreements			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Effects on Salmon Bycatch</i>	<i>Impact to Industry</i>
No Action	<p>The Council would be limited to existing mitigation measures (e.g., 200 fathom BRA) for the Pacific whiting trawl fishery.</p> <p>Co-ops could continue to use voluntary mitigation measures, but would not meet the condition that NMFS or the Council must take action before a sector is allowed access to the Reserve</p>	No effect. Voluntary co-op measures are assumed to continue.	<p>Impact to the fleet would a loss in fishing opportunity and associated revenue if they were unable to access the Reserve in a high bycatch year. If another mitigation measure was implemented to meet T&C 3a, such as the 200 fathom BRA, this would result in the impacts described above.</p> <p>Dependent on size, location, length of time implemented, and ocean conditions.</p>
Alternative 1	Develop automatic actions that requires NMFS to close a specific area to the whiting fishery, or a specific whiting sector, based on information provided to the Regional Administrator, or designee, by the executive director, or designee, of each whiting cooperative.	Dependent on size, location, length of time implemented, and ocean conditions. May reduce salmon impacts or could inadvertently shift fishing effort into a higher bycatch area.	Impacts would likely be similar to No Action as Alternative one would formalize time/area closures developed by the industry. Impacts could potentially change based if the closure time/area is altered over time.

Alternative 2	<p>Develop regulations to allow the whiting sector cooperatives to develop salmon mitigation plans.</p> <p>These salmon mitigation plans would detail the tools and strategies that the co-ops would use to mitigate salmon bycatch during the fishing season. An annual report may also be required described the efficiency of those tools in the previous year</p>	Based on the assumption that this would formalize the voluntary measures the co-ops are already utilizing, it would be the same as No Action.	Little to no administrative costs to industry or government. Likely less cost than No Action to industry as would be able to access the Reserve without more blunt mitigation measures being implemented (e.g., 200 fathom BRA).
Development of Reserve Rule Provision			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Effects on Salmon Bycatch</i>	<i>Impact to Industry</i>
No Action	<p>The Council would not recommend a process to access the Reserve be developed in regulation.</p> <p>This alternative would be out of compliance with the 2017 BiOp</p>	No benefit to salmon. The 20,000 Chinook salmon could still be caught as incidental bycatch.	No impact. The sectors would operate under existing automatic closure regulations. Whiting 14,000 Chinook salmon, Non-Whiting 8,000 Chinook salmon, Total Chinook salmon 20,000
Alternative 1	A sector could only access the Reserve if the Council or NMFS has taken action to minimize Chinook salmon bycatch in that sector prior to reaching its Chinook salmon bycatch guideline.	No benefit to salmon. The 20,000 Chinook salmon could still be caught as incidental bycatch.	The impact on industry would be relative to the of the mitigation measure employed.

Automatic Authority to Close the Trawl Sectors and Preserve 500 Chinook salmon for Fished Gear and Recreational Fisheries			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Effects on Salmon Bycatch</i>	<i>Impact to Industry</i>
No Action	<p>Bycatch guidelines would not be adjusted.</p> <p>The automatic authority closures would remain status quo. The whiting sector would close at 14,500 Chinook salmon and the non-whiting sector would close at 9,000 Chinook salmon. A total fishery closure of 20,000 Chinook salmon.</p> <p>500 Chinook salmon would not be preserved for fixed gear and select recreational fisheries.</p>	No benefit. Salmon would still be available to be caught as incidental bycatch.	<p>Status quo. Fixed gear and select recreational fisheries would close with non-whiting.</p> <p>Potential income loss for fixed gear and recreational fisheries, would average \$2.7 and \$20.9 per month, respectively.</p> <p>¹ Amounts derived from Table 3 in Agenda Item G.3.a GMT Report 1, April 2019</p>
Alternative 1	<p>Develop an automatic action authority that would close the trawl sectors as follows:</p> <ol style="list-style-type: none"> 1. Close bottom and mid-water trawl upon attainment of 8,500 Chinook salmon 2. Close the whiting upon attainment of 14,000 Chinook salmon 3. Close all trawl fisheries 19,500 Chinook salmon <p>This action would preserve 500 Chinook salmon for fixed gear and select recreational fisheries.</p>	No benefit. Salmon would still be available to be caught as incidental bycatch.	<p>Fixed gear and select recreational fisheries could remain open even if the trawl fisheries closed due to salmon bycatch</p> <p>The 500 Chinook salmon set aside for fixed gear and recreational fisheries reduces the overall amount of Chinook salmon available to trawl fisheries.</p>

1 Introduction

This document analyzes proposed management measures that would apply exclusively to those fisheries that are managed by the Pacific Coast Groundfish Fishery Management Plan (PCGFMP). The measures under consideration include: additional measures to minimize incidental Chinook and coho salmon bycatch to keep fishery sectors within guidelines, changes to the total amount of Chinook salmon bycatch allowed by the trawl sectors, and development of a process for access to the Chinook salmon Reserve.

The proposed management measures were developed by the Pacific Fishery Management Council (Council) in order to address terms and conditions (T&C) 2.a and 3.b of the Incidental Take Statement (ITS) from the 2017 National Marine Fishery Service (NMFS) biological opinion (BiOp) Reinitiation of Section 7 Consultation Regarding the Pacific Fisheries Management Council's Groundfish Fishery Management Plan. These measures will amend current Federal regulations to minimize, to the extent practicable, the amount or extent of incidental take of endangered evolutionary species units (ESU) of Chinook salmon (*Oncorhynchus tshawytscha*) and coho salmon (*Oncorhynchus kisutch*) in the West Coast groundfish fishery as identified in the BiOp.

In December of 2017, NMFS completed the BiOp, which assessed the continued impact of the PCGFMP implementation on seven listed Chinook salmon and four coho salmon evolutionary significant units (ESU). The BiOp concluded the PCGFMP was not likely to jeopardize the continued existence of these ESUs. Reasonable and prudent measures (RPM), and associated T&C, were required as part of the BiOp to minimize the impacts of incidental take that is anticipated to result from implementing the action.

In the BiOp's ITS, NMFS issued six nondiscretionary RPMs and 19 associated T&Cs that the Council and/or NMFS must comply with within three years of the BiOp's issuance order to avoid reinitiation of the ESA section 7 consultation on these salmonids. The Council successfully addressed a number of these measures as part of the 2019-2020 groundfish biennial harvest specifications and management measures process; however, T&Cs 2.b. and 3.a. remained outstanding and thus require Council action.

Under T&C 2.b, the Council is required to consider developing new incidental salmon bycatch mitigation tools to allow for timely inseason management to keep the sectors from exceeding their salmon bycatch guidelines. Under T&C 3.a, the Council is to develop regulations regarding the Reserve and its use. The Reserve is a set amount of fish reserved for addressing unexpected high bycatch levels when a sector exceeds their bycatch guideline. However, this amount is not meant to be available as a matter of course as a means to allow the sectors to exceed their bycatch guidelines.

This document is a Regulatory Impact Review/Initial Regulatory Flexibility Analysis (RIR/IRFA). An RIR/IRFA provides assessments of the economic benefits and costs of the action alternatives, as well as their distribution (the RIR), and the impacts of the action on directly regulated small entities (the IRFA). This RIR/IRFA addresses the statutory requirements of the Magnuson Stevens Fishery Conservation and Management Act, Presidential Executive Order 12866, and the Regulatory Flexibility Act.

1.1 Purpose and Need

The Council adopted the following purpose and need at its April 2019 meeting to address the requirements of T&C 2.b and 3.a of the BiOp.

- The purpose of the proposed action is to develop mitigation tools to reduce bycatch of Chinook and coho salmon in the groundfish fisheries and establish a process for accessing the Reserve.
- The proposed action is needed to comply with the 2017 Biological Opinion, notably Term and Condition 2.b and 3.a and to prevent sectors from exceeding their bycatch guidelines and minimize the risk of accessing the Reserve.

1.2 History of this Action

1.2.1 2017 Biological Opinion

In December 2017, NMFS completed the BiOp and the ITS in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 as amended (16 United States Code [U.S.C.] 1531 et seq.), and implementing regulations at 50 Code of Federal Regulations (CFR) 402). This BiOp considered the impacts of continued implementation of the PCGFMP on seven listed Chinook salmon (Puget Sound, Snake River Fall, Snake River Spring/Summer, Lower Columbia River, Upper Willamette River, California Coastal) and four listed coho salmon (Lower Columbia River, Oregon Coast, Southern Oregon/Northern California and Central California) ESUs. NMFS has considered the impacts of these, and other, ESA-listed salmon from continued operation of the West Coast groundfish fishery in seven ESA consultations since 1990. In each of these consultations, NMFS concluded the proposed actions were not likely to jeopardize the continued existence of salmonid species in question. NMFS reinitiated consultation for the ESA-listed Chinook and coho salmon ESUs in 2013 due to changes to the trawl rationalization program and the re-emergence of the non-whiting midwater trawl fishery due to recovery of groundfish stocks. Prior to the completion of that consultation, reinitiation was triggered due to an unexpected high bycatch event in 2014 by the Pacific whiting fishery.

The BiOp's ITS includes six non-discretionary RPMs, with associated T&Cs. These no-discretionary measures require the Council and NMFS to minimize the amount and extent of ESA listed Chinook and coho salmon bycatch in U.S. West Coast groundfish fisheries within three years of the BiOp's issuance. These measures were to be accomplished through a combination of fishery monitoring, minimization of bycatch, mitigation measures associated with the Reserve amount of Chinook salmon considered in the event of unexpectedly high bycatch, allowing the fishery to occur at new times of year and in new areas, identifying and addressing conditions related to high salmon bycatch, and reporting and evaluation. Under the RPMS, roles and responsibilities were assigned to the Council and NMFS, to be completed separately or in coordination with the each other.

1.2.2 Completed Terms and Conditions

As part of the 2019-2020 biennial harvest specifications and management measures process, the Council completed action on T&Cs 2.a, 2.d, 2.e, and 3.c. The Council elected to delay action on 2.b and 3.a until after the biennial management process was completed to allow for further refinement and analyses of these measures by its advisory bodies.

1.2.3 Reasonable and Prudent Measure 2

RPM 2 is comprised of five T&Cs and requires the Council and NMFS to develop measures to restrict incidental bycatch of Chinook and coho salmon to within specified thresholds. RPM 2 specifies:

The Council and NMFS will review existing regulatory mechanisms for reducing salmon bycatch, and will revise these mechanisms or develop and implement new mechanisms to ensure that, should inseason data show the annual coastwide bycatch will exceed 11,000 Chinook

salmon or 474 coho salmon for the whiting sector or 5,500 Chinook salmon or 560 coho salmon for the non-whiting sector, NMFS and the PFMC will take timely and effective inseason action to avoid an exceedance of these bycatch thresholds. BiOp 2-185

The Council took action on T&Cs 2.a and 2.e as part of the 2019-20 biennial groundfish management process. Consideration of RPM 2.b was delayed until fall of 2018 due to timing and workload issues and T&C 2.c was addressed by NMFS through the 2019 Pacific whiting rule (84 FR 20578). No action was required under T&C 2.d. Under T&C 2.a, the Council examined the effectiveness of the Ocean Salmon Conservation Zone (OSCZ) and Bycatch Reduction Areas (BRA) in minimizing incidental take of salmon. They recommended to NMFS to eliminate the OSCZ as it was deemed ineffective in mitigating salmon impacts in the whiting sectors but adopted a 200 fathom (fm) BRA for midwater gear as an inseason mitigation tool that could be used to control catch of groundfish and non-groundfish, including salmon. While other BRAs exist in regulation (§660.131(e)(6) for 75fm, 100fm and 150fm, they were not previously analyzed for impacts to salmon and are therefore not available as a mitigation measure for salmon. In November 2018, the Council elected to not analyze the 75fm, 100fm, 150fm BRAs for salmon, but rather directed the Groundfish Management Team (GMT) to analyze Block Area Closures (BAC) as a mitigation tool. Therefore, the only BRA tool available to the Council for salmon mitigation is the 200 fm depth contour. While this closure may be flexible in duration, this BRA would close all waters shoreward of 200 fm coastwide.

To address T&C 2.e, the Council recommended to NMFS that all midwater trawl gear and bottom trawling, except those using selective flatfish trawl (SFFT), be prohibited within the Columbia and Klamath Salmon Conservation Zones. NMFS implemented this recommendation as part of 2019-2020 Biennial Harvest Specifications and Management Measures (83 FR 63970; December 12, 2018).

As noted above, discussion on T&C 2.b was delayed until the fall of 2018. This T&C directs the Council to consider developing additional inseason measures that will reduce the risk of a fishery exceeding its salmon bycatch guideline. These measures are to be created, if warranted, within three years of the publication of the BiOp. The goals of these measures these measures should allow for inseason implementation, in a stepwise manner to slow the bycatch of salmonids, yet allow the fishery to continue operation. Specifically T&C 2.b states:

If the Council determines that additional management measures are needed to allow for timely inseason management to keep the sectors from exceeding their bycatch guidelines, the Council will develop such measures and recommend them to NMFS within three years of the issuance of this opinion. Such measures may include, but are not limited to: sector-specific catch limits, bycatch thresholds, harvest guidelines, time and area closures, and gear restrictions. They may be described as NMFS automatic actions or Council inseason actions. BiOp, 2-187

1.2.4 Reasonable and Prudent Measure 3

RPM 3 requires the Council and NMFS to

...develop and implement regulations regarding the Reserve and its use, ensuring that the Reserve will be available only to address unexpected high bycatch levels, and it will not be available as a matter of course to allow the sectors to exceed their bycatch guidelines. BiOp, 2-185

Of the three T&Cs under this RPM, 3.a and 3.c required Council action; however, action was delayed until the fall of 2018 due to workload. T&C 3.a address the process of accessing the Reserve. The Reserve is 3,500 Chinook salmon that can only be accessed when a fishery has attained their Chinook salmon bycatch guideline and is only meant to be accessed after unexpected high bycatch events caused a

sector to exceed its bycatch guideline. Specifically, T&C 3.a. states:

The Council and NMFS shall develop and implement initial regulations governing the Reserve of 3,500 Chinook salmon as part of the 2019-2020 biennial specifications and management measures. These regulations will be designed to, among other things, allow for inseason action to prevent any exceedance of a sector guideline plus the full amount of the Reserve and minimize the chance that the Reserve is used in three out of any consecutive five years. BiOp, 2-188

To address 3.c, the Council recommended creation of two automatic authorities to require NMFS to close the whiting and non-whiting sectors if they exceeded their bycatch guidelines of 11,000 and 5,000 Chinook salmon, respectively, and the Reserve amount of 3,500 Chinook salmon or close a sector if it attains its bycatch guideline and the other sector has attained its bycatch guideline plus the Reserve. Chinook salmon NMFS implemented this recommendation as part of 2019-2020 Biennial Harvest Specifications and Management Measures (83 FR 63970; December 12, 2018).

1.2.5 Salmon Bycatch Mitigation Measures

The following list summarizes the current and pending management measures the Council has to mitigate salmon bycatch in the groundfish fishery:

Currently in Regulation

- Delaying the start of the Primary whiting season until May 15 for all sectors, north of 40° 30' North latitude (N. lat.).
- Prohibition of at-sea processing south of 42° N. lat.
- 10,000-lb trip limit restriction on targeted harvest of whiting inside 100 fathoms in the Eureka area.
- When shorebased whiting is allowed to begin fishing on April 15 south of 40° 30' N. lat., no more than five percent of the shorebased allocation may be taken prior to the opening of the main shorebased fishery on May 15.
- Groundfish bottom trawl, except selective flatfish trawl gear, and midwater trawl gear are prohibited within the nearshore Klamath and Columbia River Salmon Conservation Zone
- Altering the start of the primary whiting season based on the availability and stock status of prohibited species (e.g., salmon).
- 200-fathom BRA for whiting and non-whiting midwater trawl.
- Automatic closure of a sector when the sector's Chinook salmon take reaches the sector's threshold plus the available amount of the Reserve, and closure of the other sector following that sector's Chinook salmon take reaching the sector's threshold.
- Automatic closure of all groundfish fisheries (including the coastal treaty tribes) when the combined total take of Chinook salmon for both sectors (whiting and non-whiting) reaches the combined sector threshold (20,000 Chinook salmon) is taken.

In current Rulemaking:

- BACs for groundfish bottom trawl (*proposed in the Amendment 28 rulemaking package; expected to be available at the start of 2020*).

1.2.6 Mitigation and Management Measures Currently before the Council

At its November 2018, meeting, the Council directed the Groundfish Management Team (GMT) to examine potential management measures described in [G.8 Supplemental GMT Report 1, November 2018](#) that could be used to satisfy T&C 2.b. The measures analyzed were: BAC for midwater trawl gear, SFFT nets, recreational and fixed gear management and the at-sea whiting fleet cooperative rules. Additionally,

the GMT investigated the potential for salmon excluder nets as a potential mitigation measure for the Council to consider. The GMT was also charged to develop a draft process for Reserve access. Council requested that the GMT provide a range of alternatives (ROA) at, either, the March or April 2019 meeting. The ROA, as well as the purpose and need of this action, were developed over the winter months and delivered to the Council at its April 2019 meeting under Council Agenda Item G.3. The Council's approved ROA and the purpose and need are provided at 1.2.8. The ROA selected by the Council has six management measures for consideration.¹ These measures are summarized below and, in detail, in Chapter 2.

- **Block Area Closure for Midwater Trawl Gear** – a single action alternative to No Action to consider developing BACs for both the whiting sector and non-whiting sector's midwater trawl fisheries as a routine inseason mitigation measure to reduce the risk incidental bycatch of Chinook and coho salmon catch.
- **Extension of Block Areas Closures for all Trawl Gear to the Western Boundary of the Exclusive Economic Zone (EEZ)** – a single action alternative to No Action to consider extending any implemented BAC, for any trawl fishery for which BACs have been developed, to the western boundary edge of the EEZ.
- **Selective Flatfish Trawl Net Requirement** – a single action alternative to No Action to consider the requirement of SFFT net gear as a mitigation measure for bottom trawl vessels operating in areas of high salmonid bycatch or, potentially, in conjunction with a BAC, to reduce incidental take of salmon.
- **Pacific Whiting Cooperative Rules** – two action alternatives to No Action. Alternative 1 is to consider the development of automatic authority for NMFS to implement conforming closures of areas of high salmon bycatch as recommended to NMFS by the Pacific whiting cooperatives (co-ops) The second action alternative to No Action is to consider developing salmon mitigation plans for the whiting co-ops (shoreside, mothership, and catcher processor).
- **Automatic Authority for NMFS to Close Trawl Sectors and Preserve 500 Chinook salmon for Fixed Gear and Recreational Fisheries** – a single action alternative to No Action that would adjust total number of Chinook salmon that would close the whiting and non-whiting trawl sectors at the following amounts: non-whiting sector's midwater and bottom trawl would close at 8,500 Chinook salmon; whiting sector would close at 14,000 Chinook salmon; and all trawl fisheries would close at 19,500 Chinook salmon.
- **Reserve Access Rule** – a single action alternative to No Action to consider that in order for a sector to access the Reserve of 3,500 Chinook salmon, the Council or NMFS must apply a mitigation measure to that sector.

1.3 Incidental Take Limits for Chinook and Coho Salmon

The 2017 NMFS BiOp details the decision making process that lead to the development of Chinook and coho salmon incidental take limits (i.e., bycatch guidelines) for Pacific coast groundfish fisheries, as described in the PCGFMP The bycatch guidelines as detailed in the BiOp, are incorporated by reference; however they are summarized in this section. The BiOp details the specific bycatch guidelines by sector. It is important to note that the BiOp does not divide the fishery into management units as does the Council. The BiOp divided the fishery into two groups or 'sectors', whiting and non-whiting. The Whiting sector contains the at-sea, shoreside, and tribal whiting fisheries and the non-whiting sector

¹ [Council Action for Agenda Item G.3 ESA Salmon Mitigation Measures](#)

contains fisheries that do not target whiting bottom and midwater groundfish trawl, fixed gear, tribal non-trawl, and recreational fisheries. These elements are described in 1.5.

Chinook salmon – The total take allowed by the entire groundfish fishery in the BiOp is 20,000 Chinook salmon (Table 1.1). As Table 1.1 shows, each sector has a specific Chinook and coho salmon bycatch guideline. The whiting sector has a bycatch guideline of 11,000 Chinook salmon and the non-whiting sector has a bycatch guideline of 5,500 Chinook salmon. There is also a Reserve amount of 3,500 Chinook salmon set aside in case a fishery exceeds its guideline. Should a sector exceed its Chinook salmon bycatch guideline plus the Reserve, that sector would close. The other sector would then close upon its exceedance of its bycatch guideline in the case of unexpectedly high Chinook salmon bycatch. In the event that both sectors access the Reserve, both sectors would close upon attainment of the full 3,500 Chinook salmon Reserve.

Coho salmon – The total take allowed by the entire groundfish fishery in the BiOp is 1034 coho salmon (Table 1.1). The whiting sector’s coho salmon bycatch guideline is 474 coho salmon and the non-whiting sector’s bycatch guideline is 560. However, unlike for Chinook salmon, coho salmon have no Reserve amount and should a sector exceed the coho salmon bycatch guideline, reconsultation will be reinitiated.

Table 1.1. Bycatch guidelines by salmon species by sector.

Sector	Chinook Bycatch Guideline	Coho Bycatch Guideline
Whiting fishery a/	11,000	474
Non-whiting fishery b/	5,500	560
Bycatch Reserve	3,500	n/a
Total	20,000	1034

a/ at-sea, shoreside, tribal, and EFPs, b/ groundfish bottom trawl, midwater non whiting trawl, LE/OA fixe gear, recreational fisheries², tribal, and non-whiting EFP.

1.3.1 Whiting Sector

The whiting sector, as defined in the BiOp, has three component fisheries: at-sea (mothership/catcher vessel and catcher-processor), shoreside, and tribal fisheries. These fisheries are described in 1.5; however, in terms of salmon bycatch guidelines developed in the BiOp, they are treated as one entity that operate under a single bycatch guideline of 11,000 Chinook salmon and 474 coho salmon. The methodology for developing the bycatch guidelines for Chinook and coho salmon in the whiting sector are incorporated by reference. In short, the bycatch guidelines for this sector assume the following:

- That the distribution of bycatch will not change substantially from that described in Section 2.5.2 of the BiOp.
- That the sector will take actions to reduce bycatch to remain within the guideline of 11,000 Chinook salmon per year.
- That bycatch will not exceed 14,500 Chinook salmon per year including a Reserve of 3,500 Chinook salmon per year in the event that bycatch increases unexpectedly.
- That coho salmon bycatch will not exceed 474 coho salmon per year.

² Noting the exceptions as described in 1.2.2

Bycatch resulting from whiting exempted fishing permits (EFP) in 2018 and beyond will be included within these bycatch limits. Consultation shall be reinitiated if any of the following events occur:

- (1) The total bycatch in the sector exceeds 14,500 Chinook salmon (bycatch guideline + Reserve) or 474 coho salmon in a calendar year;
- (2) Any of the Reserve is used in three out of any consecutive five years;
- (3) The northern and/or the southern distribution of the whiting fleet changes substantially, as described in the BiOp. In particular, bycatch and bycatch rates are anticipated to be higher and more variable when the whiting fleet fishes under a southern distribution; the fleet therefore has a substantial risk of exceeding the allowable take limits without effective management measures.

1.3.2 Non-Whiting Sector

The non-whiting groundfish fishery is comprised of the bottom trawl, midwater non-whiting trawl, fixed gear, and recreational fishery sectors. Note, the recreational fisheries subject to the ITS only include those that are not accounted for in pre-season salmon modeling, which are those recreational groundfish fisheries occurring outside of the open salmon seasons and the Oregon longleader fishery (see § 660.360(d)). Any Chinook salmon bycatch in these fisheries, along with any non-whiting EFPs in 2018 and beyond, must be attributed to the non-whiting threshold, and these fisheries are subject to potential closures.

The non-whiting fishery, like the whiting fishery described above in 1.3.1, are treated as one entity and placed under a single bycatch guideline. The methodology for developing the bycatch guidelines for Chinook and coho salmon in the whiting sector are incorporated by reference. In short, the bycatch guidelines for this sector assume the following:

- That the distribution of bycatch will not change substantially from that described in Section 2.5.2.
- That the sector will take actions to reduce bycatch to remain within the guideline of 5,500 Chinook salmon per year.
- That the sector will not exceed 9,000 Chinook salmon per year, including a Reserve of 3,500 Chinook salmon per year in the event that bycatch increases unexpectedly.
- That coho salmon bycatch will not exceed 560 coho salmon per year.

Bycatch resulting from non-whiting EFPs in 2018, and beyond, will be included within these bycatch limits. Consultation shall be reinitiated if any of the following occurs:

- (1) The total bycatch of Chinook salmon in the sector exceeds 9,000 Chinook salmon (bycatch guideline + Reserve) per year;
- (2) Any of the Reserve is used in three out of any consecutive five years;
- (3) The distribution of the fleets changes substantially from that described in the BiOp. In particular, the RPMs include a precautionary measure to ensure that management proceeds cautiously if fishing effort increases in nearshore areas, during the winter months, or in the Eureka or Monterey areas where current information on bycatch, bycatch rates, and associated stock composition is extremely limited, to ensure that impacts do not exceed those analyzed in the biological opinion; or
- (4) The total bycatch in the sector exceeds 560 coho salmon per year are taken as bycatch in any year. The coho salmon guideline is based on the highest annual bycatch of coho salmon observed

in the non-whiting commercial trawl and non-trawl fisheries since 2002 combined with a buffer for uncertainty in the commercial non-trawl and recreational sectors.

1.3.3 The Reserve

Consistent with the take amounts described above, one or both of the whiting or non-whiting sectors may access some or all of the Reserve in any year. Access of the whiting and non-whiting sectors to the Reserve in any year shall not exceed 3,500 Chinook salmon. Should the Reserve be accessed three out of five years, ESA consultation will be reinitiated.

1.4 Description of Management Area

The management area for this action is the Exclusive Economic Zone (EEZ) — defined as 3–200 nautical miles from state baselines along the coasts of Washington, Oregon, and California — and communities that engage in fishing in waters off these states.

1.5 Description of Fishery

A detailed description of the fishery, how it is managed, and other related detail is available in Section 3.5 of the [2019-2020 Harvest Specifications and Management Measures Environmental Assessment](#). The [Stock Assessment Fishery Evaluation](#) provides a detailed description of the status of the fishery. The description in those documents are incorporated by reference and the following information is summarized from them.

The groundfish fishery from a management perspective generally divides the overall fishery into three components commercial, recreational, and tribal with a multitude of sub-components or sectors. The BiOp, and this document divides the fishery into two sectors, the whiting sector and the non-whiting sector. All fisheries that primarily target whiting are contained in the ‘Whiting Sector’ and all fisheries that do not primarily target whiting are contained in the ‘Non-whiting Sector.’ It is important to note that some participating vessels in the shoreside portion of the non-whiting sector will, at times, participate in whiting sector fisheries as well. The sectors, and associated fisheries are depicted in Table 1.2.

Table 1.2. Number of participating vessel, by sector and fishery, 2018. Source PacFIN

Sector	Fishery	Vessels
Whiting	Mothership	5
	Mothership Catcher Vessels	17
	Catcher Processor	9
	Shoreside	26
Non-Whiting	Bottom Trawl	66
	Midwater Trawl	24
	IFQ-Fixed Gear	17
	LE FG	136
	OA FG	753

Whiting Sector – These vessels use midwater trawl net in their operations and strictly target Pacific whiting. Within the whiting sector, there are two fishery designations within the whiting sector, at-sea

and shoreside. The at-sea fleet consists of the catcher-processor and mothership sectors. Catcher processors both catch and process whiting at sea; whereas, motherships receive and process catch supplied by catcher vessels. The shoreside fleet lands its catch at a shore-based processing plant with Westport and Ilwaco, Washington, and Astoria, Oregon, being the principal ports for shoreside landings. Multiple vessels participate as both catcher vessels in the mothership and shoreside sectors. The Makah participate in this fishery and operate both shoreside and at-sea with a mothership.

Non-Whiting – This sector of the fishery, as described in this Council action and in the BiOp, includes the non-whiting groundfish trawl (bottom and midwater trawl gear), fixed gear (hook & line, and pot gear), as well as the recreational fishery. All four Washington coastal tribes (Makah, Quileute, Hoh, and Quinault) tribes have fixed gear vessels and the Makah are active in the bottom trawl and midwater fisheries as well.

Trawl – The non-whiting trawl fishery operates under the shorebased IFQ program is comprised of two primary gear types that target groundfish: midwater trawl and bottom trawl. While trawling portfolios are made up of a variety of groundfish species, the non-whiting midwater trawl fishery primarily targets widow and yellowtail rockfish while bottom trawlers typically target sablefish, dover sole, thornyheads (i.e. the DTS complex), and other flatfish species.

Fixed gear – This sector targets groundfish via longline (hook gear) and/or pot gear. This fishery is divided between “limited entry” and “open access” from a regulatory standpoint, but fishery managers more commonly characterize a “non-nearshore” sector which primarily targets sablefish and a “nearshore” sector, which targets various nearshore groundfish species off of Oregon and California, including blue/deacon and black rockfish. Included in this designation there is category of shore-based gear switchers, trawl vessels that use fixed gear to target such species as sablefish.

Recreational fishery – This fishery primarily targets groundfish via hook and line, though some spear effort exists, from a variety of platforms. Groundfish species can be caught from shore, man-made structures, and boats; however, the primary platform for anglers targeting groundfish species are the boat-based modes. These modes are private boats and commercial passenger fishing vessels/charter boats.

Tribal Groundfish Fisheries – Treaties specify their rights to harvest federally managed groundfish in their usual and accustomed fishing areas (§660.4). Under these treaties, the tribes manage the fisheries in which their members participate. The PCGFMP details the provisions for allocations or set-asides of certain species to ensure treaty rights are implemented. Like other groundfish management on the west coast, these amounts are developed as part of the biennial harvest specification and management measure process. Tribes prosecute the fishery in much the same manner as above, in terms of vessels, gear, and target.

2 Description of Management Measure Alternatives

The management alternatives in this chapter were designed to accomplish the stated purpose and need for the action. These alternatives are designed to address T&C 2.b and 3.a from the NMFS 2017 BiOp.

The Council adopted the following range of alternatives for analysis at its April 2019 in Rohnert Park, CA. This range was developed based on recommendations from the Council's GMT, the Groundfish Advisory Sub-Panel (GAP), the public, and Council members. These recommendations included BAC, extension of BACs to the seaward edge of the exclusive economic zone, a requirement for SFFT nets, Pacific whiting cooperative rules, and creation of an automatic authority action for NMFS to be able close trawl fisheries at a level different than is regulation currently in order to preserve 500 Chinook salmon for the fixed gear and recreational sectors. There are six action alternatives that are not mutually exclusive and could be selected alone or in concert with any other options.

2.1 Block Area Closures

No Action: BACs would not be developed for use as a mitigation tool for midwater trawl fisheries.

Alternative 1: Develop BACs as a routine inseason mitigation tool for salmon bycatch in the whiting and non-whiting midwater trawl fisheries.

Discussion:

Under the No Action Alternative, the Council would not develop BACs as a means to mitigate incidental salmon bycatch by whiting and non-whiting groundfish midwater trawl gear.

If the Council were to adopt No Action, the mitigation measures for the midwater trawl fisheries would be limited to existing measures, i.e. status quo, as described above at 1.2.5. Most of these measures are already in effect and offer little flexibility. Further, non-regulatory salmon mitigation measures are also employed by the whiting sector cooperatives as voluntary avoidance measures specified in their co-op agreement plans. As Alternative 1 focuses on an inseason spatio-temporal closure tool as a mitigation measure, this document examines a comparable mitigation measure already available to the Council under No Action, the 200 fm BRA.

The 200 fm BRA would close waters shoreward of 200 fm, coastwide, to vessels using midwater trawl gear, as described at §§ 660.60(d) and 660.131(6). This measure could be applied by sector (e.g. mothership sector, non-whiting midwater trawl) and for a set duration. This BRA was analyzed and developed as part of the 2019/2020 Harvest Specification and Management Measure process as a mitigation measure for incidental salmon bycatch and is described in [Appendix C](#) of the associated Environmental Assessment.

Under Alternative 1, the Council would have the authority to develop and implement BACs through routine inseason action for midwater fisheries in the whiting and non-whiting sectors, for a specific depth range, latitudinal range, and duration as a means to address salmonid bycatch. BACs were initially developed under Amendment 28 for the bottom trawl fishery as defined at § 660.11). This process is detailed in the Draft Environmental Impact Statement (DEIS) for Amendment 28 (PFMC 2019). They are areas closed to fishing bounded by commonly used latitude lines and depth contour approximations as described in Federal regulations at 50 CFR §660.11 and 71-74.

Table 2.1. Depth contours and latitudes in regulation by region that can be used to define the size and boundaries of block area closures.

State	Boundary Lines Approximating Depth Contours (50 CFR 660.71-74)	Commonly Used Geographic Coordinates (50 CFR 660.11)
Washington (WA)	10 fm, 20 fm, 25 fm, 25 fm modified, 30 fm, 50 fm, 60 fm, 75 fm, 100 fm, 125 fm, 150 fm, 150 fm modified, 180 fm coastwide, 200 fm, 200 fm modified, 250 fm, 250 fm,	Tribal U&A; outside action area
		U.S./Canada Border, Northern bound of EEZ
		Cape Alava, WA—48°10.00' N. lat.
		Queets River, WA—47°31.70' N. lat.
		Pt. Chehalis, WA—46°53.30' N. lat.
WA/OR Border		Leadbetter Point, WA—46°38.17' N. lat.
		Columbia River—46°16.00' N. lat.
Oregon (OR)	20 fm, 25 fm, 25 fm modified, 30 fm, 40 fm, 50 fm, 60 fm, 75 fm, 100 fm, 125 fm, 150 fm, 150 fm modified, 180 fm coastwide, 200 fm, 200 fm modified, 250 fm, 250 fm	Cape Falcon, OR—45°46.00' N. lat.
		Cape Lookout, OR—45°20.25' N. lat.
		Cascade Head, OR—45°03.83' N. lat.
		Heceta Head, OR—44°08.30' N. lat.
		Cape Arago, OR—43°20.83' N. lat.
		Cape Blanco, OR—42°50.00' N. lat.
		Humbug Mountain—42°40.50' N. lat.
		Marck Arch, OR—42°13.67' N. lat.
OR/CA Border		Oregon/California border—42°00.00' N. lat.
California (CA)	30 fm, 40 fm, 50 fm, 60 fm, 75 fm, 100 fm, 125 fm, 150 fm, 150 fm modified, 180 fm coastwide, 180 fm California, 200 fm, 200 fm modified, 250 fm, 250 fm	Cape Mendocino, CA—40°30.00' N. lat.
		North/South management line—40°10.00' N. lat.
		Cape Vizcaino, CA—39°44.00' N. lat.
		Point Arena, CA—38°57.50' N. lat.
		Point San Pedro, CA—37°35.67' N. lat.
		Pigeon Point, CA—37°11.00' N. lat.
		Ano Nuevo, CA—37°07.00' N. lat.
		Point Lopez, CA—36°00.00' N. lat.
		Point Conception, CA—34°27.00' N. lat.

The BAC tool allows the Council to implement size variable area closures to address specific areas and depths of high bycatch rather than large fixed closure areas (e.g. BRA). As multiple analyses by the GMT show (e.g., Agenda Item G.8.a, Supplemental GMT Report 1; November 2018, Agenda Item G.3.a, GMT Report 1, April 2019, etc.) the BAC tool could allow the Council to design specific area closures as opposed to the fixed size of the 200fm BRA. The clear difference between the BAC and the BRA is the BAC tool would allow the Council to set the depth and latitudinal ranges; whereas, the 200 fm BRA is a set depth range from 200fm to shore and coastwide (i.e. Mexico border to Canada border). The BAC would allow the fishery to continue in other latitudes and depth ranges thus both mitigating salmon bycatch and minimizing potential economic losses. Key differences between a BAC and the 200 fm BRAs are shown below in Table 2.2.

Table 2.2. Summarized key differences between the 200 fathom Bycatch Reduction Area (BRA) and Block Area Closure (BAC)

	Depth Range	Latitudinal Range	Duration
BAC	0-200 fm	Coastwide	Flexible
BRA	Flexible, based on depth contours in regulation	Flexible, based on commonly used latitude lines in regulation	Flexible

Implementation of a BAC is intended to occur through routine inseason action under the Council’s agenda item; however, a BAC could also be developed as a mitigation measure during the harvest specifications and management measures process should conditions warrant such action. As stated, the Council has expressed their main focus of this tool is for inseason action. A potential process under inseason could be as follows. The Council would be briefed by its groundfish advisory bodies on the extent and amount of incidental salmon bycatch by species in the midwater trawl sectors (whiting and non-whiting) during the inseason agenda item at the Council meeting. If the Council were to determine a BAC was needed, the Council could configure it based on geo-spatial information provided by their groundfish advisory bodies, which detailed the spatial extent of the salmon bycatch hot-spots. Based on these data, the Council could either recommend that NMFS implement a specific BAC as soon as possible if a bycatch guideline was likely to be exceeded or recommend that NMFS automatically implement a BAC between meetings, if a specific salmon threshold is reached. The Council would need to specify the duration and sector(s) eligible for automatic action as automatic actions are non-discretionary.

2.2 Extension of Block Area Closure for All Trawl Gear to the Western Boundary of the Exclusive Economic Zone

No Action. The Council would not be able to extend any BAC³ boundary beyond the 250 fm depth contour, as defined at 50 CFR §660.71-74, seaward to the western boundary of Exclusive Economic Zone (EEZ) for vessels using bottom or midwater trawl gear.

Alternative 1: Create regulation to allow for the extension of any BAC seaward to the western boundary of the EEZ.

³ It is important to note that that BACs are not yet available as a mitigation tool for vessels using bottom or midwater trawl gear (as of August 31, 2019). They will become available as an inseason mitigation tool for groundfish and salmon bycatch in the bottom trawl fishery once the final rule for Essential Fish Habitat / Rockfish Conservation Area (EFH/RCA) is published. BACs for the midwater fishery, as described above, are contingent on the Council adopting them through this salmon mitigation process. Though should the Council adopt BACs for the midwater fisheries, this alternative would be applicable if adopted.

Description:

Under No Action, the deepest the Council could set a BAC would be the 250 fm depth contour as, at present, 250 fm is the deepest depth contour in regulation (50 CFR §660.71-74). At present, under Amendment 28 DEIS, BACs will only be applicable to bottom trawl. Should the Council elect to adopt BACs for midwater trawl as detailed above, they also would be limited to 250 fm.

While salmon bycatch rates are generally low in depths greater than 250 fm for trawl fisheries (as detailed by the GMT in [Agenda Item G.8.a, Supplemental GMT Report 1, November 2018](#), [Agenda Item G.3.a, GMT Report 1, April 2019](#)), salmon distribution is known to extend into those depths. If incidental bycatch events occur, the Council would be constrained to the 250 fm depth contour as the seaward boundary for a BAC.

Under Alternative 1, the Council could extend the seaward extent of a BAC (for gear types in which a BAC is an eligible mitigation measure) to the western boundary of the EEZ. The intent of this alternative is for the Council to be able to address incidental salmon bycatch in depths greater than 250 fm. This measure does not create a new BAC but, rather, could extend a BAC to the western boundary of the EEZ.

If Alternative 1 is adopted, this line could be used as a boundary for implementing a BAC for an applicable gear type. The process of extending a BAC would be the same implementation process as described under 2.1 above.

2.3 Selective Flatfish Trawl Net Requirement

No Action: Selective Flatfish Trawl (SFFT) nets would not be an available mitigation tool to address salmon bycatch in the groundfish bottom trawl fishery except in areas already specified under regulation.

Alternative 1: SFFT nets would be available for use as a routine inseason mitigation tool to address salmon bycatch in the groundfish bottom trawl fisheries.

Discussion

Under No Action, the Council would not create an option to require bottom trawl vessels to use SFFT nets as a salmon mitigation tool except as described at §660.130(c) (i and iii). Use by bottom trawl vessels in areas other than specified in the aforementioned regulation would be on a voluntary basis.

The Council considered and approved of this net type as a potential incidental salmon bycatch reduction device in the recent past. With implementation of the Council's trawl gear rule,⁴ SFFT nets are now only required for bottom trawl vessels fishing shoreward of the current trawl Rockfish Conservation Area (RCA) – 100 fathom depth contour– between 40° 10' and 42° N. lat.⁵ and inside the Klamath and Columbia Salmon Conservation Areas. These nets are assumed to reduce bycatch capture based on joint GMT/NMFS analyses, as detailed in pages 4-79 of the Final Environmental Assessment Trawl Gear Regulations (NMFS, 2018) and as explored in King et al. (2004) and Hannah et al (2005).

Under Alternative 1, the Council would be able to require SFFT nets for all depths for the bottom trawl fishery under routine inseason action. Additionally, as noted [Agenda Item G.3.a, GMT Report 1, April 2019](#), the GAP has stated their interest to have a hybrid option for mitigating salmon for bottom trawl.

⁴ 83 FR 62269. Magnuson-Stevens Act Provisions; Fisheries Off West Coast States; Pacific Coast Groundfish Fishery; Groundfish Bottom Trawl and Midwater Trawl Gear in the Trawl Rationalization Program

⁵ In 2019, bottom trawl vessels enrolled in the trawl gear EFP are exempted from using SFFT gear between 40° 10 N. lat. and 42° N. lat. shoreward of 100 fathoms.

Wherein, vessels could fish with a SFFT in a BAC. To address this interest, the Council could consider implementation of SFTTs in conjunction with another salmon mitigation measures, such as a BAC. Similar to the above measures, the Council could take action to implement a SFFT requirement under the Inseason agenda item and consider information provided by its groundfish advisory bodies regarding extent and amount of salmon bycatch in the bottom trawl fishery.

2.4 Pacific Whiting Cooperative Agreements

No Action. The Council would be limited to current mitigation measures available in regulation for the Pacific whiting trawl fishery.

Alternative 1: Develop automatic actions that requires NMFS to close a specific area to the whiting fishery, or a specific whiting sector, based on information provided to the Regional Administrator, or designee, by the executive director of each whiting cooperative.

Alternative 2: Develop regulations to allow the whiting sector cooperatives to develop salmon mitigation plans.

Discussion

The at-sea and shoreside whiting cooperatives (co-op) have developed a self-management system that governs their effort and is based targeting whiting while mitigating incidental bycatch, including salmon. In general, this system requires consistent communication between all parties directly involved with the fishery (e.g., vessel operators, co-op board members, etc.) both within and amongst the fisheries in the whiting sector. Each co-op, through their management structure, reviews daily catch reports, obtains information from vessels fishing, and decides where their fleet should fish in order to find sufficient whiting schools while avoiding bycatch. Additionally, the co-op governance systems requires vessels to abide by the co-op's rules and, if warranted based on those rules, can implement vessel-level accountability measures. This system allows the industry the opportunity to mitigate bycatch concerns in a rapid manner through a suite of bycatch avoidance methods (e.g. 'move-along rules,' area closures, etc.).

Under No Action, the Council would be limited to mitigation measures in regulation to address salmon bycatch in the whiting sector. Efforts to avoid salmon bycatch by the whiting co-ops could remain status quo, (i.e., voluntary) and they could continue to adopt self-imposed mitigation measures on their vessels. However, the sector would still be subject to mitigation measures implemented by NMFS or the Council slow bycatch and/or to access the Reserve.

Alternative 1 would develop an automatic authority action which would mirror action already taken by a co-op to mitigate salmon take through an area closure. The trigger for the automatic authority would be official written or electronic notification from the co-op manager, or other designee, to the NMFS's West Coast Regional Administrator, or designee, that they have voluntarily closed an area due to high salmon bycatch and request an automatic action to conform to the closure. The request will need to specify the area to be closed, the impacted whiting fishery, and the effective time period. Closures would, additionally, require a temporal component to be defined as well. The automatic action closure and re-opening could be announced through a public notice. Council action would not be required and NMFS would not have the discretion to alter the closed area suggested by the co-ops. For non-co-op shoreside whiting vessels members, those vessels would be subject to the conforming closures.

As there are several ways that this alternative could be configured, this document outlines some potential options for Council consideration. This list of options is purely to stimulate Council discussion, and other options could be developed if the Council chooses to move forward with this alternative.

Option A - Closed areas would directly mirror the types of small area closures currently employed by the co-ops. These areas may be of non-uniform shape and size and may border previously defined closed areas by the co-ops.

Option B - An area around a high salmon bycatch point or points would be closed. A circular zone would be drawn to extend a set distance (e.g. 15 nm) from the center of the high bycatch point(s). The closed area would then be defined by a polygon drawn outside, but tangential to the circular buffer zone(s). The latitudinal and longitudinal coordinates of the polygon would then be identified. This option is based on the dynamic area management (DAM) program implemented in the Northeast from 2002-2009 to protect unexpected aggregations of right whales (67 FR 1133; January 9, 2002). When a trigger was met, lobster trap/pot and anchored gillnet fishing were temporarily restricted in a designated DAM area.

Option C - The co-ops suggest an area using existing regulatory lines, such as those in Table 2.1.

All of these options come with various impacts that will be further discussed below in section 3.6.4.3.

Alternative 2 was based on the central premise of the Incentive Plan Agreements (IPAs) in the Bering Sea pollock sectors (Inshore, Mothership, and Catcher Processor), which provide incentives for participants to reduce Chinook salmon bycatch. IPAs were implemented in the North Pacific as a part of Amendment 91 and have been required since 2011. These contracts create incentives to avoid salmon bycatch by 1) restricting the pollock fishing opportunities of vessels with poor Chinook salmon bycatch performance but 2) allowing vessels with good bycatch performance less restricted access to pollock fishing grounds. The incentive is, therefore, based on vessel performance. Those vessels with good performance (i.e., low bycatch) may have more access to productive fishing grounds where the risk of bycatch is higher; however, the vessels performance in the past suggests it can avoid bycatch in these areas. The IPAs can be revised by submitting amendments to NMFS for approval.

Through discussions with whiting co-op representatives, GMT members, and NMFS staff, it appears incorporating a salmon mitigation plan (SMP) into the existing at-sea (Catcher Processor and Mothership) co-op agreement approval processes may be preferable to a stand-alone IPA-type agreement. The description of Alternative 2 was updated from the initial range of alternatives language to remove the reference to development of an IPA. Under this design, the co-op plan would need to describe the measures by which the co-op would minimize Chinook salmon bycatch, the process through which the measures would be applied, and the process for accessing the Reserve. This SMP would need to be approved by NMFS. The SMP would include a general description of the tools and measures the co-op would use to minimize Chinook salmon bycatch. In 2.4.1, current voluntary mitigation measures used by the co-ops are summarized. The co-op SMP could be included as part of the permit application package (application form, annual report, co-op agreement), which is submitted to NMFS between February 1 and March 31 annually.

The shoreside co-op is not under the same management regime as the at-sea co-ops. It operates under the shorebased IFQ program and as such, may require a different process to meet the same management methods as the at-sea fishery. However, based on discussions with NMFS staff and the co-op members, the shoreside co-op could submit a SMP in a similar process to the at-sea co-op agreements detailed above.

The 2017 BiOp requires NMFS and the Council take action to avoid an exceedance of the whiting sector salmon bycatch guideline prior to allowing access to the Reserve. Under this alternative, the action would be NMFS' approval of the SMP. For the at-sea sectors, the SMP may require additional specificity to mitigation measures and internal governance policies to their annual co-op agreement; whereas, for the

shoreside sector, it would be a standalone plan. If one or more of the co-ops submits and follows the SMP, then the whiting sector as a whole would have access to the Reserve in the case of unexpected high bycatch. Additionally, while there are a few vessels that are not official members of the shoreside whiting co-op, these vessels would also be allowed access to the Reserve. Based on conversations with industry, these non-co-op vessels do participate in information sharing with other vessels while fishing and some of the unaffiliated vessels also participate in the mothership co-op; therefore, while not direct members of the co-op, these vessels likely participate in similar salmon mitigation measures. Ultimately, NMFS would retain the authority to close a whiting fishery prior to accessing the Reserve should the co-op not adhere to its SMP.

2.4.1 Reporting Requirements Considerations for Alternative 2

If Alternative 2 was selected, the Council may need to consider the elements that they would want to have as requirements in the framework for the salmon mitigation plan. This framework would ensure that there is a sufficient mitigation plan in place to meet the T&Cs of the 2017 BiOp but also allow for flexibility for the co-ops to react inseason to variable conditions quickly.

An additional requirement that could be a part of the SMP would be a post-season report on the effectiveness of the salmon mitigation measures employed in the previous fishing year. Currently, the mothership and CP co-ops are required to submit an annual report by March 31 of each year in order to receive that year's co-op permit. As described in 660.113, annual reports must include:

1. The sector's annual allocation of Pacific whiting;
2. The co-op's actual retained and discarded catch of Pacific whiting, salmon, Pacific halibut, rockfish, groundfish, and other species on a vessel-by-vessel basis;
3. A description of the method used by the co-op to monitor performance of co-op vessels that participated in the fishery;
4. A description of any actions taken by the co-op in response to any vessels that exceed their allowed catch and bycatch; and
5. Plans for the current year's co-op fishery, including the companies participating in the cooperative, the harvest agreement, and catch monitoring and reporting requirements.

Examples from the 2018 fishing year (submitted in 2019) can be found for the CP sector at [Supplemental Information Report 5](#), April 2019 and the MS sector at [Supplemental Information Report 6](#), April 2019. While there are current requirements regarding salmon, if the Council chooses Alternative 2, the post-season reporting component of the SMP could include additional information such as salmon bycatch minimization measures implemented (pre-season and in-season) and the effectiveness of those measures. While the shoreside whiting co-op currently is not subject to this reporting requirement, members have stated that they would be willing to submit a similar annual report on the timeline for at-sea sectors.

Whatever process is ultimately adopted, the Council would still be able to check-in on the status of salmon bycatch in the whiting sectors throughout the year. Under the inseason agenda item, the GMT provides a salmon scorecard of the total catch of salmon by each sector. If a sector or sectors were to have high bycatch, the Council could recommend additional inseason measures as needed to manage to the salmon bycatch guideline for the whiting sector. These in-season measures could be specific to at-sea and/or shoreside. Additional check-ins could be scheduled as needed, at a specified number of Chinook salmon caught, or a certain percentage of the Chinook salmon bycatch guideline is reached.

2.4.2 Salmon Bycatch Mitigation Methods employed by Whiting Cooperatives

The following is a summary of the current tools used by the co-ops to mitigate salmon impacts. This list was developed in discussions with industry and is not intended to be a complete list of potential measures used by the co-ops in their operations, but to provide the Council with a general overview of the tools employed, at present, by the co-ops.

Information Sharing

One of the primary tools that the whiting sectors use to mitigate salmon bycatch is through information sharing. Each of the co-ops work with Sea State, Inc. to analyze vessel monitoring system (VMS) data and observer data in real time. Sea State is able to produce daily reports for each co-op, develop hot spot guidance, and assist in data distribution. Additionally, industry has repeatedly stated that co-op managers and vessel captains are in consistent communication within and amongst the co-ops to share information to reduce incidental bycatch interactions.

Area Closures

Co-ops implement area closures based on haul level bycatch data and other reportable information. Closures can be developed for pre-season implementation based on historical data while others are implemented inseason. As described under Alternative 1, these area closures are time variable, and could be in place for the entire year or for a few weeks. Co-ops use test tows in closed areas to determine if the area can be reopened for fishing.

Movement Rules

Movement rules are a core mitigation measures employed by co-ops to react to increased salmon bycatch. If a haul has a high bycatch rate, the co-op rules may require the vessel to relocate to different fishing grounds where the bycatch rate is projected to be lower. This information is shared with other co-ops and vessels so they fish in areas where they may incur high bycatch of Chinook salmon.

Excluders

Salmon excluders net types operate under the same principle as SFFT's as "they all take advantage of the ability of stronger swimming fish, such as salmon, to find escape routes while slower swimmers such as Pacific whiting and walleye pollock get swept into the cod end" ([Agenda Item G.3.a, GMT Report 1, April 2019](#)). Developing salmon excluders as a mitigation measure in regulation was considered by the Council, but rejected in the final ROA. However, these nets are used by vessels in the co-ops and their performance as a mitigation device is tested by the co-ops on a regular basis. Each co-op has different rules regarding the use of salmon excluders. For example, the CP fishery requires their use when practicable, particularly within 200 fathoms where salmon bycatch is known to be high.

Internal Chinook Guidelines

Given the different structures of each of the co-op, each has a slightly different way of limiting the total amount of Chinook salmon that a vessel/company/pool may take in a given time period. For example, the MS sector operates in seasonal pools. Each pool is temporarily limited on the total number of Chinook salmon that can be caught and if a pool reaches the Chinook salmon limit before achieving the whiting allocation for that pool, then the Co-Op agreement states that the pool will cease fishing.

2.5 Create an Automatic Authority for NMFS to Close Trawl Sectors

No Action. The Council will not develop an action to preserve 500 Chinook salmon for the fixed-gear and recreational sectors. Instead, the only automatic action authority in regulation would be the one which would close, one or both, the whiting and the non-whiting sector of the groundfish fishery upon that sector having exceeded its annual Chinook salmon bycatch guideline and the Reserve.

Alternative 1: Develop an automatic action authority that would close the trawl sectors as follows:

1. Close the bottom and mid-water trawl sectors upon attainment of 8,500 Chinook salmon
2. Close the whiting sectors upon attainment of 14,000 Chinook salmon
3. Close all trawl fisheries upon attainment of 19,500 Chinook salmon

Discussion

Under No Action, the Council would not develop an automatic authority in regulation to adjust Chinook salmon bycatch closure amounts in the whiting sector and the non-whiting trawl-gear specific fisheries (i.e., bottom and midwater groundfish trawl) and, therefore, not preserve 500 Chinook salmon for the fixed gear and recreational sectors.⁶ The closure points for the whiting and non-whiting sectors would remain as specified at §660.60(d)(1)(v): whiting sector at 14,500 Chinook salmon; 9,000 Chinook salmon for the non-whiting sector; and a total closure of all fisheries at 20,000 Chinook salmon (refer to Table 1.1).

Under Alternative 1, the Council would create an automatic action authority to adjust the Chinook salmon bycatch closure attainment amounts in the whiting sector and the bottom and midwater trawl fisheries of the non-whiting sector. This action would also create automatic authority to close all trawl fisheries a specified attainment amount.

This action alternative would adjust the overall Chinook salmon bycatch amounts currently specified at §660.60(d)(1)(v) by 500 Chinook salmon. These adjustments would be specific to trawl fisheries only. The new closure point for the whiting sector would be 14,000 Chinook salmon and 8,500 Chinook salmon for the non-whiting sector's bottom and midwater trawl fisheries, with a total closure of all trawl fisheries at 19,500 Chinook salmon. The intent of this action is to preserve a fixed amount of 500 Chinook salmon to help ensure that should the trawl fishery take 19,500 Chinook salmon, fixed gear and selected recreational fisheries remain open. All fisheries would still close at 20,000 Chinook salmon.

Rationale for these three new closure points are as follows. The ITS specifies that all the non-whiting fisheries would close if the 5,500 non-whiting threshold plus the 3,500 Reserve were taken, the first automatic closure would close the bottom and mid-water non-whiting fisheries at 8,500 to ensure that 500 would remain for fixed gear and recreational fisheries. A second automatic closure would be needed to close the whiting fisheries at 14,000 to ensure they leave at least 500 of the Reserve; if they took the full Reserve and non-whiting trawl took the full nonwhiting guideline then the fixed gear and select recreational fisheries would close. These first two closures points would prevent closures from either trawl fishery, but a third automatic closure would be needed to prevent both the whiting and non-whiting trawl sectors both combining to take the full Reserve. This would result in a closure of all groundfish fisheries since non-whiting would be above their guideline and the full Reserve would be taken. To prevent this from happening, all trawl fisheries would have to be closed at 19,500. All groundfish fisheries would be closed at 20,000 Chinook salmon.

⁶ As a reminder, the recreational fisheries are those not accounted for in pre-season salmon modeling (i.e., bottomfish outside the salmon seasons and Oregon longleader fishery); therefore, any recreational groundfish fisheries occurring *during* the salmon season, and therefore accounted for, would not be subject to a closure under No Action or Alternative 1 – § 660.360(d))

2.6 Reserve Access Rule

No Action: The Council does not recommend a process for accessing the Reserve be developed in regulation.

Alternative 1: A sector may only access the Reserve if the Council or NMFS has taken action to minimize Chinook salmon bycatch in that sector prior to it reaching its Chinook salmon bycatch guideline.

Under No Action the Council would not adopt a mechanism for a fishery sector to access the Reserve of 3,500 Chinook salmon. This alternative would be out of compliance with T&C 3.a of the Incidental Take Statement in the 2017 BiOp.

Under Alternative 1, the intent of this alternative is the Council or NMFS must apply a mitigation measure, or measures, to a sector that is approaching its Chinook salmon bycatch guideline before access to the Reserve can be authorized. T&C 3.c. states that if a sector is anticipated to exceed its guideline, then the Council and NMFS will take action to prevent that guideline from being exceeded. Any mitigation measure available to the Council or NMFS, for the specific purpose of minimizing Chinook salmon bycatch by a sector, would satisfy this alternative's requirement. Thus, should the mitigation measure(s) fail, and the sector exceed its bycatch guideline, the sector would have access the Reserve. Alternative 1 would therefore meet both T&C 3.a. and 3.c. The current mitigation measures available in regulation that would meet the need of T&C 3.c. are the 200 fm BRA for midwater trawl or a BAC for bottom trawl (pending implementation). Additional inseason mitigation measures are under consideration in this action.

The process of reviewing a sector's incidental Chinook salmon bycatch relative to the sector's guideline would occur in the course of normal Council business under the Groundfish Inseason Agenda Item. The Council would be briefed by the GMT as the amount of Chinook salmon take by sector and/or subsector. This information would be made available the Council, and the general public, in two forms. The first would be via the GMT's Inseason report submitted to the Council and the second method of reporting will be through a "Salmon Report Card." This information is available through the Pacific Fishery Information Network (PacFIN) via APEX reporting system website as [Table IFQ022](#) – combined Sector Salmon Bycatch ESA Report (Table 2.3). This report details the incidental bycatch amounts of Chinook and coho salmon, by sector and is updated on a regular basis.

Table 2.3. Example of the Chinook salmon bycatch (number of fish) “Report Card” by sector and fishery the GMT presents at Council meetings. Source: Data from PacFIN Apex report [IFQ022](#)

Sector	Fishery	Catch	Threshold	% of Threshold
Whiting	CP	2,951	11,000	65%
	MS	2,572		
	Shoreside	1,605		
	Tribal	<i>confidential</i>		
	<i>Total</i>	<i>7,128</i>		
Non-Whiting	Bottom Trawl	333	5,500	17%
	Midwater Trawl	100		
	Fixed Gear	500 a/		
	WA Rec			
	OR Rec + longleader			
	CA Rec			
	<i>Total</i>	<i>933</i>		
All groundfish fisheries	8,061	20,000	40%	

a/ GMT proposed assumption of mortality, which assumed maximum historical mortality (154) plus a 250 fish buffer from the 2017 BiOp and an additional 96 fish to account for some uncertainty in recreational salmon seasons; recreational estimates only applies to groundfish fisheries occurring outside of salmon seasons

2.7 Alternatives Considered but not Analyzed Further

The Council considered the inclusion of another action alternative that would have developed salmon excluders for whiting vessels as a routine management measure. Salmon excluder nets are specialized nets that are designed to allow for salmon to escape capture but yet retain a vessel’s target species, Pacific whiting. The Council noted voluntary use of this net by the whiting fishery does occur, but elected to not consider the development of the excluders as a routine mitigation measure at this time. While this type of net has been shown to be effective, notably in Alaskan midwater fisheries, the design of excluder nets and their relative efficacy can vary greatly. Based on industry input, it became clear that there was no one style of excluder net that had been robustly tested for West Coast fisheries and to potentially require these net types at this point would likely not achieve the desired effect the Council envisions for effective salmon mitigation. The Council understood there may be potential benefits in the use of salmon excluder nets for the whiting fishery. However, rather than require a device that may be ineffective and difficult to enforce, they encouraged further research and design improvements of the nets. New information that results from this research could then be brought back before the Council for consideration at a later date.

The Council also considered developing automatic action authority BACs as a mitigation measure for midwater gear. Historically, these sectors (whiting and non-whiting) have been the source of high incidental bycatch of Chinook salmon. After consideration of the improvements in reporting requirements (24 hours or less) and overall changes to the fishery including increased awareness by industry, the Council determined the better option would to develop BACs as a routine management measure. The Council agreed that inseason action would give them the flexibility to appropriately tailor solutions to the situation at hand, rather than using rigid automatic actions that are set in regulation.

2.8 Comparison of Alternatives

Alternative	Description/Key differences	Effects on Salmon Bycatch	Impact to Industry
Block Area Closure			
No Action	<p>Council could only use existing mitigation measures for vessels using midwater trawl gear. See 1.2.5</p> <p>The comparable mitigation measure to Alternative 1 is the 200 fm BRA.</p> <p>This BRA duration can be adjusted but size is fixed, shore to 200 fm, coastwide.</p> <p>BRAs can be implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure.</p>	<p>Salmon bycatch in the 200fm BRA could not occur while the BRA was implemented</p> <p>Salmon in waters outside the 200fm depth contour could be caught incidentally.</p>	<p>Majority of midwater trawl effort is within the 200fm BRA.</p> <p>Total impact to the sector(s) affected could be high, refer to Table 3.7 for estimations of monthly revenue by sector</p> <p>Impacts to vessels that can fish in deeper than 200fm would relate to the presence/absence of target species in those depths at the time of year a BRA was implemented, etc.</p>
Alternative 1	<p>Council could develop specific area closures based on depth and latitude lines found in existing regulation</p> <p>BACs implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure</p> <p>Areas of known bycatch could be closed rather than the entire coast like the 200fm BRA.</p> <p>Multiple BACs could be implemented</p>	<p>Salmon bycatch in the specified BAC could not occur while the BAC was implemented.</p> <p>Salmon outside the BAC could be caught incidentally.</p> <p>BACs may close ‘hot spot’ areas, thus reducing risk of bycatch where salmon presence is highest.</p>	<p>Areas outside the BAC could be fished, potentially offsetting impacts.</p> <p>Any potential offset of impacts would be relative to factors such as the presence/absence of target species in non BACs, the ability of the vessel to travel to open areas, market demand for species in open areas, etc.</p>

Extension of Block Areas Closures for all Trawl Gear to the Western Boundary of the Exclusive Economic Zone			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Effects on Salmon Bycatch</i>	<i>Impact to Industry</i>
No Action	<p>BACs, for all trawl gear, would be limited to a depth of 250 fm.</p> <p>Vessels could fish beyond the seaward edge of any BAC to the EEZ</p> <p>Unexpected high bycatch events (i.e., lightning strikes) in depths greater than 250 fm could not be addressed through BAC</p>	Salmon found in depths greater than 250 fm could still be subject to incidental bycatch	<p>Vessel effort in depths greater than 250fm at present.</p> <p>Vessels that cannot fish in those depths would not be impacted.</p>
Alternative 1	<p>BACs for all trawl gear sectors could be extended to the western boundary of the EEZ.</p> <p>Extension of a BAC would be implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure.</p>	<p>Salmon bycatch in the specified BAC could not occur while the BAC was implemented.</p> <p>Salmon outside the BAC could be caught incidentally.</p> <p>BACs may close ‘hot spot’ areas, thus reducing risk of bycatch where salmon presence is highest.</p>	<p>Extension of a BAC to the EEZ would impact those vessels that can fish in depths greater than 250 fm.</p> <p>However, as described above in the BAC section, vessels impacted by the extended BAC could elect to fish in other areas that remained open.</p> <p>Moving to other fishing grounds could increase operational cost to vessel, however, those costs could be mitigated by resulting opportunities in different fishing grounds.</p>
Selective Flatfish Trawls (SFFT) for the Bottom Trawl Sector			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Salmon bycatch effects</i>	<i>Impact to Industry</i>
No Action	<p>Council could not require SFFT in areas not specified at §660.130(c) (i and iii) – <i>SFFT nets are required for bottom trawl vessels fishing shoreward of the current trawl Rockfish Conservation Area (RCA) – 100 fathom depth contour– between 40°10’</i></p>	No benefit to salmon in areas not specified at §660.130(c) (i and iii).	Economic impact would remain as a cost of net purchase and operational use for those vessels that fish in areas specified at §660.130(c) (i and iii) as well as any vessel that voluntarily elected to purchase a net.

	<p>and 42° N lat. and inside the Klamath and Columbia Salmon Conservation Areas.</p> <p>Voluntary SFFT use could continue in areas not specified</p>		<p>However, vessels that fish where SFFT nets are required are likely to own them</p>
Alternative 1	<p>Council could require use of SFFT inseason, as a stand-alone fishery-wide measure or in conjunction with and area closure, such as a BAC.</p> <p>SFFT nets are gear-specific to bottom trawl.</p> <p>SFFTs could be implemented via routine groundfish inseason action</p>	<p>Potentially reduce incidental salmon bycatch by bottom trawl vessels.</p> <p>Benefits could vary depending on the overall effectiveness of the SFFT net in reducing salmon bycatch, location, area size, and duration of the requirement.</p>	<p>Impact on vessels that possess a SFFT net would be low</p> <p>Vessels needing an SFFT would be impacted by the cost (>\$10,000)/net, revenue lost due to not fishing, etc.</p> <p>Communities (net builders) would be positively impacted by purchases of SFFTs.</p>
Pacific Whiting Cooperative Agreements			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Effects on Salmon Bycatch</i>	<i>Impact to Industry</i>
No Action	<p>The Council would be limited to existing mitigation measures (e.g., 200 fathom BRA) for the Pacific whiting trawl fishery.</p> <p>Co-ops could continue to use voluntary mitigation measures, but would not meet the condition that NMFS or the Council must take action before a sector is allowed access to the Reserve</p>	<p>No effect. Voluntary co-op measures are assumed to continue.</p>	<p>Impact to the fleet would a loss in fishing opportunity and associated revenue if they were unable to access the Reserve in a high bycatch year. If another mitigation measure was implemented to meet T&C 3a, such as the 200 fathom BRA, this would result in the impacts described above.</p> <p>Dependent on size, location, length of time implemented, and ocean conditions.</p>
Alternative 1	<p>Develop automatic actions that requires NMFS to close a specific area to the whiting fishery, or a specific whiting sector, based on information provided to the Regional Administrator, or designee, by the executive director, or designee, of each whiting cooperative.</p>	<p>Dependent on size, location, length of time implemented, and ocean conditions. May reduce salmon impacts or could inadvertently shift fishing effort into a higher bycatch area.</p>	<p>Impacts would likely be similar to No Action as Alternative one would formalize time/area closures developed by the industry. Impacts could potentially change based if the closure time/area is altered over time.</p>

Alternative 2	<p>Develop regulations to allow the whiting sector cooperatives to develop salmon mitigation plans.</p> <p>These salmon mitigation plans would detail the tools and strategies that the co-ops would use to mitigate salmon bycatch during the fishing season. An annual report may also be required described the efficiency of those tools in the previous year</p>	Based on the assumption that this would formalize the voluntary measures the co-ops are already utilizing, it would be the same as No Action.	Little to no administrative costs to industry or government. Likely less cost than No Action to industry as would be able to access the Reserve without more blunt mitigation measures being implemented (e.g., 200 fathom BRA).
Development of Reserve Rule Provision			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Effects on Salmon Bycatch</i>	<i>Impact to Industry</i>
No Action	<p>The Council would not recommend a process to access the Reserve be developed in regulation.</p> <p>This alternative would be out of compliance with the 2017 BiOp</p>	No benefit to salmon. The 20,000 Chinook salmon could still be caught as incidental bycatch.	No impact. The sectors would operate under existing automatic closure regulations. Whiting 14,000 Chinook salmon, Non-Whiting 8,000 Chinook salmon, Total Chinook salmon 20,000
Alternative 1	A sector could only access the Reserve if the Council or NMFS has taken action to minimize Chinook salmon bycatch in that sector prior to reaching its Chinook salmon bycatch guideline.	No benefit to salmon. The 20,000 Chinook salmon could still be caught as incidental bycatch.	The impact on industry would be relative to the of the mitigation measure employed.

Automatic Authority to Close the Trawl Sectors and Preserve 500 Chinook salmon for Fished Gear and Recreational Fisheries			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Effects on Salmon Bycatch</i>	<i>Impact to Industry</i>
No Action	<p>Bycatch guidelines would not be adjusted.</p> <p>The automatic authority closures would remain status quo. The whiting sector would close at 14,500 Chinook salmon and the non-whiting sector would close at 9,000 Chinook salmon. A total fishery closure of 20,000 Chinook salmon.</p> <p>500 Chinook salmon would not be preserved for fixed gear and select recreational fisheries.</p>	No benefit. Salmon would still be available to be caught as incidental bycatch.	<p>Status quo. Fixed gear and select recreational fisheries would close with non-whiting.</p> <p>Potential income loss for fixed gear and recreational fisheries, would average \$2.7 and \$20.9 per month, respectively.</p> <p>¹ Amounts derived from Table 3 in Agenda Item G.3.a GMT Report 1, April 2019</p>
Alternative 1	<p>Develop an automatic action authority that would close the trawl sectors as follows:</p> <ol style="list-style-type: none"> 1. Close bottom and mid-water trawl upon attainment of 8,500 Chinook salmon 2. Close the whiting upon attainment of 14,000 Chinook salmon 3. Close all trawl fisheries 19,500 Chinook salmon <p>This action would preserve 500 Chinook salmon for fixed gear and select recreational fisheries.</p>	No benefit. Salmon would still be available to be caught as incidental bycatch.	<p>Fixed gear and select recreational fisheries could remain open even if the trawl fisheries closed due to salmon bycatch</p> <p>The 500 Chinook salmon set aside for fixed gear and recreational fisheries reduces the overall amount of Chinook salmon available to trawl fisheries.</p>
Alternative	Description/Key differences	Salmon bycatch effects	Impact to Industry
Block Area Closure			
No Action	Council could only use existing mitigation measures for vessels using midwater trawl gear. See 1.2.5	Salmon bycatch in the 200fm BRA could not occur while the BRA was implemented	Majority of midwater trawl effort is within the 200fm BRA.

	<p>The comparable mitigation measure to Alternative 1 is the 200 fm BRA.</p> <p>This BRA duration can be adjusted but size is fixed, shore to 200 fm, coastwide.</p> <p>BRAs can be implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure.</p>	<p>Salmon in waters outside the 200fm depth contour could be caught incidentally.</p>	<p>Total impact to the sector(s) affected could be high, refer to Table 3.7 for estimations of monthly revenue by sector</p> <p>Impacts to vessels that can fish in deeper than 200fm would relate to the presence/absence of target species in those depths at the time of year a BRA was implemented, etc.</p>
Alternative 1	<p>Council could develop specific area closures based on depth and latitude lines found in existing regulation</p> <p>BACs implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure</p> <p>Areas of known bycatch could be closed rather than the entire coast like the 200fm BRA.</p> <p>Multiple BACs could be implemented</p>	<p>Salmon bycatch in the specified BAC could not occur while the BAC was implemented.</p> <p>Salmon outside the BAC could be caught incidentally.</p> <p>BACs may close ‘hot spot’ areas, thus reducing risk of bycatch where salmon presence is highest.</p>	<p>Areas outside the BAC could be fished, potentially offsetting impacts.</p> <p>Any potential offset of impacts would be relative to factors such as the presence/absence of target species in non BACs, the ability of the vessel to travel to open areas, market demand for species in open areas, etc.</p>
Extension of Block Areas Closures for all Trawl Gear to the Western Boundary of the Exclusive Economic Zone			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Salmon bycatch effects</i>	<i>Impact to Industry</i>
No Action	<p>BACs, for all trawl gear, would be limited to a depth of 250 fm.</p> <p>Vessels could fish beyond the seaward edge of any BAC to the EEZ</p> <p>Unexpected high bycatch events (i.e., lightning strikes) in depths greater than 250 fm could not be addressed through BAC</p>	<p>Salmon found in depths greater than 250 fm could still be subject to incidental bycatch</p>	<p>Vessel effort in depths greater than 250fm at present.</p> <p>Vessels that cannot fish in those depths would not be impacted.</p>

Alternative 1	<p>BACs for all trawl gear sectors could be extended to the western boundary of the EEZ.</p> <p>Extension of a BAC would be implemented via routine groundfish inseason action and could be implemented as a sector specific mitigation measure.</p>	<p>Salmon bycatch in the specified BAC could not occur while the BAC was implemented.</p> <p>Salmon outside the BAC could be caught incidentally.</p> <p>BACs may close ‘hot spot’ areas, thus reducing risk of bycatch where salmon presence is highest.</p>	<p>Extension of a BAC to the EEZ would impact those vessels that can fish in depths greater than 250 fm.</p> <p>However, as described above in the BAC section, vessels impacted by the extended BAC could elect to fish in other areas that remained open.</p> <p>Moving to other fishing grounds could increase operational cost to vessel, however, those costs could be mitigated by resulting opportunities in different fishing grounds.</p>
Selective Flatfish Trawls (SFFT) for the Bottom Trawl Sector			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Salmon bycatch effects</i>	<i>Impact to Industry</i>
No Action	Council could not require SFFT in areas not specified at §660.130(c) (i and iii) – <i>SFFT nets are required for bottom trawl vessels fishing shoreward of the current trawl Rockfish Conservation Area (RCA) – 100 fathom depth contour– between 40°10’ and 42° N lat. and inside the Klamath and Columbia Salmon Conservation Areas.</i>	No benefit to salmon in areas not specified at §660.130(c) (i and iii).	<p>Economic impact would remain as a cost of net purchase and operational use for those vessels that fish in areas specified at §660.130(c) (i and iii) as well as any vessel that voluntarily elected to purchase a net.</p> <p>However, vessels that fish where SFFT nets are required are likely to own them</p>

	Voluntary SFFT use could continue in areas not specified		
Alternative 1	<p>Council could require use of SFFT inseason, as a stand-alone fishery-wide measure or in conjunction with and area closure, such as a BAC.</p> <p>SFFT nets are gear-specific to bottom trawl.</p> <p>SFFTs could be implemented via routine groundfish inseason action</p>	<p>Potentially reduce incidental salmon bycatch by bottom trawl vessels.</p> <p>Benefits could vary depending on the overall effectiveness of the SFFT net in reducing salmon bycatch, location, area size, and duration of the requirement.</p>	<p>Impact on vessels that possess a SFFT net would be low</p> <p>Vessels needing an SFFT would be impacted by the cost (>\$10,000)/net), revenue lost due to not fishing, etc.</p> <p>Communities (net builders) would be positively impacted by purchases of SFFTs.</p>
Whiting Sector Actions			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Salmon bycatch effects</i>	<i>Impact to Industry</i>
No Action	<p>The Council would be limited to existing mitigation measures (e.g., 200 fathom BRA) for the Pacific whiting trawl fishery.</p> <p>Co-ops could continue to use voluntary mitigation measures, but would not meet the condition that NMFS or the Council must take action before a sector is allowed access to the Reserve</p>	No effect. Voluntary co-op measures are assumed to continue.	<p>Impact to the fleet would a loss in fishing opportunity and associated revenue if they were unable to access the Reserve in a high bycatch year. If another mitigation measure was implemented to meet T&C 3a, such as the 200 fathom BRA, this would result in the impacts described above.</p> <p>Dependent on size, location, length of time implemented, and ocean conditions.</p>
Alternative 1	Develop automatic actions that requires NMFS to close a specific area to the whiting fishery, or a specific whiting sector, based on information provided to the Regional Administrator, or designee, by the executive director, or designee, of each whiting cooperative.	Dependent on size, location, length of time implemented, and ocean conditions. May reduce salmon impacts or could inadvertently shift fishing effort into a higher bycatch area.	Impacts would likely be similar to No Action as Alternative one would formalize time/area closures developed by the industry. Impacts could potentially change based if the closure time/area is altered over time.

Alternative 2	<p>Develop regulations to allow the whiting sector cooperatives to develop salmon mitigation plans.</p> <p>These salmon mitigation plans would detail the tools and strategies that the co-ops would use to mitigate salmon bycatch during the fishing season. An annual report may also be required described the efficiency of those tools in the previous year</p>	Based on the assumption that this would formalize the voluntary measures the co-ops are already utilizing, it would be the same as No Action.	Little to no administrative costs to industry or government. Likely less cost than No Action to industry as would be able to access the Reserve without more blunt mitigation measures being implemented (e.g., 200 fathom BRA).
Development of Reserve Rule Provision			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Salmon bycatch effects</i>	<i>Impact to Industry</i>
No Action	<p>The Council would not recommend a process to access the Reserve be developed in regulation.</p> <p>This alternative would be out of compliance with the 2017 BiOp</p>	No benefit to salmon. The 20,000 Chinook salmon could still be caught as incidental bycatch.	No impact. The sectors would operate under existing automatic closure regulations. Whiting 14,000 Chinook salmon, Non-Whiting 8,000 Chinook salmon, Total Chinook salmon 20,000
Alternative 1	A sector could only access the Reserve if the Council or NMFS has taken action to minimize Chinook salmon bycatch in that sector prior to reaching its Chinook salmon bycatch guideline.	No benefit to salmon. The 20,000 Chinook salmon could still be caught as incidental bycatch.	The impact on industry would be relative to the of the mitigation measure employed.

Automatic Authority to Close the Trawl Sectors and Preserve 500 Chinook salmon for Fished Gear and Recreational Fisheries			
<i>Alternative</i>	<i>Description/Key differences</i>	<i>Salmon bycatch effects</i>	<i>Impact to Industry</i>
No Action	<p>Bycatch guidelines would not be adjusted.</p> <p>The automatic authority closures would remain status quo. The whiting sector would close at 14,500 Chinook salmon and the non-whiting sector would close at 9,000 Chinook salmon. A total fishery closure of 20,000 Chinook salmon.</p> <p>500 Chinook salmon would not be preserved for fixed gear and select recreational fisheries.</p>	No benefit. Salmon would still be available to be caught as incidental bycatch.	<p>Status quo. Fixed gear and select recreational fisheries would close with non-whiting.</p> <p>Potential income loss for fixed gear and recreational fisheries, would average \$2.7 and \$20.9 per month, respectively.⁷</p>
Alternative 1	<p>Develop an automatic action authority that would close the trawl sectors as follows:</p> <ol style="list-style-type: none"> 1. Close bottom and mid-water trawl upon attainment of 8,500 Chinook salmon 2. Close the whiting upon attainment of 14,000 Chinook salmon 3. Close all trawl fisheries 19,500 Chinook salmon <p>This action would preserve 500 Chinook salmon for fixed gear and select recreational fisheries.</p>	No benefit. Salmon would still be available to be caught as incidental bycatch.	<p>Fixed gear and select recreational fisheries could remain open even if the trawl fisheries closed due to salmon bycatch</p> <p>The 500 Chinook salmon set aside for fixed gear and recreational fisheries reduces the overall amount of Chinook salmon available to trawl fisheries.</p>

⁷ Amounts derived from Table 3 in [Agenda Item G.3.a GMT Report 1, April 2019](#)

3 Regulatory Impact Review

This Regulatory Impact Review (RIR)⁸ examines the benefits and costs of a proposed regulatory amendment to Pacific Coast Groundfish Fishery Management Plan (PCGFMP) that would require additional measures to minimize incidental Chinook and coho salmon bycatch in order to keep fishery sectors within guidelines, development of a process for access to the Chinook salmon Reserve, and changes to the total amount of level of Chinook salmon bycatch allowed by the trawl sectors that would result in a closure of the trawl sectors.

The preparation of an RIR is required under Presidential Executive Order (E.O.) 12866 (58 FR 51735, October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following Statement from the E.O.:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and Benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

E.O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be “significant.” A “significant regulatory action” is one that is likely to:

- Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in this Executive Order.

3.1 Statutory Authority

Under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801, *et seq.*), the United States has exclusive fishery management authority over all marine fishery resources found within the exclusive economic zone (EEZ). The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in the regional fishery management councils. In the West Coast Region, the Council has the responsibility for preparing fishery management plans (FMPs) and FMP amendments for the marine fisheries that require conservation and management, and for submitting its recommendations to the Secretary. Upon approval by the Secretary, NMFS is

⁸ Analysts have consulted with NMFS West Coast Region and preliminarily determined that none of the alternatives have the potential to have an effect individually or cumulatively on the human environment. This determination is subject to further review and public comment. If this determination is confirmed when a proposed rule is prepared, the proposed action will be categorically excluded from the need to prepare an Environmental Assessment

charged with carrying out the Federal mandates of the Department of Commerce with regard to marine and anadromous fish.

The commercial and recreational groundfish fisheries in the EEZ off Washington, Oregon, and California are managed under the PCGFMP. The proposed action under consideration would amend this FMP and Federal regulations at 50 CFR 660. Actions taken to amend FMPs or implement other regulations governing these fisheries must meet the requirements of Federal law and regulations, and Executive Orders.

3.2 Purpose and Need for Action

The purpose and need for the proposed action is described in Section 1.1.

3.3 Alternatives

The alternatives are described in Chapter 2.

3.4 Methodology for analysis of impacts

The evaluation of impacts in this analysis is designed to meet the requirement of E.O. 12866, which dictates that an RIR evaluate the costs and benefits of the alternatives, to include both quantifiable and qualitative considerations. Additionally, the analysis should provide information for decision-makers “to maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.” The costs and benefits of this action with respect to these attributes are described in the sections that follow, comparing the No Action Alternatives with the action alternatives. The analyst then provides a qualitative assessment of the net benefit to the Nation of each alternative, compared to No Action.

This analysis was prepared using data from the Pacific Fishery Information Network (PacFIN), NMFS Fisheries Economics Explorer (FISHEyE), and the NMFS West Coast Groundfish Observer Program. These sources provide the best available data on fishery participation.

3.5 Description of the West Coast Groundfish Fishery

The description of the fishery is described in Chapter 1.5.

3.5.1 Incidental Chinook salmon Bycatch in Fishery Sectors

The catch of Chinook salmon has varied by year and by fishery. Table 3.1 details the bycatch by each sector and fishery in relation to the current bycatch guidelines (titled as ‘thresholds’ in Table 3.1) from 2002-2018. The total annual Chinook salmon bycatch has only exceeded 20,000 fish once, in 2003. The whiting sector has exceeded the current bycatch guideline of 11,000 Chinook salmon twice, in 2005 and 2014, by 961 and 2,747 Chinook salmon respectively. The non-whiting sector exceeded the current 5,500 Chinook salmon bycatch guideline in 2002 and 2003, primarily from the bottom trawl fishery. In comparing total historical Chinook salmon bycatch to the current bycatch guidelines plus the Reserve of 3,500 Chinook salmon (i.e. 20,000 Chinook salmon in total), only in 2002 and 2003 was this level exceeded. Since those years, only the whiting sector has exceeded what is their present bycatch guideline and, based on current regulations, would have therefore entered into the Reserve. The non-whiting sector has not exceeded 2,500 Chinook salmon since 2002 and 2003; however, it is important to consider that the midwater rockfish fishery only recently re-emerged after the rebuilding of several rockfish species.

Though these levels were primarily from the bottom trawl fishery. In comparing historical Chinook salmon bycatch to the current bycatch guidelines plus the Reserve of 3,500 Chinook salmon (i.e. 20,000 Chinook salmon in total), only in 2003 was this level exceeded. Since those years, only the Whiting sector has exceeded what is their present bycatch guideline and, based on current regulations, would have therefore entered into the Reserve. The non-whiting sector has not exceeded 2,500 Chinook salmon since 2002 and 2003.

Table 3.1. Historical Chinook salmon bycatch, by fishery, in relation to bycatch guidelines (threshold) for 2002 -2018. Source [Agenda Item G.8.a, Supplemental GMT Report 1, November 2018](#)

Sector		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Whiting	At-sea	1,663	2,617	803	3,958	1,192	1,317	718	318	714	3,989	4,209	3,739	6,695	1,806	3,051	3,772	4,402
	Shoreside/IFQ	1,062	425	4,206	4,018	839	2,462	1,962	278	2,997	3,722	2,359	1,263	6,898	2,002	738	1,394	1,330
	Tribal (all fisheries)	1,018	3,439	3,740	3,985	1,940	2,404	697	2,147	678	906	17	1,025	154	1	200	577	125
	Total	3,743	6,481	8,749	11,961	3,971	6,183	3,377	2,743	4,389	8,617	6,585	6,027	13,747	3,809	3,989	5,743	5,607
	Threshold	11,000																
	% Threshold	34%	59%	80%	109%	36%	56%	31%	25%	40%	78%	60%	55%	125%	35%	36%	52%	53%
	# above threshold	---	---	---	961	---	---	---	---	---	---	---	---	2,747	---	---	---	---
Non-whiting	Bottom trawl	15,384	16,855	1,773	816	61	191	419	308	237	175	304	323	984	1020	374	243	348
	Mid-water a/	45	45	45	45	45	45	45	45	45	45	45	45	45	661	484	42	45
	Rec + FG max b/	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
	Total	15,929	17,400	2,318	1,361	606	736	964	853	782	720	849	868	1,529	2,181	1,358	785	893
	Threshold	5500																
	% Threshold	290%	316%	42%	25%	11%	13%	18%	16%	14%	13%	15%	16%	28%	40%	25%	14%	16%
	# above threshold	10929	12400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	Total Chinook	19,672	23,881	11,067	13,322	4,577	6,919	4,341	3,596	5,171	9,337	7,434	6,895	15,276	5,990	5,347	6,528	6,500
	Closure threshold	20,000																
	% of threshold	98%	119%	55%	67%	23%	35%	22%	18%	26%	47%	37%	34%	76%	30%	27%	33%	33%
	# above threshold	---	3881	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

a/ EFP including in mid-water because almost exclusively targeting rockfish in mid-water column despite using "bottom trawl" gear in 2017
a/ But excludes 173 chinook EFP trip from Noah's Ark since were using "non-EFP" large footrope for DTS
a/ These 173 from Noah's Ark included b. trawl total which is more fitting due to fishing DTS
a/ Assume 45 each year, which is the high from 2017-2018 when fishery re-emerged
a/ Actual mid-water catches were 661 in 2015 and 484 in 2016, but were not deemed reflective of fishery as was before canary rebuilt and widow quotas low

3.5.2 Number of Participating Vessels Affected by the Proposed Action

The amount of vessels active in the fishery have varied over time and there are multiple ways to calculate the number of vessels in the fishery (permits, EDC data, etc.). This action applies to all groundfish vessels that participate in West Coast fisheries and mitigation measures can be applied by sector, therefore understanding the number of vessels that participate is paramount in understanding the potential impacts of the action appropriately characterize the potential number of vessels by fishery that may be affected by this action, this report is based on WCGOP data from Somers et al, 2019, specifically Tables 1, 7, and 8.

Table 3.2 shown below detail the number of active vessels in the commercial fishery by sector, fishery, and gear type as of 2018.⁹ This table was developed from landings information housed by the Pacific Fishery Information Network (PacFIN) and use of the Dahle Sector Code to determine the fishery sector.

⁹ 2018 data under review, table to be updated upon finalization of this information.

Table 3.2. Number of participating commercial whiting and non-whiting sector vessels, by sector and fishery, in 2017. Source: Somers et al, 2019

Sector	Fishery	Vessels
Whiting	Mothership	4
	MS Catcher Vessel	15
	Catcher-Processor	9
	Shoreside	25
Non-Whiting	Midwater Trawl	17
	Open Access Hook and Line	605
	Limited Entry Hook and Line	3
	Open Access Pot Gear	151
	Limited Entry Pot Gear	15
	Bottom Trawl	61

3.5.3 Fishery Revenue

Table 3.3 and Table 3.4 provide summary statistics of the annual ex-vessel revenue for the whiting sector and non-whiting sector by fishery (commercial only), respectively. The whiting sector shows some variability in annual ex-vessel revenue; however, the ex-vessel revenue generated over \$56 million dollars per year for the years 2011-2017 on average.

Table 3.3 Whiting sector ex-vessel revenue, in current dollars, by \$1,000s, by whiting sector, 2014-2017. Source PacFIN SAFE Table 14b

	2011	2012	2013	2014	2015	2016	2017
Catcher-Processor Total	\$20,578	\$18,475	\$24,124	\$26,857	\$11,722	\$23,511	\$25,243
Mothership Total	\$14,826	\$12,579	\$16,021	\$16,175	\$4,611	\$13,469	\$11,621
Shoreside Whiting Trawl Total	\$25,356	\$23,027	\$28,849	\$25,891	\$10,934	\$15,255	\$25,729
Grand Total	\$60,760	\$54,081	\$68,994	\$68,923	\$27,267	\$54,251	\$62,593

The commercial non-whiting sector fisheries, when combined, have similar ex-vessel amounts as the whiting sector. The predominant fisheries in this fishery are the shoreside ITQ trawl and the non-nearshore fixed gear fisheries. These two fisheries account for nearly 80 percent of the ex-vessel revenue in the non-whiting sector. This sector generated over \$58 million dollars in ex-vessel revenue per year for the years 2011-2017 on average.

Table 3.4. Groundfish ex-vessel revenue in current, \$1,000, by shoreside commercial fishery non-whiting sectors, 2011-2017. Source PacFIN SAFE Document Table 12b

Year	Shoreside IFQ Trawl (Nonwhiting)	Shoreside IFQ Nontrawl	Non Nearshore Fixed Gear	Nearshore Fixed Gear	Non Fixed Gear Open Access	Incidental Open Access	Exempted Trawl, EFP/Research, Misc.	Total
2011	\$27,381	\$8,590	\$29,362	\$3,718	\$39	\$130	\$873	\$70,094
2012	\$25,276	\$5,572	\$17,989	\$3,655	\$36	\$130	\$646	\$53,303
2013	\$27,164	\$2,981	\$13,101	\$3,920	\$56	\$90	\$1,200	\$48,513
2014	\$26,169	\$4,792	\$14,402	\$3,855	\$75	\$134	\$461	\$49,888
2015	\$28,042	\$5,528	\$17,147	\$4,605	\$97	\$180	\$474	\$56,073
2016	\$29,450	\$7,120	\$19,938	\$3,943	\$46	\$195	\$680	\$61,372
2017	\$30,128	\$6,431	\$21,592	\$4,064	\$31	\$196	\$1,685	\$64,128

3.5.4 Groundfish Emergence and Dependence in West Coast Ports

This action affects the entire West Coast groundfish fishery; therefore, 100 percent of groundfish vessels are dependent on this fishery for revenue. Engagement and dependence can be used to assess the impact of ex-vessel revenue in a port (Table 3.5) Engagement is measure represents how much groundfish revenue is landed in a given port relative to groundfish revenue coastwide. This percentage can provide a sense of how active--in terms of revenue--a port is in the fishery. Dependence represents how much groundfish revenue is landed in a given port relative to total revenue from all fisheries landed in that port. This percentage can provide a sense of the "importance" of groundfish to a given port.

Table 3.5. Groundfish engagement (ex-vessel revenue in port as percent of ex-vessel coastwide revenue) and dependence (ex-vessel revenue in port as percent of total ex-vessel revenue in port), using current (inflation adjusted) dollars for 2018. Source PacFIN SAFE Table 23b.

	Engagement	Dependence
Puget Sound	5%	36%
N. WA	4%	48%
S. / Cen. WA	10%	23%
Washington	19%	16%
Astoria	27%	56%
Tillamook	0%	4%
Newport	22%	29%
Coos Bay	5%	9%
Brookings	5%	19%
Oregon	59%	28%
Crescent City	1%	2%
Eureka	6%	21%
Fort Bragg	3%	28%
Bodega Bay	1%	7%
San Francisco	2%	7%
Monterey	1%	6%
Morro	3%	49%
Santa Barbara	4%	10%
Los Angeles	1%	2%
San Diego	1%	7%
California	22%	10%
Coastwide		18%

3.5.5 Communities

Table 3.6 shows the shoreside groundfish ex-vessel revenue for IOPAC port groups in 2018 by major groundfish species groups. At the state level, the primary revenue generators are Pacific whiting, sablefish, and rockfish. These species are highly targeted and disruption to the supply of these species could negatively impact communities. The proposed actions, notably closures, could decrease the amount of these species landed. However, that concern may be somewhat mitigated by the type of closure implemented. If the 200 fm BRA were implemented, catch would likely be severely curtailed as the majority of catch occurs within the 200fm BRA depth range. Though, species that inhabit depth ranges

beyond the 200 fm contour could still be targeted which could help offset some of the economic loss. If, however, BACs were implemented, some areas would likely remain open and therefore potentially offer opportunity to vessels to target the same or similar species.

Table 3.6. Ex-vessel revenue in current (inflation adjusted) dollars, \$1,000s, by IOPAC port groups and species and species groups for 2018. Source PacFIN

	P. Whiting	Sablefish	Other Roundfish	Rockfish	Flatfish	Other Groundfish
IOPAC PORT						
North WA Coast		2,502	55	141	407	63
Puget Sound		2,031	278	174	1,117	52
S/Cen WA Coast		1,610	12	1,023	15	
Astoria	9,132	3,418	356	4,503	4,514	247
Brookings	0.00	1,403	746	792	987	18
Coos Bay	0.36	2,111	93	216	1,350	40
Newport	7,302	4,981	174	2,811	2,535	107
Tillamook		2	115	107		
Bodega Bay		393	31	53	0.10	
Crescent City		237	59	217		
Eureka		1,083	363	856	2,597	72
Fort Bragg		1,321	213	662	395	8
Los Angeles		183	5	218	59	12
Monterey		561	141	482	8	7
Morro	0.00	779	241	1,297	32	5
San Diego		312	4	197	22	13
San Francisco	0.00	491	88	361	277	9
Santa Barbara	0.08	1,360	67	2,128	24	17

Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow

Blank cells indicate null value (no data exist for that stratum)

AFI ex-vessel revenue rounded to nearest whole unit

3.5.6 Safety Considerations

The alternatives being considered in this package would likely have safety considerations similar to status quo. Vessel operators may consider changing fishing tactics relative to location of area closures (if selected or implemented) and changing to different gear types to address salmon mitigation measure implementation. However, these elements are little different from current practices in the fishery.

3.6 Mitigation Measure Impacts

3.6.1 Block Area Closures

3.6.1.1 Impacts of No Action

Under No Action, the Council would not develop BACs for midwater fisheries. The only mitigation measures available for midwater trawl fisheries would be those described above at 1.3.5. The primary spatial tool that would be available, and most comparable to Alternative 1, is the 200 fathom BRA. The 200 fm BRA would close the majority of areas typically fished by midwater trawl, only those vessels that

could fish beyond 200 fm would be able to continue fishing – noting fishing effort would correlate with target species presence in those depths.

3.6.1.1.1 Effectiveness in Chinook and Coho salmon Bycatch Mitigation

The Council and NMFS have limited tools under No Action to mitigate bycatch in the midwater trawl sectors. As described above at 2.1, the 200 fathom BRA was developed during the 2019-20 harvest specifications and management measures process is the only spatio-temporal tool available to the Council inseason to mitigate bycatch.

Overall, the 200 fathom BRA would appear to mitigate most to all of the salmon bycatch within the midwater trawl sectors (whiting and non-whiting) based on historical data. Implementing a 200 fm BRA could result varying degrees of salmon bycatch reduction depending on the timing and duration of the closure. As described in [Agenda Item G.3.a, GMT Report 1, April 2019](#), the highest bycatch rates have typically occurred between 100 and 200 fathoms. However, it is important to note that while historically catch rates have been highest in these depths, they do not predict what could occur in the future as Chinook salmon or target species distribution could change. Additionally, while the 100-200 fathom depth bin may have the highest bycatch rate, it is important to consider the depths at which the four sectors fish. The 200 fathom BRA would likely close the shoreside whiting and non-whiting midwater trawl fisheries that tend to operate shallower than 200 fathoms resulting in zero potential impacts to Chinook salmon. At-sea sectors have historically operated deeper than the shoreside sectors. However, the mothership co-op is limited by the horsepower on the catcher vessels reducing their effort inside 250 fathoms while the CP co-op can operate outside of 250 fathoms (Figures 1 and 2 in [Agenda Item G.3.a, GMT Report 1, April 2019](#)). Therefore, there would likely be a moderate to relatively high reduction in salmon bycatch in the MS sector under a 200 fathom BRA and a moderate reduction in the CP sector.

Additionally, while there are few other mitigation tools available to the Council and NMFS to mitigate bycatch, there has been an increased focus by the members of the trawl industry to mitigate incidental catch of Chinook and coho salmon. For example, there has been informal agreements between salmon trollers and trawlers to support the rockfish and whiting trawl fisheries to increase benefits to coastal communities while the trawlers continue to actively avoid salmon bycatch ([Agenda Item G.3.a, Supplemental GMT Report 2, April 2019](#)). It is assumed under No Action that these voluntary actions would continue.

The non-whiting midwater fleet is re-emerging and their effort in terms of depth and latitude are limited, as are the potential areas of salmon bycatch. While the GMT did some limited data analyses in Agenda Item H.5.a, GMT Report 1, March 2018, there is still limited spatial data to inform what BACs might best work for mitigating bycatch in the midwater rockfish fishery. However, based on the limited data and inferring trends from other fisheries, it is likely that salmon bycatch rates for this fishery would be highest between 100-200 fm and lowest beyond 250 fm as the fishery typically operates shallower than the shoreside whiting fishery. A BAC would likely be able to mitigate salmon bycatch and would provide an opportunity for industry to continue to fish in lower bycatch areas.

3.6.1.1.2 Costs

Under No Action, the main costs would occur if the Council were to implement the 200 fathom BRA on a midwater trawl sector. Potential economic consequences to each sector of implementing a 200 fathom BRA can be found in [Appendix C of the 2019-20 Groundfish Harvest Specifications and Management Measures analytical document](#). Implementing a 200 fm BRA could have varying degree of costs to industry depending on the timing and duration of the closure. In general, the implementation of a 200 fathom BRA would result in a de facto closure to the shoreside sectors, an almost complete closure to the MS sector, and a significant reduction in operations for the CP sectors. For whiting in particular, this is

also dependent on where the whiting schools operate. If there are no whiting outside of 200 fathoms in sufficient schools, then there would be likely no purpose in continuing to fish resulting in closure to the at-sea fleets. Estimated costs of a closure, by month, by sector are show in Table 3.7.

Table 3.7. Projected loss in income in millions of \$USD associated with fishery closures by month for the midwater trawl fisheries (from Table C-18 of the draft EA for the 2019-20 harvest specifications and management measures.)

Whiting Sector					Non-Whiting Sector
Month	CP	MS	SS	Treaty	Midwater
Jan	---	---	---	0.2	1.5
Feb	---	---	---	0.2	1.6
Mar	---	---	---	0.6	2.4
Apr	---	---	---	1.5	0.9
May	29.4	5.9	1	1.4	1.6
Jun	9.9	5	6.7	1.4	1.8
July	0	0.9	13.2	2.8	1.2
Aug	1.8	0.8	16.3	3.4	1.2
Sep	20.7	4.5	11.7	4.2	1.1
Oct	22.9	8.9	8.3	2.6	1
Nov	11.8	2.2	2.5	0.5	1.3
Dec	2	0.1	0.1	0.3	2.1
Sum	98.5	28.3	59.8	19.1	17.7

Dashed cells indicate closure months by sector.

3.6.1.2 Impacts of Alternative 1

Alternative 1 would develop BACs as a routine management measure for all midwater gears, whiting and non-whiting. BACs could be implemented between any depth contours and latitude lines in regulation, for a specific sector(s), and a specified duration.

3.6.1.2.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

The GMT examined the potential impacts of several BAC combinations in [Agenda Item G.3.a., GMT Report 1, April 2019](#) in addition to relying on previous analyses done for the 200 fathom BRA as a part of the 2019-20 biennial process. While the 200 fathom BRA would close from shore to 200 fathoms coastwide, the GMT looked at salmon bycatch and effort by region and depth bin which is applicable in assessing potential mitigation of salmon bycatch using BACs.

Overall, BACs would provide a more flexible tool in mitigating salmon bycatch compared to tools available under No Action. Additionally, as BACs can extend to 250 fathoms compared to the 200 fathom BRA, it could allow for implementation of more appropriate sector specific BACs. Section 3.6.1.1.1 describes the fishing patterns of each of the sectors. Implementing a BAC could result in varying degrees of salmon bycatch reduction depending on the timing, location, and duration of the BAC.

As shown in Figure 3.1 and Figure 3.2, historical salmon bycatch data based on depth and latitude could inform the Council on where and when bycatch could be highest. This information could assist the Council in setting the extent of a BAC. The nature of a BAC as a function of latitude and depth lines allows it to be more flexible than a BRA and could allow for specific areas of higher bycatch to be closed rather than the BRA, which is a shore to 200 fathom closure. For example, the Council may want to consider closing the area from 100-200 fathoms for at-sea sectors for the area between Cape Falcon and Cape Blanco based on historical data if the sectors were tracking high at the November Council meeting (also taking into account updated data and bycatch locations to date). This would require the at-sea

sectors to move to other areas which have historically had lower bycatch rates, thereby lowering their overall salmon bycatch, while being able to continue to fish.

Figure 3.1. Heatmap of Chinook salmon bycatch rates for the shoreside whiting sectors by area, depth, and month, 2011-2017. The color indicates low (green), moderate (yellow), orange (medium), to high (red) bycatch rates. (Source: [Agenda Item H.5.a, GMT Report 1, March 2018](#))

Depth (fm)	Area	May	June	Jul.	Aug.	Sept	Oct	Nov.	Dec.
0-75	1: N. Falcon	Yellow	Yellow	Yellow	Orange	Yellow	Yellow		
0-75	2: Falcon - Blanco		Orange	Yellow	Yellow	Yellow	Yellow		
0-75	3: Blanco - 40.10			Green	Yellow				
76-100	1: N. Falcon	Green	Green	Green	Green	Yellow	Yellow	Orange	
76-100	2: Falcon - Blanco		Yellow	Yellow	Yellow	Yellow	Orange	Yellow	
76-100	3: Blanco - 40.10		Green	Green	Yellow				
101-150	1: N. Falcon	Green	Green	Green	Green	Yellow	Yellow	Orange	
101-150	2: Falcon - Blanco		Green	Yellow	Yellow	Yellow	Orange	Orange	Red
101-150	3: Blanco - 40.10		Green	Green	Green				
151-200	1: N. Falcon	Orange	Green	Green	Green	Yellow	Yellow	Orange	
151-200	2: Falcon - Blanco	Green	Green	Yellow	Yellow	Yellow	Orange	Orange	Red
151-200	3: Blanco - 40.10		Yellow	Green	Yellow	Red	Yellow	Green	Green
>200	1: N. Falcon	Yellow		Green	Green	Green	Green	Orange	
>200	2: Falcon - Blanco	Green	Green	Green	Green	Yellow	Yellow	Orange	
>200	3: Blanco - 40.10		Green	Green		Green	Yellow	Green	Green

Figure 3.2. Heatmap of Chinook salmon bycatch rates for the at-sea whiting sectors by area, depth, and month, 2011-2017. The color indicates low (green), moderate (yellow), orange (medium), to high (red) bycatch rates. (Source: [Agenda Item H.5.a, GMT Report 1, March 2018](#))

Depth Bin	Area Bin	May	June	July	August	Sept.	Oct.	Nov.	Dec.
0-75	N of Cape Falcon	Yellow	Yellow			Orange			
	Cape Falcon to Cape Blanco	Yellow	Green						
	Cape Blanco to 40 10 N. lat.								
76-100	N of Cape Falcon	Green	Green		Green	Yellow	Yellow	Red	
	Cape Falcon to Cape Blanco	Green	Yellow						
	Cape Blanco to 40 10 N. lat.								
101-150	N of Cape Falcon	Green	Green	Green	Green	Green	Green	Yellow	
	Cape Falcon to Cape Blanco		Orange	Yellow		Red			
	Cape Blanco to 40 10 N. lat.		Green	Green	Green	Red			
151-200	N of Cape Falcon	Yellow	Green	Green	Yellow	Yellow	Yellow	Red	
	Cape Falcon to Cape Blanco	Green	Green	Yellow	Green				Yellow
	Cape Blanco to 40 10 N. lat.	Green	Green	Green	Green	Yellow			
>200	N of Cape Falcon	Green	Yellow					Yellow	
	Cape Falcon to Cape Blanco	Green	Green	Green	Yellow			Orange	Orange
	Cape Blanco to 40 10 N. lat.	Green	Green	Green	Green	Yellow			Orange

3.6.1.2.2 Costs

Implementing a BAC could have varying degree of costs to industry depending on the timing, location, and duration of the closure. In terms of an area closure, the likely result of the measures on the vessel would be vessel movement to open areas. Thus, the likely costs to a vessel would directly relate to both fixed and variable operational costs. Given the uncertainty around the mechanics of the closure, such as configuration of BACs, which sector(s) would be affected, duration of the closure, etc., a connecting point between these two alternatives that will provide insight into area based closures is operational costs per day for the fisheries that could be impacted. Vessel incur two types of costs to operate, fixed and variable costs. Fixed

costs include fishing gear and processing and vessel equipment. Variable costs include fuel, crew, and observer coverage. Cost of vessel operations could be a likely area to increase as it is in direct relation to time traveling and not fishing. Table 3.8 provides the estimated median for fixed and variable costs per day for the whiting sector, by fishery, and for 2017.

Table 3.8. Median fixed and variable costs per day for midwater trawl fisheries in the whiting and non-whiting sectors. Source: Economic Data Collection, data accessed 8/19 via [Fisheye](#).

Sector	Fishery	Fixed Cost per day	Variable Cost per day
Whiting	Mothership	\$14,589	\$120,009
	Catcher-processor	\$24,914	\$79,460
	Shoreside	\$1,333	\$7,554
Non-Whiting	Midwater trawl	\$1,887	\$6,907

As BACs can vary in size, location, and duration, it is difficult to quantify the exact costs to industry with the implementation of a BAC. It can be assumed that industry would be negatively impacted to a degree by the implementation of a BAC. For example in the whiting sector, the primary seasons for the at-sea fishery are in the early spring and fall. Closures in those periods could have them most economic impact on the fishery. Additionally, the longer an area is closed, especially if target species densities are high in that area, the more the economic loss could increase.

BACs may result in closures of areas with high target species densities. While a BAC would close that area, vessels may be able to move outside of a BAC and continue to fish for whiting or midwater rockfish. Movement may result in additional costs to the vessel, though those costs may be mitigated by opportunities found in other fishing grounds. Though, for some fisheries, the variable costs may exceed that offset. Vessels would need to spend additional days on the water to catch their quota, if they are able to find schools to fish at all. Additionally, depending on where the BAC is implemented, it could force vessels to fish in areas with other constraining species (e.g. sablefish). There may be resulting economic consequences, such as shoreside vessels having to obtain additional quota on the market to account for the additional groundfish catch.

3.6.2 Extension of any Block Area Closure for All Trawl Gear to the Western Boundary of the Exclusive Economic Zone (EEZ)

3.6.2.1 Impacts of No Action

Under No Action, the Council would not be able to extend a BAC for all trawl gears beyond the 250 fm depth contour, as defined in regulation.

3.6.2.1.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

While salmon bycatch rates are, overall, low in depths greater than 200 fm, for several months in the fall (Sept-Nov), moderate to high bycatch rates have occurred, notably in the Falcon to Blanco latitudinal bin for at-sea and shoreside (Figure 3.1 and Figure 3.2) . However, the uncertainty around salmon distribution in those depths suggests that while recorded bycatch rates may overall be low, any effort in depths greater than 250fm could potentially encounter salmon at rates higher or lower than what Figure 3.1 and Figure 3.2 show. No Action would, therefore, not be an effective mitigation measure as it could not prevent effort by trawl fisheries in depths greater than 250 fm.

Fishing effort for the whiting and non-whiting midwater trawl is low beyond 250 fm. As described above at 3.6.1.1.1, the highest bycatch rates have occurred in the 100 fm to 200 fm depth zone. The majority of whiting and non-whiting trawl midwater fishing effort occurs in depths less than 250fm. In a cursory examination of WCGOP data, MS catcher vessels fishing effort was less than 1 percent per 50 fm depth bins beyond 250 fm. CPs and SS vessels showed an equally low amount of effort for the same periods in those depth bins, with a median effort of less than 2 percent in depths greater than 250 fm. In non-whiting midwater groundfish vessels, fishing effort was less than two percent between 250 to 300 fm, suggesting this re-emerging fishery would not, at present, be affected by extending a BAC from 250 fm to the western edge of the BAC. The historical data shows relatively low effort; however, effort rates does not necessarily correlate to salmon bycatch. Salmon are known to be distributed in waters greater than 250 fm. It is, therefore, entirely possible a vessel or fishery could encounter unexpectedly high bycatch rates in depths greater than 250 fm.

When considering the non-whiting midwater fishery, it is important to consider this fishery is re-emerging after nearly two decades of regulatory restrictions. At present, there is little information on salmon bycatch hot-spots for the non-whiting midwater fleets. The heatmaps (hot-spots) above were developed for the whiting sector. While the midwater fleet fish in similar areas as the whiting fleets with a similar gear type, there may be some correlation to salmon bycatch rates noted in the whiting sector with non-whiting midwater fishery. However, until more information is collected, salmon bycatch for the non-whiting midwater trawl fishery should be considered very uncertain.

Bottom trawl effort was extensively analyzed in the Amendment 28 DEIS (PFMC 2019) package. Somers et al (2019) shows this fishery as predominantly targeting depths under 250 fm; however, the bottom trawl fishery does extend into depths greater than 250 fm. This fishery primarily targets Dover sole, sablefish, and thornyheads in depths greater than 250 fm. Noted in the Somers et al. (2019) report, median fishing effort in in depths greater than 250 was highest for the 2016-2017 period in the 250 fm, 300 fm, and 350 fm depth bin at 12.4 percent, 9.3 percent, and 7.6 percent respectively. The 2011-2015 period showed similar median effort distribution, with the 250 and 300 fm depth bins at 13 percent and 12 percent, respectively.

3.6.2.1.2 Costs

Costs of No Action would be status quo. Trawl vessels could continue to fish in depths greater than 250fm as they have historically.

3.6.2.2 Impacts of Alternative 1

Under Alternative 1, the Council could extend any BAC for midwater and/or bottom trawl gear beyond the 250 fm depth contour to the western boundary of the EEZ.

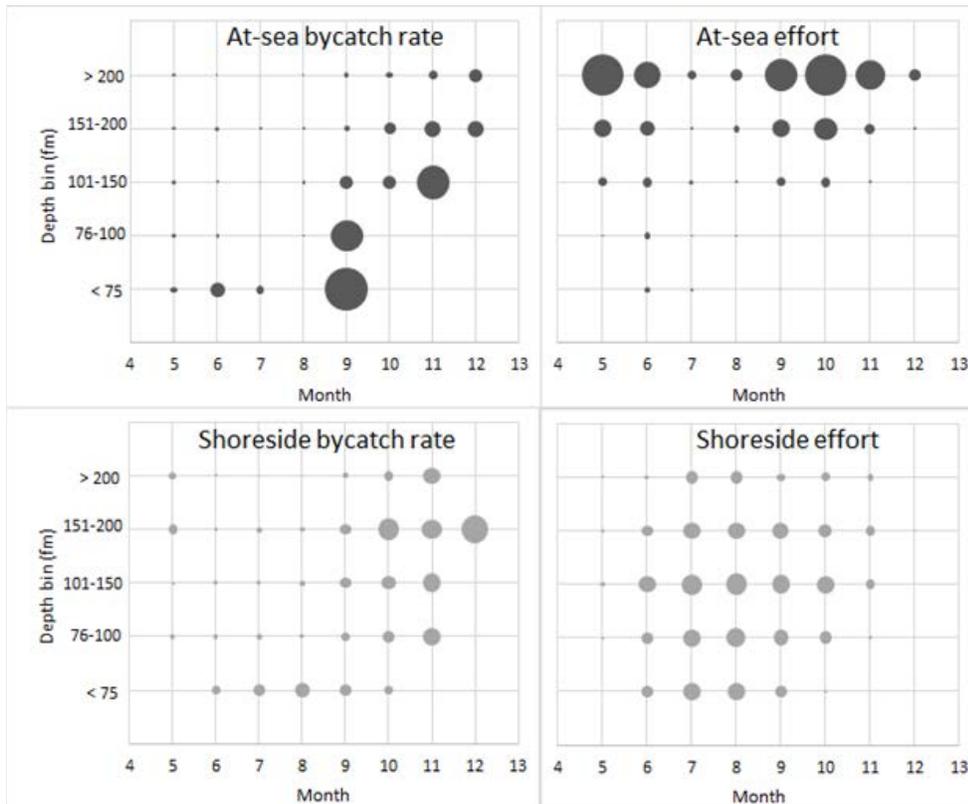
3.6.2.2.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

As described above at 3.6.2.1.1, fishing effort by the trawl fisheries does occur in depths greater than 250fm. While the overall amount of effort may be low relative to effort in other depths, fishing in those depths could encounter salmon. Given spatial distribution of the fleet relative to the time of year can be uncertain based on target species extent and location, actual encounter rate could be low. However, as noted above, there are no regulations at present that afford salmon mitigation in those depths. As shown in Figure 3.3, the whiting sector does fish beyond 250fm, though bycatch rates are notably lower in those depths than in shallower areas.

Extending a BAC beyond 250 fm could act as a mitigation measure for salmon in those depths. Hot-spot information is not necessarily predictive of future spatial distribution of salmon, however, what Figures 3.1 and 3.2 detail are salmon bycatch rates are moderate in depths greater than 250 fm at certain times of

the year. If vessels shifted effort to deeper water in corresponding times, incidental salmon bycatch is possible. Noting the bycatch rates in Figure 3.1, Figure 3.2, and Figure 3.2 show the highest rates for the whiting fleets in the latter half of the year, this would likely correspond to when bycatch amounts for the fishery sectors may be closer to their bycatch guidelines. Suggesting that fishing in these depths could push the sectors closer to their bycatch guideline. The net result of closing these waters would reduce opportunity for some operations.

Figure 3.3. Relative bycatch rates (# Chinook salmon/ mt whiting) and effort (% of hauls) for the whiting fisheries by month and depth (from Agenda Item H.5.a, GMT Report 1, March 2018)



Increasing the spatial footprint of a BAC to the EEZ could reduce the risk of incidental take. Further, as a BAC would close only a portion of all available depths, it would allow the fishery to continue. Alternative 1 has potential protection benefits to salmon through bycatch minimization.

3.6.2.2.2 Costs

The cost impacts of Alternative 1 are similar to the cost impacts of Alternative 1 in the BAC measure described above. While an area would be closed to fishing, vessels could travel to other fishing grounds outside the closed area. Vessels could offset lost opportunity in the BAC zone by fishing in areas adjacent to it. The extent of the offset would largely be dependent on the amount and extent of target species in adjacent areas.

Vessels that normally fish in depths greater than 250 fm likely encounter higher fixed and variable costs relative to vessels that do not; however, these costs may be offset based on economic return from catch at these depths. Meaning, while costs may be greater, so is economic return, thus the profit margin may be similar to vessels that do not fish in depths greater than 250 fm. Though BACs may offer vessels opportunity to fish in areas not under the BAC, uncertainty of unfamiliar fishing grounds may cause

vessels to reconsider fishing. The risks may exceed the benefits and movement to alternative fishing grounds may be a risk vessels are unwilling to take.

3.6.3 Selective Flatfish Trawl Net Requirement

3.6.3.1 Impacts of No Action

The impact of the No Action alternative would be status quo. With implementation of the Council's trawl gear rule, SFFT nets are required for bottom trawl vessels fishing shoreward of the current trawl Rockfish Conservation Area (RCA) – 100 fathom depth contour – between 40°10' and 42° N. lat. and inside the Klamath and Columbia Salmon Conservation Areas (660.130(c)(i) and (iii)). SFFT net use by bottom trawl vessels in areas other than specified in the aforementioned regulation would be on a voluntary basis.

3.6.3.2 Effectiveness in Chinook and coho salmon Bycatch Mitigation

No Action would limit the effectiveness of a SFFT net as a salmon mitigation measure to those areas where it is currently required. Those benefits are described in detail under 3.6.3.4.1.

3.6.3.3 Costs

Cost of No Action would remain on those vessels that fish in areas where SFFT nets are required or use SFFT on a voluntary basis.

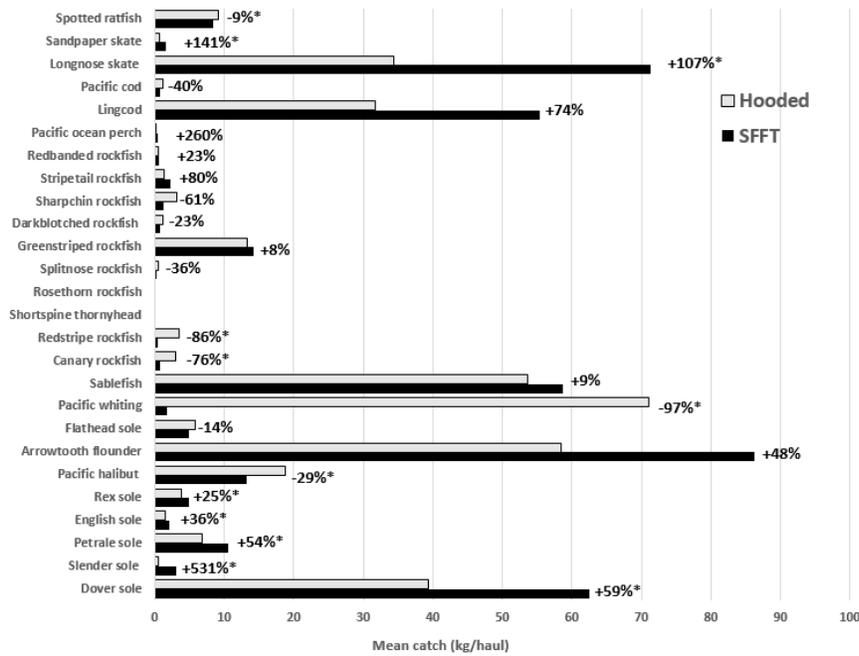
3.6.3.4 Impacts of Alternative 1

Under Alternative 1, SFFT nets would be available for use as a routine inseason mitigation tool to address salmon bycatch in the groundfish bottom trawl fisheries. This mitigation measure could be used as a stand-alone requirement for all groundfish bottom trawl vessels or in conjunction with a spatial closure(s) (e.g., BAC).

3.6.3.4.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

These nets are assumed to reduce salmon bycatch capture based on joint GMT/NMFS analyses, as detailed in pages 4-79 of the [Final Environmental Assessment Trawl Gear Regulations](#) (NMFS, 2018) and as explored in King et al. (2004) and Hannah et al (2005). The SFFT net is designed to selectively target flatfish species and allow for stronger swimming species, such as rockfish and salmon, to escape capture (Figure 3.4). King et al (2004) and Hannah et al (2005) demonstrated the net's design may reduce catch of strong swimming west coast pelagic or semi-pelagic species (e.g., Pacific whiting, canary rockfish, etc.). Similar results have been detailed in other research conducted in other regions (e.g. Thomsen 1993, He et al. 2007, Eayrs et al. 2017, etc.).

Figure 3.4. Comparison of catch rates for SFFT vs traditional hooded trawl. Source:



It is important to note, while this net type has been shown to effectively reduce catch of strong swimming species, there were no observed salmon bycatch in SFFT trials; however, the potential for these nets to minimize salmonid bycatch can be inferred, as salmon exhibit similar, if not stronger, swimming abilities of other strong swimming species. Even though the effectiveness of this net type as a salmon minimization tool is still being evaluated, it is largely assumed to be a beneficial mitigation tool in overall reduction of incidental salmon bycatch in the bottom trawl fishery.

3.6.3.4.2 Costs

Net costs would be limited to those who do not own SFFT nets at present. The costs of a SFFT net vary, but estimates for a single net range from \$18,000 – \$25,000; however, net makers likely do not stock pile SFFT nets and would need to build SFFT nets for each order. While the exact number of vessels that have this type of net is unknown, data from the WCGOP suggests that vessel in those areas where SFFT nets are required, ownership is high (Table 3.9). With this in mind, for vessels that do not possess SFFT nets, it is likely they could incur lost revenue due to not fishing while waiting for a net to be built.

Table 3.9. Count of trawlers who have used selective flatfish trawls on observed trips since 2011. (Source: [Agenda Item G.3.a, GMT Report 1, April 2019](#)).

Area	Total observed trawlers	Used SFFT	% Used SFFT
Coastwide*	84	45	53.6%
N 42°	62	38	61.3%
S 42°	46	12	26.1%
S 40° 10'	21	4	19.0%

*Regional totals exceed coastwide due to single boats fishing multiple areas.

As noted, the Council could require use of an SFFT in conjunction with a BAC. Amendment 28 (PFMC 2019) detailed the economic impacts of BACs to the bottom trawl fishery, though it did not take into

account the use of SFFT. While it is difficult to project actual economic impacts due to the myriad of combinations of BAC configurations, Table 3.10 provides a broad estimate of bottom trawl ex-vessel revenue by state and month. However, if a SFFT net was required in a BAC, the ramifications would vary by ownership and experience with the net type. Those vessels possess a SFFT net and are experienced with fishing it may not incur a loss of revenue; however, these nets may not function the same as non-SFFT nets in some fishing grounds. Vessels may have to change fishing tactics and that could lead to changes in fishing success, and thus in revenue. For vessels that are not experienced with this net type, there would be operational downtime as the crew learned how to fish it. This could lead to reduced catch, initially, until the crew became proficient with the gear. Though it is important to consider, if a SFFT net were required just in a BAC, vessels could elect to fish outside the closed area with a different net type, thus potentially mitigating some operational costs.

Table 3.10. Average inflation-adjusted ex-vessel revenues in millions for bottom trawl fisheries by month and state from 2011-2017. Source PacFIN.

State	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Washington	0.4	0.5	0.7	0.6	0.6	0.6	0.6	0.9	0.8	0.9	0.6	0.5
Oregon	1.2	1.6	1.9	1.7	1.5	1.2	1.2	1.2	1.2	1.3	1.5	2.0
California	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	1.0
Total	1.8	2.4	2.9	2.6	2.5	2.3	2.2	2.5	2.5	2.9	2.9	3.5
---*South of Blanco	0.4	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.2

*A South of Blanco sub-total was provided since this encapsulates the Klamath Management Zone for salmon

An additional cost would be time required by law enforcement if they contacted vessels in order to validate net type. A cost of this activity would also cost the vessel as time lost for fishing.

3.6.4 Pacific Whiting Cooperative Rules

3.6.4.1 Impacts of No Action

Under No Action, the Council would be limited to mitigation measures defined in regulation salmon (e.g., 200 fathom BRA) for the whiting sector. Voluntary actions to mitigate bycatch by the co-ops would still be permitted. While the voluntary actions taken by the co-ops may and have proven to be effective in mitigating bycatch, T&C 3.a. and 3.c. require the Council and NMFS to take some action to prevent exceedance of a sector guideline (3.c.) and the guideline plus the Reserve (3.a.). Therefore, another action such as implementing a 200 fathom BRA or another mitigation measure (e.g. BAC if developed), would need to be taken to allow for access into the Reserve.

3.6.4.1.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

As discussed above, the whiting co-ops have developed an operational system that is focused on targeting Pacific whiting while mitigating bycatch of salmon and other constraining or overfished species. This description assumes these voluntary measures would continue under No Action and therefore the effectiveness in mitigating bycatch could be the same as status quo. Regarding the effectiveness of these voluntary salmon bycatch mitigation measures, the whiting sector has stayed under 11,000 total Chinook salmon each year since 2002, except for two instances in 2005 and 2014 (Table 3-1). While there have been changes to management over those 17 years, the CP sector has operated under a co-op structure since 1997 and the MS and SS co-ops were formed at the start of the trawl rationalization program. Given the changes in Pacific whiting total allowable catch (TAC) and salmon populations within this span of time, it can be interpreted that those measures have been effective in mitigating overall bycatch of salmon.

Based on the analyses within the 2017 BiOp, given the Northern distribution, there is an approximate 80 percent (under 100 percent whiting attainment) and 85 percent (under average attainment) chance that the whiting sectors would stay under the 11,000 Chinook salmon guideline. This includes some assumption of tribal whiting harvest. However, under a Southern distribution, the non-tribal sectors alone could exceed the Chinook salmon guideline more than 50 percent of the time (based on 2008-2016 data). Given that whiting allocations are at an all-time high in recent years and there continues to be a suite of other species to avoid (e.g., sablefish, widow rockfish), there is a strong likelihood that the whiting fleets needing to fish a more southerly distribution to access prime whiting grounds in certain years.

3.6.4.1.2 Costs

When comparing Alternatives 1 and 2 to No Action, there is a larger potential cost to industry. Notably in the situation where the whiting sector could not access the Reserve under No Action unless another mitigation measure such as a 200 fathom BRA was implemented. As described above, T&Cs 3.a. and 3.c require that the Council and NMFS take action before a sector is projected to exceed their guideline and enter the Reserve. At present, the only mitigation tool in regulation that the Council and NMFS could use to access the Reserve would be to implement a 200 fathom BRA on one or more of the whiting fisheries. As discussed above, this could result in a near total closure of the shoreside and MS sectors due as many of the catcher and shoreside vessels are unable to fish in those depths. It may also reduce opportunities to the CP fishery, although data suggests they can fish deeper than 200 fathoms. The ability of a vessel to fish in depths greater than 200 fm notwithstanding, the presence of Pacific whiting outside 200 fm would also be a strong factor in fishery activity. Depending on the time of implementation, it could result in varying degrees of economic impacts as shown in Table C-18 of [Appendix C](#) of the 2019-20 Harvest Specifications and Management Measures.

At present, co-op agreements can be cost effective measures that reduce bycatch as well as allow vessel to continue fishing. If these agreements are regularly superseded by other regulatory action, such as a 200 fm BRA, cost to operate a vessel could change in that a mitigation measure may require them to move to areas they would have not fished normally. Moving to these new areas could increase variable costs (e.g., fuel) and potentially reduce the cost effectiveness of the vessels operation. While it is difficult to exactly quantify the potential costs of not having access to the Reserve as there is interannual variability in Pacific whiting concentration and location as well as salmon bycatch, Table 3.11 below offers a simplified look at potential loss in revenue using historical bycatch rates.

Table 3.11. Average catch (at-sea) and landings (shoreside) in pounds by whiting sector, 2011-2018 for October through December. Source:

Month	CP	MS	SS
October	21,693.64	16,251.04	10,172.19
November	12,284.73	5,737.85	2,627.72
December	12,389.37	c/	780.53

c/ Data confidential due to less than 3 vessels in that strata

Table 3.12 below shows the overall bycatch rate (mt whiting per Chinook salmon) amongst all three non-tribal sectors in 2014 (when the 11,000 Chinook salmon threshold was exceeded) and 2018 (most recent year). Assuming the sector had access to the entirety of the 3,500 Chinook salmon Reserve, the second row shows the potential metric tons of whiting that could be taken and the third the hypothetical revenue based on the average shoreside price of whiting to date in 2019 (\$0.08/lb).

Table 3.12. Bycatch rate amongst all tribal sectors, potential Pacific whiting catch based on bycatch rate and the shoreside price per pound. Source:

	2014	2018
Bycatch Rate (mt whiting/ # of Chinook salmon)	19.37	45.59
Whiting Catch Potential Based on Bycatch Rate (mt)	67,787.14	159,200.35
Revenue (millions of \$)	\$12.37	\$29.04

Again, this is a very simplified look at the potential loss in revenue and doesn't take into account changes in ocean conditions, TAC levels, and other factors. However, as shown in below, the average amount of whiting that can be taken in each of the sectors in the months of October-December exceeds the amount of whiting that could have been caught with the full Reserve under the 2014 bycatch assumption. Given that this would likely be the time in which access to the Reserve would be needed, it shows that access to Reserve may be critical for the fleets in fully utilizing their quota in a given year.

3.6.4.2 Impacts of Alternative 1

Alternative 1 would develop an automatic authority action which would mirror action already taken by the at-sea and shoreside co-ops to mitigate salmon take through an area closure. The trigger for the automatic authority could be either official written or electronic notification from the co-op manager, or other designee, to the NMFS's West Coast Regional Administrator (RA), or designee, that they have voluntarily closed an area due to high salmon bycatch and request for an automatic action to conform to the closure. The request will need to specify the area to be closed, the impacted whiting sector, and the effective time period.

3.6.4.2.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

Depending on how this Alternative is structured (options presented above in Section 2.4), salmon impacts are expected to be the same as No Action with Option A as it would conform to the actions already being taken by the co-op. Under other options, salmon impacts could vary as described under the BAC impacts in Section 3.6. The intent of Alternative 1 is to close an area of high salmon bycatch, thus providing benefits to salmon. However, prime fishing grounds for whiting with low salmon bycatch may end up being closed off from fishing depending on the size, location, and duration of the closure. Therefore, Alternative 1 also has the potential for vessels to be forced to fish in other areas with higher bycatch of salmon or other constraining species. While the co-ops utilize area closures and have rules to ensure their vessels comply with area closures as part of their agreements, NMFS would need to implement and enforce an area closures under Alternative 1. The mandatory nature and federal enforceability of the Alternative 1 area closures may increase the effectiveness of the salmon bycatch mitigation compared to the voluntary area closures implemented by the co-ops.

One method employed by industry to determine if salmon bycatch rates remain high in an industry closed area is test tow. Before reopening a self-imposed closed area, industry will conduct test tows to determine if it can be reopened. Under No Action or Alternative 2 (discussed below), a vessel could be granted access back into a closed area to conduct test tows. If NMFS were to take conforming action and close off that area for a designated time, there would not be an allowance for test tows unless it was specifically designed within the automatic action authority as there is no discretion allowed by NMFS in taking conforming action. Prime fishing grounds for Pacific whiting with low salmon bycatch may be closed for longer than necessary, again causing vessels to fish in other areas that may be productive for Pacific whiting but have high salmon bycatch rates.

3.6.4.2.2 Costs

When assessing the costs of implementing the proposed alternatives under this mitigation measures, there are two categories to consider: the actual implementation costs for both industry and government in developing the conforming area closures and then the costs to industry if they were unable to access the Reserve without a current mitigation measure in an unexpected high bycatch year under No Action.

In terms of implementation, Alternative 1 would require the co-op manager to notify the NMFS RA (or designee) of a proposed closed area and the specifications around that closure (e.g., time, area). NMFS staff would then take conforming action in the way of a public notice. Therefore, the main costs would be associated with staff time for both industry and government in implementing the closed areas. Given the current structure of the three co-ops, it is assumed that there would be little additional cost to industry given that the systems are already in place to implement area closures quickly (described in Section 2.4). There would be additional NMFS staff time involved in producing the public notice, albeit, it would be less than a full regulatory action. Additionally, if Option A is selected under Alternative 1, the polygons that are closed tend to be of non-uniform shape and sizes. There may be difficulties in enforcing these closures or additional costs to NOAA's Office of Law Enforcement (OLE).

If the Council selected Alternative 1, the impact of the options (described above in Section 2.4.) in how the alternative was structured would have different socioeconomic impacts. If smaller areas are identified and can be enforced, the socioeconomic impacts from the closure would be limited and would likely be much less restrictive to industry than a larger area closure, such as a BAC.

Based on these analyses, it appears as if Option C would have greater socioeconomic costs to industry compared to Option B, and Option B would have greater socioeconomic costs than Option A. All three options would have some degree of cost in potentially displacing effort into poor whiting grounds with higher salmon bycatch rates than the area closed.

Finally, the implementation of the Alternative 1 by one or more of the whiting sector fisheries would also permit the fisheries to access the Reserve in years with unexpected high bycatch. Therefore, it would have positive economic benefits to industry as compared to No Action.

3.6.4.2.3 Impacts of Alternative 2

Alternative 2 would create a process by which one or all of the whiting co-ops could submit a salmon mitigation plan to NMFS which, if followed, would allow access into the Reserve in the situation of a high bycatch year. The plan would include a general description of the tools and measures the co-op would use to minimize Chinook salmon bycatch as well as require a post-season annual report on the previous year's fishing activities. Alternative 2, when compared to Alternative 1 or No Action, may provide more benefits to the industry as it would provide them the most latitude to react the quickest with the best available tools at their disposal throughout the year, while providing an avenue to access the Reserve if necessary.

3.6.4.2.4 Effectiveness in Chinook and coho salmon Bycatch Mitigation

Given that the SMPs would be formalizing the voluntary salmon bycatch mitigation measures taken by the co-ops, it is assumed that Alternative 2 would provide some increase in effectiveness in salmon bycatch mitigation compared to the No Action. Increase in effectiveness would be related to stringency of mitigation measures detailed in the SMP. It is presumed NMFS and the industry would coordinate in development the SMP, if the SMP were simply a formalization of existing voluntary measures, the resulting effectiveness would likely be status quo. However, in the process of developing the measures, NMFS could recommend different specifications than are in the co-op's plan. The recommendations may be more effective at mitigating bycatch than the industry's measures. For example, NMFS could

recommend the duration of an area closure be in effect for a longer period than what industry recommends. A longer duration may, therefore, afford more protection to salmon in that area.

3.6.4.2.5 Costs

Alternative 2 would require some additional time for the at-sea co-ops in developing their annual reports and co-op agreements to include the salmon mitigation plan. This would be a new product for the shoreside co-op, resulting in more administrative burden. For the government, there is likely to be negligible additional work with the at-sea co-ops agreements given that there is already a process in place for the co-op agreements. For the shoreside sector, it would be a new process, but as there is no new permit being issued, it should be minor.

While it is difficult to quantify the exact costs associated with Alternative 2 compared to No Action, it can be said that there would likely be additional costs under No Action compared to Alternative 2 in terms of the inability to access the Reserve under high bycatch situations. As described above, under No Action, the Council would have only one tool (i.e. the 200 fathom BRA) available resulting in a de facto closure or severely restricted opportunities or would have to close one or more of the sectors prior to exceeding the threshold.

3.6.5 Create an Automatic Authority for NMFS to Close Trawl Sectors

3.6.5.1 Impacts of No Action

Under No Action, the incidental salmon bycatch closure levels for whiting and non-whiting sectors would remain status quo as specified at §660.60(d)(1)(v). The closure point for the whiting sector is 14,500 Chinook salmon and 9,000 Chinook salmon for the non-whiting sector, and a total closure of all fisheries at 20,000 Chinook salmon.

3.6.5.1.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

This measure will not minimize Chinook salmon bycatch in groundfish fisheries as it is not a mitigation measure in the traditional sense. A mitigation measure can be considered a method to reduce catch of a species. This measure only maintains the current automatic authority in regulation to 20,000 total Chinook salmon in a given year. For coho salmon, there are no defined closure points.

3.6.5.1.2 Costs

This measure does not induce costs to the fishery as a mitigation measure. No Action would keep status quo management in effect. However, if a sector reaches its guideline plus the reserve (or the other sector reaches its guideline), this regulation would cause the closure of fisheries. The closure(s) at the specified amounts of Chinook salmon would result in some impact to revenue of a sector, but to what degree would depend on the month and sector affected. Table 3.13 shows estimates of what a closure would cost in terms of revenue to the affected sector(s) by month.

As noted in [Agenda Item G.3.a, Supplemental GMT Report 2, April 2019](#), the projected maximum total for fixed gear and recreational fisheries, for the entire West Coast is 173 Chinook salmon. This amount is significantly less than what the trawl fishery takes and linking the fixed gear and recreational fisheries to the non-whiting sector's trawl fisheries could result in disproportionate impacts. The economic ramifications for those fisheries if they closed due to high trawl bycatch could be quite high. For instance, complete closure of the fixed gear and recreational fisheries could result in projected losses of \$13-\$26 million per month in income during the fall months when a closure would be most likely to occur. Table 3.13 below details these estimated losses for all the fixed gear and recreational fisheries by month.

Table 3.13. Projected loss in income in millions of \$USD associated with fishery closures by month.
 Source [Appendix C](#) from 2029/2020 harvest specifications and management measures document.

Month	Whiting Sector				Non-Whiting Sector				
	Catcher Processor	Mothership	Shoreside	Treaty	Mid-water	Bottom trawl	LEFG OA	IFQ FG	Rec.
Jan	---	---	---	0.2	1.5	3.9	1.7	0	5.4
Feb	---	---	---	0.2	1.6	5.2	1.4	0.1	5.8
Mar	---	---	---	0.6	2.4	6.2	1.7	0.3	15.6
Apr	---	---	---	1.5	0.9	5.4	3.3	0.4	17.8
May	29.4	5.9	1	1.4	1.6	4.8	5.1	0.2	25.1
Jun	9.9	5	6.7	1.4	1.8	4.2	4.8	0.5	35.2
July	0	0.9	13.2	2.8	1.2	4.2	4.9	0.9	41.9
Aug	1.8	0.8	16.3	3.4	1.2	4.6	5.3	0.9	35.3
Sep	20.7	4.5	11.7	4.2	1.1	4.2	6.4	2.8	23.4
Oct	22.9	8.9	8.3	2.6	1	4.9	5.4	2.9	17.8
Nov	11.8	2.2	2.5	0.5	1.3	4.5	2.3	1.3	15.1
Dec	2	0.1	0.1	0.3	2.1	5.3	1.8	0.7	12.3

3.6.5.2 Impacts of Alternative 1

Under Alternative 1, the Chinook salmon bycatch closure amounts would be adjusted. Automatic authority would be developed to close trawl sectors at the following amounts: the whiting sector would close at 14,000 Chinook salmon, the bottom and midwater trawl of the non-whiting trawl sector would close at 8,500 Chinook salmon, with a total closure of all trawl fisheries at 19,500 Chinook salmon. This action would preserve 500 Chinook salmon available for the non-whiting sector’s fixed gear and recreational fisheries. All groundfish fisheries would close at 20,000 Chinook salmon.

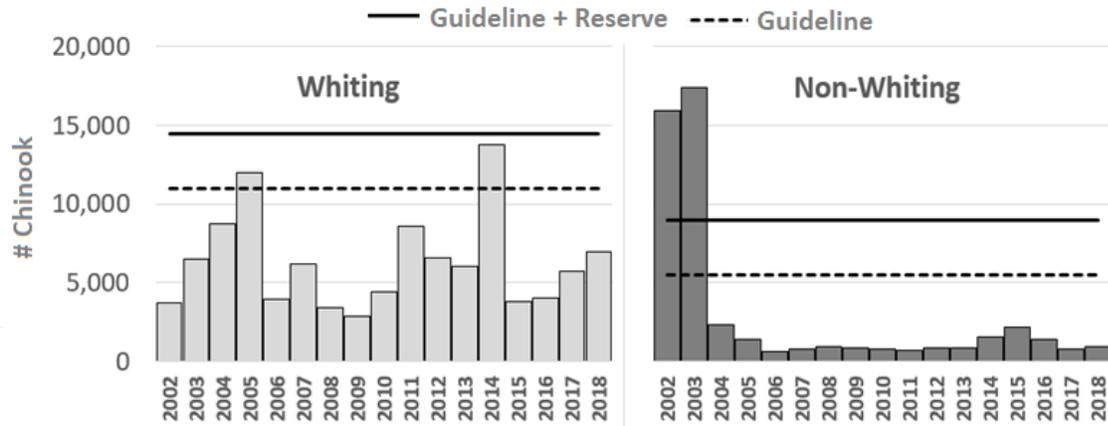
3.6.5.2.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

As noted above, this measure does not minimize Chinook salmon bycatch in groundfish fisheries. Instead it specifies new Chinook salmon closure points for the whiting and non-whiting trawl fisheries and creates the automatic authority necessary to do so.

3.6.5.2.2 Costs

Alternative 1 does not directly add costs to the industry. It readjusts the amount of Chinook salmon by creating a new automatic authority to close trawl fisheries at the aforementioned amounts and preserves 500 Chinook salmon for the fixed gear and select recreational fisheries. Based on GMT analyses ([Agenda Item G.3.a, Supplemental GMT Report 2, April 2019](#)), 500 Chinook salmon is not expected to diminish opportunity in the trawl fisheries as salmon bycatch in the trawl fisheries has fallen steadily over the past 15 yrs. (Figure 3.5) and, based on actions taken by the trawl fisheries to date, is expected to remain relatively low compared to the thresholds even with a 500 fish deduction.

Figure 3.5 Retrospective analysis of Chinook salmon bycatch relative to the 20,000 Chinook salmon guideline set in the Biological Opinion: Source [Agenda Item G3a, Supplemental GMT Report 2, April 2019](#)



The fixed gear and recreational fisheries would benefit from this measure, notably in the event that the salmon bycatch levels in the non-whiting trawl fisheries were tracking high and likely to result in a closure. Alternative 1 would allow the fixed gear and recreational fisheries to continue even if the trawl fisheries closed — until the total cap of 20,000 Chinook salmon was reached. Administrative costs would likely be associated with developing this Alternative

3.6.6 Development of Reserve Rule Provision

3.6.6.1 Impacts of No Action

Under No Action the Council would not adopt a mechanism for a fishery sector to access the Reserve of 3,500 Chinook salmon. This alternative would be out of compliance with T&C 3.c of the Incidental Take Statement in the BiOp.

3.6.6.1.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

There would be no process to prevent a sector from accessing the Reserve without having some sort of mitigation measure applied to the sector to slow or curtail salmon bycatch completely. The lack of a requirement to access the Reserve, could, therefore have greater potential impact on Chinook salmon than Alternative 1, where some action would be required to mitigate bycatch before the Reserve was accessed.

3.6.6.1.2 Costs

The costs associated with No Action relate to whatever efforts the sectors take to stay within their sector guidelines and the overall 20,000 Chinook salmon threshold. These measures could be any of the above or undescribed industry designed employed measures. Costs would be related to the administrative burden of NMFS in tracking salmon bycatch and other related activities. This cost would likely remain status quo.

3.6.6.2 Impacts of Alternative 1

Alternative 1 would create a mechanism that would allow the whiting and non-whiting sectors access to the Reserve of 3,500 Chinook salmon only after a mitigation measure had been applied.

3.6.6.2.1 Effectiveness in Chinook and coho salmon Bycatch Mitigation

This measure will not minimize salmon bycatch in the fishery directly; however, indirectly it would result in application of mitigation measures that could reduce salmon bycatch. This action could therefore reduce the incidence of a sector exceeding its bycatch guideline and entering the Reserve.

3.6.6.2.2 Costs

This action imposes no direct costs, however, this measure does require that a mitigation measure be imposed on a sector (or fishery) before it is granted access to the Reserve. Thus, indirectly, there would be a cost to industry as their normal operations would, in some way, be impacted by the selected mitigation measure(s). The costs associated with potential mitigation measures are described above. Administrative costs could be incurred as a result of this action.

3.7 Management and Enforcement Considerations

The mitigation tools described above may increase the enforcement burden, notably BAC monitoring and SFFT validation. While most vessels are required to use a VMS, enforcement would need to observe vessel effort in and around any closed area. This activity could take two forms; active on the water patrol and VMS track log observation. Enforcement may need to consider developing methods to track and audit vessel VMS tracks in real-time. Further, enforcement may need to consider how to address co-op rules as the options detailed above put the onus on the co-ops to enforce the rules. However, as enforcement is responsible for ensuring the regulations are followed, their involvement will be required.

A requirement for SFFT nets may also increase the burden on enforcement to validate a percentage of vessels fishing in areas where this net type may be required. This activity could require either contact at sea or dockside. Enforcement may likely have these procedures developed; however, should widespread use of SFFT go into effect, the burden on enforcement may increase.

Enforcement may need to consider how to address a closure for a sector, sector fishery, or even a total closure. This action may require increased contact with fishery participants initially and observation throughout the closure to ensure the sector(s) are compliant with the closure over time.

Management may need to consider a process to implement and notify participants in a timely manner so they are not out of compliance with regulatory changes. Mitigation measures may go into effect while vessels are at sea. Those vessels may not have regular contact with NMFS during those times; therefore, they could inadvertently be out of compliance.

Managers will also need to closely track all salmon bycatch to ensure the objectives of the BiOp and associated mitigation measures are being achieved. Many fisheries have timely data updates (e.g., whiting sector) whereas others, like the recreational fishery, are less timely.

3.8 Summation of the Alternatives with Respect to Net Benefit to the Nation

- Alternative 1 under Block Area Closures (at 2.1) could result reducing take of Chinook and coho salmon in areas where a BAC was developed. This alternative could assist in salmon recovery as well as allow for fishing effort to continue outside of closed areas.
- Alternative 1 under Extension of Block Area Closure for All Trawl Gear to the Western Boundary of the Exclusive Economic Zone (2.2) could result in reducing take of Chinook and coho salmon in depths greater than 250 fm. Listed Chinook and coho salmon that may be present in waters greater than 250 fm would be no subject to fishing pressure in any BAC present in those depths. This alternative could assist in salmon recovery as well as allow for fishing effort to continue outside of closed areas.
- A requirement for selective flatfish trawl nets could reduce take of Chinook and coho salmon in areas where the net was employed. This net type has proven effective in reduction of non-salmon bycatch and some results show it can also reduce incidental salmon take. Use of this net could allow for bottom trawl vessels to continue fishing in areas of where listed and threatened salmon are present.
- The alternatives presented under Pacific Whiting Cooperative Actions would allow the industry to impose industry designed mitigation measures to reduce salmon bycatch. These measures are similar to other measures used in management to reduce salmon take. The industry can, on average, respond to incidental bycatch events faster than managers; their mitigation plans would both accomplish salmon mitigation as well as allowing for continued fishing effort.
- Alternative 1 under the Create an Automatic Authority for NMFS to Close Trawl Sectors would result in unquantifiable benefits to the Nation. This measure adjusts closure points for the trawl specific fisheries of the whiting and non-whiting sectors of the West Coast groundfish fishery. While this measure may affect the trawl fisheries, it is not likely to significantly reduce trawl effort. The non-trawl portion of the non-whiting sector would benefit as they would be able to continue fishing even if trawl sectors closed, potentially providing between \$13 and \$26 million dollars to the economy that could likely be lost if the fixed gear and recreational fisheries closed.
- Alternative 1 under Reserve Access Rules would ensure the PCFMP is in compliance with the 2017 BiOp. This measure would allow for fishery sectors to access the Reserve of 3,500 Chinook salmon.

4 Initial Regulatory Flexibility Analysis

4.1 Introduction

This Initial Regulatory Flexibility Analysis (IRFA) addresses the statutory requirements of the Regulatory Flexibility Act (RFA) of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (5 U.S.C. 601-612). This IRFA evaluates the potential adverse economic impacts on small entities directly regulated by the proposed action.

The Regulatory Flexibility Act (RFA), first enacted in 1980 and amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (5 U.S.C. 601-612), is designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are 1) to increase agency awareness and understanding of the impact of their regulations on small business, 2) to require that agencies communicate and explain their findings to the public, and 3) to encourage agencies to use flexibility and to provide regulatory relief to small entities.

The RFA emphasizes predicting significant adverse economic impacts on small entities as a group distinct from other entities, and on the consideration of alternatives that may minimize adverse economic impacts, while still achieving the stated objective of the action. When an agency publishes a proposed rule, it must either ‘certify’ that the action will not have a significant adverse economic impact on a substantial number of small entities, and support that certification with the ‘factual basis’ upon which the decision is based; or it must prepare and make available for public review an Initial Regulatory Flexibility Analysis (IRFA). Under section 603 of the RFA, an IRFA “shall describe the impact of the proposed rule on small entities.”

4.2 IRFA Requirements

Until the Council makes a final decision on a preferred alternative, a definitive assessment of the proposed management alternatives cannot be conducted. In order to allow the agency to make a certification decision, or to satisfy the requirements of an IRFA of the preferred alternative, this section addresses the requirements for an IRFA. Under 5 U.S.C., section 603(b) of the RFA, each IRFA is required to contain:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- A description of the projected reporting, record keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule;
- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:

1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
3. The use of performance rather than design standards;
4. An exemption from coverage of the rule, or any part thereof, for such small entities.

When an agency publishes a final rule, it must prepare a Final Regulatory Flexibility Analysis, unless, based on public comment, it chooses to certify the action.

This section of the RIR provides information about the small entities that may be directly regulatory by the alternatives and the general nature of those effects. This information is useful for the Council to consider in selecting among the alternatives analyzed in this EA/RIR and for NMFS to use to prepare the IRFA for the proposed rule, should the Council recommend implementation of one of the action alternatives. Specifically, this section provides a description and estimate of the number of small entities that may be directly regulated by the action alternatives, noting if the categories or numbers of directly regulated small entities differs among the action alternatives. This section also identifies the general nature of the potential economic impacts on directly regulated small entities, specifically addressing whether the impacts may be adverse or beneficial. The exact nature of the costs and benefits of each of the alternatives is addressed in the impact analysis sections of the RIR and is not repeated in this section, unless the costs and benefits described elsewhere in the RIR differs between small and large entities.

This action regulates the fisheries described and managed by the PCGFMP. The alternatives would directly regulate the owners and operators in the whiting and non-whiting sectors. The Whiting sector is comprised of motherships, mothership catcher vessels, catcher-processors, and shoreside vessels and includes tribal participation. The non-whiting sector is comprised of midwater and bottom trawl vessels, fixed gear vessels and the recreational fleet. Mitigation measures described above at 2.1 through 2.4 affect the trawl fisheries in the two sectors. The actions described at 2.5 and 2.6 affect all vessels and all sectors of the West Coast groundfish fleet.

This Section will be addressed after the preliminary preferred alternatives are selected.

4.3 Definition of a Small Entity

The RFA recognizes and defines three kinds of small entities: 1) small businesses, 2) small non-profit organizations, and 3) small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a ‘small business’ as having the same meaning as ‘small business concern’, which is defined under section 3 of the Small Business Act (SBA). ‘Small business’ or ‘small business concern’ includes any firm that is independently owned and operated and not dominant in its field of operation. The SBA has further defined a “small business concern” as one “organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the firm is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture.”

The thresholds applied to determine if an entity or group of entities is a small business under the RFA depend on the industry classification for the entity or entities. Businesses classified as primarily engaged in commercial fishing are considered small entities if they have combined annual gross receipts not in excess of \$11.0 million for all affiliated operations worldwide (81 FR 4469; January 26, 2016).

Businesses classified as primarily engaged in fish processing are considered small entities if they employ 750 or fewer persons on a full-time, part-time, temporary, or other basis, at all affiliated operations worldwide. Since at least 1993, NMFS has considered CPs to be predominantly engaged in fish harvesting rather than fish processing. Under this classification, the threshold of \$11.0 million in annual gross receipts is appropriate.

The SBA has established “principles of affiliation” to determine whether a business concern is “independently owned and operated.” In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question.

The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern’s size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when 1) a person is an affiliate of a concern if the person owns or controls, or has the power to control 50 percent or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock; or 2) if two or more persons each owns, controls or has the power to control less than 50 percent of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors, or general partners, controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint venture if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

NMFS considers members of fishing cooperatives affiliated for purposes of applying thresholds for identifying small entities. In making this determination, NMFS considered SBA’s “principles of affiliation” at 13 CFR 121.103. Specifically, in § 121.103(f), SBA refers to “[A]ffiliation based on identity of interest,” which states “[A]ffiliation may arise among two or more persons with an identity of interest. Individuals or firms that have identical or substantially identical business or economic interests (such as family members, individuals or firms with common investments, or firms that are economically dependent through contractual or other relationships) may be treated as one party with such interests aggregated.” If business entities are affiliated, then the threshold for identifying small entities is applied to the group of affiliated entities rather than on an individual entity basis.

Small organizations. The RFA defines “small organizations” as any not-for-profit enterprise that is independently owned and operated, and is not dominant in its field.

Small governmental jurisdictions. The RFA defines “small governmental jurisdictions” as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of fewer than 50,000.

This Section will be addressed after the preliminary preferred alternatives are selected.

4.4 Reasons for Considering the Proposed Action

The reason for considering the proposed action is described in Section 1.1, Purpose and Need.

4.5 Objectives of the Proposed Action and its Legal Basis

Under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Stevens Act), the Secretary of Commerce (NMFS West Coast Regional Office) and the Council have the responsibility to prepare fishery management plans and associated PCGFMP RIR/IRFA, April 2018 40 regulations for the marine resources found to require conservation and management. NMFS is charged with carrying out the Federal mandates of the Department of Commerce with regard to marine fish, including the publication of Federal regulations. The West Coast Regional Office of NMFS, and Northwest Fisheries Science Center, research, draft, and support the groundfish management actions recommended by the Council. Commercial groundfish long fisheries are managed under the PCGFMP. The proposed action represents an amendment, as required, to the fishery management plan, as well as amendments to associated Federal regulations.

The principal objective of the proposed action is to reduce take of Chinook and coho salmon by groundfish commercial longline vessels operating off the states of Washington, Oregon, and California to the smallest level practicable, consistent with the Endangered Species Act and National Standard 9 of the Magnuson-Stevens Act.

4.6 Number and Descriptions of Directly Regulated Small Entities

This Section will be addressed after the preliminary preferred alternatives are selected.

4.7 Recordkeeping, Reporting, and Other Compliance Requirements

This Section will be addressed after the preliminary preferred alternatives are selected.

4.8 Federal Rules that may Duplicate, Overlap, or Conflict with Proposed Action

An IRFA is required to identify whether relevant Federal rules have been identified that would duplicate or overlap with the proposed action. This section will be completed once the Council has identified a preferred alternative.

4.9 Description of Significant Alternatives to the Proposed Action that Minimize Economic Impacts on Small Entities

An IRFA also requires a description of any significant alternatives to the proposed action(s) that accomplish the stated objectives, are consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities. This section will be completed once the Council has identified a preferred alternative.

5 Magnuson-Stevens Act

5.1 Magnuson-Stevens Act National Standards

Below are the 10 National Standards as contained in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and a brief discussion of how each alternative is consistent with the National Standards, where applicable. In recommending a preferred alternative, the Council must consider how to balance the national standards.

National Standard 1 — Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The PCGFMP determines how overfishing and optimum yield are determined for all Pacific Coast groundfish stocks and provides measures by which the fisheries are managed in order to prevent overfishing and achieve optimum yield. Neither the No Action nor the action alternatives would change these measures.

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

The proposed action analyzed in this document utilizes the best scientific information available on Chinook and coho salmon bycatch and fishery operation off the West Coast.

National Standard 3 — To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The PCGFMP manages stocks as a unit and utilizes stock complex designations and measures in order to manage interrelated stocks of fish as a unit. The proposed action does not affect the management of the stocks of PCGFMP management unit species.

National Standard 4 — Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation 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.

The proposed actions would apply to commercial and recreational fisheries authorized to fish in the west coast EEZ with specific requirements applying to the whiting and/or non-whiting sectors, depending upon the action. The proposed actions would not allocate or assign fishing privileges.

National Standard 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.

This proposed action provides multiple alternatives available to mitigate incidental Chinook and coho salmon bycatch by commercial and recreational groundfish fisheries in order to meet the Terms and Conditions of the Incidental Take Statement from 2017 National Marine Fisheries Service (NMFS)

biological opinion (BiOp) *Reinitiation of Section 7 Consultation Regarding the Pacific Fisheries Management Council's Groundfish Fishery Management Plan*.

National Standard 6 — Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The proposed action examines commercial trawl fishery sectors in accordance with the biological opinion and allows for sector specific mitigation measures to be applied in order to minimize salmon bycatch.

National Standard 7 — Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The proposed action does not create unnecessary duplication.

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

The proposed action takes into account the characteristics of each affected fishing sector and provides salmon bycatch mitigation measures that would respond to salmon bycatch events while implementing measures that could reduce overall economic impact of the measures on the fishery.

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

The intent of this proposed action is to mitigate and minimize Chinook and coho salmon bycatch in the West Coast groundfish fisheries. This proposed action would bring the fishery into compliance with the 2017 National Marine Fisheries Service biological opinion *Reinitiation of Section 7 Consultation Regarding the Pacific Fisheries Management Council's Groundfish Fishery Management Plan*.

National Standard 10 — Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The proposed action does not dramatically alter the current means and methods utilized by fishermen to prosecute the groundfish fishery. Safety concerns would remain largely status quo with the PCGFMP.

6 Preparers and Persons Consulted

Preparers

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Contributors

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Persons (*and Agencies*) Consulted

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