Authorization of an Oregon Recreational Fishery for Midwater Groundfish Species

Draft Environmental Assessment

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Authorization of an Oregon Recreational Fishery for Midwater Groundfish Species

Proposed Action:	To develop alternatives for targeting healthy and underutilized midwater groundfish species using midwater long-leader gear designed to avoid contact with bottom habitat and avoid and/or minimize impacts on overfished rockfish species.
Type of Statement:	Draft Environmental Assessment (EA)
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Abstract: This draft EA analyzes the impacts of authorizing the use of midwater long-leader gear for recreational fishing in waters seaward of a boundary line approximating the 40 fathoms depth contour off the coast of Oregon. Under the action alternatives, fishing for midwater rockfish seaward of the 40 fathom line would be allowed during a season ranging from one to six months between April and September. This action would have a minor impact on groundfish species, protected species (salmon), and the economy of the participating port towns. However, there would be no significant impact on the human environment as a result of the proposed action.

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ACRONYMS AND GLOSSARY

Acronym	Definition
ACL	annual catch limit
BB	briefing book
BMSY	biomass maximum sustainable yield
CCE	California Current Ecosystem
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
Council	Pacific Fishery Management Council
CPS	coastal pelagic species
CZMA	Federal Coastal Zone Management Act
DEIS	draft environmental impact statement
DPS	distinct population segment
EA	environmental assessment
EEZ	Exclusive Economic Zone
EFH	essential fish habitat
EFP	exempted fishing permit
EIS	environmental impact statement
EO	Executive Order
ENSO	El Niño Southern Oscillation

Acronym	Definition
ESA	Endangered Species Act
ESU	evolutionarily significant units
fm	fathom or fathoms
FMP	fishery management plan
F_{MSY}	the fishing mortality rate that maximizes catch biomass in the long term
GAP	Groundfish Advisory Subpanel
GMT	Groundfish Management Team
HAPC	habitat areas of particular concern
IFQ	individual fishing quota
IOPAC	Input-Output Model for Pacific Coast Fisheries
IRFA	initial regulatory flexibility analysis
m	meter or meters
MBTA	Migratory Bird Treaty Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	minimum spawning stock threshold
MSY	maximum sustainable yield
mt	metric ton
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service

Acronym	Definition
NOAA	National Oceanic and Atmospheric Administration—the parent agency of National Marine Fisheries Service
ODFW	Oregon Department of Fish and Wildlife
OFL	overfishing level
OMZ	oxygen minimum zone
ORBS	Oregon Recreational Boat Survey
OY	optimum yield
PacFIN	Pacific Coast Fisheries Information Network. Provides commercial fishery information for Washington, Oregon, and California. Maintained by the Pacific States Marine Fisheries Commission.
PDO	Pacific Decadal Oscillation
POP	Pacific ocean perch—a rockfish species that was declared overfished in 1999
PSMFC	Pacific States Marine Fisheries Commission
RCA	Rockfish Conservation Area
RecFIN	Recreational Fishery Information Network. Provides recreational fishery information for Washington, Oregon, and California. Maintained by the Pacific States Marine Fisheries Commission.
RFA	Regulatory Flexibility Analysis, or Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE	stock assessment and fishery evaluation
SSC	Science and Statistical Committee
USFWS	U.S. Fish and Wildlife Service—a representative of USFWS is a nonvoting member of the Council

Acronym	Definition
WCR	West Coast Region
YRCA	Yellowtail Rockfish Conservation Area

1 Introduction

This Environmental Assessment (EA) provides an analysis of alternatives regarding a proposed action by the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) to authorize a midwater long-leader recreational fishery for healthy midwater rockfish species (e.g., yellowtail rockfish, *Sebastes flavidus)* in waters seaward of approximately 40 fathoms (fm) off the coast of Oregon (42° 00' N. lat. to 46° 18' N. lat.). The proposed action would take place during the established Oregon recreational groundfish fishery, open from April to September, managed under the seasonal depth restriction framework.

This document addresses the statutory requirements of the National Environmental Policy Act (NEPA) and provides an assessment of the environmental impacts of the proposed action and its reasonable alternatives compared to the No Action alternative. An EA provides the analytical background for decision-making and has four essential components: 1) a description of the purpose and need for the proposed action; 2) alternatives that represent different ways of accomplishing the proposed action; 3) a description of the human environment affected by the proposed action; and 4) an evaluation of the expected direct, indirect, and cumulative impacts of the alternatives. The human environment includes the natural and physical environment and the relationship of people with that environment, as defined at 40 CFR 1508.14. These elements allow decision makers to look at different approaches to accomplishing a stated purpose and need and the likely consequences of each alternative. Based on this structure, the document is organized into the following chapters:

- Chapter 1 describes the purpose and need, the proposed action, the proposed action area, and considerations that went into the development of this EA.

- Chapter 2 outlines the alternatives that have been considered to address the purpose and need of the proposed action.

- Chapter 3 describes the components of the human environment potentially affected by the proposed action (i.e., the "affected environment"). The affected environment represents the baseline condition, which would be potentially changed by the proposed action.

- Chapter 4 evaluates the effects of the alternatives on components of the human environment to provide the information necessary to determine whether such effects are significant or potentially significant.

This action must conform to the Magnuson-Stevens Fishery Conservation and Management Act (MSA), which is the principal legal basis for fishery management within the U.S. Exclusive Economic Zone (EEZ) that extends from the outer boundary of the territorial sea to a distance of 200 nautical miles from shore, as well as other applicable laws.

1.1 Proposed Action

The proposed action is to authorize the use of midwater long-leader gear for recreational fishing in waters seaward of a line (as defined by waypoints) approximating 40fm off the coast of Oregon. This action would require a regulatory amendment within the existing framework of the Pacific Coast Groundfish Fishery Management Plan (FMP), which contains the policies and framework for managing the harvestable surplus of groundfish.

Recreational groundfish fisheries are primarily managed with time/area closures, length limits, and bag limits. The primary restriction that impedes additional recreational fishing activity on healthy stocks is low bycatch limits for the co-occurring overfished species yelloweye rockfish, *S. ruberrimus*. Allowing the use of the midwater long-leader gear during the current seasonal depth restriction is a way to allow additional opportunity to access healthy or underutilized mid-water rockfish species while avoiding the more benthic yelloweye rockfish.

Based on the recommendations of the Pacific Fishery Management Council (Council), midwater long-leader gear would be allowed for both charter and private vessels seaward of the 40fm seasonal depth closure and monitored with the existing Oregon Ocean Recreational Boat Sampling (ORBS) program. The preferred alternative would limit the season to between the months of April and September, months currently subject to depth restrictions. The gear configuration would be as described in the September 2015 Groundfish Advisory Subpanel Report,[1] including no more than three hooks, at least 30-feet (ft) between the sinker on the bottom and the lowest hook, and a non-compressible float required above the hooks. The term "long-leader" denotes the unusual length of line (>~30ft) between the hooks and sinker (Fig. 1-1) deployed on rod and reel sportfishing gear used during the Oregon midwater long-leader exempted fishing permit (EFP) to target midwater rockfish species. Further, lingcod (*Ophiodon elongate*) retention would be prohibited to discourage anglers from fishing the gear closer to the bottom. This is intended to aid in limiting bycatch of yelloweye rockfish, which, like lingcod, tend to stay closer to the bottom than the intended target midwater species yellowtail, widow, and canary rockfish. All other existing state and Federal groundfish regulations, such as bag limits and Rockfish Conservation Areas (RCAs), among others, would remain in effect.

The proposed action is based in part on favorable EFP test fishing results using midwater long-leader gear on-board sport charter fishing vessels off the coast of Oregon. The EFP test fishing, which commenced in 2009 and ended in 2011, was conducted by the Oregon Recreational Fishing Alliance in cooperation with the Oregon Department of Fish and Wildlife (ODFW) under a NMFS-authorized EFP.[2] An EFP was required to allow test fishing using this legal gear type in an area that would otherwise be closed to the recreational fishery.

[1] http://www.pcouncil.org/wp-content/uploads/2015/09/H1a_SUP_GAP_Rpt_SEPT2015BB.pdf
[2] Oregon Recreational Yellowtail Rockfish EFP Application to National Marine Fisheries Service, March 2, 2009.

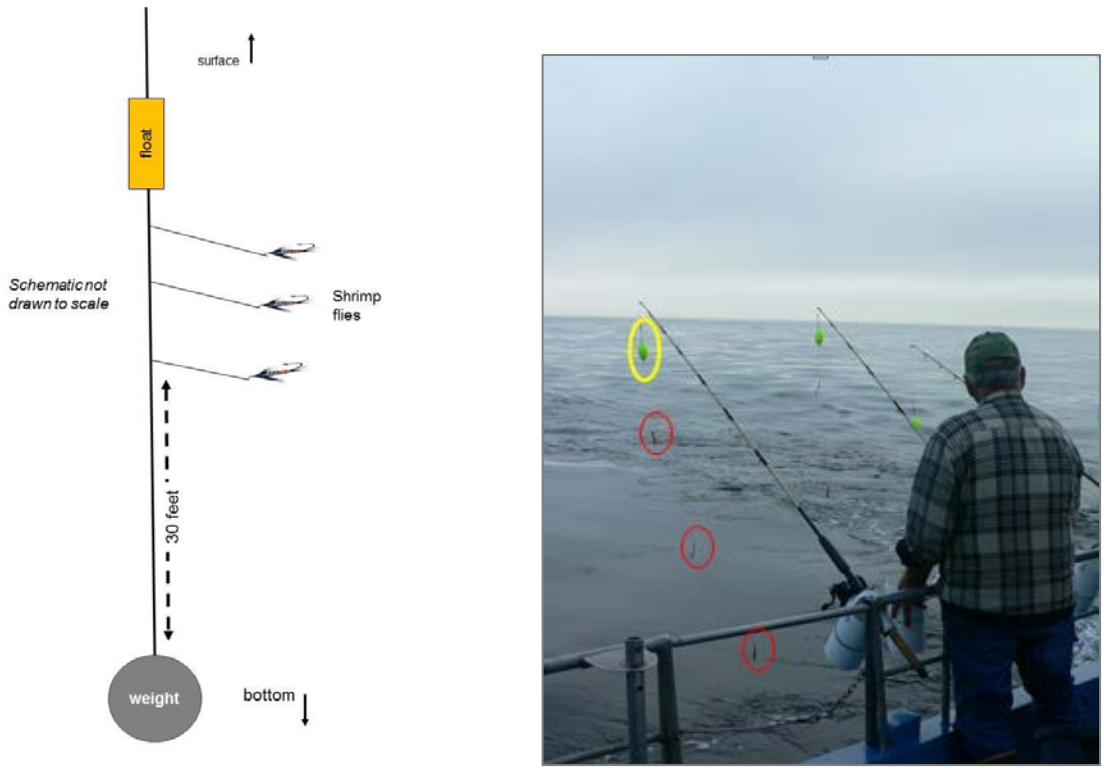

Figure 1-1. Schematic of the EFP midwater long-leader gear with photo of gear ready for deployment off the coast of Oregon. ***Note:*** *The bucket was used to contain the 30ft of leader between the sinker and the shrimp flies. Lynn Mattes, ODFW.*

The midwater long-leader EFP gear contained a float that was affixed to the upper end of the leader (Figure 1-1). The purpose of the float was to prevent hooking gear from descending below the upper level of the leader and into deeper waters where yelloweye rockfish are found. The float had sufficient buoyancy (~2.25 ounces) to support all hooking gear and line above the leader. The maximum number of hooks used in the midwater long-leader EFP was 3, which conformed to current Oregon state regulations that allow no more than 3 hooks per line. Small plastic worms and shrimp flies were used while weighted hooks, bait, and large lures were prohibited.

1.2 Purpose and Need

The purpose of this action is to allow access to abundant midwater rockfish during the current seasonal depth restrictions while avoiding and/or minimizing impacts on overfished and rebuilding rockfish species. The action is needed to diversify and ensure viable recreational fishing opportunities off Oregon with the aim to provide increased opportunities because recreational rockfish fisheries have been constrained in recent years to help rebuild overfished stocks. The action could also provide substitute recreational fishing opportunities to alleviate fishing pressure on nearshore rockfish species and serve as an additional fishing option during periods of constrained recreational salmon harvest.

The action is intended to alleviate fishing pressure on nearshore rockfish species and provide increased recreational fishing opportunities. The recreational groundfish fisheries are an important part of the local economy and social fabric in Oregon's coastal communities, and the implementation of deep-water rockfish closures in 2004 has left several ports without any viable groundfish fishing opportunities. Increasing recreational fishing opportunities are stated policy goals and objectives for sustainably managing groundfish resources in NOAA's "National Saltwater Recreational Fisheries Policy"[3] and the MSA.

Recreational fishing depth and area closures in recent years have constrained fishing opportunity in Oregon, due in part to the overfished status of yelloweye rockfish. Yelloweye rockfish reside near the bottom of rocky habitats, while midwater species, which exist in relative abundance above those habitats, are inaccessible to recreational fishermen due to existing depth and area closures. Yelloweye rockfish are encountered more frequently in deeper water and have lower survival rates when released in shallower water due to barotruama inflicated injuries.[4] Since 2004, the Oregon sport groundfish fisheries have been restricted to shallow depths (< 30fm) during the peak months for effort and catch to reduce interactions with deeper water species. These depth restrictions have greatly reduced the ability for anglers to access healthy and robust stocks, such as yellowtail and widow rockfish, *S. entomelas*.

The depth restrictions have also eliminated groundfish fishing opportunity for ports like Florence and Winchester Bay in southern Oregon that lack access to shallow reef habitat. And for ports with access to nearby shallow reef habitat, the depth restrictions have caused the fisheries to become almost entirely dependent on shallow water groundfish stocks. In Oregon, the recreational groundfish fishery has become almost exclusively dependent on a single shallow water species, black rockfish, *S. melanops*, which constitutes ~70 percent of total recreational groundfish catch (in number of fish).

Authorizing the use of midwater long-leader gear in waters seaward of approximately 40fm off the coast of Oregon during currently prohibited months would extend access to more fishing grounds where healthy midwater species may be caught while minimizing impacts to deeper water species, such as yelloweye rockfish. The recreational groundfish fishery in Oregon is currently restricted to shoreward of the management line approximating the 30fm curve[5] from April 1 through September 30. The resulting 10fm buffer zone between the traditional recreational fishery and the area in which use of midwater long-leader gear is proposed would aid in monitoring and enforcement. The midwater long-leader gear has been proven to be effective at catching the healthy and robust semi-pelagic stocks in deep water with minimal yelloweye rockfish interactions. Authorizing the midwater gear and providing access to additional fishing grounds could provide a hedge against negative consequences in the event of a decline in the black rockfish fishery or the traditional salmon ocean recreational fishery.

This EA analyses effects of the proposed long-leader fishery into the future. If implemented, the proposed action will remain in place until changed by a subsequent action that will be analysed as necessary under applicable laws.

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[3] http://www.nmfs.noaa.gov/sfa/management/recreational/policy/.html
[4] http://www.pcouncil.org/wp-content/uploads/D3b_GMT_MAR2014BB.pdf
[5] http://www.dfw.state.or.us/MRP/regulations/sport_fishing/docs/30fmwaypts.pdf

1.3 Description of the Management Area

The area under consideration for the proposed action comprises the fishing grounds seaward of a line approximating the 40fm depth curve that are used by federally managed U.S. West Coast recreational groundfish fisheries and associated coastal communities in Oregon (42° 00' N. lat. to 46° 18' N. lat.). In general, the fishing grounds are within the west coast EEZ, which stretches from 3 to 200 nautical miles (Figure 1-2). However, recreational groundfish fishing is largely confined to depths of 30fm or less, or roughly within 30 miles of the coast, as areas with depths greater than 30fm are currently closed to recreational groundfish fishing between April 1 and September 30.

Figure 1-2. The proposed affected area off the coast of Oregon with key recreational fishing ports and the 30 and 40 fm management lines.

1.4 Recreational Groundfish Fishery Management Measures

Federal recreational groundfish regulations are not intended to supersede more restrictive state recreational groundfish regulations relating to federally managed groundfish. The state-managed groundfish fisheries are not interrelated to, or interdependent with, the proposed action. However, vessels participating in federally managed fisheries transit through state waters and land fish within the coastal states. Thus, some effects of the federally managed groundfish fishery occur in state waters. For most groundfish regulations, the State of Oregon adopts the federal regulation by reference into state regulations (e.g., bag limits include fish taken in both state and federal waters). Off the coast of Oregon, boat limits apply, whereby each fisher aboard a vessel may continue to use angling gear until the combined daily limits of groundfish for all licensed and juvenile anglers aboard has been attained.

Recreational groundfish conservation areas off the coast of Oregon include the Stonewall Bank Yelloweye Rockfish Conservation Area (YRCA). Recreational fishing for groundfish and halibut is prohibited within the Stonewall Bank YRCA. It is unlawful for recreational fishing vessels to take and retain, possess, or land groundfish taken with recreational gear within the Stonewall Bank YRCA. A vessel fishing in the Stonewall Bank YRCA may not be in possession of any groundfish. Recreational vessels may transit through the Stonewall Bank YRCA with or without groundfish on board. The Stonewall Bank YRCA is defined by latitude and longitude coordinates specified at §660.70, subpart C.

1.5 Additional Background

The history of discussions and considerations leading up to the proposed action and alternatives analysed in this document is robust. This section includes an historical overview of the discussions between NMFS and the Council to consider use of the midwater long-leader gear. These discussions included considerations for testing the gear under EFPs, reviewing the results of these EFPs, and the proposed action to authorize use of the gear in areas currently closed under the groundfish FMP.

The Council process is based on stakeholder involvement and allows for public participation and public comment on fishery management proposals during Council, subcommittee, and advisory body meetings, as well as through state agencies. It is the principal mechanism to scope this proposed action for allowing the midwater long-leader sport fishery off Oregon during months currently subject to seasonal depth restrictions.

EFPs provide a process for testing innovative fishing gears and strategies to substantiate methods for prosecuting sustainable and risk-averse fishing opportunities that would otherwise be prohibited. EFPs are commonly used to explore ways to reduce effort on depressed stocks, encourage innovation and efficiency in the fisheries, provide access to underutilized target stocks while directly measuring the bycatch associated with those fishing strategies, and evaluating current and proposed management measures. A primary purpose of EFPs is the evaluation of fishing gear or management measures that can be transferred into regulation and applied fleet wide.

1.5.1 History of Council and Agency Scoping and Decisions Related to the Proposed Action

The Council first considered the use of midwater long-leader gear with the submission of the initial recreational midwater long-leader EFP at their June 2008 meeting in Foster City, California.[6] The Council recommended approval of the final EFP[7] at their September 2008 meeting in Boise, Idaho and recommended renewal of the EFP at their November 2009 and September 2010 meetings. The NMFS Northwest Region Sustainable Fisheries Division (now merged with the former NMFS Southwest Region, for the newly created NMFS West Coast Region) issued EFPs to fish with midwater long-leader gear in 2009, 2010, and 2011. However, due to permit issuing delays in 2010, no activities occurred under the EFP that year.

Based on initially favourable EFP results on 100 percent observer-monitored sport charter fishing vessels, the Council first considered implementing this recreational fishing opportunity into regulation at the November 2012 meeting, but concrete action with potential deliverables and timelines did not take place until the June 2013 meeting.[8] At that meeting, the Council advanced consideration with a target implementation date of January 1, 2015, contingent on NMFS conducting a detailed analysis of all relevant considerations that would be reviewed at a future Council meeting.[9] Specifically, the Council recommended NMFS, with assistance from ODFW, prepare an analysis for authorizing a midwater long-leader recreational groundfish fishing in Oregon and California. Between September 2013 and March 2014, the Council took no further concrete action on this item and NMFS did not initiate the contingent analysis.

In June 2014, the Council included authorization of the midwater long-leader gear outside a line approximating 40fm during the seasonal depth restrictions (April-September) in the list of actions under a proposed omnibus amendment.[10] The ODFW provided NMFS with a preliminary analysis and supporting rationale for the Oregon component of the proposed fishery to be included in the NEPA analysis. The California Department of Fish and Wildlife (CDFW) engaged in initial discussions on the California component of the proposed action. However, CDFW did not provide an analysis. In conducting the preliminary draft NEPA analysis, NMFS noted several issues, including monitoring and enforcement concerns raised by CDFW, that necessitated further Council discussion and guidance. NMFS prepared an Issues Paper[11] in August 2015 to guide the Council in addressing the stated issues and concerns and to seek needed clarifications to continue preparing the analysis as requested in June 2013. NMFS recommended Council discussion at the September 2015 Council meeting to:

- define the purpose and need for authorizing the use of the gear as proposed;
- clarify the range of alternatives for consideration, including the geographic scope; and
- provide guidance on key issues, including monitoring, management response to quota overages, enforcement, allocation, and socioeconomic factors.

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[6] http://www.pcouncil.org/bb/2008/0608/F3_0608.pdf
[7] http://www.pcouncil.org/bb/2008/0908/I6a_ATT4_0908.pdf
[8] http://www.pcouncil.org/wp-content/uploads/F3_SITSUM_JUN2013BB.pdf
[9] http://www.pcouncil.org/wp-content/uploads/0613decisions.pdf
[10] http://www.pcouncil.org/wp-content/uploads/F9a_SUP_ATT1_UPDATED_Compilation_F3_and_F6Actions_JUNE2014BB.pdf
[11] http://www.pcouncil.org/wp-content/uploads/2015/08/H1a_NMFS_Rpt_SEPT2015BB.pdf

While the CDFW expressed some interest during initial discussions, as the process unfolded it eventually decided to opt out of further participation. The Council adopted[12] a range of alternatives for developing mid-water recreational fishing regulations for areas of the Oregon coast only. It also adopted a draft purpose and need statement (which has been included in this analysis), as requested by NMFS, and directed that the draft NEPA analysis be updated for further consideration at their March 2016 Council meeting.

1.5.2 Summary of EFP Results for Midwater Long-leader Gear

Mr. John Holloway, Regional Director of the Oregon Recreational Fishing Alliance, conducted and administered the midwater long-leader EFP test fishing off the coast of Oregon (Figure 1-3), beginning in 2009 and ending in 2011. In sum, 35 charter vessel trips were taken, along with 306 different drifts on those trips. During each drift, at-sea observers provided by ODFW recorded the number and length of fish caught by species. Below, Table 1-1 presents the observed catch in the long-leader EFPs, which was dominated by catch of the target healthy stocks (i.e., yellowtail rockfish), with very minor catch of overfished yelloweye rockfish (only two of the total catch of ~5,000 fish were yelloweye rockfish).

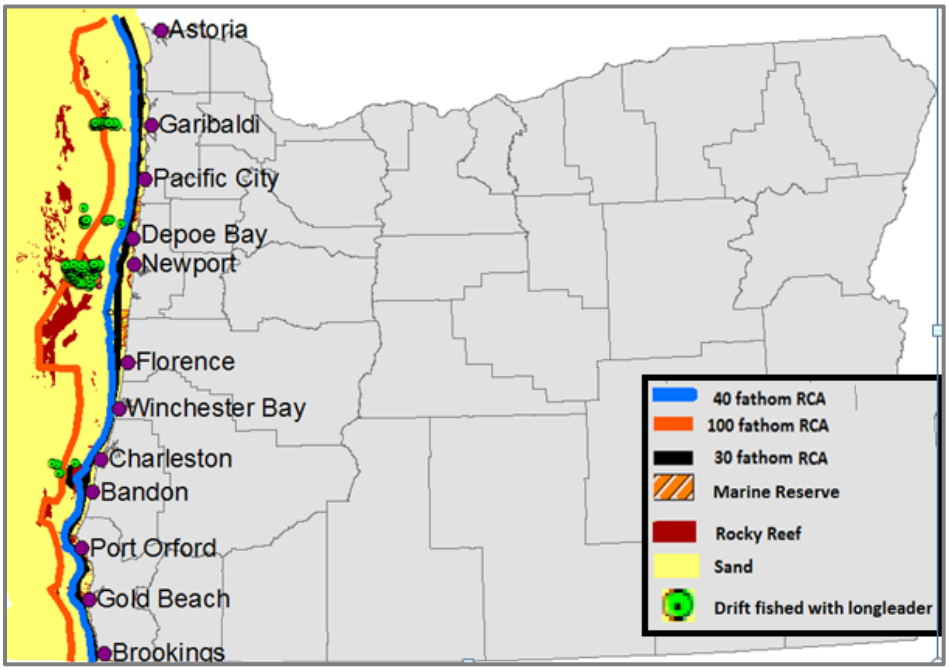

Figure 1-3. Depth and area locations for midwater long-leader EFP fishing trials.

[12] http://www.pcouncil.org/wp-content/uploads/2015/09/0915decisions.pdf

Table 1-1. Species composition of long-leader catch by numbers of fish and total weight (2009–2011).

Species	Fish	percent of Total	Kg	percent of total
Yellowtail RF	2,930	59.2 percent	3,348	62.1 percent
Widow RF	1,228	24.8 percent	816	15.1 percent
Canary RF	636	12.8 percent	1,111	20.6 percent
Blue RF	84	1.7 percent	58	1.1 percent
Redstripe RF	40	0.8 percent	28	0.5 percent
Silvergray RF	16	0.3 percent	11	0.2 percent
Salmon	7	0.1 percent		0.0 percent
Bocaccio RF	3	0.1 percent	4	0.1 percent
Lingcod	3	0.1 percent	13	0.2 percent
Quillback RF	2	0.0 percent	2	0.0 percent
Yelloweye RF	2	0.0 percent	4	0.1 percent
Total	**4,951**	**100.0 percent**	**5,395**	**100.0 percent**

Note: *Canary rockfish were signicantly larger and heavier than widow rockfish, thus the flip in their respective ranking of fish vs. weight.*

Although catch of yelloweye rockfish was minor, the midwater long-leader EFP gear encountered bycatch of other potential constraining species (e.g., blue and canary rockfish). Of greatest concern during execution of the EFP was the relatively large bycatch of canary rockfish, another semi-pelagic species that, at the time, was considered overfished. However, the results of the 2015 stock assessment indicate that the canary rockfish stock has been rebuilt.[13] As a result, canary rockfish is no longer considered overfished and the annual catch limit (ACL) has increased significantly, such that bycatch of this species in the midwater long-leader fishery is no longer a concern.

1.5.3 Key Differences between the Proposed Action and the Midwater Long-leader EFP

The Council and NMFS decided not to apply several conditions of the EFPs to the proposed action or the reasonable alternatives for the proposed action. These conditions and the rationale for excluding them from proposed action and further consideration and analysis in this EA are summarized below.

As part of the Oregon midwater long-leader EFP, sport charter vessels had their own daily rockfish bag limits, separate and distinct from the state and federal daily rockfish bag limits. The 15 fish bag limit used during the EFP was to entice more participation and to have a larger sample size of possible catches. The proposed action does not include separate bag limits for this fishery. Rather, the proposed action includes adherence to existing state and federal groundfish regulations, including the existing bag limits.

As part of the Oregon midwater long-leader EFP, fishing was allowed in the Stonewall Bank YRCA. The proposed action, however, would not allow this exemption to continue. This adherence to existing regulations in the proposed action reduces the need to make changes to

[13] http://www.pcouncil.org/wp-content/uploads/2016/05/Canary_2016_Final.pdf

regulations and anticipates other potential implications to enforcement operations and the affected environment (e.g., considering the potential for bycatch of yelloweye rockfish in the YRCA).

As part of the Oregon midwater long-leader EFP, fishing was not allowed shoreward of the 40fm curve on the same trip in which long-leader gear was utilized seaward of the 40fm curve. However, the proposed action does not include this provision because separating the two trip types creates an unnecessary burden on anglers and enforcement personnel. Instead, the trip types would be coded separately through the ORBS program allowing for calculations of catch by trip type to be determined.

As part of the Oregon midwater long-leader EFP, anglers were allowed to use long-leader lengths of 30ft, 40ft, or 60ft at their discretion. The majority of the EFP drifts, however, employed a 30ft long-leader length, which demonstrated a significant reduction of yelloweye rockfish bycatch while also reducing tangles when compared to the longer leader lengths. Therefore, the proposed action exclusively specifies use of a 30ft long-leader.

2 Description of Alternatives

To meet the stated Purpose and Need above, the Council and NMFS considered three alternatives in addition to the No Action alternative. All three of the action alternatives would allow fishing seaward of 40fm.

2.1 The No Action Alternative

Under the No Action Alternative, the status quo recreational groundfish regulations in Oregon remain in place, including the use of midwater long-leader gear in open areas, providing year-round fishing opportunities to harvest a suite of groundfish species. For the period 2011-2015, recreational anglers fished, on average, approximately 84,405 trips per year for bottomfish (groundfish) in Oregon waters, which is the largest ocean recreational fishery in Oregon representing about 44 percent of the total effort over that time period. The existing deepwater closures would remain seasonally in place, prohibiting access to otherwise healthy and underutilized midwater species, to avoid interactions with overfished rockfish species. The status quo groundfish sportfishing state regulations for Oregon include, among others:[14] (1) no fishing for groundfish within the Stonewall Bank Yelloweye Rockfish Conservation Area,[15] (2) ocean waters closed April 1-September 30 outside of the boundary line approximating the 30fm depth contour (defined by waypoints; 40fm in federal regulations), (3) retention of yelloweye rockfish prohibited, (4) daily catch limits of seven (ten in federal regulations) groundfish species in aggregate, and (5) daily catch limit of two (three in federal regulations) lingcod species with a minimum size limit of 22 inches.

2.2 Alternative 1 (preferred)—Allow midwater long-leader recreational groundfish fishing in waters seaward of a line approximating the 40 fm depth curve off the coast of Oregon for the time period April-September.

Under Alternative 1, midwater long-leader recreational groundfish fishing would be authorized seaward of a line approximating the 40 fm depth curve exclusively off the coast of Oregon (42°00' N lat .to 46°18' N lat.) from April-September to target abundant and healthy midwater species while avoiding or minimizing interactions with overfished rockfish species. The gear configuration would include no more than one line with three hooks, a minimum of 30 feet between the sinker and the lowest hook, and a non-compressible float required above the hooks. Small plastic worms and flies would be used along with weighted hooks; bait and large lures (greater than 5 inches) would be prohibited. Further, lingcod retention would be prohibited. All other existing state and federal groundfish regulations, such as bag limits, rockfish conservation areas, etc., would remain in effect. This alternative would be monitored with the existing ORBS program. While it is impossible to project the exact number of angler trips expected to occur with this gear, or the total impacts by species, based on bycatch levels observed during the Oregon midwater long-leader Exempted Fishing Permit (EFP), this alternative could potentially support 25,000-50,000 angler trips before bycatch levels of limiting species constrained recreational sport fishing. While the fishery could theoretically support this number of trips, realistically the number

[14] http://www.dfw.state.or.us/fish/docs/2015/2015%20Marine%20Zone%20Sport%20Fishing%20Regs_r11-5-14.pdf
[15] The Stonewall Bank YRCA is defined by latitude and longitude coordinates specified at §660.70, subpart C.

would be much lower. There are several factors that would contribute to limiting participation in this fishery. As the fishery would take place in deeper water than currently allowed during the seasonal closure, it would require a longer steam time to reach the fishing grounds, consume more fuel, and result in higher costs. These costs could limit interest by both private boat anglers and passengers on charter fishing vessels who would have to pay a higher fare than for inshore trips. Additionally, the required long-leader gear configuration (as described in section 1.1) will be challenging to use compared with standard bottom fishing gear. The long leader gear could pose a serious tangling hassle, especially for inexperienced anglers like those found on many charter boats, and could dissuade participation. NMFS staff calculated a possible number of trips based on boats that travel past 40 fathoms to fish during all-depth months. They found that during those months, 15 percent fish deeper than 40 fathoms with normal fishing gear though many may opt out if they have to use long-leader gear.

The record high number of trips off Oregon is about 100,000. Applying 15 percent to 100,000 trips would result in maximum effort of 15,000 trips deeper than 40 fathoms. Because the 100,000 effort is an all-time maximum, and because some fishermen would not want to deal with long-leader gear, a realistic number is 5,000 trips (instead of 15,000). However, if ODFW closes nearshore reefs early (as it has in 2017), fishermen would be left with only the long-leader fishery and could take an additional 5,000-10,000 trips. With this in mind, the upper boundary used for this NEPA analysis to determine the potential environmental effects will be set at 15,000 trips per year.

2.3 Alternative 2—Allow midwater long-leader recreational groundfish fishing in waters seaward of a line approximating the 40fm depth curve off the coast of Oregon for the time period July-September.

Under Alternative 2, midwater long-leader recreational groundfish fishing would be authorized seaward of a line approximating the 40fm depth curve exclusively off the coast of Oregon (42°00' N lat.to 46°18' N lat.) from July-September. Compared with Alternative 1, because this alternative has a shorter season, it would have a corospondingly lower number of angler trips. All other factors remain the same as in Alternative 1 with the only difference being the time period and corresponding number of trips.

2.4 Alternative 3—Allow midwater long-leader recreational groundfish fishing in waters seaward of a line approximating the 40fm depth curve off the coast of Oregon for the month of August.

Under Alternative 3, midwater long-leader recreational groundfish fishing would be authorized seaward of a line approximating the 40fm depth curve exclusively off the coast of Oregon (42°00' N lat.to 46°18' N lat.) during the month of August. Compared with Alternatives 1 and 2, because this alternative would have an even shorter season, it would have a corospondingly lower number of angler trips. All other factors remain the same as in Alternative 1 with the only difference being the time period and corresponding number of trips.

2.5 Alternatives Considered and Eliminated from Further Detailed Analysis

Additional alternatives to the proposed action were considered, but ultimately rejected for the purposes of further analysis in this EA. These alternatives represent additional considerations beyond those described in Section 1.4. as differences between the proposed action and the EFP.

An alternative to establish a midwater long-leader recreational groundfish fishery in California waters was considered, but it was eliminated from further analysis due to a CDFW recommendation and Council adoption of that recommendation.[16] CDFW expressed concerns regarding the monitoring, enforcement, and funding challenges associated with establishing a new fishery in California waters. Additionally, there has been very little EFP test fishing of the midwater long-leader recreational gear in California waters. It was argued that until robust observer-verified data exist, this potential alternative presents too high a risk to include in the suite of alternatives under consideration.

An alternative to establish a midwater long-leader recreational groundfish fishery in Oregon waters for the sport charter vessel fleet only was considered by the Council, as that fleet could carry observers on board the vessels to collect data on interactions with prohibited and constraining species. It was noted that no current program exists for placing observers on the private recreational vessels, and such a program would require additional analyses and consideration. The Council decided not to recommend this alternative for further analysis due in part to ODFW's policy regarding sector separation and the goal of preserving equality in managing sport recreational fisheries modes in Oregon.

The Council considered allowing retention of all groundfish species, including lingcod. However, the Council did not recommend further analysis of this alternative given concerns about the increased potential for yelloweye rockfish bycatch should anglers choose to target more bottom-dwelling species, like lingcod.

The Council considered including additional monitoring and reporting requirements for anglers fishing in deep waters with the long-leader gear. However, NMFS regards the current sampling rate of the ORBS monitoring program (which includes angler-reported discard estimates by species and area) to be sufficient for adequately covering new activities under the proposed action. Additionally, charter vessels may also be included in the sampling frame with a voluntary at-sea observer program conducted by ODFW and the Pacific States Marine Fisheries Commission (PSMFC).

Finally, the Council considered allowing the fishery to operate seaward of 30fm but did not make that part of their recommended alteratives for further analysis. This decision was based in part on input from law enforcement that a 10fm buffer zone (i.e., fishing seaward of 40fm enforceable depth contour) would be preferred to allow for effective and efficient enforcement when using depth-based regulations.

[16] http://www.pcouncil.org/wp-content/uploads/2015/09/0915decisions.pdf

3 Description of the Affected Environment

This chapter describes the Pacific Coast groundfish fishery and the resources that would be affected by the alternative action. Physical environment, marine ecosystems, and essential fish habitat would not be affected as the gear being proposed would have no more impact than gear currently allowed. Because of this, these topics are not discussed in this document. Groundfish resources are described in Section 3.1, protected species are described in Section 3.2, salmon are described in Section 3.3, and economic resources are described in Section 3.4. The 2016 Status of the Pacific Groundfish Fishery, Stock F and Fishery Evaluation (SAFE) document,[17] the Final Environmental Impact Statement[18] completed for the 2015/2016 Groundfish Harvest Specifications and Management Measures (PFMC 2015) and the Environmental Assessment for the 2017/2018 Groundfish Harvest Specifications and Management Measures (2017 EA) provide detailed information pertaining to the physical, biological, and socioeconomic environment. These documents may provide additional background for the reader.

3.1 Groundfish Species

There are more than 90 species of groundfish managed under the groundfish FMP. This includes over 60 species of rockfish in the family Scorpaenidae, seven roundfish species, 12 flatfish species, assorted shark species, all endemic skate species, all endemic grenadier species, and a few miscellaneous bottom-dwelling marine fish species. Groundfish species occur throughout the Federal EEZ off the coast of Oregon and within state waters, occupying diverse habitats at all stages in their life history.

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

Under the Pacific coast groundfish FMP, stocks are defined as healthy, precautionary, or overfished. The passage of the Sustainable Fisheries Act in 1996 and the reauthorization of the MSA in 2006 incorporated the current conservation and rebuilding mandates into the MSA. These mandates—including abundance-based standard reference points for declaring the status of a stock (overfished; in a "precautionary" status; or at levels that can support maximum sustainable yield (MSY) (healthy or "rebuilt"))—were subsequently incorporated in the groundfish FMP with adoption of Amendments 11, 12, and 23. The detailed information on life history, historical catch,

[17] http://www.pcouncil.org/wp-content/uploads/2017/02/SAFE_Dec2016_02_28_2017.pdf
[18] http://www.pcouncil.org/wp-content/uploads/GF15_16_SpexFEISJanuary2015.pdf

and management information for each of these stock categories can be found in the 2016 SAFE document (PFMC 2016).

Under the groundfish FMP, healthy stocks are those non-flatfish stocks with current biomass levels greater than 40 percent of their unfished biomass level (depletion is the term used to define the ratio of current spawning biomass relative to unfished spawning biomass). The current list of 23 healthy rockfish stocks noted in the 2016 SAFE document includes the primary species impacted by this proposed action, yellowtail rockfish, with an estimated 69 percent depletion based on the 2013 assessment, widow rockfish with an estimated 75.1 percent depletion based on the 2015 assessment, and canary rockfish with an estimated 55.5 percent depletion based on the 2015 assessment. These three species comprised 96.8 percent of the total number of fish captured during the Oregon midwater long-leader EFP (Table 1-1). The northern lingcod stock was also listed as a healthy stock and comprised 0.1 percent by number (3 fish) of the total fish captured during the Oregon midwater long-leader EFP.

Precautionary zone non-flatfish stocks are those with depletion between 25 and 40 percent. To prevent a precautionary zone stock from becoming overfished, an ACL adjustment is made reducing the allowable catch to a level below the acceptable biological catch. The more the stock biomass is below the precautionary threshold of 40 percent depletion for non-flatfish stocks or 25 percent depletion for flatfish stocks, the greater the precautionary adjustment. Five of the current six rockfish species listed as precautionary stocks in the 2016 SAFE document were not captured as part of the Oregon midwater long-leader EFP. The sixth species, blue rockfish, comprised 1.7 percent of the total fish captured during the Oregon midwater long-leader EFP (Table 1-1) and has an estimated 29.7 percent depletion based on the 2007 assessment.

Overfished stocks are those whose abundance has fallen below the depletion threshold of 25 percent (i.e., their spawning biomasses that have dropped below the minimum spawning stock threshold (MSST)). The Groundfish FMP requires overfished stocks to be rebuilt to the biomass maximum sustainable yield (BMSY) through harvest restrictions and conservation measures. Furthermore, the MSA requires the rebuilding periods to be the shortest time possible while considering the status and biology of the stock, the needs of fishing communities, and the interaction of the stock within the marine ecosystem. A rebuilding analysis that considers alternate harvest levels and rebuilding times is prepared for each overfished species.

As of July 2017, three west coast rockfish stocks were considered overfished: cowcod south of 40º10' N lat., Pacific ocean perch, and yelloweye rockfish. All three of these stocks are rebuilding. Pacific ocean perch is a slope rockfish that is not caught by hook and line gear. Of the overfished species, only the yelloweye rockfish occurs within the management area for the proposed midwater long-leader fishery and is vulnerable to hook and line gear. There were only two yelloweye rockfish caught out of 5,395 fish captured during the Oregon midwater long-leader EFP (Table 1-1). Detailed background information on yelloweye rockfish is presented below.

Unassessed groundfish stocks include species managed in complexes (i.e., the Minor Shelf Rockfish complexes, Other Flatfish, and Other Fish). For these species, it is usually impossible to determine stock status or an overfished threshold quantitatively. Relatively data-poor, catch-based methods are used to determine the OFL. There were three species from the Minor Shelf Rockfish complex captured during the Oregon midwater long-leader EFP: redstripe rockfish, *S. proriger*;

sivergray rockfish, *S. brevispinis*; and quillback rockfish, *S. maliger*. A total of 40 redstripe rockfish were captured (0.8 percent of total), 16 silvergray (0.3 percent of total), and 2 quillback (0.04 percent of total).

3.1.1 Yelloweye Rockfish Distribution and Life History

Yelloweye rockfish range from the Aleutian Islands, Alaska, to northern Baja California, Mexico, and are common from the Gulf of Alaska southward to Central California (Eschmeyer, et al. 1983; Hart 1988; Love, et al. 2002; Miller and Lea 1972; O'Connell and Funk 1986). Yelloweye rockfish occur in waters 25m to 550m deep with 95 percent of survey catches occurring from 50m to 400m (Allen and Smith 1988). Yelloweye rockfish are bottom dwelling, generally solitary, rocky reef fish, found either on or just over reefs (Eschmeyer, et al. 1983; Hart 1988; Love, et al. 2002; Miller and Lea 1972; O'Connell and Funk 1986). Boulder areas in deep water (>180 m) are the most densely populated habitat type, and juveniles prefer shallow-zone broken-rock habitat (O'Connell and Carlile 1993). They also reportedly occur around steep cliffs and offshore pinnacles (Rosenthal, et al. 1982). The presence of refuge spaces is an important factor affecting their occurrence (O'Connell and Carlile 1993). Yelloweye rockfish are a large predatory reef fish that usually feeds close to the bottom (Rosenthal, et al. 1982). They have a widely varied diet, including fish, crabs, shrimps and snails, rockfish, cods, sand lances, and herring (Love, et al. 2002). Yelloweye rockfish have been observed underwater capturing smaller rockfish with rapid bursts of speed and agility. Off Oregon, the major food items of the yelloweye rockfish include cancroid crabs, cottids, righteye flounders, adult rockfishes, and pandalid shrimps (Steiner 1978).

3.1.2 Yelloweye Rockfish Stock Status and Management History

The first yelloweye rockfish stock assessment on the U.S. West Coast was conducted in 2001 (Wallace 2002). The assessment concluded yelloweye rockfish stock biomass in 2001 was at about 7 percent of unexploited biomass in Northern California and 13 percent of unexploited biomass in Oregon. The assessment revealed a thirty-year declining biomass trend in both areas with the last above average recruitment occurring in the late 1980s. The assessment's conclusion that yelloweye rockfish biomass was well below the 25 percent of unexploited biomass threshold for overfished stocks led to this stock being declared overfished in 2002. The last full assessment of yelloweye was conducted in 2009 (Stewart, 2009), and an update for yelloweye rockfish was done in 2011 (Taylor and Wetzel, 2011). The resource is modeled as a single stock, but with three explicit spatial areas: Washington, Oregon, and California. As with the other overfished stocks, yelloweye rockfish harvest is now tracked separately and managed against a species-specific ACL. Yelloweye ACLs for 2015-16 were 18 mt in 2015 and 19 mt in 2016 mt, while annual fishing mortalities are estimated to have been 11 mt in 2013, 9 mt in 2014 and 12 mt in 2015, representing approximately 65 percent of the aggregate allowable catch over that period. A yelloweye catch report[19] was provided in 2015 (Agenda Item I.1.a NWFSC Report 3) which indicated 2014 total catches were well below specified ACLs/OYs (e.g., 9mt of estimated catch approximately 51 percent of the allowable 18mt ACL). The recreational fisheries sector from Oregon accounted for

[19] Somers[1], K.A., J. Jannot[1], Y.-W. Lee[1], N.B. Riley[1], V. Tuttle[1], and J. McVeigh[1]. 2015. Estimated discard and catch of groundfish species in the 2014 U.S. west coast fisheries. NOAA Fisheries, NWFSC Observer Program, 2725 Montlake Blvd E., Seattle, WA 98112.

2.72 mt of the total catch in 2013, 2.63 mt in 2014, and 3.25 mt in 2015. The ACLs for 2017-2018 are 20 mt each year, and the probability of rebuilding the yelloweye rockfish stock by the current TTARGET year of 2067 is 62.1 percent (PFMC, 2014; NOAA, 2015).

3.1.3 Yelloweye Rockfish Fishing Mortality

Yelloweye rockfish are caught coastwide in all sectors of the fishery. Yelloweye rockfish are particularly vulnerable to hook-and-line gears, which are effective in the high relief habitats in which they reside. The current non-trawl RCA and the recreational depth closures are primarily configured based on yelloweye rockfish distribution and projected impacts in these hook-and-line fisheries. Area closures and a prohibition on retention are the main strategies used to minimize recreational yelloweye impacts. Depth management is the main tool used for controlling yelloweye rockfish fishing mortality in the Oregon recreational fisheries. Catch monitoring uncertainty is high given the relatively small contribution of yelloweye to rockfish market categories and the relatively large scale of recreational removals. In addition, since 2001, management restrictions have required nearly all yelloweye rockfish caught by recreational and commercial fishermen to be discarded at sea. Precisely tracking recreational catch inseason has been a challenge. Mortality rates for yelloweye rockfish discard at the surface vary by depth of capture but can be significant for fish captured from deep-water habitat (e.g., 56 percent mortality for fish captured from 21-30fm depth and 100 percent mortality for fish captured greater than 30fm depth (PFMC, 2014)).

3.2 Protected Species

The term "protected species" refers to organisms for which killing, capture, or harm is prohibited under several Federal laws, unless authorized. Incidental take of these species in the course of groundfish fishing operations may be allowed under provisions of applicable law. This section describes protected species that may be encountered in recreational groundfish fisheries off Oregon.

Table 3-1. Endangered Species Act (ESA) listed endangered and threatened species under the jurisdiction of the National Marine Fisheries Service that may occur off the Oregon coast. This list is current as of August 2017.

Species	**Status**	**May occur within 40 miles of shore**
Marine Mammals		
Blue whale (*Balaenoptera musculus*)	Endangered	X
Fin whale (*Balaenoptera physalus*)	Endangered	X
Humpback whale (*Megaptera novaeangliae*)**	Endangered	X

Sei whale (*Balaenoptera borealis*)	Endangered	X
North Pacific right whale (*Eubalaena japonica*)	Endangered	X
Gray whale (*Eschrichtius robustus*) western North Pacific population	Endangered	
Sperm whale (*Physeter macrocephalus*)	Endangered	X
Killer whales (*Orcinus orca*) southern resident distinct population segment (DPS)	Endangered	
Guadalupe fur seal (*Arctocephalus townsendi*)	Threatened	X

Table 3-1A continued. Endangered Species Act (ESA) listed endangered and threatened species under the jurisdiction of the National Marine Fisheries Service that may occur off the Oregon coast. This list is current as of August 2017.

Species	**Status**	**May occur within 40 miles of shore**
Sea Turtles		
Leatherback turtle (*Dermochelys coriacea*)*	Endangered	X
Loggerhead turtle (*Caretta caretta*) North Pacific Ocean DPS	Endangered	X
Olive ridley (*Lepidochelys olivacea*)	Endangered/ Threatened	X
Green turtle (*Chelonia mydas*) (East Pacific)**	Threatened	X
Marine invertebrates		
White abalone (*Haliotis sorenseni*)	Endangered	
Black abalone (*Haliotis cracherodii*)*	Endangered	
Marine and anadromous fish		
Green sturgeon (*Acipenser medirostris*) southern DPS*	Threatened	X

Pacific eulachon (*Thaleichthys pacificus*) southern DPS	Threatened	X
Chinook (*Oncorhynchus tshawytscha*) Sacramento River winter, evolutionarily significant unit (ESU)	Endangered	X
Chinook, Central Valley Spring ESU	Threatened	X
Chinook, California Coastal ESU	Threatened	X
Chinook, Puget Sound	Threatened	
Chinook, Snake River Fall	Threatened	X
Chinook, Snake River Spring/Summer	Threatened	X
Chinook, Lower Columbia River	Threatened	X

Table 3-1 continued. Endangered Species Act (ESA) listed endangered and threatened species under the jurisdiction of the National Marine Fisheries Service that may occur off the Oregon coast. This list is current as of August 2017.

Species	**Status**	**May occur 40 miles offshore**
Marine and anadromous fish		
Chinook, Upper Willamette River	Threatened	X
Chinook, Upper Columbia River Spring	Endangered	X
Coho (*Oncorhynchus kistuch*) Central California Coastal ESU	Endangered	X
Coho, S. Oregon/N. CA Coastal ESU	Threatened	X
Coho, Lower Columbia River	Threatened	X
Coho, Oregon Coast natural	Threatened	X
Steelhead (*Oncorhynchus mykiss*), Southern California DPS	Endangered	
Steelhead, South-Central California DPS	Threatened	
Steelhead, Central California Coast DPS	Threatened	
Steelhead, California Central Valley DPS	Threatened	

Steelhead, Northern California DPS	Threatened	
Steelhead, Upper Columbia River DPS	Endangered	X
Steelhead, Snake River Basin DPS	Threatened	X
Steelhead, Lower Columbia River DPS	Threatened	X
Steelhead, Upper Willamette River DPS	Threatened	X
Steelhead, Middle Columbia River DPS	Threatened	X
Sockeye (*Oncorhynchus nerka*) Snake River	Endangered	X
Scalloped hammerhead (*Sphyrna lewini*) eastern Pacific DPS	Endangered	

*Species with designated critical habitat within marine waters. ** Species with proposed DPS designations

Approximately thirty species of marine mammals, including seals and sea lions, sea otters, and whales, dolphins, and porpoise, occur within the west coast EEZ. A detailed discussion of marine mammals that occur within the west coast EEZ can be found in the EIS for Amendment 24 (Harvest Specifications and Management Measures for 2015-2016) of the Groundfish FMP (PFMC, 2015). The EIS discusses the current biological opinions for the groundfish fishery and includes information on marine mammals that have been taken in groundfish fisheries. A detailed list of the various strategic and non-strategic marine mammals stocks found along the west coast EEZ can be found in the most recent Marine Mammal Stock Assessment Report.[20] The fishery described in the alternatives is very similar to, and uses similar gear types, as fisheries listed as Category III under the Marine Mammal Protection Act, indicating a remote likelihood of, or no known, serious injuries or mortalities to marine mammals. In addition, the midwater long-leader EFP trials that tested the fishery described in the alternatives had no interactions with marine mammals. The alternatives do not propose to change overall groundfish harvest levels from those previously considered in the 2015 FEIS and 2017 EA prepared for the Groundfish Harvest Specifications and Management Measures, nor does it shift effort to fishing gears and activities that impact marine mammals. As a result, and because we do not expect any impacts to marine mammals from this proposed action that would fall outside of the range of effects already analyzed in the 2015 FEIS and 2017 EA, there are no additional marine mammal impacts that need to be considered in this EA analysis.

The California Current Ecosystem is a coastal upwelling biome, as found along the eastern margins of all major ocean basins. It modulates weather patterns and the hydrologic cycle of much of the western United States including the water off the coast of Oregon. The ecosystem supports more than two million breeding seabirds and at least twice that number of migrant visitors. Seabird species listed as endangered under the ESA include short-tail albatross (*Phoebastria albatrus*) and the California least tern (*Sterna antillarum browni*). The only species listed as threatened under the ESA is the marbled murrelet (*Brachyramphs marmoratus*). These species of seabirds have

[20] http://www.nmfs.noaa.gov/pr/sars/region.htm

been sighted off the west coast, however, no takes of these species have been documented in the recreational groundfish fishery, or during the Oregon midwater long-leader EFP trials (pers. comms Lynn Mattes, ODFW). The alternatives do not propose to change overall groundfish harvest levels from those considered in the 2015 FEIS and 2017 EA prepared for the Groundfish Harvest Specifications and Management Measures nor does it shift effort to fishing gears and activities that impact seabirds. The most recent biological opinion considering impacts of continued implementation of the groundfish fishery management plan, completed in May 2017, had similar conclusions to the opinion that supported analyses in the 2015 FEIS and 2017 EA; that such activities would not jeopardize the continued existence of short-tail albatross.[21] The May 2017 opinion included an incidental take statement, which described terms and conditions for commercial longline groundfish fisheries in order to meet the objectives of the reasonable and prudent measures. However, the recreational fishing gear that is the subject of this action is extremely unlikely to have any impact on ESA-listed seabirds, including short-tail albatross. As a result, and because we do not expect any impacts to seabirds from this proposed action that would fall outside of the range of effects already analyzed in the 2015 FEIS and 2017 EA, there are no additional seabird impacts that need to be considered in this EA analysis.

Four sea turtle species have been sighted off the U.S. West Coast: loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), and olive ridley (*Lepidochelys olivacea*). Under the Endangered Species Act (ESA), green, leatherback, and olive ridley sea turtles are listed as endangered; loggerheads are listed as threatened. Although sea turtles have been sighted off the west coast, no takes of these species have been documented in the groundfish fishery or during the midwater long-leader EFP trials. The alternatives do not propose to change overall harvest levels from those previously considered in the 2015 FEIS and 2017 EA for the Groundfish Harvest Specifications and Management Measures, nor does it shift effort to fishing gears and activities that impact sea turtles. As a result, and because we do not expect any impacts to sea turtles from this proposed action that would fall outside of the range of effects already analyzed in the 2015 FEIS and 2017 EA, there are no additional sea turtle impacts that need to be considered in this EA analysis.

Green sturgeon occurs along the coastal waters of North America, ranging from northern Baja California to the Bering Sea (Mecklenberg et al. 2002). Depending on spawning locations and genetic distinctions, populations are classified into the Northern Distinct Population Segment (DPS) and the Southern DPS. The Southern DPS of green sturgeon was listed as threatened under the ESA in 2006 (71 Fed. Reg. 17757), and critical habitat was designated in 2009 (74 Fed. Reg. 52300). A Biological Opinion on the Continuing Operation of the Pacific Coast Groundfish Fishery was completed in 2012 regarding take estimates of green sturgeon encountered in the federally managed U.S. west coast groundfish fisheries (NMFS 2012). The ORBS program recorded no encounters with green sturgeon on bottomfish trips from 2001 to present (pers. comm. Lynn Mattes, ODFW). Similarly, there have been no recorded interactions with green sturgeon to date by observers monitoring the Oregon groundfish hook and line recreational fishery. The alternatives do not propose to change overall harvest levels from those previously considered in the 2017 EA, nor does it shift effort to fishing gears and activities that would be more likely to impact green sturgeon. As a result, and because we do not expect any impacts to green sturgeon

[21] United States Fish and Wildlife Service, Biological Opinion, May 2, 2017, FWS Reference Number 01EOFW00-2017-F-0316.

from this proposed action that would fall outside of the range of effects already analyzed in the 2015 FEIS and 2017 EA, there are no additional green sturgeon impacts that need to be considered in this EA analysis.

3.3 Salmon

During their life cycle, salmon caught in west coast fisheries utilize coastal streams and river systems from central California to Alaska and marine waters along the U.S. and Canada seaward into the north central Pacific Ocean, including Canadian territorial waters and the high seas. Salmon bycatch occurs in the recreational groundfish fisheries of Oregon[22] predominantly on trips targeting salmon and combo trips (i.e., targeting salmon and a secondary non-salmon target species; Table 3-2). The number of salmon landed on trips targeting bottomfish averaged 78 fish annually from 2011 through 2015, with a maximum of 131 fish. State and federal managers estimate the bycatch of salmon from the recreational fisheries through the Oregon Ocean Recreational Boat Survey (ORBS) program.[23] ORBS is a dockside intercept survey program that estimates effort, catch (or landings), and angler reported discards by month, port, and trip type. Additionally, there are a limited number (100 trips annually) of charter bottomfish trips that are observed in the Oregon recreational fishery from which data on discarded species can be obtained. The Oregon midwater long-leader EFP, however, was monitored 100 percent by at-sea observers, with a total of 7 salmon recorded captured on the EFP trips using the midwater gear as shown in Table 1-1. The salmon from the EFP trips are not included in the annual landings estimates in Table 3-2.

Table 3-2. Chinook Salmon Landed in Oregon Recreational Ocean Trips, based on ORBS data.

Year	2011	2012	2013	2014	2015	5-year avg.
Bottomfish	36	90	131	84	48	78
Combo	312	1,810	2,489	1,611	629	1,370
Halibut	15	6	7	3	5	7
Salmon	4,794	16,857	27,606	16,746	8,739	14,948
Tuna	0	0	0	0	0	0
Total	5,157	18,763	30,233	18,444	9,421	16,404

Source: ODFW ORBS program

There are few interactions with salmon from November through February, months with a low number of bottomfish angler trips. The majority of interactions occur in May through September, months of high bottomfish angler trips as well as when salmon are more prevalent off of the Oregon coast. Tables 3-2 through 3-5 show the number of Chinook and coho salmon landed and released at sea by year and month. For Chinook salmon, July has the most fish landed and released at sea. For coho salmon, September has more landings and releases at sea.

[22] http://www.pcouncil.org/wp-content/uploads/2015/05/D3a_NMFS_Rpt1_SalmonBycatch_JUN2015BB.pdf
[23] http://www.dfw.state.or.us/MRP/salmon/docs/ORBS_Design.pdf

To retain salmon under Oregon state regulations, they must be caught on legal salmon sport gear for ocean salmon, which is no more than two single point barbless hooks. Legal gear for groundfish/bottomfish is a single line with no more than three hooks. Salmon incidentally caught with bottomfish (or halibut) gear must be returned unharmed. Additionally, once legally caught salmon are retained onboard the vessel, only legal salmon gear is allowed to be used for the rest of that trip. Some anglers may use "salmon gear" when fishing for bottomfish, and, on the off chance catch a salmon, they could keep it.

Section 7 of the ESA requires Federal agencies, in consultation with and with the assistance of the U.S. Secretary of Commerce, to ensure that their actions are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat that has been designated for those species. NMFS issued biological opinions (BiOp) under the ESA pertaining to the effects of the Pacific Coast groundfish FMP fisheries (including the recreational) on Chinook salmon, the most recent on March 11, 2006.[24] These biological opinions indicate that Chinook[25] is the salmon species most likely to be affected by the groundfish fishery, while other salmon species are rarely encountered in groundfish fisheries. The following "evolutionarily significant units" (ESUs) of ESA-listed Chinook are most likely to be affected by the groundfish fisheries found within the range of the action area under consideration: Snake River fall Chinook (threatened), Upper Willamette River Chinook (threatened), Lower Columbia River Chinook (threatened), Puget Sound Chinook (threatened), California coastal Chinook (threatened), and Central Valley spring-run Chinook (threatened). Sacramento River winter-run Chinook (endangered) are rarely reported in the action area (pers. comm. Peter Lawson, NMFS).

NMFS has reinitiated consultation under the ESA pertaining to the effects of the Pacific Coast groundfish FMP fisheries (including the recreational) on salmon. This opinion is analyzing the effects of this proposed long-leader fishery on salmon. The Final EA for this action will not be released until that new BiOp is completed.

3.4 Economic Environment

Since 2000, west coast groundfish management has been heavily centered on the need to rebuild overfished stocks. The resulting need to constrain some harvest of healthy stocks has economic implications for recreational anglers, businesses, and communities due to the loss of landings and revenue that could have been derived from both overfished species and many target species that co-occur with those overfished species.

The recreational fishery primarily consists of charter vessels, party boat businesses, and private or privately operated rented vessels, although some fishing occurs off beaches and piers. Coast-wide,

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[24] NMFS West Coast Region's Sustainable Fisheries Division has reinitiated section 7 consultation on the groundfish FMP with respect to listed salmonids.

[25] http://www.fisheries.noaa.gov/pr/species/fish/chinook-salmon.html

the number of recreational marine angler trips peaks in the July through August period, but seasonal concentration is more pronounced in Oregon and Washington where weather is more variable.

Oregon recreational groundfish fisheries are an important part of fishery related economic activity with 106,504 angler trips completed in 2015 (Table 3-4). Using multipliers from the IO-PAC model developed for the 2015-FEIS, recreational fishing for groundfish (i.e., bottomfish and halibut) accounted for $14,225,329 in trip-related expenses (excludes durable goods) and 327 jobs in the state of Oregon.

The ODFW's ORBS program monitors recreational catch as it is landed in port, with sampling data compiled and archived through the PSMFC in the Recreational Fisheries Information Network (RecFIN) database. The types of data compiled in RecFIN include sampled biological data, estimates of landed catch plus discards, type of trip (party/charter, private/rental), estimates of total numbers of anglers and total number of trips, and economic data. Data are generally available within 3 months. Descriptions of the RecFIN program, state recreational fishery sampling programs, and the most recent data available to managers, assessment scientists, and the general public can be found on the PSMFC web site.[26]

Table 3-3. Oregon Charter and Private Boat Angler Trips, 2011-2015.

Year	2011	2012	2013	2014	2015	5-year avg.
Bottomfish	71,230	72,526	91,848	79,917	106,504	84,405
Combo	6,008	9,941	13,918	18,776	11,549	12,038
Halibut	16,528	18,055	19,409	14,193	17,551	17,147
Salmon	42,663	57,359	71,705	102,793	54,465	65,797
Tuna	10,784	16,011	9,435	12,045	11,930	12,041
Total	147,213	173,892	206,315	227,724	201,999	191,429

Source: ODFW ORBS program

Table 3-4. Average bottomfish angler trips per month by port and boat type for months without depth restrictions (all-depth), 2014-2016 (the most current years with full year data).

[26] http://www.psmfc.org/program/prog-3

Port	Charter						Private						Total					
	Jan	Feb	Mar	Oct	Nov	Dec	Jan	Feb	Mar	Oct	Nov	Dec	Jan	Feb	Mar	Oct	Nov	Dec
Astoria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Garibaldi	17	45	1,004	1,135	73	73	317	180	1,592	595	160	109	335	225	2,596	1,729	233	183
Pacific City	21	20	296	127	13	16	361	199	1,312	460	104	83	383	219	1,608	587	117	99
Depoe Bay	752	1,179	3,436	2,016	48	291	711	693	1,381	541	267	176	1,463	1,872	4,817	2,557	315	467
Newport	1,201	2,024	4,017	3,216	1,031	653	2,240	1,501	3,695	1,624	443	399	3,441	3,525	7,712	4,840	1,473	1,052
Florence	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Winchester Bay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Charleston	0	27	1,212	1,197	45	53	1,848	1,279	2,043	1,979	560	313	1,848	1,305	3,255	3,176	605	367
Bandon	36	35	425	205	20	23	128	77	383	207	36	27	164	112	808	412	56	49
Port Orford	0	0	0	0	0	0	105	85	112	68	37	20	105	85	112	68	37	20
Gold Beach	21	20	241	131	11	13	215	137	677	404	73	52	236	157	919	535	84	65
Brookings	107	159	857	591	3	0	1,996	1,647	3,091	1,796	959	399	2,103	1,805	3,948	2,387	961	399
Total	2,156	3,508	11,489	8,617	1,244	1,123	7,921	5,799	14,285	7,673	2,639	1,577	10,077	9,307	25,775	16,291	3,883	2,700

Source: ODFW ORBS program

4 Environmental Consequences

The alternatives and associated impacts of the proposed action are analyzed below based on best available data. The proposed action is related to the biennial groundfish harvest specifications in that the action alternatives will require compliance with the resulting allocations and management measures. At their June 2016 meeting, the Council selected its final preferred alternatives for the 2017 and 2018 ACLs for all FMP stocks and complexes. NMFS then published a proposed rule for comment, considered public comment, and published a final rule implementing the measures on February 7, 2017. The midwater fishery will be included in the No Action alternative when considering the Oregon recreational fishery in future biennial cycles. This section will analyze impacts that may occur as a result of the proposed action that have not been previously analyzed.

4.1 Groundfish Species

As discused in section 2.2 (prefered alternative) is difficult to quantitatively evaluate the impacts of the different action alternatives on the target and non-target species and physical environment due to uncertainty about the number of trips that may fish the gear. However, the action alternatives all require compliance with biennial harvest specifications and management measures; therefore, none of the the alternatives for the proposed action are expected to result in significant impacts to any groundfish above or beyond harvest specifications considered in the EIS for the 2015-2016 harvest specifications and management measures or the EA for the 2017-2018 harvest specification and management measures. The proposed action may increase or decrease relative harvest amount of some groundfish stocks, and is discussed below. Prior preliminary analyses also considered canary rockfish as a 'constraining' stock, but canary rockfish has since been declared rebuilt and ACLs increased beginning in 2017. Therefore, canary rockfish is considered a 'healthy stock' in this analysis and canary caught will be accounted for in the ACLs and managed under the FMP.

4.1.1 No Action Alternative

Under the No Action alternative, the status quo management measures for the recreational groundfish fishery would remain in place, including seasonal depth closures to protect overfished groundfish species, namely yelloweye rockfish. This fishery is managed under the 2017-18 specifications and management measures, and the Groundfish FMP and has been analyzed in those actions.

4.1.2 Alternative 1) Full season option, April-September

As stated above, the action alternatives all require compliance with biennial harvest specifications and management measures; therefore, the alternatives for the proposed action are not expected to result in significant impacts to any groundfish above or beyond harvest specifications.

It is expected that there will be an increased harvest of deeper-water groundfish species whose catch under the No Action Alternative is limited by the depth-based area closures of the recreational rockfish conservation area. This could increase the risk of overfishing those stocks compared to the risks of overfishing that were considered in the 2015-2016 EIS. However, there are measures in place to prevent overfishing. This fishery would be subject to ORBS monitoring

program and overfishing concerns, if any, could be addressed through adaptive management/inseason actions. Therefore, any increased harvest from the proposed action on groundfish stocks would be insignificant, because accountability measures to control harvest remain in place, the same measures that are in place under the No Action Alternative. Because the observer program is already in place and would continue to be used, accountability measures would be just as effective under Alternative 1 as under No Action. as.

ODFW modeled the potential bycatch of the constraining stocks (i.e., yelloweye and blue rockfishes) under a proposed full season (April-September) scenario. This assists in determining the potential impacts of the midwater long-leader fishery. Estimates of potential impacts to individual constraining species are based, in part, on results from the midwater long-leader EFP test fishery. To project total catch of individual constraining species for the midwater long-leader fishery, the respective ratio of individual constraining species to total catch of healthy target stocks (e.g., ~0.13 mt of blue rockfish for 10 mt of target healthy stocks combined) is applied to possible total catch of target healthy species for the midwater long-leader fishery as a whole. To frame uncertainity, variances in the ratios from individual trips were used to determine a 95 percent confidence interval, which can provide some information on the potential for greater takes of constraining species.

Precise total catch of target healthy species is uncertain because potential participation in the midwater long-leader fishery is dependent on multiple factors. Therefore, a range of 0-500 mt of catch of target healthy species was used to calculate potential catches of the constraining stocks (i.e., yelloweye, and blue rockfish). The quota for each of these limiting species is plotted with projected catches in the figure below (Figure 4-1) to provide a visual demonstration of how much take of target healthy species may be possible before reaching the quotas of the constraining species.

Yelloweye Rockfish

The midwater long-leader EFPs were successful in targeting healthy semi-pelagic rockfish stocks without significantly impacting yelloweye rockfish (Table 1-1), which are the most constraining species to Oregon recreational fisheries. The concusion was that the low catch of yelloweye was due to the long-leader gear's selectivity as yelloweye are commonly caught in greater numbers when standed gear is used. Only two yelloweye rockfish were caught during two years of the Oregon midwater long-leader EFP test fishery. The yelloweye rockfish bycatch in the midwater long-leader fishery is projected to be minor, even with substantial effort and catch of target healthy stocks (full season yelloweye = 0.6 mt (1.4 mt 95 percent), partial season = 0.6 mt (1.4 mt 95 percent), and August only = .26 mt (.65 mt 95 percent)). Under the status quo or No Action Alternative, the other sport fisheries currently take most of the yelloweye rockfish quota which may mean that stricter regulations in the other sport fisheries could be required to provide more effective quota of yelloweye rockfish for the midwater long-leader fishery.

Oregon could also restrict the traditional groundfish fishery to provide relief if bycatch of yelloweye rockfish in the midwater long-leader fishery became problematic. Although the ACL for yelloweye rockfish increased 1 mt for 2017-2018 from the current 19mt to 20 mt, bycatch of

yelloweye rockfish is a primary constraint to both of the Oregon sport fisheries (i.e., traditional groundfish and Pacific halibut). While bycatch in the longleader fishery is not expected to be substantual, Oregon could either close the midwater long-leader fishery via state rule or adopt more conservative regulations if required.

Blue Rockfish

Although blue rockfish are not overfished, they are co-managed with a group of other nearshore rockfish (i.e., Minor Nearshore Rockfish), for which the Oregon sport fisheries are allocated a relatively small collective quota (33.1 mt). The blue rockfish quota used in this analysis is based on the 2015-2016 Oregon state allocation of 26 mt from within the informal federal allocation of 36 mt to Oregon, which was part of the 2015-2016 ACL of 69 mt. While blue rockfish could restrain the midwater long-leader fishery at an ACL of 69 mt, the Oregon sport allocation of blue rockfish and the other Minor Nearshore Rockfish complex is expected to increase in the future; thereby reducing the possibility that blue rockfish could restrain the midwater long-leader fishery. Specifically, the ACL for 2017-2018 increased from 69 mt to 105 mt in 2017-2018. The Oregon portion of the ACL is 60.5 mt, of which the Oregon recreational fishery harvest guidelines (through state sharing rules) is 33.1 mt. Even with the allocation to the Oregon sport fishery increase, the potential that blue rockfish could restrain the midwater long-leader fishery could be considered low. ODFW currently manages its groundfish fisheries using a variety of in-season actions, including bag limits, to ensure that the ACLs established in the biannual harvest specifications process are not exceeded. Oregon would continue to rely on these management measures in the the traditional sport groundfish fishery to provide relief in the event that bycatch of blue rockfish in the midwater long-leader fishery was forecasted to restrain the midwater long-leader fishery.

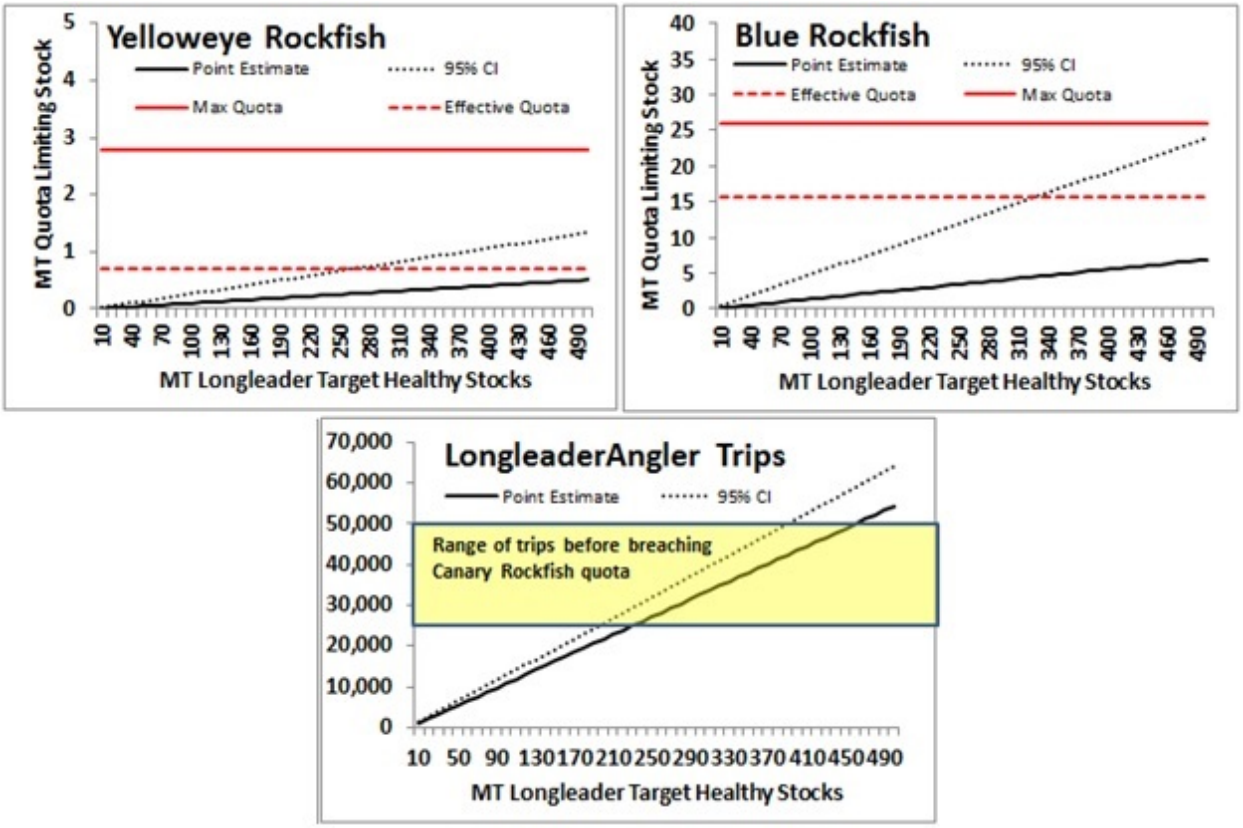


Figure 4-1. Projected mortality of constraining stocks (Yelloweye, Blue, and Canary rockfishes) and angler trips in the midwaer long-leader fishery depending on the theoretical takes of healthy target stocks (e.g., Yellowtail and Widow rockfishes). ***Note:*** *The intersections of the black catch lines and the red quota lines represent the amount of yield of target healthy stocks that could be taken before reaching the quota of a constraining stock. Corresponding maximum potential midwater long-leader angler trips can then be determined based on that amount of yield of target healthy stocks. "Maximum quota" and "effective quota" are defined in the text.*

Sources of Uncertainty in Catch of Constraining Non-target Species

Projections of mortalities of constraining species (Figure 4-1) assume that bycatch ratios in a midwater long-leader fishery will be similar to those observed on charter boats in the midwater long-leader EFP test fishery. There may be differences, however. For example, private boats may have greater bycatch ratios than charter anglers. While there is a possibility that non-observed midwater long-leader bycatch rates may be greater than those observed during the test fishery, actions can be taken to ensure that bycatch stays within acceptable limits. To avoid exceeding established quota allocations and bycatch limits, catch and discard mortality is monitored closely through the ORBS program and reported weekly (one week time lag). If catch is projected to approach an established quota, mechanisms are in place to close the fishery (e.g., within 24 to 48 hours via emergency actions by the state of Oregon).

In summary, the actual bycatch of target and non-target or constraining species will depend on the potential participation in the midwater long-leader fishery. The existing ORBS monitoring program would track the catch totals for these constraining species as takes place now in the traditional groundfish fishery. With quota set-asides and a prohibition of take of benthic species,

take of constraining species in a midwater long-leader fishery would be carefully managed to meet management objectives of sustainably managing groundfish resources for all fisheries.

4.1.3 Alternative 2) Reduced season option, July-September.

The purpose for shortened seasons in Alternative 2 for the midwater long-leader fishery, versus Alternative 1, is to prevent bycatch of constraining species from reaching levels that could jeopardize opportunity in the other sport fisheries that would share in those quotas. Limiting the season to three months would result in a lower catch of all groundfish species and would therefore have a smaller impact than Alternative 1 while still providing some of the additional angling opportunities.

4.1.4 Alternative 3) One month season option, August.

As with Alternative 2, the purpose for shortened seasons in Alternative 3 for the midwater long-leader fishery, versus Alternative 1, is to prevent bycatch of constraining species from reaching levels that could jeopardize opportunity in the other sport fisheries that would share in those quotas. Limiting the season to one month would further lower the catch of all groundfish species and would therefore have a smaller impact than Alternative 1 or 2 while providing limited additional angling opportunities.

4.2 Protected Species

The action alternatives all require compliance with biennial harvest specifications and management measures; therefore, the alternatives for the proposed action are not expected to result in significant impacts to any protected species above or beyond the specifications and measures considered in the EIS for the 2015-2016 harvest specifications and management measures or the EA for the 2017-2018 harvest specification and management measures. As referenced in Chapter 3, salmon are the only protected species with the potential to have interactions with the midwater long-leader fishery being proposed. A description of the potential impacts follows below.

4.2.1 No Action Alternative

Under the No Action alternative, the status quo management of the recreational groundfish fishery would remain in place, including seasonal depth closures to protect overfished groundfish species. While the midwater long-leader gear is an allowable gear in waters shoreward of 40fm during the April-September recreational groundfish fishing season in Oregon, most anglers prefer to target near shore rockfish species using traditional bottom fishing gear. In the event of decreased recreational salmon fishing effort, which may be caused in part by climate events or lower recreational quotas, the potential for a shift in fishing effort to target nearshore rockfish stocks as a substitute could put additional pressure on those stocks and the associated bycatch of salmon encountered in the nearshore fishery. However, any additional salmon bycatch resulting from an effort shift to nearshore stocks would be more than offset by a total reduction in salmon targeting efforts. In relation to the action alternatives, the No Action alternative would provide a neutral impact for salmon as the status quo of prohibiting use of midwater long-leader gear in waters seaward of 40fm depth where salmon stocks are found co-mingled to some degree with target rockfish stock would be continued.

4.2.2 Alternative: 1) Full season option, April-September

The change in fishing effort under the action alternatives, as compared to the No Action alternative, are uncertain. Generally, it is expected that fishing effort could be shifted from nearshore to midwater areas. However, given the uncertainties involved in predicting salmon-fishing behavior responses to changing ocean conditions (i.e., a strong El Niño in recent years) under the No Action alternative, it is also plausible to expect a combination of effort shifts from both nearshore and salmon trips towards midwater trips.

When compared to the No Action Alternative, no significant adverse differential impacts on salmonids (ESA-listed and non-listed) are anticipated with any of the action alternatives. Although the proposed action could potentially increase risk of interactions with salmonids given their occurrence in midwater habitat, the EFP test fishing results suggest that the likelihood of these types of interactions occurring in a future authorized fishery is low. Additionally, hook and line fishing gear, similar to the proposed gear, generally has low catch rates of salmon if salmon are not targeted. During the EFP fishing, only 7 salmon were taken out of 4,951 total fish caught on 380 angler trips (i.e., salmon made up 0.14 percent of the catch; catch rate was 0.02 fish per angler trip). Assuming the number of angler trips this fishery could generate is 15,000, a catch rate of 0.02 fish per trip would result in an estimated bycatch of 300 salmon. This bycatch rate is much higher than normally found in the recreational groundfish fishery which have an average of 0.00079 fish per trip over the period 2015-2017. Using this average, salmon bycatch in the long-leader fishery would be estimated at 12 fish. However, as mentioned in section 2.2, most years the actual number of angler trips will likely be lower than 15,000. In addition, it is expected that most of the salmon caught as bycatch would come from nearshore Central Valley fall run chinook stocks, which are non-ESA listed, as these are the fish more commonly found in the proposed fishing grounds. Also, mortality of salmon caught with hook and line gears and released consistent with salmon regulations (e.g. quickly, with minimal handling, etc.), is estimated to be low. Currently a hook-and-release mortality rate of 35 percent has be determined for salmon released from recreational groundfish fisheries. At this rate, an estimated 105 or 4 salmon may be killed under this alternative based on the bycatch rate of the EFP and the standard bycatch average. Under any of the action alternatives, west coast groundfish fishing activities would continue to adhere to measures included in biological opinions for listed salmonids taken incidentally in this fishery. While this alternative may have some impact, it is not expected to rise to the level of significance. The long-leader fishery is being analyzed in the newest salmon biological opinion (BiOp) which is scheduled to be issued prior to the final EA and rule for this action.

4.2.3 Alternative: 2) Reduced season option, July-September

The purpose for shortened seasons for the midwater long-leader fishery in Alternative 2, when compared to Alternative 1, is to lower levels of bycatch that could jeopardize opportunity in the other sport fisheries that would share in those quotas. Limiting the season to three months would reduce the potential salmon bycatch relative to Alternative 1; however bycatch could be higher than in the No Action Alternative. This alternative would have less impact than Alternative 1, and is not expected to rise to the level of significance, therefore this alternative does not result in any significant effects to protected species.

4.2.4 Alternative: 3) One month season option, August.

As with Alternative 2, the purpose for shortened seasons in Alternative 3 for the midwater long-leader fishery, versus Alternative 1, is to lower levels of bycatch that could jeopardize opportunity in the other sport fisheries that would share in those quotas. Limiting the season to one month would further reduce the levels of salmon bycatch. This alternative would have less impact than Alternatives 1 and 2, and is not expected to rise to the level of significance, therefore this alternative does not result in any significant effects to protected species

4.3 Economic Environment

Angler participation in the midwater long-leader fishery could be an important economic benefit to coastal businesses and economies as a whole. During the course of their fishing trips, anglers spend money on lodging, food, tackle, entertainment, etc. The money anglers spend at these businesses is cycled through other local businesses multiple times, until all of it eventually moves out of the local economy from import purchases (e.g., fuel purchased from outside state). Accordingly, the primary spending of anglers and associated "multiplier" effects generate income and jobs in Oregon coastal economies, which are small and heavily dependent on tourism, such as sport fishing, and natural resource extraction (e.g., logging and commercial fishing).

For the midwater long-leader fishery to benefit Oregon coastal communities it must increase net angler trips, meaning it must generate trips that would have not occurred otherwise (for any marine species). This could occur either as a result of an increase in trips compared to No Action, or by preventing a loss of trips that might otherwise occur in an existing fishery (e.g., occur in lieu of a salmon fishing trip).

Not all participation in the midwater long-leader fishery will result in a net increase in trips. Some of the midwater long-leader trips would have fished for another species had the midwater long-leader fishery been closed; these types of trips are referred to as substitution trips. Some midwater long-leader fishing can be expected to occur as an additional activity on trips primarily targeting other species; these are referred to as combination trips. While substitution and combination midwater long-leader trips may have value to individual anglers due to extra opportunity and catch, they do not add value to coastal economies because they do not affect net total effort.

Estimation of economic impacts resulting from changes in angler trips can be can be accomplished using the Input-Output Model for Pacific Coast Fisheries (Leonard, 2015). However, there are inherent challenges in estimating changes in angler trips likely to result from the proposed action. As described earlier in this section, such changes are likely more dependent on indirect than direct factors. Due to this ambiguity involved in estimating the number of new angler trips generated by the proposed action, economic impacts are not estimated quantitatively herein. Rather, expected economic effects and impacts are described in qualitative terms and approximations.

4.3.1 No Action Alternative

The impacts of the No Action Alternative are expected to stay the same as the current conditions due to the continued lack of recreational groundfish fishing opportunities for southern ports in Oregon that are not located adjacent to near-shore reef habitat. The current seasonal depth

restriction (30 fathoms) has virtually shut down bottomfish fishing out of the ports of Florence and Winchester Bay. There is no reef structure within 30 fathoms near either of those ports. The seasonal depth restriction also concentrates fishing pressure on the shallow water reefs, and associated species. When depth restrictions were implemented, the groundfish fishery was effectively closed in these areas, and eliminated many trips and fishing opportunities. When coupled with salmon downturns, these ports suffered greater negative impacts than ports with shallow reefs. For example, the Winchester Bay charter industry, which once included as many as 8-10 charter boats, completely collapsed (currently no charter boats are based there).

In addition, there would remain the potential for lost groundfish sport fishing opportunity should restrictions in other fisheries (e.g., salmon) occur without viable options for shifting that lost effort other fisheries, including the proposed midwater long-leader fishery.

4.3.2 Alternative 1) Full season option, April-September

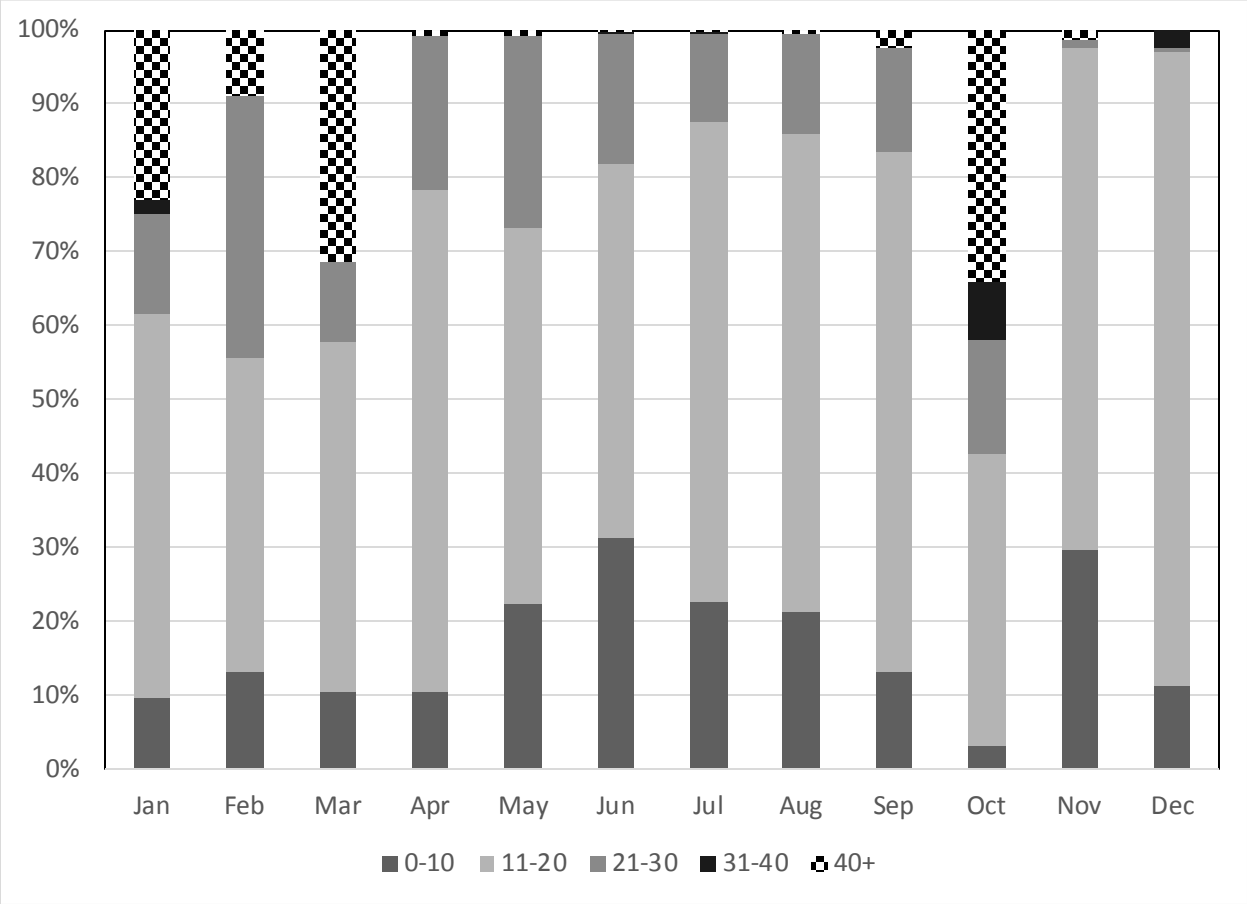
Alternative 1 is expected to result in minor beneficial economic impacts. The economic impacts will likely be the greatest near ports that lack shallow water reefs (i.e., ports that would otherwise have little to no groundfish fishing opportunity during summer months).

The number of anglers who will participate in the midwater long-leader fishery is uncertain since the fishery has not occurred in Oregon (or in any other state) before. The number of participants in the fishery will likely vary from year to year as incentives to participate in the fishery may change. For example, some may choose to fish the first year out of novelty, or in years when opportunities are more limited in other fisheries.

The maximum allowable effort was modeled in the bycatch section based on the number of trips and yield of healthy target stocks that could be attained before surpassing the quota of any of the constraining stocks (Figure 4-1). Canary Rockfish has been the most limiting of the constraining stocks. Given this, it is still projected that the midwater long-leader fishery could support as many as 25,000 to 50,000 angler trips (i.e., the lower end of the range is based on a 95 percent confidence interval). To put this range of trips in context, the traditional sport groundfish fishery has typically ranged between 70,000-80,000 trips per year.

Under current (2017) conditions, the opportunity to participate in a midwater long-leader fishery is not expected to be enough of an incentive for the fishery to significantly increase net effort for most ports (i.e., to result in new trips that would have not otherwise fished for other marine species). First, anglers would have to travel much further to the offshore grounds (depths > 40fm) than they do for the traditional nearshore shallow water groundfish fishery (which are highly productive fisheries). Second, in a midwater long-leader fishery, anglers have to reel up fish from several hundred feet below, and anglers typically prefer to fish shallow waters when possible, as it requires less reeling and allows for lighter, more sporting tackle. There is evidence from ORBS sampling during months open to all-depths (Oct-Mar) that anglers in the traditional recreational groundfish fishery prefer to fish shallow because during months when they may fish any depth, only a small proportion choose to fish deep (> 40fm: Figure 4-5), due to longer run times, more fuel usage, etc.

Table 4-1. The proportion of bottomfish angler trips by depth bin and month, 2014-2016. Data from ODFW ORBS interviews.



Although the midwater long-leader fishery may not significantly change net effort under current conditions, there is a strong possibility that anglers will participate in the fishery, not as new trips but as trips that would have occurred regardless. Some of these non-new trips may be part of combination trips for other far offshore species (i.e., Pacific halibut and albacore tuna), which drew the angler to fish in the same areas open to the midwater long-leader fishery. Some of the midwater long-leader trips may be from substitutes to trips that otherwise would have fished the traditional recreational groundfish fishery had there not been midwater long-leader opportunity.

The amount of non-new effort that will occur in the midwater long-leader fishery is difficult to model since the fishery has never occurred before. To account for the uncertainty, an upper range of potential catch was modeled by assuming that all far-offshore trips (i.e., halibut and tuna) would fish combination midwater long-leader trips (Table 4-1). In addition, the upper range also included substitute trips from the traditional groundfish fishery, modeled as the proportion of trips that fish beyond 40 fm (the proposed shoreward limit) during months when allowed to fish any depth, multiplied by the total trips per year (as these trips that fish deep may be more inclined to participate in the midwater long-leader fishery when the traditional recreational fishery is depth restricted).

While non-new effort does not benefit communities, it is important to project since non-new angler trips could exceed the projected maximum number of trips the midwater long-leader fishery could support before reaching the canary rockfish quota (Figure 4-4). In times of excess, there would be no issues with non-new effort participating in the midwater long-leader fishery, as these fish would otherwise go underutilized. However, there could be situations where other fisheries collapse and the midwater long-leader fishery could be used to offset losses from these fisheries. In this case, the midwater long-leader fishery would change net trips (by preventing loss), and would therefore be of great value to coastal communities.

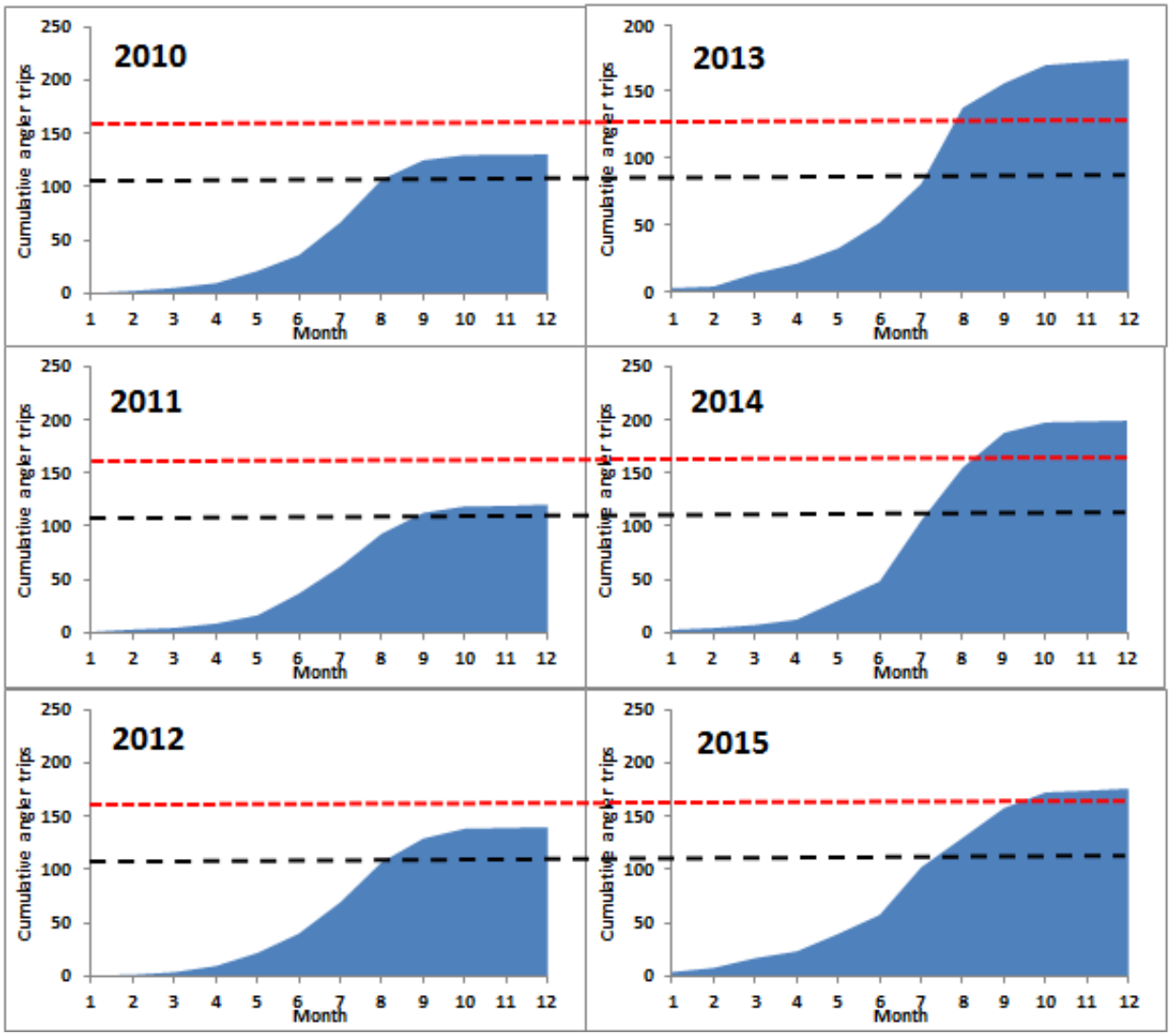


Figure 4-2. Maximum effort levels (trips) for midwater long-leader fishery given effort shift from salmon fishery. ***Note:*** In the worst case scenario (very unlikely to occur), the entire salmon fishery closes and all salmon trips switch to traditional groundfish. The blue is the combined traditional groundfish trips that occurred plus the salmon crossover trips. The worst case scenario shows that the combined trips would not breach the capacity of the traditional groundfish fishery until July or August (110,000 trips; dotted black line), and at that point, switch to the midwater long-leader fishery (portion of blue above the dotted black line). And if that were to occur, the midwater long-leader fishery (dotted red line) would be able to absorb much of that effort, and only have reached capacity from 2013-2015.

Table 4-2. Potential annual combination and groundfish substitution trips by port area.

	Potential combination trips (Longleader + other deep fishery)		Potential GF substitution trips (switch from traditional GF gear to longleader)				
Port	Halibut + LL	Tuna + LL	Traditional GF	Proportion fish deep			Longleader
Astoria	241	491	326	x	0.03	=	10
Garibaldi	2,325	1,971	7,090	x	0.69	=	4,880
Pacific City	574	214	2,640	x	0.14	=	370
Depoe Bay	950	2,054	14,831	x	0.17	=	2,580
Newport	10,013	3,811	19,152	x	0.05	=	874
Florence	138	18	5	x	1.00	=	5
Winchester Bay	187	380	19	x	1.00	=	19
Charleston	440	2,593	9,923	x	0.18	=	1,805
Bandon	378	191	1,998	x	0.05	=	100
Port Orford	192	28	533	x	0.01	=	7
Gold Beach	35	23	2,184	x	0.01	=	22
Brookings	993	159	15,331	x	0.00	=	56
Coastwide	16,465	11,933					10,728

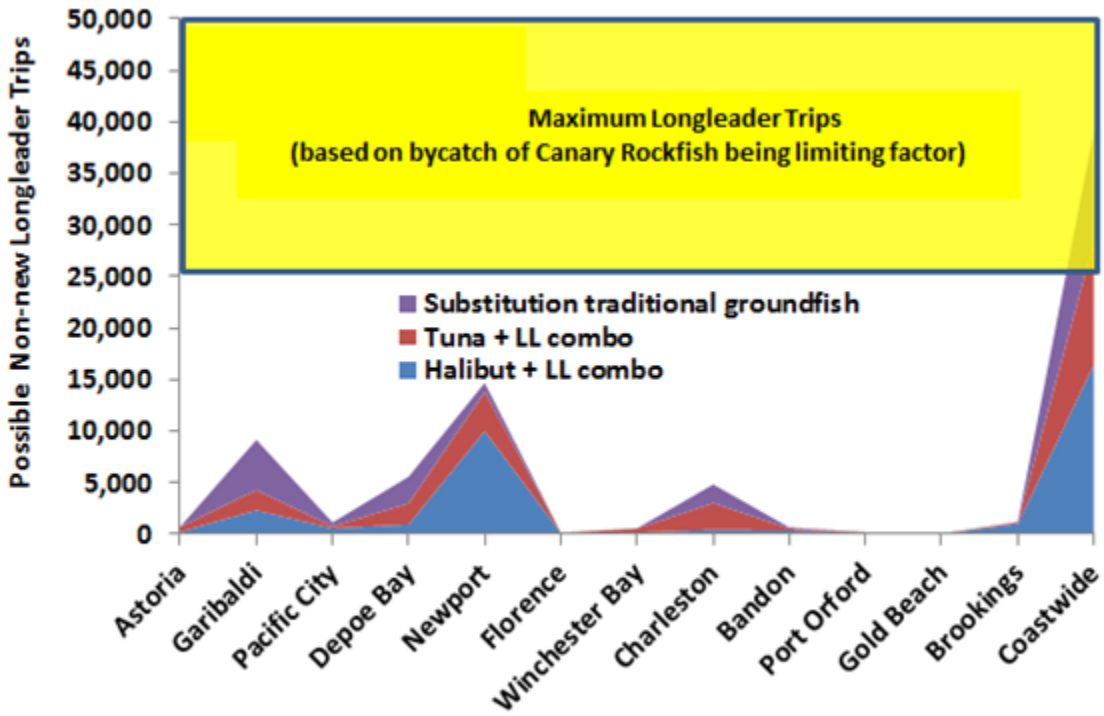


Figure 4-3. Upper range of potential non-new angler participation (no change to net trips) in the midwater long-leader fishery from combination trips with other far offshore fisheries and as substitute trips from the traditional groundfish fishery, by port and coastwide

Note: The upper and lower bounds of the yellow shaded area show the maximum and minimum number of potential trips, with 95 percent confidence, that the midwater long-leader fishery can sustain before the reaching the quota of canary rockfish.

While the midwater long-leader fishery is not expected to increase net effort for most ports in Oregon under current conditions, it could be of great value to ports without shallow reefs. As seen in Table 4-1, there is essentially no traditional recreational groundfish fishery in the ports of Winchester Bay and Florence (less than 30 trips per year for both ports combined), since neither of these ports has reef within the shallow water depth restrictions (Figure 4-6).

However, both Winchester Bay and Florence have deep water reef in close proximity. The midwater long-leader fishery could provide new opportunities for these ports, which would substantially benefit those communities. Further, establishment of a midwater long-leader fishery could provide a stable base to support the return of a charter fishery in Winchester Bay. Once a charter community with 8-10 active vessels, Winchester Bay saw its entire charter businesses close in large part due to not having substitute fisheries following the collapses of the salmon fisheries in the 1980s and 1990s. Although it is unknown whether charters would return if provided midwater long-leader opportunity, in addition to current salmon and tuna opportunity, the fishery would provide a much more stable base for charter businesses than those fisheries, which can be highly variable from year to year.

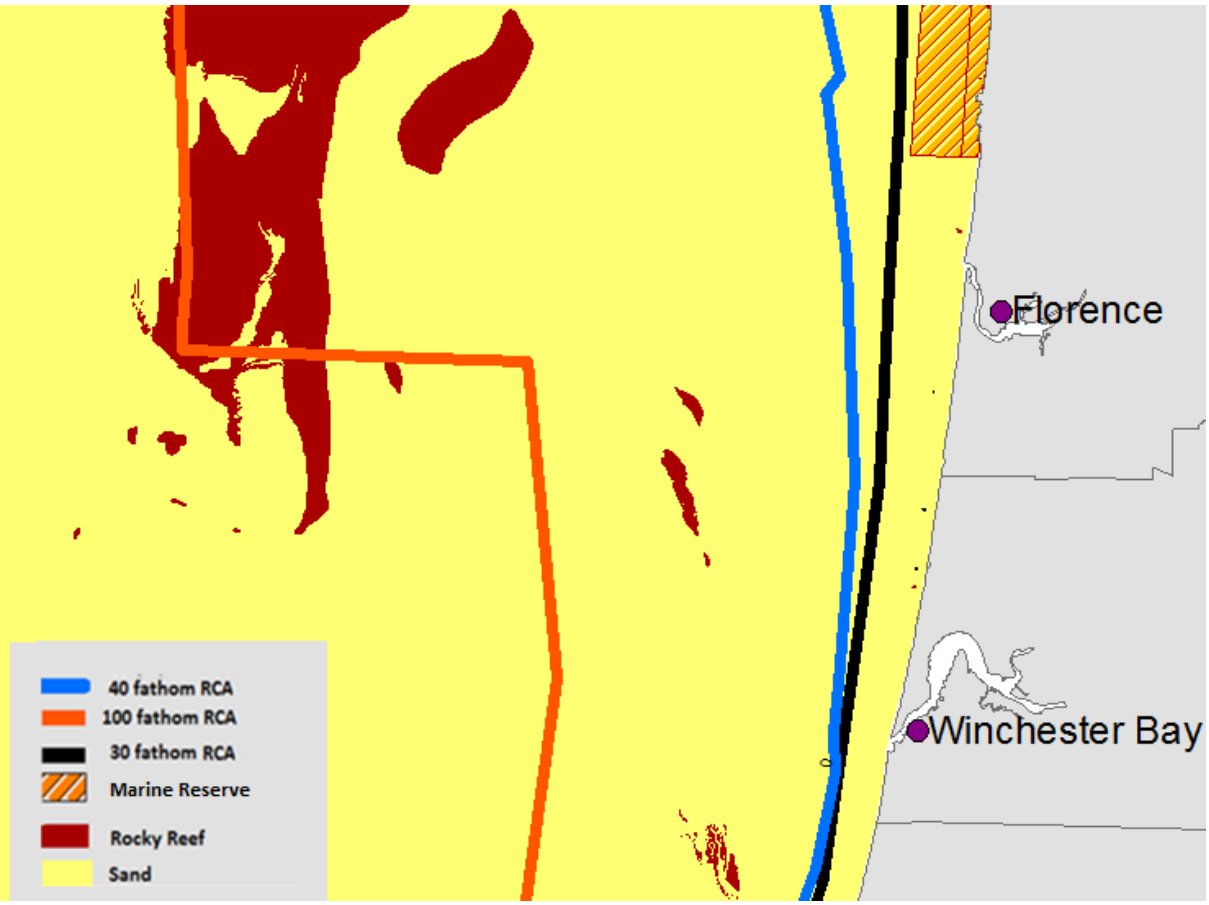


Figure 4-4. Reef habitat as a function of depth near Winchester Bay and Florence.

While the midwater long-leader fishery may not offer much additional economic benefit under current conditions, it could help fishing communities be more resilient by offering other fishing and economic opportunities if other existing Oregon sport fisheries opportunities became limited. Most of the other sport fisheries are at full capacity (quotas of Pacific halibut, Chinook salmon, Coho salmon, and traditional recreational groundfish fisheries are fully-utilized), and reduction or collapse of any of these fisheries could result in substantial decreases in net sport fishing trips in Oregon. If that were to occur, the midwater long-leader fishery could be used to absorb some of the effort that otherwise would be lost.

Currently, only the albacore tuna fishery would be able to absorb additional effort to offset potential losses associated with declines in any of the other fisheries. However, the albacore tuna fishery is not a dependable substitute, as the strength of the fishery varies substantially from year-to-year due to oceanographic and environmental conditions. The albacore tuna fishery is not always a viable target species for all angler and all ports as participation requires boats capable of traveling the typical 40-60 miles to the fishing grounds.

Because the status quo does not allow for the additional angling opportunities proposed in the action alternatives, each action alternative would all allow for a positive economic impact. While the impact of this alternative would be positive, it is not expected to rise to the level of significance, therefore this alternative does not result in any significant economic impacts.

4.3.3 Alternative 2) Reduced season option, July-September

With a shorter season (three months), Alternative 2 would have a minor economic benefit, but less than Alternative 1 (six months). While the impact of this alternative would be positive, it is not expected to rise to the level of significance, therefore this alternative does not result in any significant economic impacts.

4.3.4 Alternative 3) One month season option, August

With a short season (one month), Alternative 3 would have a minor economic benefit, but less than either Alternative 1 (six months) or Alternative 2 (three months). While the impact of this alternative would be positive, it is not expected to rise to the level of significance, therefore this alternative does not result in any significant economic impacts.

4.4 Environmental Justice

Chapter 4 discusses environmental effects on groundfish, protected species, and economics. The only anticipated effects of the action alternatives on human populations are minor beneficial economic effects as discussed in Sections 4.3.2 to 4.3.4. Therefore, the action alternatives are not expected to have any adverse economic or environmental effects on human populations. Given that there are no adverse effects, there can be no disproportionate adverse effects on low income or minority populations.

4.5 Climate Change

The FEIS to Amendment 24 of the Groundfish FMP (PFMC 2015) provides a qualitative overview of potential climate change impacts to West Coast groundfish fisheries. Section 3.4.5 (System Forcing and Climate Change), Section 3.4.6 (Implications of Climate Change for Groundfish Fisheries), and Section 3.4.7 (Baseline Status of the California Current Ecosystem) of the EIS describe the effects of climate on ecosystem components. The introduction to Section 4.5 in the Council's Fishery Ecosystem Plan (FEP)[27] also discusses the effects of climate change in the California Current Ecosystem (CCE). Warm-water phases in cyclical climate phenomena decrease the productivity of many groundfish stocks. Climate change may lead to range shifts decreasing local abundance of groundfish. As noted in the FEP, climate change is expected to lead to substantial changes in physical characteristics and dynamics within the marine environment, with complex and interacting impacts on marine populations, fisheries, and other ecosystem services (Doney et al. 2012; Harley et al. 2006; Scavia et al. 2002). Three major aspects of future climate change that will have direct effects on the CCE are ocean temperature, pH of ocean surface waters, and deepwater oxygen.

Elevated water temperature, whether due to climate change or shorter term fluctuations, could make benthic and midwater groundfish species habitat in the west coast EEZ less habitable, resulting in less availability to recreational anglers. The analyses conducted in this EA are a function both of availability (or abundance) and total recreational fishing effort. Decreased abundance could result in lower recreational catch in the management area than recorded historically. However, a permanent change in the distribution and abundance of groundfish species in the management area is likely on a longer time scale. The management framework in the Groundfish FMP allows biennial adjustment in harvest allocations and regulations; if there is a substantial and ongoing change in recreational catch, the management framework would ensure that adjustments are made to ensure sustainable fisheries and stock status. For these reasons, none of the alternatives are expected to significantly impact, or contribute to, climate change over the compared to baseline conditions.

4.6 Cumulative Impacts

Cumulative impacts are the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions; cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). This section of the EA addresses the significance of the expected cumulative impacts as they relate to the federally managed midwater recreational Oregon groundfish fishery and the affected resources described in Chapter 3 (Description of the Affected Environment).

4.6.1 Geographic Boundaries

The analysis of impacts focuses on actions related to the harvest of yellowtail rockfish and other midwater groundfish species in a proposed midwater long-leader recreational sport fishery. The core geographic scope for each of the affected resources listed above is focused in state and federal

[27] http://www.pcouncil.org/wp-content/uploads/FEP_FINAL.pdf

waters off the coast of Oregon (Figure 1-2). The core geographic scope for endangered and protected resources can be considered the overall range of these resources in the Eastern Pacific Ocean. For human communities, the core geographic boundaries are defined as those U.S. fishing communities directly involved in fishing for the target species, which were found to occur in the ports and communities of Oregon.

4.6.2 Temporal Boundaries

The temporal scope of past and present actions for the affected resources is primarily focused on actions that have occurred after FMP implementation (1982) up to the present, and more specifically during the 2009-2011 baseline period when the Oregon midwater long-leader EFP test fishing was conducted, which is the temporal context within which affected resources are described in Chapter 3. For endangered species and other protected resources, the scope of past and present actions is determined by analysis pursuant to the ESA and MMPA, including biological opinions and marine mammal stock assessment reports. The temporal scope of future actions for all affected resources extends about 4 years into the future. This period was chosen based on the biennial harvest specifications process that is the main framework this proposed action and fishery would be regulated under. Four years covers approximately two biennial harvest specification cycles. The dynamic nature of resource management for this species and lack of information on projects that may occur in the future make it very difficult to predict impacts beyond this timeframe with any certainty.

4.6.3 Past, Present, and Reasonably Foreseeable Future Actions Other than the Proposed Action

Past and present actions and their effects are described in Chapter 3. This forms the environmental baseline. The cumulative effect results from the combination of the effects of these past and present actions, reasonably foreseeable future actions, and the proposed action. Ongoing and reasonably foreseeable actions with detectable effects are summarized below.

4.6.3.1 Fishery-related Actions

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

Groundfish Harvest Specifications and Salmon Fishery Management

NMFS has approved harvest specifications and management measures for 2017 and 2018. In 2017 and 2018, ACLs for some pelagic rockfish species (yellowtail and canary rockfish) increased, in particular for canary rockfish, since it has been declared recovered from overfishing. The coastwide ACL increased from 125 mt in 2016 to 1,714 mt in 2017 and 1,526 mt in 2018. The Oregon recreational portion increased from 12 mt to 75 mt. The yellowtail rockfish ACL remains above 6,000 mt for 2017 and 2018.

The ACL levels recommended by the Council in the 2017-2018 harvest specifications are expected to bring an increase in benefits for the recreational fishing industry. Additional actions are outlined in the following section. Together, they are expected to have a synergistic effect, contributing further to the original goals and objectives envisioned for this proposed midwater long-leader fishery.

The Council's Fishery Ecosystem Plan

The FEP is a living document, which means that the Council plans to regularly amend and update it. The current FEP was adopted by the Council in April 2013. The FEP is meant to be an informational document. It is not meant to be prescriptive relative to Council fisheries management. Information in the FEP, results of the Integrated Ecosystem Assessment, and the Annual State of the California Ecosystem Report may be available for consideration during the routine management processes for fisheries managed in each FMP. How exactly these items will affect fishery management decisions is at the discretion of the Council. The Council is also developing measures to protect unfished and unmanaged forage fish species pursuant to an initiative identified in the FEP. This action involves amending all current FMPs to prohibit targeted harvest of specified forage species. These protections could benefit both currently unmanaged fish stocks and managed stocks that depend on forage fish.

4.6.3.2 Non-Fishery Related Actions

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

The 2014 Annual State of the California Ecosystem Report[28] states that non-fisheries human activities in the CCE that may negatively impact the ecosystem are generally low with stable or declining trends. Nutrient input is an exception: it is elevated, although it shows a declining trend at the coast-wide scale. Impacts of nutrient input are concentrated in estuarine and nearshore areas and unlikely to substantially affect pelagic resources that occur farther offshore.

For many of the proposed non-fishing activities to be permitted under other federal agencies (such as offshore energy facilities, etc.), those agencies would conduct examinations of potential impacts on the affected resources. The Magnuson-Stevens Act (50 CFR 600.930) imposes an obligation on other federal agencies to consult with the Secretary of Commerce on actions that may adversely affect essential fish habitat (EFH). The eight regional fishery management councils are engaged in this review process by making comments and recommendations on any federal or state action that may affect habitat, including EFH, for their managed species, and by commenting on actions likely to substantially affect habitat, including EFH. In addition, under the Fish and Wildlife Coordination Act (Section 662), "*whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency first shall consult with the United States Fish and Wildlife Service* [USFWS], *Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular state wherein the . . .*" activity is taking place. 16 U.S.C. § 662(a). This act provides another avenue for review of actions by other federal and state agencies that may impact resources that NMFS manages in the reasonably foreseeable future. In addition, NMFS and the USFWS share responsibility for implementing the ESA. The ESA requires NMFS to designate "critical habitat" for any species it lists under the ESA (i.e., areas that contain physical or biological features essential to conservation, which may require special management considerations or protection) and to develop and implement recovery plans for threatened and endangered species. The ESA provides another avenue for NMFS to review actions by other entities that may impact endangered and protected resources whose management units are under NMFS's jurisdiction.

4.6.4 Effects of Past, Present, and Reasonably Foreseeable Future Actions, the Proposed Action, and Net Cumulative Effects

This section summarizes effects to determine cumulative impacts with respect to the environmental components evaluated in this EA. Table 4-2 is included for reference.

4.6.4.1 Groundfish

<u>Past, Present, and Reasonably Foreseeable Future Actions</u>. Past fishing has caused the yelloweye rockfish stock to be overfished. However, present and reasonably foreseeable future actions are part of an MSA-mandated rebuilding plan that will allow for yelloweye recovery and return the stock to sustainable levels. The Oregon midwater long-leader EFP test fishery results demonstrated that the proposed gear functioned as hypothesized in maximizing healthy midwater

[28] http://www.noaa.gov/iea/Assets/iea/california/Report/pdf/IEA%20State%20of%20the%20California%20Current%20Report%202015.pdf

target stocks while minimizing protected benthic non-target stocks, specifically yelloweye rockfish.

Cumulative Effects.

- The no action alternative would result in continued restraints on the sport fishing communities' access to healthy midwater stocks, due to area management measures intended to limit catches of overfished species. These constraints may lead to access pressure on other weak stocks and nearshore species.
- Alternative 1 (full season option, April-September) would most likely have a neutral cumulative effect with a possible increase in target species catch although limited by management measures to prevent overfishing and other measures associated with rebuilding plans. Alternative 1 would diversify fishing opportunities and help alleviate pressure on other weak stocks and nearshore species.
- Action Alternatives 2 (reduced season option, July-September) and 3 (one month season option, August) would offer many of the same benefits as Alternative 1. However, the reduced seasons in these alternatives compared with Alternative 1 would further constrain fishing opportunities. Therefore, these action alternatives may do little more to reduce or alleviate pressure on nearshore species than the no action alternative.

4.6.4.2 Economic Environment: Oregon Recreational Fisheries and Communities

Future changes in harvest specifications for key groundfish stocks could have implications for the expected net cumulative effects of these changes in combination with the proposed action. As discussed earlier, the midwater long-leader fishery could provide up to 15,000 angler trips, based on canary rockfish being the most limiting stock.

The midwater long-leader fishery may offer some resilience to the recreational fishing community in the event that forecasted losses in recreational salmon fishing opportunities (as described in Section 4.5.4.1) come to fruition. The projected number of reductions in trips associated with a potential changes to the Chinook salmon fishery (i.e., 14,000 fewer trips per year) is within the lower range of the maximum potential trips the midwater long-leader fishery is expected to yield (i.e., up to 15,000 trips per year). Therefore, it is expected that the midwater long-leader fishery could offer enough capacity to offset anticipated losses in the Chinook salmon fishery. These conclusions, however, are sensitive to the assumption that anglers wanting to target Chinook salmon would show the same or similar avidity for fishing for groundfish with midwater long-leader gear.

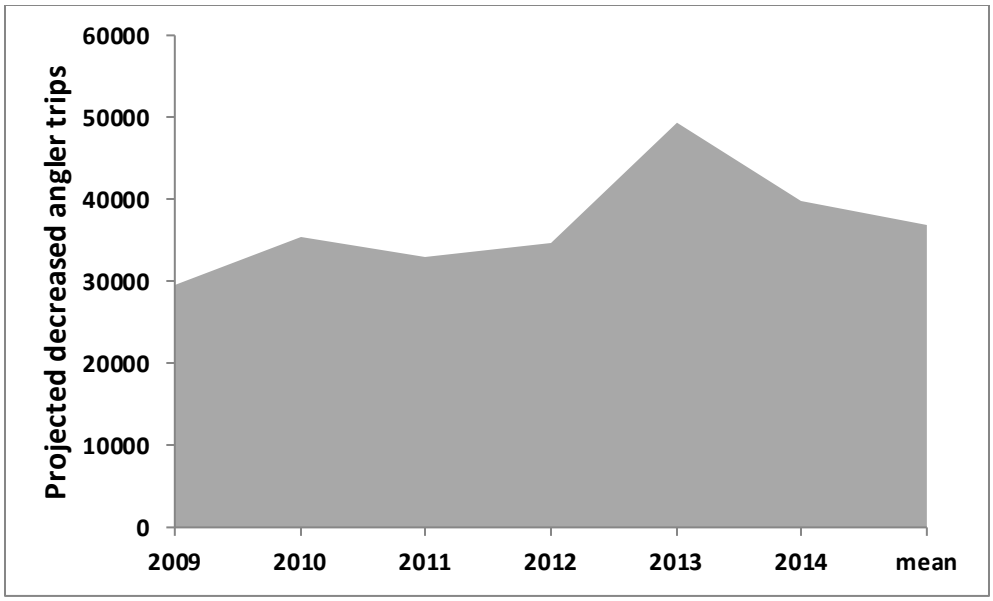


Figure 4-5. Projected decreased angler trips in the traditional groundfish fishery per year if the black rockfish fishery effort was to decline in line with proposed ACLs and recreational harvest guidelines in 2017-18.

Past, Present, and Reasonably Foreseeable Future Actions. Macroeconomic factors affecting household disposable income appear to have a much greater effect on participation in recreational fisheries compared to the availability of any one species. Disposal income and cost of participation (fixed and variable dollar costs, opportunity cost) and the perceived value of the recreational experience are the likely factors affecting participation.

Cumulative Effects. The cumulative effects of the action alternatives could be either moderately beneficial or adverse depending on external macroeconomic conditions. A recovering economy may have beneficial effects if anglers have more disposable income and are more willing to devote that income to recreational fishing. A declining economy could dampen demand for recreational fishing, reducing recreational fishing. The action alternatives could help meet any demand increase.

- The no action alternative would result in continued restraints on the sport fishing communities' access to healthy midwater stocks, due to area management measures intended to limit catches of overfished species. These constraints could significantly reduce sport groundfish opportunity for charter and private anglers which may lead to reduced economic benefits.
- Alternative 1 (Full season option, April-September) would most likely have a neutral cumulative effect with a possible increase in target species catch although limited by management measures to prevent overfishing and other measures associated with rebuilding plans. Alternative 1 would diversify fishing opportunities and provide increased economic benefits for charter and private anglers and communities dependent on sportfishing business.

- Action Alternatives 2 (reduced season option, July-September) and 3 (one month season option, August) would offer many of the same benefits as Alternative 1. However, the reduced seasons in these alternatives compared with Alternative 1 would further constrain fishing opportunities. Therefore, these action alternatives may do little more to reduce or alleviate pressure on nearshore species than the no action alternative while further reducing the potential economic benefit provided by the full season option.

Table 4-3. Summary of the cumulative effects of the proposed actions.

Affected Resources	**Past, Present, and Reasonably Foreseeable Future Actions**	**Proposed Action**	**Cumulative Effects**
Groundfish species	Positive	Neutral	Positive
Non-groundfish species	Neutral	Neutral	Neutral
Protected Species	Positive	Neutral	Positive
Oregon Recreational Fisheries and Communities	Neutral/mixed	Positive	Positive

The proposed action is not likely to result in significant cumulative impacts to the affected resources evaluated in this EA when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions; cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). Related actions to this proposed action include the biennial harvest specifications, with decision-making for the 2019-2020 fishing seasons scheduled to begin in late 2017.

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