

# Preface to the Final Environmental Assessment for 2020 Ocean Salmon Fisheries Management Measures (RIN 0648-BJ48)

The development of annual management measures for West Coast salmon fisheries is a well-documented and public process. Alternatives for annual management measures are developed at the March meeting of the Pacific Fishery Management Council (Council). At this meeting, the previous year's fisheries are reviewed, and alternatives are developed for the current year's fisheries after considering projected stock abundances, conservation objectives in the Fishery Management Plan (FMP), and compliance with the Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), and other relevant laws, as well as international agreements under the Pacific Salmon Treaty (PST). Public meetings are held in Washington, Oregon, and California in late March to give the public the opportunity to provide comments on the alternatives. The Council meets again in April to consider public and agency input on the alternatives and to develop and adopt a preferred alternative. Environmental impacts of the preferred alternative are within the range of impacts analyzed for the preliminary alternatives, although new fisheries data developed between March and April, especially regarding fisheries north of Cape Falcon, may require modification of the range of impacts.

During this process, the Council and the National Marine Fisheries Service (NMFS) develop a series of documents that describe the development and analysis of the alternatives. These documents collectively form the basis for the Environmental Assessment (EA) for NMFS' analysis of the proposed action of adopting the 2020 ocean salmon fisheries management measures under the National Environmental Policy Act (NEPA). This Preface is provided to guide the reader through the three documents that, collectively, form the EA (see Table 1, below). These documents are available to the public on the Council's website ([www.pcouncil.org](http://www.pcouncil.org)):

Preseason Report I (PRE I): Stock Abundance Analysis and Environmental Assessment Part 1 for 2020 Ocean Salmon Fishery Regulations (February 2020).

*PRE I describes Purpose and Need, Affected Environment, and the no-action alternative.*

Preseason Report II (PRE II): Proposed Alternatives and Environmental Assessment Part 2 for 2020 Ocean Salmon Fishery Regulations (March 2020).

*PRE II describes the analysis of the action alternatives.*

Preseason Report III (PRE III): Analysis of Council Adopted Management Measures for 2020 Ocean Salmon Fisheries (April 2020).

*PRE III describes the final preferred alternative adopted by the Council.*

A fourth document, also available on the Council's website, is referenced in the above and provides some aspects of the affected environment, especially related to salmon stocks:

Review of 2019 Ocean Salmon Fisheries (February 2020).

This final EA includes edits and information added after review of the initial documents and in response to public comments. Therefore, this final EA will have differences from the Preseason Report documents on the Council’s website.

Table 1. Directory of NEPA elements in the Environmental Assessment for 2020 Ocean Salmon Fisheries Management Measures (RIN 0648-BJ48).

<b>NEPA Element</b>	<b>Location</b>
Purpose and Need	PRE I: Introduction and PRE II: Chapter 1
Affected Environment	PRE I and PRE II
Description of the Affected Environment	PRE I: Chapters I – IV and PRE II: Chapter 8
Alternatives	PRE I, PRE II, and PRE III
Description of No-action alternative	PRE I: Chapter V
Description of Action alternatives	PRE II: Chapter 7, Tables 1 – 4; PRE III: Chapter 1, Tables 1 - 4
Analysis of Impacts (Environmental Effects)	PRE I and PRE II
Analysis of the No-action Alternative	PRE I: Chapter V
Impacts on salmon stocks	PRE II: Chapter 8, Tables 5-7
Socioeconomics	PRE II: Chapter 8.2, Tables 9-10, Figures 1-2
Non-target Species	PRE II: Chapter 8.3
Marine Mammals	PRE II: Chapter 8.4
ESA Listed Species (other than salmon)	PRE II: Chapter 8.5 PRE III: Chapter 11
Seabirds	PRE II: Chapter 8.6
Biodiversity and Ecosystem Function	PRE II: Chapter 8.7
Ocean and Coastal Habitats	PRE II: Chapter 8.8
Public Health and Safety	PRE II: Chapter 8.9
Cumulative Impacts	PRE II: Chapter 8.10
Final Preferred Alternative	PRE III
Description	PRE III: Tables 1 – 4
Socioeconomic Impacts	PRE III: Chapter 10, Tables 9-10
Environmental Effects	PRE III: Chapter 11, Tables 5-7, and 11-12
Compliance with other Applicable Law	Addendum
Finding of No Significant Impact (FONSI)	Addendum

**FINAL  
ENVIRONMENTAL ASSESSMENT PART 1  
FOR 2020 OCEAN SALMON FISHERY  
REGULATIONS**

REGULATION IDENTIFIER NUMBER 0648-BJ48

**BASED ON**

**PRESEASON REPORT I  
STOCK ABUNDANCE ANALYSIS**



Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, OR 97220-1384  
(503) 820-2280  
[www.pcouncil.org](http://www.pcouncil.org)

MARCH 2020

# ACKNOWLEDGMENTS

---

## SALMON TECHNICAL TEAM

**DR. MICHAEL O'FARRELL, CHAIR**

National Marine Fisheries Service, Santa Cruz, California

**MR. JON CAREY, VICE CHAIR**

National Marine Fisheries Service, Lacey, Washington

**MS. WENDY BEEGHLEY**

Washington Department of Fish and Wildlife, Olympia, Washington

**MR. CRAIG FOSTER**

Oregon Department of Fish and Wildlife, Clackamas, Oregon

**DR. STEVE HAESEKER**

U.S. Fish and Wildlife Service, Vancouver, Washington

**MS. ASHTON HARP**

Northwest Indian Fisheries Commission, Forks, Washington

**MR. ALEX LETVIN**

California Department of Fish and Wildlife, Santa Rosa, California

**MS. MINDY ROWSE**

National Marine Fisheries Service, Seattle, Washington

## PACIFIC FISHERY MANAGEMENT COUNCIL STAFF

**MS. ROBIN EHLKE**

The Salmon Technical Team and the Council staff express their thanks for the expert assistance provided by Mr. Kyle Van de Graaf, Washington Department of Fish and Wildlife; Mr. Eric Schindler, Oregon Department of Fish and Wildlife; Dr. Pete M<sup>c</sup>Hugh, Ms. Jennifer Simon, and Ms. Melodie Palmer-Zwahlen, California Department of Fish and Wildlife; and numerous other agency and tribal personnel in completing this report.

This document may be cited in the following manner:

Pacific Fishery Management Council. 2020. *Preseason Report I: Stock Abundance Analysis and Environmental Assessment Part 1 for 2020 Ocean Salmon Fishery Regulations*. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220-1384.



A report of the Pacific Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award Number FNA20NMF4410011.

## TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES .....	vii
LIST OF FIGURES .....	viii
LIST OF ACRONYMS AND ABBREVIATIONS .....	ix
INTRODUCTION .....	1
Purpose and Need .....	1
STT Concerns .....	3
CHAPTER I: DESCRIPTION OF THE AFFECTED ENVIRONMENT .....	4
ABUNDANCE FORECASTS .....	5
ACCEPTABLE BIOLOGICAL CATCH, ANNUAL CATCH LIMITS, AND OVERFISHING LIMITS .....	5
Acceptable Biological Catch .....	5
Annual Catch Limit .....	6
Overfishing Limit .....	6
STATUS DETERMINATION CRITERIA .....	6
CHAPTER II: AFFECTED ENVIRONMENT - CHINOOK SALMON ASSESSMENT .....	14
CHINOOK STOCKS SOUTH OF CAPE FALCON .....	14
Sacramento River Fall Chinook .....	14
Predictor Description .....	14
Predictor Performance .....	14
Stock Forecast and Status .....	15
OFL, ABC, and ACL .....	15
Sacramento River Winter Chinook .....	15
Predictor Description .....	16
Predictor Performance .....	16
Stock Forecast and Status .....	16
Klamath River Fall Chinook .....	16
Predictor Description .....	16
Predictor Performance .....	16
Stock Forecast and Status .....	17
OFL, ABC, and ACL .....	17
Other California Coastal Chinook Stocks .....	17
Oregon Coast Chinook Stocks .....	18
Predictor Description .....	18
Predictor Performance .....	18
Stock Forecast and Status .....	18
CHINOOK STOCKS NORTH OF CAPE FALCON .....	20
Columbia River Chinook .....	20
Predictor Description .....	21
Predictor Performance .....	21
Stock Forecasts and Status .....	21
Washington Coast Chinook .....	22
Predictor Description and Past Performance .....	22
Stock Forecasts and Status .....	22
Puget Sound Chinook .....	23
Predictor Description .....	23
Predictor Performance .....	24
Stock Forecasts and Status .....	24
STOCK STATUS DETERMINATION UPDATES .....	24

SELECTIVE FISHERY CONSIDERATIONS FOR CHINOOK .....	24
CHAPTER III - COHO SALMON ASSESSMENT .....	50
COLUMBIA RIVER AND OREGON/CALIFORNIA COAST COHO .....	50
OREGON PRODUCTION INDEX AREA .....	50
Hatchery Coho 50	
Predictor Description .....	50
Predictor Performance .....	51
Stock Forecast and Status .....	51
Oregon Coastal Natural Coho .....	51
Predictor Description .....	51
Predictor Performance .....	52
Stock Forecasts and Status .....	53
Lower Columbia River Natural .....	53
Predictor Description .....	53
Predictor Performance .....	53
Stock Forecast and Status .....	53
Oregon Production Index Area Summary of 2020 Stock Forecasts .....	54
WASHINGTON COAST COHO .....	54
Willapa Bay 54	
Predictor Description .....	54
Predictor Performance .....	54
Stock Forecasts and Status .....	55
OFL, ABC, and ACL .....	55
Grays Harbor 55	
Predictor Description .....	55
Predictor Performance .....	55
Stock Forecasts and Status .....	56
OFL .....	56
Quinault River 56	
Predictor Description .....	56
Predictor Performance .....	56
Stock Forecasts and Status .....	56
Queets River 56	
Predictor Description .....	56
Predictor Performance .....	57
Stock Forecasts and Status .....	57
OFL .....	57
Hoh River 57	
Predictor Description .....	57
Predictor Performance .....	58
Stock Forecasts and Status .....	58
OFL .....	58
Quillayute River .....	58
Predictor Description .....	58
Predictor Performance .....	59
Stock Forecasts and Status .....	59
North Washington Coast Independent Tributaries .....	59
Predictor Description .....	59
Predictor Performance .....	60
Stock Forecasts and Status .....	60
PUGET SOUND COHO STOCKS .....	60
Strait of Juan de Fuca .....	61

Predictor Description .....	61
Predictor Performance .....	61
Stock Forecasts and Status.....	61
OFL.....	61
Nooksack-Samish .....	61
Predictor Description .....	61
Predictor Performance .....	61
Stock Forecasts and Status.....	61
Skagit           62	
Predictor Description .....	62
Predictor Performance .....	62
Stock Forecasts and Status.....	62
OFL.....	62
Stillaguamish   62	
Predictor Description .....	62
Predictor Performance .....	63
Stock Forecasts and Status.....	63
OFL.....	63
Snohomish       63	
Predictor Description .....	63
Predictor Performance .....	64
Stock Forecasts and Status.....	64
OFL.....	64
Hood Canal      64	
Predictor Description .....	64
Predictor Performance .....	64
Stock Forecasts and Status.....	64
OFL.....	65
South Sound     65	
Predictor Description .....	65
Stock Forecasts and Status.....	65
STOCK STATUS DETERMINATION UPDATES .....	65
SELECTIVE FISHERY CONSIDERATIONS FOR COHO .....	65
CHAPTER IV: AFFECTED ENVIRONMENT - PINK SALMON ASSESSMENT.....	77
CHAPTER V: DESCRIPTION AND ANALYSIS OF THE NO-ACTION ALTERNATIVE .....	78
ANALYSIS OF EFFECTS ON THE ENVIRONMENT OF THE NO-ACTION ALTERNATIVE.....	78
Overview        78	
Sacramento River Fall Chinook.....	78
Sacramento River Winter Chinook.....	79
Klamath River Fall Chinook.....	79
California Coastal Chinook Stocks.....	79
Oregon Coast Chinook Stocks.....	79
Columbia River Chinook Stocks .....	79
Washington Coast and Puget Sound Chinook Stocks.....	80
Oregon Production Index Area Coho Stocks.....	80
Washington Coast, Puget Sound, and Canadian Coho Stocks.....	80
Summary         80	
Conclusion      80	
CHAPTER VI: REFERENCES .....	98
APPENDIX A SUMMARY OF COUNCIL STOCK MANAGEMENT GOALS .....	100
APPENDIX B SALMON HARVEST ALLOCATION SCHEDULES .....	116

APPENDIX C OREGON PRODUCTION INDEX DATA ..... 128

**LIST OF TABLES**

	<u>Page</u>
TABLE I-1. Preseason adult Chinook salmon stock forecasts in thousands of fish.....	8
TABLE I-2. Preseason adult coho salmon stock forecasts in thousands of fish.....	11
TABLE II-1. Harvest and abundance indices for adult Sacramento River fall Chinook (SRFC) in thousands of fish. ....	25
TABLE II-2. Sacramento River winter Chinook escapement, allowable age-3 impact rates, and management performance. ....	27
TABLE II-3. Klamath River fall Chinook ocean abundance (thousands), harvest rate, and river run size estimates (thousands) by age. (Page 1 of 2).....	28
TABLE II-4. Comparisons of preseason forecast and postseason estimates for ocean abundance of adult Klamath River fall Chinook.....	30
TABLE II-5. Summary of management objectives and predictor performance for Klamath River fall Chinook .....	34
TABLE II-6. Harvest levels and rates of age-3 and age-4 Klamath River fall Chinook.....	35
TABLE II-7. Rogue River fall Chinook inriver run and ocean population indices.....	39
TABLE II-8. Predicted and postseason returns of Columbia River adult summer and fall Chinook in thousands of fish.....	40
TABLE II-9. Preseason forecasts and postseason estimates of Puget Sound run size for summer/fall Chinook in thousands of fish.....	43
TABLE III-1. Preliminary preseason and postseason coho stock abundance estimates for Oregon production index area stocks in thousands of fish .....	66
TABLE III-2. Oregon production index (OPI) area coho harvest impacts, spawning, abundance, and exploitation rate estimates in thousands of fish. ....	68
TABLE III-3. Preseason forecasts and postseason estimates of ocean abundance for selected Washington coastal adult natural coho stocks in thousands of fish.....	69
TABLE III-4. Preseason forecasts and postseason estimates of ocean abundance for selected Puget Sound adult natural coho stocks in thousands of fish <sup>av</sup> .....	71
TABLE III-5. Status categories and constraints for Puget Sound and Washington Coast coho under the FMP and PST Southern Coho Management Plan.....	73
TABLE III-6. Projected coho mark rates for 2020 U.S. forecasts under base period fishing patterns (percent marked).....	74
TABLE IV-1. Estimated annual (odd-numbered years) run sizes and forecasts for Fraser River and Puget Sound pink salmon in millions of fish.....	77
TABLE V-1. 2019 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted.....	82
TABLE V-2. 2019 Recreational management measures for non-Indian ocean salmon fisheries - Council adopted.....	88
TABLE V-3. 2019 Treaty Indian ocean troll management measures for ocean salmon fisheries - Council adopted.....	93
TABLE V-4. Stock status relative to overfished and overfishing criteria.....	94
TABLE V-5. Postseason $S_{ACL}$ , $S_{OFL}$ , and spawner escapement estimates for Sacramento River fall Chinook (SRFC), Klamath River fall Chinook (KRFC) and Willapa Bay coho.....	95
TABLE V-6. Comparison of projected ocean escapements and exploitation rates for critical natural and Columbia River hatchery coho stocks (thousands of fish) resulting from application of 2019 Council-adopted regulations to 2019 and 2020 ocean abundance forecasts.....	95



TABLE V-7. Comparison of Lower Columbia natural (LCN), Oregon coastal natural (OCN), and Rogue/Klamath (RK) coho projected harvest mortality and exploitation rates by fishery under Council-adopted 2019 management measures and preliminary 2020 preseason abundance estimates. .... 95

TABLE V-8 Maximum allowable fishery impact rate for OCN coho under Amendment 13 matrix and the revised OCN work group matrix based on parent escapement levels by stock component and marine survival category. <sup>a/</sup> ..... 97

**LIST OF FIGURES**

	<u>Page</u>
FIGURE II-1. The Sacramento Index (SI) and relative levels of its components. The Sacramento River fall Chinook $S_{MSY}$ of 122,000 adult spawners is noted on the vertical axis. ....	47
FIGURE II-2. Sacramento Index (SI) forecast based on log-log regression of the SI on jack escapement from the previous year, accounting for autocorrelated errors. The solid line represents the fitted model and the black dot denotes the SI forecast. Years shown are SI years. ....	47
FIGURE II-3. Regression estimators for Klamath River fall Chinook ocean abundance (September 1) based on that year’s river return of same cohort. Numbers in plots denote brood years. ....	48
FIGURE II-4. Selected preseason vs. postseason forecasts for Chinook stocks with substantial contribution to Council area fisheries. ....	49
FIGURE III-1a. Selected preseason vs. postseason forecasts for coho stocks with substantial contribution to Council area fisheries. ....	75
FIGURE III-1b. Selected preseason vs. postseason forecasts for coho stocks with substantial contribution to Council area fisheries. ....	76

## LIST OF ACRONYMS AND ABBREVIATIONS

ABC	acceptable biological catch
ACL	annual catch limit
BY	brood year
CDFW	California Department of Fish and Wildlife
CoTC	Coho Technical Committee (of the PSC)
Council	Pacific Fishery Management Council
CRFMP	Columbia River Fishery Management Plan
CWT	coded-wire tag
EA	Environmental Assessment
EEZ	exclusive economic zone (from 3-200 miles from shore)
EIS	Environmental Impact Statement
EMAP	Environmental Monitoring and Assessment Program
ESA	Endangered Species Act
ESU	evolutionarily significant unit
$F_{ABC}$	exploitation rate associated with ABC
$F_{ACL}$	exploitation rate associated with ACL (= $F_{ABC}$ )
FMP	fishery management plan
$F_{MSY}$	maximum sustainable yield exploitation rate
FNMC	Far-North-Migrating Coastal
$F_{OFL}$	exploitation rate associated with the overfishing limit (= $F_{MSY}$ , MFMT)
FONSI	Finding of No Significant Impacts
FRAM	Fishery Regulatory Assessment Model
GAM	generalized additive models
ISBM	individual stock-based management
Jack CR	Columbia River jacks (coho)
Jack OC	Oregon coastal and Klamath River Basin jacks (coho)
Jack OPI	Jack CR + Jack OC (coho)
KMZ	Klamath management zone (ocean zone between Humbug Mountain and Horse Mountain where management emphasis is on Klamath River fall Chinook)
KOHM	Klamath Ocean Harvest Model
KRFC	Klamath River fall Chinook
KRTT	Klamath River Technical Team
LCN	lower Columbia River natural (coho)
LCR	lower Columbia River (natural tule Chinook)
LRB	lower Columbia River bright (Chinook)
LRH	lower Columbia River hatchery (tule fall Chinook returning to hatcheries below Bonneville Dam)
LRW	lower Columbia River wild (bright fall Chinook spawning naturally in tributaries below Bonneville Dam)
MCB	Mid-Columbia River bright (bright hatchery fall Chinook released below McNary Dam)
MFMT	maximum fishing mortality threshold
MOC	mid-Oregon coast
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSM	mixed stock model
MSST	minimum stock size threshold
MSY	maximum sustainable yield
NA	not available
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOC	north Oregon coast

## LIST OF ACRONYMS AND ABBREVIATIONS (continued)

NPGO	North Pacific Gyre Oscillation
NSIG	National Standard 1 Guidelines
OCN	Oregon coast natural (coho)
OCNL	Oregon coast natural lake (coho)
OCNR	Oregon coast natural river (coho)
ODFW	Oregon Department of Fish and Wildlife
OFL	overfishing limit
OPI	Oregon Production Index (coho salmon stock index south of Leadbetter Point)
OPIH	Oregon Production Index public hatchery
OPITT	Oregon Production Index Technical Team
OY	Optimum Yield
PDO	Pacific Decadal Oscillation
PFMC	Pacific Fishery Management Council (Council)
PRIH	Private hatchery
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
RER	rebuilding exploitation rate
RK	Rogue/Klamath (coho)
RMP	Resource Management Plan (for exemption from ESA section 9 take prohibitions under limit 6 of the 4(d) rule)
ROPI	Rogue Ocean Production Index (Chinook)
SAB	Select Area brights (bright fall Chinook destined for Select Area sites on the lower Columbia River)
S <sub>ABC</sub>	spawning escapement associated with ABC
S <sub>ACL</sub>	spawning escapement associated with ACL (= S <sub>ABC</sub> )
SCH	Spring Creek Hatchery (tule fall Chinook returning to SCH)
SHM	Sacramento Harvest Model
SI	Sacramento Index
SJF	Strait of Juan de Fuca
S <sub>MSY</sub>	MSY spawning escapement
S <sub>OFL</sub>	spawning escapement associated with the overfishing limit (= S <sub>MSY</sub> )
SOC	south Oregon Coast
SRFC	Sacramento River fall Chinook
SRS	Stratified Random Sampling
SRWC	Sacramento River winter Chinook
STEP	Salmon Trout Enhancement Program
STT	Salmon Technical Team (formerly the Salmon Plan Development Team)
TAC	Technical Advisory Committee ( <i>U.S. v. Oregon</i> )
URB	Upriver bright (naturally spawning bright fall Chinook primarily migrating past McNary Dam)
VSI	visual stock identification
WCVI	West Coast Vancouver Island
WDFW	Washington Department of Fish and Wildlife

## INTRODUCTION

This is the second report in an annual series of four reports prepared by the Salmon Technical Team (STT) of the Pacific Fishery Management Council (Council) to document and help guide ocean fishery salmon management off the coasts of Washington, Oregon, and California. The report focuses on Chinook, coho, and pink salmon stocks that have been important in determining Council fisheries in recent years, and on stocks listed under the Endangered Species Act (ESA) with established National Marine Fisheries Service (NMFS) ESA consultation standards. This report will be formally reviewed at the Council's March 2020 meeting.

This report provides 2020 salmon stock abundance forecasts, and an analysis of the impacts of 2019 management measures or regulatory procedures, on the projected 2020 abundance. This analysis is intended to give perspective in developing 2020 management measures. This report also constitutes the first part of an Environmental Assessment (EA) to comply with National Environmental Policy Act (NEPA) requirements for the 2020 ocean salmon management measures. An EA is used to determine whether an action being considered by a Federal agency has significant impacts. This part of the EA includes a statement of the purpose and need, a summary description of the affected environment, a description of the No-Action Alternative, and an analysis of the No-Action Alternative effects on the salmon stocks included in the Council's Salmon Fishery Management Plan (FMP).

The STT and Council staff will provide two additional reports prior to the beginning of the ocean salmon season to help guide the Council's selection of annual fishery management measures: Preseason Report II and Preseason Report III. These reports will analyze the impacts of the Council's proposed alternatives and adopted fishery management recommendations, respectively. Preseason Report II will constitute the second part of the EA, and will include additional description of the affected environment relevant to the alternative management measures considered for 2020 ocean salmon fisheries, a description of the alternatives, and an analysis of the environmental consequences of the alternatives. Preseason Report II will also analyze the potential impacts of a reasonable range of alternatives, which will inform the final fishery management measures included in Preseason Report III. Preseason Report III will describe and analyze the effects of the Council's final proposed action, including cumulative effects. Together, these parts of the EA will provide the necessary components to determine if a finding of no significant impact (FONSI) or Environmental Impact Statement (EIS) is warranted.

Chapter I provides a summary of stock abundance forecasts. Chapters II and III provide detailed stock-by-stock analyses of abundance, a description of prediction methodologies, and accuracy of past abundance forecasts for Chinook and coho salmon, respectively. Chapter IV summarizes abundance and forecast information for pink salmon. Chapter V provides an assessment of 2019 regulations applied to 2020 abundance forecasts. Appendices provide supplementary information as follows: Appendix A provides a summary of Council stocks and their management objectives; Appendix B contains the Council's current harvest allocation schedules, and Appendix C contains pertinent data for Oregon Production Index (OPI) area coho. For NEPA purposes, Chapters I-IV of this document describe the affected environment and Chapter V provides a description and analysis of the No-Action Alternative.

### *Purpose and Need*

The purpose of this action, implementation of the 2020 ocean salmon fishery management measures, is to allow fisheries to harvest surplus production of healthy natural and hatchery salmon stocks within the constraints specified under the Salmon FMP, the Pacific Salmon Treaty (PST), and consultation standards established for ESA-listed salmon stocks. In achieving this purpose, management measures must take into account the allocation of harvest among different user groups and port areas. Without this action, 2019 management measures would be in effect, which do not consider changes in abundance of stocks in the

mixed stock ocean salmon fisheries. Therefore, this action is needed to ensure constraining stocks are not overharvested, and that harvest of abundant stocks can be optimized and achieve the most overall benefit to the nation.

The Salmon FMP also establishes nine more general harvest-related objectives:

1. Establish ocean exploitation rates for commercial and recreational salmon fisheries that are consistent with requirements for stock conservation objectives and annual catch limits (ACLs), specified ESA consultation standards, or Council-adopted rebuilding plans.
2. Fulfill obligations to provide opportunity for Indian harvest of salmon as provided in treaties with the United States, as mandated by applicable decisions of the Federal courts, and as specified in the October 4, 1993 opinion of the Solicitor, Department of Interior, with regard to federally-recognized Indian fishing rights of Klamath River Tribes.
3. Maintain ocean salmon fishing seasons supporting the continuance of established recreational and commercial fisheries, while meeting salmon harvest allocation objectives among ocean and inside recreational and commercial fisheries that are fair and equitable, and in which fishing interests shall equitably share the obligations of fulfilling any treaty or other legal requirements for harvest opportunities.
4. Minimize fishery mortalities for those fish not landed from all ocean salmon fisheries as consistent with achieving optimum yield (OY) and bycatch management specifications.
5. Manage and regulate fisheries so that the OY encompasses the quantity and value of food produced, the recreational value, and the social and economic values of the fisheries.
6. Develop fair and creative approaches to managing fishing effort, and evaluate and apply effort management systems as appropriate to achieve these management objectives.
7. Support the enhancement of salmon stock abundance in conjunction with fishing effort management programs to facilitate economically viable and socially acceptable commercial, recreational, and tribal seasons.
8. Achieve long-term coordination with the member states of the Council, Indian tribes with federally-recognized fishing rights, Canada, the North Pacific Fishery Management Council, Alaska, and other management entities which are responsible for salmon habitat or production. Manage consistent with the PST and other international treaty obligations.
9. In recommending seasons, to the extent practicable, promote the safety of human life at sea.

These objectives, along with the consultation standards established under the ESA, provide "sideboards" for setting management measures necessary to implement the Salmon FMP, which conforms to the terms and requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the National Standard 1 Guidelines (NS1G).

Implementation of 2020 management measures will allow fisheries to harvest surplus production of healthy natural and hatchery salmon stocks within the constraints specified under the Salmon FMP and consultation standards established for ESA-listed salmon stocks.

The reauthorization of the MSA in 2006 established new requirements to end and prevent overfishing through specification of overfishing limits (OFL), acceptable biological catch (ABC), ACLs and accountability measures (AMs). Because OFLs, ABCs, and ACLs are based on annual abundance forecasts, Preseason Report I also specifies OFLs, ABCs, and ACLs for 2020 fisheries.

### ***STT Concerns***

At the September 2019 Council meeting, the Council approved three topics for methodology review, one of which was to “examine the data and models used to forecast impacts on Upper Columbia River summer Chinook to determine whether a change in methodology is warranted.” After a thorough investigation, the Model Evaluation Workgroup (MEW) presented its findings to the STT and Scientific and Statistical Committee (SSC) Salmon Subcommittee during an October 22, 2019 webinar. The MEW recommended that no formal methodology review was required, but identified three data input corrections that would help to improve the model representation of the Upper Columbia River summer Chinook stock.

At the November 2019 Council meeting, the Council agreed with the MEW’s findings and directed that “any needed data input changes would be made in time for the 2020 preseason process.” At that time it was understood that these data input changes would come in the form of a new Chinook FRAM base period calibration that was scheduled for completion and implementation prior to the 2020 preseason process.

Due to other developments, however, this updated base period calibration will not be available for the 2020 preseason. The STT is concerned that, in the absence of this updated base period, use of the existing model base period for the 2020 preseason will continue to result in over-representation of the Upper Columbia River summer Chinook stock in both Council area fisheries and other fisheries along the coast. Consequently, this would also result in the underestimation of impacts to other stocks that are encountered in these fisheries, some of which are ESA listed.

## CHAPTER I: DESCRIPTION OF THE AFFECTED ENVIRONMENT

The action area for this proposed action is the exclusive economic zone (EEZ), 3 to 200 nautical miles, off the West Coast of the U.S. (California, Oregon, and Washington).

The affected environment relevant to establishing the 2020 ocean salmon fishery management measures consists of the following components:

- Target Species – Chinook, coho, and pink salmon,
- ESA-listed salmon stocks; and
- Socioeconomic aspects of coastal communities, federally-recognized Tribes, and states.

A description of the historical baseline for these components of the affected environment is presented in the Review of 2019 Ocean Salmon Fisheries (PFMC 2020). The current status (2020 ocean abundance forecasts) of the environmental components expected to be affected by the 2020 ocean salmon fisheries regulation alternatives (FMP salmon stocks, including those listed under the ESA) are described in this report (Part 1 of the 2020 salmon EA); the Review of 2019 Ocean Salmon Fisheries (PFMC 2020) provides an historical description of the salmon fishery-affected environment, including stock status and socioeconomic impacts, and represents the current status of the socioeconomic component of the affected environment.

The No-Action alternative was assessed in the 2019 NEPA process for ocean salmon regulations (Preseason Reports II and III; PFMC 2019b and 2019c). In those analyses, proposed management measures were determined to have no significant impacts on several components of the affected environment. These components included:

- Non-target species – Pacific Halibut, groundfish (NMFS 2003; PFMC 2006, 2019a)
- Marine mammals – pinnipeds, killer whales (NMFS 2003, 2008; PFMC 2006, 2019a)
- Seabirds (NMFS 2003; PFMC 2006, 2019a)
- Ocean and coastal habitats, ESA critical habitat, and Essential Fish Habitat (EFH) (NMFS 2003; PFMC 2006, 2019a)
- Biodiversity and ecosystem function (NMFS 2003; PFMC 2006, 2019a)
- Unique characteristics of the geographic area (NMFS 2003; PFMC 2006, 2019a)
- Cultural, scientific, or historical resources such as those eligible for listing in the National Register of Historic Places (NMFS 2003; PFMC 2006, 2019a)
- Public health or safety (NMFS 2003; PFMC 2006, 2019a)

The 2020 No-Action alternative is the same as the 2019 action, therefore it is expected to have no significant impacts on these elements of the environment. Thus, this document includes analysis of the impacts of the No Action alternative on salmon stocks identified in the FMP, the component of the environment for which conditions have changed such that the effects in 2020 are different.

The component of the affected environment that is described in this document consists only of the salmon stocks identified in the FMP (Appendix A). The 2020 forecast abundance of the FMP salmon stocks represents this component of the affected environment. The surviving stock after fishery-related mortality is generally referred to as spawning escapement (S), and the proportion of the stock that succumbs to fishing-related mortality is generally referred to as the exploitation rate (F); these are the metrics that constitute conservation objectives for FMP stocks, and by which effects of the alternatives to this part of the affected environment are evaluated. Thus, application of management measures (alternatives) to the abundance forecasts (affected environment) results in projected exploitation rates and spawning escapements (effects).



A description of the other components of the affected environment considered for 2020 ocean salmon fishery regulation alternatives, including socioeconomic components and updated additional information on the biological components of the environment, will be presented in Preseason Report II, to be issued after the March Council meeting.

### ***ABUNDANCE FORECASTS***

Abundance forecasts in 2020 are summarized for key Chinook and coho salmon stocks in Tables I-1 and I-2, respectively. A cursory comparison of preseason forecast and postseason abundance estimates for selected stocks is presented in Figures II-2, 3, 4 and III-1. More detailed analyses of this subject are covered in Chapters II (Chinook) and III (coho). Information on pink salmon abundance and forecasts is contained in Chapter IV. Council Salmon FMP conservation objectives are presented in Appendix A; allocation objectives are presented in Appendix B.

In addition to the key stocks with abundance forecasts listed in Tables I-1 and I-2, Council management decisions for the 2020 ocean salmon fishing seasons may be constrained by other stocks, such as those listed under the ESA or subject to PSC agreements, which may not have abundance forecasts made, or do not have abundance forecasts available in time for inclusion in this report. These include the following Evolutionarily Significant Units (ESUs): Central Valley Spring Chinook, California Coastal Chinook, Lower Columbia River (LCR) natural tule Chinook, Snake River Fall Chinook; Central California Coast coho, Southern Oregon/Northern California Coast coho, and Interior Fraser (including Thompson River) coho.

### ***ACCEPTABLE BIOLOGICAL CATCH, ANNUAL CATCH LIMITS, AND OVERFISHING LIMITS***

Amendment 16 to the Salmon FMP, approved in December 2011, was developed to comply with the requirements of the 2006 MSA reauthorization, including specification of acceptable biological catch (ABC), annual catch limits (ACLs), overfishing limits (OFLs), and Scientific and Statistical Committee (SSC) recommendations for ABC. Amendment 16 established that ABC and ACLs were required for two stocks, Sacramento River fall Chinook (SRFC) and Klamath River fall Chinook (KRFC), which serve as indicator stocks for the Central Valley Fall and Southern Oregon/Northern California Chinook complexes, respectively. Other stocks in the FMP are not required to have ACLs either because they were components of these two stock complexes, were ESA-listed, were hatchery stocks, or were managed under an international agreement. Since publication of Amendment 16, ABC and ACL specifications have been added to the Salmon FMP for Willapa Bay coho.

ABCs and ACLs are not specified for stocks that are managed under an international agreement as there is a statutory exception in the MSA to the requirement for ACLs, and the NSIGs state that ABCs are not required if stocks meet this international exception. The NSIGs allow the flexibility to consider alternative approaches for specifying ACLs for stocks with unusual life history characteristics like Pacific salmon, and particularly for species listed under the ESA and hatchery stocks. For hatchery stocks, broodstock goals serve as conservation objectives rather than specifying ACLs. For ESA-listed stocks, biological opinions and associated consultation standards describe necessary controls to ensure their long-term conservation.

Preseason OFLs are determined for all non-ESA-listed and non-hatchery stocks with an estimate of  $F_{MSY}$  (or Maximum Fishing Mortality Threshold, MFMT) and sufficient information available to make abundance forecasts.

#### **Acceptable Biological Catch**

For salmon, ABC is defined in terms of spawner escapement ( $S_{ABC}$ ), which is determined annually based on stock abundance, in spawner equivalent units (N) and the exploitation rate  $F_{ABC}$ .



$$S_{ABC} = N \times (1 - F_{ABC})$$

The ABC control rule defines  $F_{ABC}$  as a fixed exploitation rate reduced from  $F_{MSY}$  to account for scientific uncertainty. The degree of the reduction in  $F$  between  $F_{ABC}$  and  $F_{MSY}$  depends on whether  $F_{MSY}$  is directly estimated (tier 1 stock) or a proxy value is used (tier 2 stock). For tier 1 stocks,  $F_{ABC}$  equals  $F_{MSY}$  reduced by five percent. For tier 2 stocks,  $F_{ABC}$  equals  $F_{MSY}$  reduced by ten percent.

Tier-1:  $F_{ABC} = F_{MSY} \times 0.95$ .

Tier-2:  $F_{ABC} = F_{MSY} \times 0.90$ .

### Annual Catch Limit

ACLs are also defined in terms of spawner escapement ( $S_{ACL}$ ) based on  $N$  and the corresponding exploitation rate ( $F_{ACL}$ ), where the exploitation rate is a fixed value that does not change on an annual basis.

$F_{ACL}$  is equivalent to  $F_{ABC}$  and

$$S_{ACL} = N \times (1 - F_{ACL}),$$

which results in  $S_{ACL} = S_{ABC}$  for each management year.

During the annual preseason salmon management process,  $S_{ACL}$  is estimated using the fixed  $F_{ACL}$  exploitation rate and the preseason forecast of  $N$ . Thus, fishery management measures must result in an expected spawning escapement greater than or equal to this preseason estimate of  $S_{ACL}$ .

### Overfishing Limit

For salmon, OFL is defined in terms of spawner escapement ( $S_{OFL}$ ), which is consistent with the common practice of using spawner escapement to assess stock status for salmon.  $S_{OFL}$  is determined annually based on stock abundance, in spawner equivalent units ( $N$ ) and the exploitation rate  $F_{OFL}$ .

$F_{OFL}$  is defined as being equal to  $F_{MSY}$  (or MFMT) and

$$S_{OFL} = N \times (1 - F_{MSY}).$$

### STATUS DETERMINATION CRITERIA

Amendment 16 also included new status determination criteria (SDC) for overfishing, approaching an overfished condition, overfished, not overfished/rebuilding, and rebuilt. These criteria are:

- Overfishing occurs when a single year exploitation rate exceeds the maximum fishing mortality threshold (MFMT), which is based on the maximum sustainable yield exploitation rate ( $F_{MSY}$ );
- Approaching an overfished condition occurs when the geometric mean of the two most recent postseason estimates of spawning escapement, and the current preseason forecast of spawning escapement, is less than the minimum stock size threshold (MSST);
- Overfished status occurs when the most recent 3-year geometric mean spawning escapement is less than the MSST;
- Not overfished/rebuilding status occurs when a stock has been classified as overfished and has not yet been rebuilt, and the most recent 3-year geometric mean spawning escapement is greater than the MSST but less than  $S_{MSY}$ ;
- A stock is rebuilt when the most recent 3-year geometric mean spawning escapement exceeds  $S_{MSY}$ .

Comparison of stock status to criteria for overfishing, overfished, not overfished/rebuilding, and rebuilt were reported in the annual SAFE document, Review of 2019 Ocean Salmon Fisheries (PFMC 2020).

Approaching an overfished condition relies on current year preseason forecasts and Council adopted fishing regulations for the upcoming season in order to calculate projected spawning escapement. In this report, because the actual regulations for the upcoming season are not yet known, the calculations are based on preseason forecasts and Council-adopted regulations from the year prior. Thus, the stock status in this report is described as being *at risk* of approaching an overfished condition. Once the regulations for the upcoming season are adopted and spawning escapement is projected, the status description will be updated and provided in the Preseason-III report. All SDC rely on the most recent estimates available, which in some cases may be a year or more in the past because of incomplete broods or data availability; however, some status descriptions reported in the SAFE document may be updated if more recent spawning escapement or exploitation rate estimates become available between the time the SAFE document and this document are published.

TABLE I-1. Preseason adult Chinook salmon stock forecasts in thousands of fish. (Page 1 of 3)

Production Source and Stock or Stock Group	Preseason Abundance Forecasts						Methodology for 2020 Prediction and Source
	2015	2016	2017	2018	2019	2020	
<b>Sacramento River</b>							
Fall (Sacramento Index)	652.0	299.6	230.7	229.4	379.6	473.2	Log-log regression of the Sacramento Index on jack escapement from the previous year, accounting for lag-1 autocorrelated errors. STT.
Winter (age-3 absent fishing)	--	--	--	1.6	1.9	3.1	Stochastic life cycle model applied to natural- and hatchery-origin production. STT.
<b>Klamath River (Ocean Abundance)</b>							
Fall	423.8	142.2	54.2	359.2	274.2	186.6	Linear regression analysis of age-specific ocean abundance estimates on river runs of same cohort. STT.
<b>Oregon Coast</b>							
North and South/Local Migrating	--	--	--	--	--	--	None.
<b>Columbia River (Ocean Escapement)</b>							
Cowlitz Spring	11.2	25.1	17.1	5.2	1.3	1.4	Age-specific linear regressions of cohort returns in previous run years. WDFW.
Kalama Spring	1.9	4.9	3.1	1.5	1.4	1.0	Age-specific linear regressions of cohort returns in previous run years. WDFW.
Lewis Spring	1.1	1.0	0.7	3.7	1.5	1.4	Age-specific linear regressions of cohort returns in previous run years. WDFW.
Willamette Spring	55.4	68.7	38.1	53.8	40.2	40.8	Age-specific linear regressions of cohort returns in previous run years. ODFW. Forecast includes adult fish only.
Sandy Spring	5.5	NA	3.6	5.3	5.5	5.2	Recent 3-year average. ODFW.
Upriver Spring <sup>a/</sup>	232.5	188.8	160.4	166.7	99.3	81.7	Log-linear sibling regressions of cohort returns in previous run years.
Upriver Summer <sup>b/</sup>	73.0	93.3	63.1	67.3	35.9	38.3	Log-linear sibling regressions or average return (4-ocean fish). Columbia River TAC subgroup.
LRW Fall	18.9	22.2	12.5	7.6	13.7	19.7	Columbia River Fall Chinook: Age-specific average cohort ratios or sibling regressions. Columbia River TAC subgroup and WDFW.
LRH Fall	94.9	133.7	92.4	62.4	54.5	51.0	
SCH Fall	160.5	89.6	158.4	50.1	46.0	46.2	
MCB Fall	113.3	101.0	45.6	36.4	56.7	71.8	
URB Fall	500.3	589.0	260.0	200.1	158.4	233.4	

EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE I-1. Preseason adult Chinook salmon stock forecasts in thousands of fish. (Page 2 of 3)

Production Source and Stock or Stock Group		Preseason Abundance Forecasts						Methodology for 2020 Prediction and Source
		2015	2016	2017	2018	2019	2020	
<b>Washington Coast</b>								
Willapa Bay Fall	Natural	3.8	3.3	4.2	3.8	4.3	2.9	Return per spawners applied to 3-6 year olds (brood years 2014-17) adjusted by brood year performance.
	Hatchery	31.0	36.2	34.3	40.3	23.6	28.3	
Grays Harbor Fall	Natural	--	--	--	16.4	18.0	NA	Past year based on a 4-year average recruits for age-3, and recruits per spawner adjusted by brood performance for age-4, 5, 6.
	Hatchery	--	--	--	4.8	7.7	NA	Past year based on a 10-year average recruits per spawn for age 3 and log linear regressions for age-4 on Age-2 and 3; age-5 on age-2, 3, and 4 for all stocks; and age- 6 on age-5.
Quinault Spring/Summer	Natural	NA	NA	NA	NA	NA	NA	
	Hatchery	--	--	--	4.8	NA	NA	
Quinault Fall	Natural	8.1	5.5	5.9	5.2	5.3	NA	
	Hatchery	4.0	5.3	4.4	3.1	2.7	NA	
Queets Spring/Sum	Natural	0.4	0.5	0.5	0.5	0.6	NA	
Queets Fall	Natural	4.3	4.9	3.7	3.3	3.4	NA	
	Hatchery	1.5	1.7	0.9	0.6	0.8	NA	
Hoh Spring/Summer	Natural	0.8	0.9	1.0	1.1	1.0	0.8	Recent 3 year mean adjusted by previous performance.
Hoh Fall	Natural	2.6	1.8	2.7	2.6	2.5	2.6	Recent 3 year mean adjusted by previous performance, age 4 & 5 adjusted by regressions.
Quillayute Spring	Hatchery	1.7	1.8	2.2	2.1	2.1	2.4	Spring: Recent 5 year mean adjusted by previous performance.
Quillayute Sum/Fall	Natural	8.5	7.5	7.6	8.0	7.9	9.8	Summer: Recent 5 year mean for all ages. Fall: Recent 3 year means; adjusted for previous 5 year forecast performance.
Hoko <sup>d</sup>	Natural	3.3	2.9	1.5	1.5	2.8	2.6	Escapement without fishing, includes supplemental. 2019 recruits for age-3 is recent 5-year average return, age 4-6 is sibling regression.
<b>North Coast Totals</b>								
Spring/Summer	Natural	1.2	1.4	1.5	1.6	1.7	NA	
Fall	Natural	23.5	19.7	19.9	19.1	19.2	NA	
Spring/Summer	Hatchery	1.7	1.8	2.2	2.1	2.1	2.4	
Fall	Hatchery	5.5	7.0	5.3	3.7	3.5	NA	

TABLE I-1. Preseason adult Chinook salmon stock forecasts in thousands of fish. (Page 3 of 3)

Production Source and Stock or Stock Group		Preseason Abundance Forecasts						Methodology for 2020 Prediction and Source
		2015	2016	2017	2018	2019	2020	
<b>Puget Sound summer/fall<sup>d/</sup></b>								
Nooksack/Samish	Hatchery	38.6	27.9	21.2	24.6	21.3	18.2	Three year average return rate.
East Sound Bay	Hatchery	1.2	0.7	0.8	0.7	0.3	0.3	Three year average return rate.
Skagit	Natural	11.8	15.1	15.8	13.3	13.6	12.9	<u>Natural</u> : Hierarchical Bayesian model to estimate the spawner-recruit dynamics. <u>Hatchery</u> : Recent 4-year average terminal smolt to adult return rate to estimate ages 2 -5.
	Hatchery	0.6	0.4	0.4	0.3	0.3	0.5	
Stillaguamish <sup>e/</sup>	Natural	0.5	0.5	1.5	1.6	0.9	0.9	Natural plus hatchery terminal run. Multiple regression environmental model (EMPAR).
Snohomish <sup>e/</sup>	Natural	4.2	3.3	3.4	3.5	3.2	3.0	Natural: Multiple regression environmental model (EMPAR).
	Hatchery	3.3	5.0	4.8	6.5	7.0	6.8	Hatchery: Extreme Terminal Run (to mouth of Snohomish River), with ocean fishing, recent 3-year geomean of total return broken out into returns from fingerling and yearling releases and age at return.
Tulalip <sup>e/</sup>	Hatchery	1.3	1.4	5.3	7.5	12.5	6.0	Three year geomean.
South Puget Sound	Natural	3.8	4.5	4.7	4.8	8.4	5.8	<u>Natural</u> : Puyallup, climate relationship for age 3, and 5 year average return per spawner applied to brood years contributing to ages 4-5. Nisqually, 5 year average age specific return/spawner for ages 3 and 5, sibling relationship for age 4. Green, 3-year geometric return rates. <u>Hatchery</u> : Variety of recent year average return rates and sibling relationships.
	Hatchery	62.4	43.1	80.4	123.6	99.9	100.7	
Hood Canal	Natural	3.1	2.3	2.5	3.9	1.2	4.6	Natural: proportioned using the Hood Canal terminal run reconstruction-based relative contribution of the individual Hood Canal management units in the 2015-2019 return years. Area 12B returns derived from applying an average proportion of natural origin recruits returning to area 12B during 2016-2019.
	Hatchery	59	42.7	48.3	57.6	66.0	67.6	Brood 2015 fingerling lbs released from WDFW facilities in 2016, multiplied by the average of post-season estimated terminal area return rates for the last 5 years (2014-2019).
Strait of Juan de Fuca Including Dungeness spring run	Natural	4.9	3.7	3.1	6.0	8.3	5.0	Natural and hatchery. Dungeness and Elwha hatchery estimated by recent return rates times average releases. Dungeness wild estimated by smolts times average hatchery return rate. Elwha wild estimated using 9 year hatchery/wild breakouts from otolith and CWT.

a/ Since 2005, the upriver spring Chinook run includes Snake River summer Chinook.

b/ Since 2005, the upriver summer Chinook run includes only upper Columbia summer Chinook, and not Snake River summer Chinook.

c/ Expected spawning escapement without fishing.

d/ Unless otherwise noted, Puget Sounds forecasts are in units of terminal run size.

e/ Includes a mixture of runsize types including escapement without fishing and terminal run. 2020 values are terminal runsize.

TABLE I-2. Preseason adult coho salmon stock forecasts in thousands of fish. (Page 1 of 2)

Production Source and Stock or Stock Group		Preseason Ocean Abundance Forecasts						Methodology for 2020 Prediction and Source
		2015	2016	2017	2018	2019	2020	
<b>OPI Area Total Abundance</b> (California, Oregon Coasts, and Columbia River)		1,015.0	549.2	496.2	349.0	1,009.6	268.7	Abundance of all OPI components based on cohort reconstruction including all fishery impacts using Mixed Stock Model (MSM); prior to 2008 only fishery impacts south of Leadbetter Point were used (traditional OPI accounting). OPITT, see Chapter III for details.
OPI Public	Hatchery	808.4	396.5	394.3	294.1	933.5	185.7	OPIH: Columbia River jacks adjusted for delayed smolt releases and total OPI jacks regressed on 1970-2019 adults. Columbia/Coastal proportions based on jacks; Columbia early/late proportions based on jacks; Coastal N/S proportions based on smolts.
Columbia River Early		515.2	153.7	231.7	164.7	545.0	130.7	
Columbia River Late		261.8	226.9	154.6	121.5	360.6	50.3	
Coastal N. of Cape Blanco		6.9	5.5	3.5	3.3	12.0	2.4	
Coastal S. of Cape Blanco		24.4	10.4	4.5	4.6	15.9	2.3	
Low er Columbia River	Natural	35.9	40.0	30.1	21.9	36.9	24.6	Oregon: recent two year average return; Washington: natural smolt production multiplied by 2017 brood marine survival rate. Abundance is subset of early/late hatchery abundance above.
Oregon Coast (OCN)	Natural	206.6	152.7	101.9	54.9	76.1	83.0	Rivers: Generalized additive model (GAM) relating ocean recruits to parental spawners and marine environmental variables. See text in Chapter III for details. Lakes: recent three year average abundance.
<b>Washington Coast</b>								
Willapa	Natural	42.9	39.5	36.7	20.6	63.4	17.9	Washington Coast stocks: A variety of methods were used for 2020, primarily based on smolt production and survival. See text in Chapter III for details.
	Hatchery	57.7	28.1	55.0	44.5	94.0	51.8	
Grays Harbor	Natural	142.6	35.7	50.0	42.4	71.5	50.0	
	Hatchery	46.6	22.9	36.4	51.4	64.3	42.3	
Quinault	Natural	44.2	17.1	26.3	25.4	13.9	17.5	
	Hatchery	24.9	19.8	29.4	29.6	26.9	27.0	
Queets	Natural	7.5	3.5	6.5	7.0	11.1	7.8	
	Hatchery	11.3	4.5	13.7	10.8	13.2	10.9	
Hoh	Natural	5.1	2.1	6.2	5.8	7.0	4.2	

EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE I-2. Preseason adult coho salmon stock forecasts in thousands of fish. (Page 2 of 2)

Production Source and Stock or Stock Group		Preseason Ocean Abundance Forecasts						Methodology for 2020 Prediction and Source	
		2015	2016	2017	2018	2019	2020		
Quillayute Fall	Natural	10.5	4.5	15.8	10.6	14.7	9.2	For all Washington Coast stocks: A variety of methods were used for 2020, primarily based on smolt production and survival. See text in Chapter III for details.	
	Hatchery	8.0	6.4	17.6	16.5	17.0	13.0		
Quillayute Summer	Natural	1.2	0.3	1.5	2.7	1.2	0.8		
	Hatchery	2.2	1.4	3.4	3.3	3.4	3.4		
North Coast Independent Tributaries	Natural	11.7	1.9	6.5	4.1	8.1	5.1		
	Hatchery	11.9	2.5	0.2	7.9	12.5	1.3		
<i>WA Coast Total</i>	<i>Natural</i>	<i>265.6</i>	<i>104.6</i>	<i>149.5</i>	<i>118.7</i>	<i>191.0</i>	<i>112.4</i>		
	<i>Hatchery</i>	<i>162.6</i>	<i>85.6</i>	<i>155.6</i>	<i>164.1</i>	<i>231.3</i>	<i>149.6</i>		
<b>Puget Sound</b>									
Strait of Juan de Fuca	Natural	11.1	4.4	13.1	7.2	8.8	7.5		For all Puget Sound stocks: A variety of methods were used for 2020, primarily based on smolt production and survival. See text in Chapter III and Joint WDFW and tribal annual reports on Puget Sound Coho Salmon Forecast Methodology for details.
	Hatchery	11.1	3.9	15.4	10.6	16.8	20.6		
Nooksack-Samish	Natural	28.1	9.0	13.2	20.6	25.1	15.4		
	Hatchery	50.8	28.8	45.6	61.3	59.8	42.5		
Skagit	Natural	121.4	8.9	11.2	59.2	57.9	31.0		
	Hatchery	19.5	4.9	7.6	13.1	9.9	18.2		
Stillaguamish	Natural	31.3	2.8	7.6	19.0	23.8	19.5		
	Hatchery	0.0	0.0	1.5	0.0	2.2	2.3		
Snohomish	Natural	151.5	20.6	107.3	65.9	62.6	39.0		
	Hatchery	53.9	16.7	62.0	38.3	43.7	26.6		
South Sound	Natural	63.0	9.9	20.2	15.0	30.4	7.3		
	Hatchery	180.2	27.1	102.4	103.0	180.4	164.0		
Hood Canal	Natural	61.5	35.3	115.6	59.5	40.1	35.0		
	Hatchery	108.4	83.5	74.9	84.5	87.9	72.2		
<i>Puget Sound Total</i>	<i>Natural</i>	<i>467.9</i>	<i>91.0</i>	<i>288.3</i>	<i>246.4</i>	<i>248.8</i>	<i>154.6</i>		
	<i>Hatchery</i>	<i>423.9</i>	<i>165.0</i>	<i>309.3</i>	<i>310.8</i>	<i>400.7</i>	<i>346.3</i>		

Page Intentionally Left Blank



## CHAPTER II: AFFECTED ENVIRONMENT - CHINOOK SALMON ASSESSMENT

### CHINOOK STOCKS SOUTH OF CAPE FALCON

#### Sacramento River Fall Chinook

The SRFC stock comprises a large proportion of the Chinook spawners returning to Central Valley streams and hatcheries. SRFC are designated as the indicator stock for the Central Valley fall Chinook stock complex, which was established under FMP Amendment 16 to facilitate setting and assessing compliance with ABC and ACLs, as required by the 2006 revision of the MSA. The Sacramento Index (SI) is the aggregate-age index of adult SRFC ocean abundance.

#### *Predictor Description*

The SI is the sum of (1) adult SRFC ocean fishery harvest south of Cape Falcon, OR between September 1 and August 31, (2) adult SRFC impacts from non-retention ocean fisheries when they occur, (3) the recreational harvest of adult SRFC in the Sacramento River Basin, and (4) the SRFC adult spawner escapement (Table II-1, Figure II-1).

The SI forecasting approach uses jack escapement estimates to predict the SI and accounts for autocorrelated errors. In practice, this means that if, in the previous year, the modeled SI value was larger than the SI postseason estimate for that year, the current year forecast is adjusted downward to account for that error. Conversely, if the modeled SI value in the previous year was less than the postseason estimate of the SI for that year, the current year SI forecast would be adjusted upward to compensate for that error.

The forecast of the log-transformed SI was made using the model

$$\log SI_t = \beta_0 + \beta_1 \log J_{t-1} + \rho \varepsilon_{t-1},$$

where  $\log SI_t$  and  $\log J_{t-1}$  are log-transformed SI and jack escapement values, respectively;  $t$  is the year for which the SI is being forecast;  $\beta_0$  is the intercept;  $\beta_1$  is the slope;  $\rho$  is the autocorrelation coefficient; and  $\varepsilon_{t-1}$  is the difference between the modeled value of the log SI for year  $t-1$  and the postseason estimate of log SI in year  $t-1$ . The  $\log SI_t$  is back-transformed to the arithmetic scale and corrected for bias in this transformation,

$$SI_t = e^{\log SI_t + 0.5\sigma^2},$$

where  $\sigma^2$  is the variance of the normally distributed error component of the fitted model (referred to as the “innovation” variance). A more detailed description of the forecast approach can be found in Appendix E of the 2014 Preseason Report I (PFMC 2014).

#### *Predictor Performance*

The performance of past SI forecasts is displayed graphically in Figure II-4. For 2019, the postseason estimate of the SI was 505,535, which is 133 percent of the preseason forecast of 379,632.

A control rule, adopted as part of Amendment 16 to the salmon FMP, is used annually to specify the maximum allowable exploitation rate on SRFC (Appendix A, Figure A-1). The allowable exploitation rate is determined by the predicted number of potential adult spawners in the absence of fisheries, which is defined for SRFC as the forecast SI. The FMP allows for any ocean and river harvest allocation that meets the exploitation rate constraints defined by the control rule. The regulations adopted in 2019 were expected to result in 160,159 hatchery and natural area adult spawners and an exploitation rate of 57.8 percent.

Postseason estimates of these quantities were 162,532 hatchery and natural area adult spawners and an exploitation rate of 67.8 percent (Table II-1).

### *Stock Forecast and Status*

Sacramento Index forecast model parameters were estimated from SI data for years 1983-2019 and jack escapement data for years 1982-2018. A total of 29,944 SRFC jacks were estimated to have escaped to Sacramento River basin hatcheries and natural spawning areas in 2019. This jack escapement and the estimated parameters

$$\begin{aligned}\beta_0 &= 7.368891, \\ \beta_1 &= 0.566971, \\ \rho &= 0.7474764, \\ \epsilon_{t-1} &= -0.2916186, \\ \sigma^2 &= 0.144809,\end{aligned}$$

result in a 2020 SI forecast of 473,183.

Figure II-2 graphically displays the 2020 SI forecast. The model fit (line in Figure II-2) was higher than the 2019 postseason estimate of the SI. As a result, the 2020 SI forecast value is adjusted downward from the fitted model.

The forecast SI applied to the SRFC control rule (Appendix A, Figure A-1) results in an allowable exploitation rate of 70 percent which produces, in expectation, 141,955 hatchery and natural area adult spawners. Therefore, fisheries impacting SRFC must be crafted to achieve, in expectation, a minimum of 141,955 adult spawners in 2020.

### *OFL, ABC, and ACL*

The OFL, ABC, and ACL are defined in terms of spawner escapement ( $S_{OFL}$ ,  $S_{ABC}$ , and  $S_{ACL}$ ), and are calculated using potential spawner abundance forecasts and established exploitation rates. For SRFC,  $F_{MSY} = 0.78$ , the proxy value for Tier-2 Chinook stocks that do not have estimates of this rate derived from a stock-specific spawner-recruit analysis. The OFL for SRFC is  $S_{OFL} = 473,183 \times (1-0.78) = 104,100$ . Because SRFC is a Tier-2 stock,  $F_{ABC} = F_{MSY} \times 0.90 = 0.70$ , and  $F_{ACL} = F_{ABC}$ . The ABC for SRFC is  $S_{ABC} = 473,183 \times (1-0.70) = 141,955$ , with  $S_{ACL} = S_{ABC}$ . These preseason estimates will be recalculated with postseason abundance estimates (when available) to assess ACL and OFL compliance.

### **Sacramento River Winter Chinook**

ESA-listed endangered SRWC are harvested incidentally in ocean fisheries, primarily off the central California coast. A two-part consultation standard for endangered SRWC was first implemented in 2012, and later updated in 2018.

The first component of the consultation standard is the season and size limit provisions that have been in place since the 2004 Biological Opinion. These provisions state that the recreational salmon fishery between Point Arena and Pigeon Point shall open no earlier than the first Saturday in April and close no later than the second Sunday in November. The recreational salmon fishery between Pigeon Point and the U.S.–Mexico Border shall open no earlier than the first Saturday in April and close no later than the first Sunday in October. The minimum size limit shall be at least 20 inches total length. The commercial salmon fishery between Point Arena and the U.S.–Mexico border shall open no earlier than May 1 and close no later than September 30, with the exception of an October fishery conducted Monday through Friday between Point Reyes and Point San Pedro, which shall end no later than October 15. The minimum size limit shall be at least 26 inches total length.

The second component of the consultation standard is specified by a control rule that limits the maximum age-3 impact rate (allowable as a preseason forecast) for the area south of Point Arena, California (Appendix A, Figure A-3). The control rule specifies the maximum allowable age-3 impact rate on the basis of a forecast of the SRWC age-3 escapement in the absence of fisheries.

### *Predictor Description*

The forecast of the age-3 escapement absent fishing (abundance) is based on a SRWC life cycle model that is stratified by age, sex, and origin (hatchery and natural). Juvenile survival rates spanning outmigration in freshwater and early ocean residence are applied to hatchery- and natural-origin juvenile production estimates. The age-3 escapement absent fishing is then forecasted by applying age- and sex-specific maturation rates and the age-3 natural mortality rate. The forecast is stochastic and thus the age-3 escapement absent fishing is represented by a distribution. The median of this distribution is applied to the control rule to specify the maximum allowable age-3 impact rate. A complete description of the abundance forecasting approach can be found in O'Farrell et al. (2016). The abundance forecasting approach used here is the Base model described in the aforementioned report.

### *Predictor Performance*

The forecast of SRWC age-3 escapement absent fishing was implemented for the first time in 2018. Postseason estimates not are not yet available.

### *Stock Forecast and Status*

The forecast of SRWC age-3 escapement absent fishing is 3,077. Application of the control rule results in a maximum age-3 impact rate of 20.0 percent for the area south of Point Arena in 2020 (Table II-2).

## **Klamath River Fall Chinook**

### *Predictor Description*

For Klamath River fall Chinook, linear regressions are used to relate September 1 ocean abundance estimates of age-3, age-4, and age-5 fish to that year's river run size estimates of age-2, age-3, and age-4 fish, respectively (Table II-3). Historical abundance estimates were derived from a cohort analysis of CWT information (brood years 1979-2015). The y-intercept of the regressions is constrained to zero, which gives the biologically reasonable expectation that a river run size of zero predicts an ocean abundance remainder of zero for the same cohort. The abundance of age-2 fish is not forecasted because no precursor to age-2 fish of that brood is available. Ocean fisheries harvest nominal numbers of age-2 KRFC.

### *Predictor Performance*

Since 1985, the preseason ocean abundance forecasts for age-3 fish have ranged from 0.30 to 3.10 times the postseason estimates; for age-4 fish from 0.37 to 6.21 times the postseason estimates; and for the adult stock as a whole from 0.34 to 2.43 times the postseason estimates (Table II-4). The September 1, 2018 age-3 forecast (167,500) was 1.21 times its postseason estimate (138,941). The age-4 forecast (106,100) was 6.21 times its postseason estimate (17,078); and the age-5 forecast (600) was 2.67 times its postseason estimate (225). The preseason forecast of the adult stock as a whole was 1.75 times the postseason estimate.

Management of KRFC harvest since 1986 has attempted to achieve specific harvest rates on fully-vulnerable age-4 and age-5 fish in ocean and river fisheries (Table II-5). The Council has used a combination of quotas and time/area restrictions in ocean fisheries in an attempt to meet the harvest rate objective set each year. Since 1992, fisheries have been managed to achieve 50/50 allocation between tribal

and non-tribal fisheries. Tribal and recreational river fisheries have been managed on the basis of adult Chinook quotas.

The FMP describes a control rule used annually to specify the maximum allowable exploitation rate on KRFC (Appendix A, Figure A-2). The allowable exploitation rate is determined by the predicted number of potential spawners, which is defined as the natural area adult escapement expected in the absence of fisheries. The FMP allows for any ocean and river harvest allocation that meets the exploitation rate constraints defined by the control rule.

The 2019 salmon fishery regulations were expected to result in 40,700 natural-area spawning adults and an age-4 ocean harvest rate of 16.0 percent. Postseason estimates of these quantities were 20,245 natural-area adult spawners and an age-4 ocean harvest rate of 34.4 percent (Table II-5 and Table II-6).

### ***Stock Forecast and Status***

The 2020 forecast for the ocean abundance of KRFC as of September 1, 2019 (preseason) is 149,618 age-3 fish, 36,241 age-4 fish, and 739 age-5 fish.

Late-season commercial ocean fisheries in 2019 (September through November) were estimated to have harvested 51 adult KRFC, including 26 age-4. For the two fisheries combined, this equates to a 0.07 percent age-4 ocean harvest rate, which will be deducted from the ocean fishery's allocation in determining the 2020 allowable ocean harvest.

The forecast of potential spawner abundance is derived from the ocean abundance forecasts, ocean natural mortality rates, age-specific maturation rates, stray rates, and the proportion of escapement expected to spawn in natural areas. The 2020 KRFC potential spawner abundance forecast is 48,274 natural-area adults. This potential spawner abundance forecast applied to the KRFC control rule results in an allowable exploitation rate of 25.0 percent, which produces, in expectation, 36,206 natural-area adult spawners. Therefore, fisheries impacting KRFC must be crafted to achieve, in expectation, a minimum of 36,206 natural-area adult spawners in 2020.

### ***OFL, ABC, and ACL***

The OFL, ABC, and ACL are defined in terms of spawner escapement ( $S_{OFL}$ ,  $S_{ABC}$ , and  $S_{ACL}$ ), and are calculated using potential spawner abundance forecasts and established exploitation rates. For KRFC,  $F_{MSY} = 0.71$ , the value estimated from a stock-specific spawner-recruit analysis (STT 2005). The OFL for KRFC is  $48,274 \times (1-0.71) = 13,999$ . Because KRFC is a Tier-1 stock,  $F_{ABC} = F_{MSY} \times 0.95 = 0.68$ , and  $F_{ACL} = F_{ABC}$ . The ABC for KRFC is  $S_{ABC} = 48,274 \times (1-0.68) = 15,448$ , with  $S_{ACL} = S_{ABC}$ . These preseason estimates will be recalculated with postseason abundance estimates (when available) to assess ACL and OFL compliance.

### **Other California Coastal Chinook Stocks**

Other California coastal streams that support fall Chinook stocks which contribute to ocean fisheries off Oregon and California include the Smith, Little, Mad, Eel, Mattole, and Russian rivers, and Redwood Creek. Except for the Smith River, these stocks are included in the California coastal Chinook ESU, which is listed as threatened under the ESA. Current information is insufficient to forecast the ocean abundance of these stocks; however, the NMFS ESA consultation standard restricts the KRFC age-4 ocean harvest rate to no more than 16.0 percent to limit impacts on these stocks. In 2019, the age-4 ocean harvest rate was estimated to be 34.4 percent. The Klamath River spring, Smith River, Rogue River, Umpqua River, and other Oregon Chinook stocks south of the Elk River are components of the Southern Oregon/Northern California (SONC) Chinook complex, and as such, specification of ACLs is deferred to KRFC, the indicator stock for the SONC Chinook complex.

## **Oregon Coast Chinook Stocks**

Oregon coast Chinook stocks are categorized into three major subgroups based on ocean migration patterns: the North Oregon Coast (NOC) Chinook aggregate, the Mid Oregon Coast (MOC) Chinook aggregate, and the South Oregon Coast (SOC) Chinook aggregate. Although their ocean harvest distributions overlap somewhat, they have been labeled as far-north, north, or south/local migrating, respectively.

### *Far-North and North Migrating Chinook (NOC and MOC groups)*

Far-north and north migrating Chinook stocks include spring and fall stocks north of and including the Elk River, with the exception of Umpqua River spring Chinook. Based on CWT analysis, the populations from ten major NOC river systems from the Nehalem through the Siuslaw Rivers are harvested primarily in ocean fisheries off British Columbia and Southeast Alaska, and to a much lesser degree in Council area and terminal area (state waters) fisheries off Washington and Oregon. CWT analysis indicates populations from five major MOC systems, from the Coos through the Elk Rivers, are harvested primarily in ocean fisheries off British Columbia, Washington, Oregon, and in terminal area fisheries. Minor catches occur in California fisheries, and variable catches have been observed in southeast Alaska troll fisheries.

NOC and MOC Chinook stocks are components of the Far-North-Migrating Coastal (FNMC) Chinook complex, which is an exception to the ACL requirements of the MSA because they are managed under an international agreement (the PST); therefore, specification of ACLs is not necessary for stocks in the FNMC complex.

### *Predictor Description*

Quantitative abundance predictions are made for all three of the coastal Chinook groups (NOC, MOC, and SOC), but are not used in annual development of Council area fishery regulations. Quantitative forecasts of abundance are based on sibling regression analyses from individual basins' escapement assessment data and scale sampling, which occur coast-wide. Forecast data for the NOC are used in the PSC management process in addition to terminal area management actions.

Natural spawner escapement is assessed yearly from the Nehalem through Sixes rivers. Peak spawning counts of adults are obtained from standard index areas on these rivers and monitored to assess stock trends (PFMC 2020, Chapter II, Table II-5 and Figure II-3). Natural fall Chinook stocks from both the NOC and MOC dominate production from this subgroup. Also present in lesser numbers are naturally-produced spring Chinook stocks from several rivers, and hatchery fall and/or spring Chinook released in the Trask, Nestucca, Salmon, Alsea, and Elk rivers.

Basin-specific forecasts constitute the overall aggregate forecasts and are derived in conjunction with annual PSC Chinook model input and calibration activities; however, they were not available at publication time.

### *Predictor Performance*

There was no information available to evaluate performance of predictors for NOC and MOC stocks.

### *Stock Forecast and Status*

#### *North Oregon Coast*

Since 1977, the Salmon River Hatchery production has been tagged for use primarily as a PSC indicator stock for the NOC stock component. Because these fish are primarily harvested in fisheries north of the Council management area, the STT has not reviewed the procedure by which this indicator stock is used in

estimating annual stock status. The 2019 NOC density from standard survey areas (Nehalem R. through the Siuslaw R.) was a decrease from 2018 (PFMC 2020, Appendix B, Table B-11).

Based on the density index of total spawners, the generalized expectation for NOC stocks in 2020 is below recent years' average abundance. Specifically, the 2019 spawner density in standard survey areas for the NOC averaged 67 spawners per mile, the lowest since 2009.

### *Mid Oregon Coast*

Since 1977, the Elk River Hatchery production has been tagged for potential use as a PSC indicator stock for the MOC stock aggregate. Beginning in 2019, Elk River Hatchery production was included as a PSC indicator stock. Age-specific ocean abundance forecasts for 2020 are not currently available, but are being developed. The STT has not undertaken a review of the methods used by Oregon Department of Fish and Wildlife (ODFW) staff in developing these abundance forecasts.

The 2019 MOC density from standard survey areas (Coos and Coquille basins) averaged 38 adult spawners per mile, a decrease from 2018, the same as 2017 and the lowest since 2008 (PFMC 2020, Appendix B, Table B-11). Fall Chinook escapement goals are currently under development for the South Umpqua and Coquille basins of the MOC.

### *South/Local Migrating Chinook (SOC group)*

South/local migrating Chinook stocks include Rogue River spring and fall Chinook, fall Chinook from smaller rivers south of the Elk River, and Umpqua River spring Chinook. These stocks are important contributors to ocean fisheries off Oregon and northern California. Umpqua River spring Chinook contribute to a lesser degree to fisheries off Washington, British Columbia, and southeast Alaska.

SOC stocks are components of the Southern Oregon/Northern California (SONC) Chinook complex, and as such, specification of ACLs is deferred to KRFC, the indicator stock for the SONC complex.

### **Rogue River Fall Chinook**

Rogue River fall Chinook contribute to ocean fisheries principally as age-3 through age-5 fish. Mature fish enter the river each year from mid-July through October, with the peak of the run occurring during August and September.

### *Predictor Description*

Carcass recoveries in Rogue River index surveys covering a large proportion of the total spawning area were available for 1977-2004. Using Klamath Ocean Harvest Model (KOHM) methodology, these carcass numbers, allocated into age-classes from scale data, were used to estimate the Rogue Ocean Population Index (ROPI) for age-3 to age-5 fish. A linear regression was developed using the escapement estimates (all ages) in year  $t$  based on seining at Huntley Park (1976-2004) to predict the ROPI in year  $t+1$  (1977-2005).

Beginning in 2015, a revised predictor was used which relies on the Huntley Park escapement estimate and dispenses with the use of the carcass counts. Linear regressions are used to relate May 1 ocean abundance estimates of age-3, age-4, age-5, and age-6 Rogue fall Chinook to the previous year's river run size estimates of age-2, age-3, age-4, and age-5 fish, respectively. Historical May 1 ocean abundance estimates were derived from a cohort analysis of 1988-2006 brood years. May 1 ( $t$ ) ocean abundances were converted to September 1 ( $t-1$ ) forecasts by dividing the May ( $t$ ) number by the assumed September 1 ( $t-1$ ) through May 1 ( $t$ ) survival rate of 0.5 age-3, 0.8 age-4, 0.8 age-5, and 0.8 age-6. River run size estimates are derived from a flow-based expansion of standardized seine catches of fall Chinook at Huntley Park (RM 8). The y-intercept of the regressions is constrained to zero.



The 2019 Huntley Park escapement estimate and the resulting 2020 ROPI forecast of 256,900 consists of age-3 (217,200), age-4 (35,100) and age-5-6 (4,600) fish.

#### *Predictor Performance*

The ROPI is based on cohort reconstruction methods with index values predicted from regression equations. Because postseason estimates of the ROPI are not available, it is not possible to assess predictor performance.

#### *Stock Forecast and Status*

The 2020 ROPI is below recent years' average (Table II-7).

#### **Other SOC Stocks**

Umpqua and Rogue spring Chinook contribute to ocean fisheries primarily as age-3 fish. Mature Chinook enter the rivers primarily during April and May and generally prior to annual ocean fisheries.

Natural fall Chinook stocks from river systems south of the Elk River and spring Chinook stocks from the Rogue and Umpqua rivers dominate production from this subgroup. Substantial releases of hatchery spring Chinook occur in both the Rogue and Umpqua rivers, although also present in lesser numbers are hatchery fall Chinook, primarily from the Chetco River.

These stocks are minor contributors to general season mixed-stock ocean fisheries. Standard fall Chinook spawning index escapement data were available for the smaller SOC rivers (Winchuck, Chetco, and Pistol rivers). These had been used for assessment of the conservation objective for the SOC stocks prior to 2015. The 2019 average density from standard survey areas was 10 adult spawners per mile, the lowest since the beginning of these surveys in 1971 (PFMC 2020, Appendix B, Table B-8). Beginning in 2015, for the SOC Chinook stock complex, the conservation objective is assessed using the escapement estimate of naturally produced fall Chinook at Huntley Park on the Rogue River (PFMC 2020, Appendix B, Table B-10, Chapter II, Table II-5 and Figure II-3).

### **CHINOOK STOCKS NORTH OF CAPE FALCON**

#### **Columbia River Chinook**

Columbia River fall Chinook stocks form the largest contributing stock group to Council Chinook fisheries north of Cape Falcon. Abundance of these stocks is a major factor in determining impacts of fisheries on weak natural stocks critical to Council area management, particularly ESA-listed Lower Columbia River (LCR) natural tule Chinook. Abundance predictions are made for five major fall stock units characterized as being hatchery or natural production, and originating above or below Bonneville Dam. The upriver brights (URB) and lower river wild (LRW) are primarily naturally-produced stocks, although the upriver brights do have a substantial hatchery component. The lower river hatchery (LRH) tule, Spring Creek Hatchery (SCH) tule, and Mid-Columbia Bright (MCB) are primarily hatchery-produced stocks. The MCB include the Lower River Bright (LRB) stock as a small naturally-produced component. LRB spawn in the mainstem Columbia River near Beacon Rock and are believed to have originated from MCB hatchery strays. The tule stocks generally mature at an earlier age than the bright fall stocks and do not migrate as far north. Minor fall stocks include the Select Area Bright (SAB), a stock originally from the Rogue River.

Upper Columbia River summer Chinook also contribute to Council area fisheries, although like URB and LRW, most ocean impacts occur in British Columbia (B.C.) and Southeast Alaska (SEAK) fisheries. Upper Columbia River summer Chinook have both natural and hatchery components, and originate in areas upstream from Rock Island Dam.

URB and upper Columbia summer Chinook are exempt from the ACL requirements of the MSA because they are managed under an international agreement (the PST); therefore, specification of ACLs is not necessary for these two stocks. ESA consultation standards serve the purpose of ACLs for ESA-listed stocks like LRW Chinook. Broodstock goals serve the purpose of ACLs for hatchery-origin stocks like LRH, SCH, and MCB.

### *Predictor Description*

Preseason forecasts of Columbia River fall and summer Chinook stock abundance, used by the STT to assess the Council's adopted fishery regulations, are based on age-specific and stock-specific forecasts of annual ocean escapement (returns to the Columbia River). These forecasts are developed by WDFW and a subgroup of the *U.S. v Oregon* Technical Advisory Committee (TAC). Columbia River return forecast methodologies used for Council management are identical to those used for planning Columbia River fall season fisheries, although minor updates to Council estimates of inriver run size may occur prior to finalization of the inriver fishery plans, based on the results of planned ocean fisheries.

The 2020 return of summer and each fall Chinook stock group is forecasted using relationships between successive age groups within a cohort. The database for these relationships was constructed by combining age-specific estimates of escapement and inriver fishery catches for years since 1964 (except for MCB, which started in the 1980s). Typically, only the more recent broods are used in the current predictions. Fall Chinook stock identification in the Columbia River mixed-stock fisheries is determined by sampling catch and escapement for CWTs and visual stock identification (VSI). Age composition estimates are based on CWT data and scale reading of fishery and escapement samples, where available. These stock and age data for Columbia River fall Chinook are the basis for the return data presented in the *Review of 2019 Ocean Salmon Fisheries* (Appendix B, Tables B-15 through B-20). The 2019 returns for summer Chinook and the five fall Chinook stocks listed in this report may differ somewhat from those provided in the *Review of 2019 Ocean Salmon Fisheries*, since ocean escapement estimates may have been updated after that report was printed.

Summer and fall Chinook ocean escapement forecasts developed for the March Council meeting do not take into account variations in marine harvest. The STT combines the initial inriver run size (ocean escapement; Table II-8) with expected Council area fishery harvest levels and stock distribution patterns to produce adjusted ocean escapement forecasts based on the proposed ocean fishing regulations. These revised forecasts are available at the end of the Council preseason planning process in April and are used for preseason fishery modeling in the Columbia River.

### *Predictor Performance*

Performance of the preliminary inriver run size estimation methodology can be assessed, in part, by examining the differences between preseason forecasts and postseason estimates (Table II-8; Figure II-4). The recent 10-year average March preliminary preseason forecasts as a percentage of the postseason estimates are 104 percent for URB, 104 percent for LRW, 117 percent for LRH, 150 percent for SCH, and 107 percent for MCB. None of the fall Chinook stocks had a notable bias in the recent time series of March preliminary forecasts, although all were slightly over-forecasted in March. The recent 10-year average March preliminary preseason forecasts as a percentage of the postseason estimates for summer Chinook is 110 percent.

### *Stock Forecasts and Status*

Ocean escapement of LRW fall Chinook in 2020 is forecast at 19,700 adults, about 116 percent of the recent 10-year average return of 17,000. The forecast is about 119 percent of last year's actual return of 16,600. The spawning escapement goal of 5,700 in the North Fork Lewis River is expected to be achieved this year.



The preliminary forecast for 2020 ocean escapement of LRH fall Chinook is for a return of 51,000 adults, about 104 percent of last year's return of 48,900 and 58 percent of the recent 10-year average return of 87,600. Based on this abundance forecast, the total allowable LCR natural tulle exploitation rate for 2020 fisheries is no greater than 38.0 percent under the matrix developed by the Tule Chinook Workgroup in 2011, which is used by NMFS in developing ESA guidance for this stock (Appendix A Table A-6).

The preliminary ocean escapement forecast of SCH fall Chinook in 2020 is 46,200 adults, about 161 percent of last year's return of 29,000 and 59 percent of the 10-year average of 78,800.

The preliminary forecast for the 2020 ocean escapement of MCB fall Chinook is 71,800 adults, about 124 percent of last year's return of 58,100 and about 67 percent of the recent 10-year average of 107,100.

The preliminary forecast for summer Chinook in 2020 is 38,300 adults, approximately 111 percent of last year's return of 34,600 and about 53 percent of the recent 10-year average of 72,000. This ocean escapement may allow for limited opportunity for both ocean and in-river fisheries while exceeding the FMP  $S_{MSY}$  conservation objective of 12,143 escapement above Rock Island Dam.

The preliminary forecast for 2020 URB fall Chinook ocean escapement is 233,400 adults, about 110 percent of last year's return of 212,200 and about 55 percent of the recent 10-year average of 427,600. This forecast is about 147 percent of the 158,400 forecast in 2019 and is well below the strong returns that occurred during 2010-2016. This forecasted ocean escapement should allow for moderate ocean and in-river fisheries while achieving the FMP  $S_{MSY}$  conservation objective of 39,625 natural area spawners in the Hanford Reach, Yakima River, and areas above Priest Rapids Dam.

The forecast for the 2020 ocean escapement of ESA-listed Snake River wild fall Chinook is 10,900 adults.

### **Washington Coast Chinook**

Washington Coast Chinook consist of spring, summer, and fall stocks from Willapa Bay through the Hoko River. Based on limited CWT analysis, these populations are harvested primarily in ocean fisheries off British Columbia and Southeast Alaska, and to a lesser degree in Council-area fisheries off Washington and Oregon.

Washington Coast Chinook stocks are components of the FNMC Chinook complex, which is an exception to the ACL requirements of the MSA because it is managed under an international agreement (the PST); therefore, specification of ACLs is not necessary for stocks in the FNMC complex.

#### *Predictor Description and Past Performance*

Council fisheries have negligible impacts on Washington coast Chinook stocks and information to assess past performance is unavailable. However, abundance estimates are provided for Washington Coastal fall stocks in subsequent preseason fishery impact assessment reports prepared by the STT (e.g., Preseason Report III).

#### *Stock Forecasts and Status*

The 2020 Willapa Bay natural fall Chinook terminal runsize forecast is 2,914, which is below the FMP  $S_{MSY}$  conservation objective of 3,393. The hatchery fall Chinook terminal runsize forecast is 28,271.

The 2020 Grays Harbor spring Chinook terminal runsize forecast was not available at the time of publication. The FMP  $S_{MSY}$  conservation objective is 1,400. The natural fall Chinook terminal runsize

forecast was not available at the time of publication. The FMP  $S_{MSY}$  conservation objective is 13,326. The fall hatchery terminal runsize forecast was also not available at the time of publication.

The 2020 Quinault River natural fall Chinook terminal runsize forecast was not available at the time of publication. The fall hatchery terminal runsize forecast was also not available at the time of publication.

The 2020 Queets River spring Chinook terminal runsize forecast was not available at the time of publication. The FMP  $S_{MSY}$  conservation objective is 700. The natural fall Chinook terminal runsize forecast was not available at the time of publication. The FMP  $S_{MSY}$  conservation objective is 2,500. The fall hatchery terminal runsize forecast was also not available at the time of publication.

The 2020 Hoh River natural spring/summer Chinook spawning escapement forecast is 804, which is below the FMP  $S_{MSY}$  conservation objective of 900. The natural fall Chinook forecast is 2,601, which is above the FMP  $S_{MSY}$  conservation objective of 1,200.

The 2020 Quillayute River hatchery spring Chinook ocean escapement forecast is 2,407 and the natural summer/fall Chinook forecast is 9,793 (1,328 summer and 8,465 fall). The FMP  $S_{MSY}$  conservation objectives are spawning escapements of 1,200 summer Chinook and 3,000 fall Chinook.

The 2020 Hoko River forecast is for an escapement without fishing of 2,575, which, after fisheries are planned, should result in a spawner estimate that is above the FMP  $S_{MSY}$  conservation objective of 850.

### **Puget Sound Chinook**

Puget Sound Chinook stocks include all fall, summer, and spring stocks originating from U.S. tributaries in Puget Sound and the eastern Strait of Juan de Fuca (east of Salt Creek, inclusive). Puget Sound consists of numerous natural Chinook stocks of small to medium-sized populations and substantial hatchery production. The Puget Sound ESU was listed under the ESA as threatened in March 1999.

Council-area fishery impacts to Puget Sound Chinook stocks are generally very low, on the order of 5 percent or less. NMFS issued a biological opinion in 2004 concluding that Council-area fisheries were not likely to jeopardize listed Puget Sound Chinook, and exempting these fisheries from the ESA section 9 take prohibition as long as they are consistent with the terms and conditions in the opinion. This opinion does not cover Puget Sound fisheries. In recent years, the comanagers have developed annual fishery management plans for Puget Sound and NMFS has issued one-year biological opinions for these plans exempting them from ESA section 9 take prohibitions. These opinions take into account the combined impacts of ocean and Puget Sound fisheries. Puget Sound stocks contribute to fisheries off B.C., are present to a lesser degree off SEAK, and are impacted to a minor degree by Council-area ocean fisheries. Because Council-area fishery impacts to Puget Sound Chinook stocks are minor, ocean regulations are not generally used to manage these stocks

#### *Predictor Description*

Methodologies for estimates are described in the annual Puget Sound management reports (starting in 1993, reports are available by Puget Sound management unit, not by individual species). Forecasts for Puget Sound stocks generally assume production is dominated by age-4 adults. The STT has not undertaken a review of the methods employed by state and tribal staffs in preparing these abundance forecasts. Run-size expectations for various Puget Sound stock management units are listed in Table I-1.

### ***Predictor Performance***

Performance of the preliminary inriver run size estimation methodology can be assessed, in part, by examining the differences between preseason forecasts and postseason estimates. Table II-9 compares preseason forecasts and postseason estimates of Puget Sound run size for summer/fall Chinook.

### ***Stock Forecasts and Status***

ACLs are undefined in the FMP for ESA-listed stocks like Puget Sound Chinook, and are deferred to ESA consultation standards.

### ***Spring Chinook***

Puget Sound Spring Chinook abundances remain depressed.

### ***Summer/Fall Chinook***

The 2020 preliminary natural Chinook return forecast is 32,100 (includes supplemental hatchery forecasts) and the preliminary hatchery Chinook return forecast is 200,100. The 2019 preseason natural Chinook return forecast was 35,700 (includes supplemental hatchery forecasts) and the hatchery Chinook return forecast was 207,400.

Since ESA listing and development of the Resource Management Plan (RMP), fishery management for Puget Sound Chinook has changed from an escapement goal basis to the use of stock-specific exploitation rates and “critical abundance thresholds.” This new approach is evaluated on an annual basis through the RMP.

## ***STOCK STATUS DETERMINATION UPDATES***

Sacramento River fall Chinook and Klamath River fall Chinook were found to meet the criteria for being classified as overfished in the PFMC *Review of 2017 Ocean Salmon Fisheries*, released in February 2018. NMFS subsequently published an overfished designation for both stocks in June 2018, and rebuilding plans were developed for both and adopted by the Council in 2019. Based on the most recent three-year geometric mean escapement (2017-2019), published in the PFMC *Review of 2019 Ocean Salmon Fisheries*, both Sacramento River fall Chinook and Klamath River fall Chinook continue to meet the criteria for overfished status.

## ***SELECTIVE FISHERY CONSIDERATIONS FOR CHINOOK***

As the North of Falcon region has moved forward with mass marking of hatchery Chinook salmon stocks, the first mark selective fishery for Chinook salmon in Council waters was implemented in June 2010 in the recreational fishery north of Cape Falcon. In 2011 and 2012, the mark selective fishery in June was 8 and 15 days, respectively. In 2013 and 2014, the North of Falcon mark selective recreational fishery started in mid-May in Neah Bay and La Push subareas, then opened in all areas in late May or June. In 2015, the mark selective Chinook quota was 10,000 fish in the mid-May to mid-June fishery. There were no mark selective fisheries for Chinook in Council waters in 2016, 2017, 2018 and 2019. For 2020 preseason planning, selective fishing options for non-Indian fisheries may be under consideration in the ocean area from Cape Falcon, Oregon to the U.S./Canada border. Observed mark rates in previous mark selective fisheries north of Cape Falcon ranged from 53 to 71 percent. Similar mark rates are expected in this area for 2020.

TABLE II-1. Harvest and abundance indices for adult Sacramento River fall Chinook (SRFC) in thousands of fish. (Page 1 of 2)

Year	SRFC Ocean Harvest South of Cape Falcon <sup>a/</sup>				River Harvest	Spawning Escapement			Sacramento Index (SI) <sup>c/</sup>	Exploitation Rate (%) <sup>d/</sup>
	Troll	Sport	Non-Ret <sup>b/</sup>	Total		Natural	Hatchery	Total		
1983	246.6	86.3	0.0	332.9	18.0	91.7	18.6	110.2	461.1	76
1984	266.2	87.0	0.0	353.1	25.9	120.2	38.7	159.0	538.1	70
1985	355.5	158.9	0.0	514.4	39.1	210.1	29.3	239.3	792.8	70
1986	619.0	137.5	0.0	756.4	39.2	218.3	21.8	240.1	1,035.7	77
1987	686.1	173.1	0.0	859.2	31.8	175.2	19.8	195.1	1,086.1	82
1988	1,163.2	188.3	0.0	1,351.5	37.1	200.7	26.8	227.5	1,616.1	86
1989	602.8	157.1	0.0	759.9	24.9	127.6	24.9	152.6	937.3	84
1990	507.3	150.4	0.0	657.8	17.2	83.3	21.7	105.1	780.0	87
1991	300.1	89.6	0.0	389.7	26.0 <sup>e/</sup>	92.8	26.0	118.9	534.6	78
1992	233.3	69.4	0.0	302.8	13.3 <sup>e/</sup>	59.9	21.7	81.5	397.6	79
1993	342.8	115.3	0.0	458.1	27.7 <sup>e/</sup>	112.8	24.6	137.4	623.2	78
1994	303.5	168.8	0.0	472.3	28.9 <sup>e/</sup>	135.0	30.6	165.6	666.7	75
1995	730.7	390.4	0.0	1,121.0	48.2	253.8	41.5	295.3	1,464.6	80
1996	426.8	157.0	0.0	583.8	49.2	269.1	32.5	301.6	934.7	68
1997	579.7	210.3	0.0	790.0	56.3	281.6	63.3	344.8	1,191.1	71
1998	292.3	114.0	0.0	406.3	69.8 <sup>e/</sup>	176.0	69.9	245.9	722.1	66
1999	289.1	76.2	0.0	365.3	68.9 <sup>e/</sup>	357.6	42.2	399.8	834.0	52
2000	421.8	152.8	0.0	574.6	59.5 <sup>e/</sup>	370.0	47.6	417.5	1,051.6	60
2001	284.4	93.4	0.0	377.9	97.4	539.4	57.4	596.8	1,072.0	44
2002	447.7	184.0	0.0	631.7	89.2 <sup>e/</sup>	684.2	85.6	769.9	1,490.8	48
2003	501.6	106.4	0.0	608.0	85.4	414.6	108.4	523.0	1,216.3	57
2004	621.8	212.6	0.0	834.5	46.8	206.2	80.7	286.9	1,168.2	75
2005	367.9	127.0	0.0	494.9	64.6	214.9	181.1	396.0	955.5	59
2006	149.9	107.7	0.0	257.7	44.9	196.5	78.5	275.0	577.6	52
2007	119.9	32.0	0.0	152.0	14.3 <sup>e/</sup>	70.1	21.3	91.4	257.7	65
2008	3.2	0.9	0.0	4.1	0.1 <sup>e/</sup>	47.3	18.0	65.4	69.6	6
2009	0.0	0.2	0.1	0.3	0.0 <sup>e/</sup>	24.9	15.9	40.9	41.1	1
2010	11.2	11.4	0.3	22.8	2.7 <sup>e/</sup>	91.1	33.2	124.3	149.8	17

TABLE II-1. Harvest and abundance indices for adult Sacramento River fall Chinook (SRFC) in thousands of fish. (Page 2 of 2)

Year	SRFC Ocean Harvest South of Cape Falcon <sup>a/</sup>			Total	River Harvest	Spawning Escapement			Sacramento Index (SI) <sup>c/</sup>	Exploitation Rate (%) <sup>d/</sup>
	Troll	Sport	Non-Ret <sup>b/</sup>			Natural	Hatchery	Total		
2011	46.7	22.8	0.0	69.5	18.2 <sup>e/</sup>	77.9	41.5	119.3	207.0	42
2012	183.1	93.4	0.3	276.7	65.8 <sup>e/</sup>	166.2	119.2	285.4	627.9	55
2013	290.7	114.3	0.0	404.9	57.5 <sup>e/</sup>	305.6	101.2	406.8	869.3	53
2014	240.6	62.4	0.0	303.0	35.7 <sup>e/</sup>	168.7	43.8	212.5	551.2	61
2015	100.1	24.5	0.0	124.6	16.9 <sup>e/</sup>	74.5	39.0	113.5	254.9	55
2016	62.9	28.9	0.0	91.8	23.9 <sup>e/</sup>	56.3	33.4	89.7	205.3	56
2017	38.7	31.9	0.0	70.7	22.1 <sup>e/</sup>	17.9	25.6	43.5	136.2	68
2018	53.6	44.9	0.0	98.6	16.3 <sup>e/</sup>	71.7	33.8	105.5	220.4	52
2019 <sup>f/</sup>	248.4	74.3	0.0	322.7	20.3 <sup>e/</sup>	120.4	42.1	162.5	505.5	68

a/ Ocean harvest for the period September 1 (t-1) through August 31 (t).

b/ Mortalities estimated from non-retention ocean fisheries (e.g., coho-only fisheries, non-retention GSI sampling). In 2008, there were 37 estimated mortalities as a result of non-retention fisheries that have been rounded to 0 in this table.

c/ The SI is the sum of (1) SRFC ocean fishery harvest south of Cape Falcon between September 1 and August 31, (2) SRFC impacts from non-retention ocean fisheries when they occur, (3) the recreational harvest of SRFC in the Sacramento River Basin, and (4) the SRFC spawner escapement.

d/ Total ocean harvest, non-retention ocean fishery mortalities, and river harvest of SRFC as a percentage of the SI.

e/ Estimates derived from CDFW Sacramento River Basin angler survey. Estimates not marked with a footnote are inferred from escapement data and the mean river harvest rate estimate.

f/ Preliminary.

TABLE II-2. Sacramento River winter Chinook escapement, allowable age-3 impact rates, and management performance.

Year	Escapement <sup>a/</sup>	3-yr GM Escapement <sup>b/</sup>	Abundance Forecast <sup>c/</sup>	Age-3 impact rate south of Point Arena, CA		
				Maximum Allowable (%) <sup>d/</sup>	Preseason Forecast (%)	Postseason Estimate (%)
2000	--	--	-	-	-	21.4
2001	8,224	--	-	-	-	23.3
2002	7,464	--	-	-	-	21.8
2003	8,218	--	-	-	-	10.3
2004	7,869	7,960	-	-	-	24.8
2005	15,839	7,844	-	-	-	17.2
2006	17,290	10,080	-	-	-	15.1
2007	2,541	12,917	-	-	-	17.8
2008	2,830	8,862	-	-	-	0.0
2009	4,537	4,991	-	-	-	0.0
2010	1,596	3,195	-	-	-	e/
2011	824	2,737	-	-	-	28.3
2012	2,671	1,814	-	13.7	13.7	12.6
2013	6,084	1,520	-	12.9	12.9	18.8
2014	3,015	2,375	-	15.4	15.4	15.8
2015	3,439	3,659	-	19.0	17.5	e/
2016	1,546	3,981	-	19.9	12.8	11.6
2017	975	2,521	-	15.8	12.2	17.6
2018	2,638	1,731	1,594	14.4	8.5	13.4 <sup>f/</sup>
2019	8,128	1,584	1,924	15.7	14.8	NA <sup>g/</sup>
2020	NA	2,755	3,077	20.0	NA	NA

a/ Escapement includes jacks and adults spawning in natural areas and fish used for broodstock at Livingston Stone National Fish Hatchery.

b/ Geometric mean of escapement for the three prior years (e.g., 2017 GM computed from 2014-2016 escapement).

c/ Abundance forecast is defined as the predicted age-3 escapement in the absence of fisheries.

d/ Allowable impact rates from 2012-2017 were determined by a control rule utilizing the three-year geometric mean of escapement. Beginning in 2018, allowable impact rates were determined by a new control rule utilizing the abundance forecast.

e/ Insufficient data for postseason estimate.

f/ Preliminary. Incomplete cohort data (age-4 escapement unavailable).

g/ Not estimated. Incomplete cohort data (age-3 and age-4 escapement unavailable).

TABLE II-3. Klamath River fall Chinook ocean abundance (thousands), harvest rate, and river run size estimates (thousands) by age. (Page 1 of 2).

Year (t)	Ocean Abundance Sept. 1 (t-1)			Annual Ocean Harvest Rate Sept. 1 (t-1) - Aug. 31 (t)		Klamath Basin River Run (t)				
	Age-3	Age-4	Total	Age-3	Age-4	Age-2	Age-3	Age-4	Age-5	Total Adults
1981	493.2	57.0	550.2	0.21	0.53	28.2	64.1	14.4	1.8	80.3
1982	561.1	133.4	694.5	0.30	0.52	39.4	30.1	33.9	2.6	66.6
1983	313.3	114.2	427.5	0.19	0.60	3.8	35.9	20.7	0.9	57.5
1984	157.3	82.8	240.1	0.08	0.38	8.3	21.7	24.4	1.1	47.2
1985	374.8	56.9	431.7	0.11	0.24	69.4	32.9	25.7	5.8	64.4
1986	1,304.4	140.8	1,445.2	0.18	0.46	44.6	162.9	29.8	2.3	195.0
1987	781.1	341.9	1,123.0	0.16	0.43	19.1	89.7	112.6	6.8	209.1
1988	756.3	234.8	991.0	0.20	0.39	24.1	101.2	86.5	3.9	191.6
1989	369.8	177.2	547.1	0.15	0.36	9.1	50.4	69.6	4.3	124.3
1990	176.1	104.0	280.1	0.30	0.55	4.4	11.6	22.9	1.3	35.9
1991	69.4	37.2	106.6	0.03	0.18	1.8	10.0	21.6	1.1	32.7
1992	39.5	28.2	67.7	0.02	0.07	13.7	6.9	18.8	1.0	26.7
1993	168.5	15.0	183.5	0.05	0.16	7.6	48.3	8.2	0.7	57.2
1994	119.9	41.7	161.7	0.03	0.09	14.4	37.0	26.0	1.0	64.0
1995	787.3	28.7	816.0	0.04	0.14	22.8	201.9	18.3	2.6	222.8
1996	192.3	226.3	418.6	0.05	0.16	9.5	38.8	136.7	0.3	175.8
1997	140.2	62.8	203.0	0.01	0.06	8.0	35.0	44.2	4.6	83.7
1998	154.8	44.7	199.5	0.00	0.09	4.6	59.2	29.7	1.7	90.6
1999	129.1	30.5	159.5	0.02	0.09	19.2	29.2	20.5	1.3	51.0
2000	617.1	44.2	661.3	0.06	0.10	10.2	187.1	30.5	0.5	218.1
2001	356.1	133.8	489.9	0.03	0.09	11.3	99.1	88.2	0.1	187.3
2002	513.6	98.9	612.5	0.02	0.15	9.2	94.6	62.5	3.7	160.8
2003	401.1	192.2	593.3	0.08	0.21	3.8	94.3	96.8	0.9	191.9
2004	159.4	105.2	264.7	0.12	0.35	9.6	33.1	40.5	5.3	78.9
2005	190.0	38.1	228.1	0.02	0.20	2.3	43.8	17.5	3.9	65.2
2006	90.7	63.4	154.1	0.01	0.10	26.9	18.5	41.6	1.3	61.4
2007	376.9	33.7	410.6	0.06	0.21	1.7	113.7	16.8	1.6	132.1
2008	68.0	81.4	149.4	0.00	0.10	25.2	18.6	50.2	1.7	70.6
2009	240.8	21.1	261.9	0.00	0.00	11.9	78.6	16.4	5.6	100.6
2010	192.8	62.1	254.8	0.01	0.04	16.6	46.1	44.3	0.4	90.9

TABLE II-3. Klamath River fall Chinook ocean abundance (thousands), harvest rate, and river run size estimates (thousands) by age. (Page 2 of 2).

Year (t)	Ocean Abundance Sept. 1 (t-1)			Annual Ocean Harvest Rate Sept. 1 (t-1) - Aug. 31 (t)		Klamath Basin River Run (t)				
	Age-3	Age-4	Total	Age-3	Age-4	Age-2	Age-3	Age-4	Age-5	Total Adults
2011	240.2	64.6	304.8	0.03	0.08	84.9	59.0	41.0	2.0	102.0
2012	799.4	74.3	873.7	0.03	0.08	21.4	243.9	49.3	2.1	295.3
2013	438.4	194.4	632.9	0.04	0.20	14.4	55.2	108.8	1.1	165.0
2014	216.5	180.7	397.2	0.03	0.17	22.3	57.8	98.7	3.9	160.4
2015	110.5	61.0	171.5	0.02	0.22	6.1	36.7	34.0	7.1	77.8
2016	32.7	24.8	57.4	0.01	0.09	2.8	8.6	15.5	0.5	24.6
2017	63.3	9.8	73.1	0.02	0.04	20.3	24.4	7.3	1.6	33.2
2018	196.1 <sup>a/</sup>	10.5	206.6	0.05	0.24	10.9	85.5	5.6	0.0	91.1
2019	138.9 <sup>b/</sup>	17.1 <sup>a/</sup>	156.0	NA <sup>c/</sup>	0.34 <sup>a/</sup>	10.0	30.3	6.9	0.1	37.3

a/ Preliminary: incomplete cohort data (age-5 unavailable).

b/ Preliminary: incomplete cohort data (age-4 and age-5 unavailable).

c/ Not estimated: incomplete cohort data (age-4 and age-5 unavailable).



TABLE II-4. Comparisons of preseason forecast and postseason estimates for ocean abundance of adult Klamath River fall Chinook. (Page 1 of 4)

Year (t)	Preseason Forecast <sup>a/</sup>		Postseason Estimate	
	Sept. 1 (t-1)		Sept. 1 (t-1)	
	<b>Age-3</b>			
1985	113,000		374,822	0.30
1986	426,000 <sup>b/</sup>		1,304,409	0.33
1987	511,800		781,122	0.66
1988	370,800		756,261	0.49
1989	450,600		369,828	1.22
1990	479,000		176,122	2.72
1991	176,200		69,424	2.54
1992	50,000		39,502	1.27
1993	294,400		168,473	1.75
1994	138,000		119,915	1.15
1995	269,000		787,309	0.34
1996	479,800		192,272	2.50
1997	224,600		140,153	1.60
1998	176,000		154,799	1.14
1999	84,800		129,066	0.66
2000	349,600		617,097	0.57
2001	187,200		356,128	0.53
2002	209,000		513,604	0.41
2003	171,300		401,112	0.43
2004	72,100		159,446	0.45
2005	185,700		189,977	0.98
2006	44,100		90,666	0.49
2007	515,400		376,940	1.37
2008	31,600		68,015	0.46
2009	474,900		240,787	1.97
2010	223,400		192,750	1.16
2011	304,600		240,222	1.27
2012	1,567,600		799,446	1.96
2013	390,700		438,443	0.89
2014	219,800		216,493	1.02
2015	342,200		110,506	3.10
2016	93,400		32,670	2.86
2017	42,000		63,253	0.66
2018	330,000		196,070	1.68
2019 <sup>c/</sup>	167,500		138,941	1.21
2020	149,600		--	--

TABLE II-4. Comparisons of preseason forecasts and postseason estimates for ocean abundance of adult Klamath River fall Chinook. (Page 2 of 4)

Year (t)	Preseason Forecast <sup>a/</sup>	Postseason Estimate	Pre/Postseason
	Sept. 1 (t-1)	Sept. 1 (t-1)	
	<b>Age-4</b>		
1985	56,900	56,908	1.00
1986	66,300	140,823	0.47
1987	206,100	341,875	0.60
1988	186,400	234,751	0.79
1989	215,500	177,245	1.22
1990	50,100	103,951	0.48
1991	44,600	37,171	1.20
1992	44,800	28,169	1.59
1993	39,100	15,037	2.60
1994	86,100	41,736	2.06
1995	47,000	28,726	1.64
1996	268,500	226,282	1.19
1997	53,900	62,820	0.86
1998	46,000	44,733	1.03
1999	78,800	30,456	2.59
2000	38,900	44,176	0.88
2001	247,000	133,801	1.85
2002	143,800	98,927	1.45
2003	132,400	192,180	0.69
2004	134,500	105,246	1.28
2005	48,900	38,079	1.28
2006	63,700	63,384	1.00
2007	26,100	33,650	0.78
2008	157,200	81,411	1.93
2009	25,200	21,131	1.19
2010	106,300	62,089	1.71
2011	61,600	64,570	0.95
2012	79,600	74,300	1.07
2013	331,200	194,407	1.70
2014	67,400	180,669	0.37
2015	71,100	60,979	1.17
2016	45,100	24,777	1.82
2017	10,600	9,821	1.08
2018	28,400	10,541	2.69
2019 <sup>c/</sup>	106,100	17,078	6.21
2020	36,200	--	--

TABLE II-4. Comparisons of preseason forecasts and postseason estimates for ocean abundance of adult Klamath River fall Chinook. (Page 3 of 4)

Year (t)	Preseason Forecast <sup>a/</sup>	Postseason Estimate	Pre/Postseason
	Sept. 1 (t-1)	Sept. 1 (t-1)	
	<b>Age-5</b>		
1985	NA	11,113	NA
1986	NA	6,376	NA
1987	5,300	19,414	0.27
1988	13,300	14,632	0.91
1989	10,100	9,612	1.05
1990	7,600	7,767	0.98
1991	1,500	2,774	0.54
1992	1,300	1,444	0.90
1993	1,100	1,759	0.63
1994	500	1,468	0.34
1995	2,000	3,805	0.53
1996	1,100	788	1.40
1997	7,900	9,004	0.88
1998	3,300	2,382	1.39
1999	2,000	2,106	0.95
2000	1,400	1,051	1.33
2001	1,300	258	5.04
2002	9,700	6,933	1.40
2003	6,500	1,915	3.39
2004	9,700	17,184	0.56
2005	5,200	6,859	0.76
2006	2,200	5,236	0.42
2007	4,700	2,911	1.61
2008	1,900	2,900	0.66
2009	5,600	7,059	0.79
2010	1,800	517	3.48
2011	5,000	2,753	1.82
2012	4,600	5,110	0.90
2013	5,700	3,945	1.44
2014	12,100	7,625	1.59
2015	10,400	13,283	0.78
2016	3,700	1,142	3.24
2017	1,700	2,024	0.84
2018	800	50	16.00
2019 <sup>c/</sup>	600	225	2.67
2020	700	--	--

TABLE II-4. Comparisons of preseason forecasts and postseason estimates for ocean abundance of adult Klamath River fall Chinook. (Page 4 of 4)

Year (t)	Preseason Forecast <sup>a/</sup>	Postseason Estimate	Pre/Postseason
	Sept. 1 (t-1)	Sept. 1 (t-1)	
<b>Total Adults</b>			
1985	169,900 <sup>d/</sup>	442,843	0.38
1986	492,300 <sup>d/</sup>	1,451,608	0.34
1987	723,200	1,142,411	0.63
1988	570,500	1,005,644	0.57
1989	676,200	556,685	1.21
1990	536,700	287,840	1.86
1991	222,300	109,369	2.03
1992	96,100	69,115	1.39
1993	334,600	185,269	1.81
1994	224,600	163,119	1.38
1995	318,000	819,840	0.39
1996	749,400	419,342	1.79
1997	286,400	211,977	1.35
1998	225,300	201,914	1.12
1999	165,600	161,628	1.02
2000	389,900	662,324	0.59
2001	435,500	490,187	0.89
2002	362,500	619,464	0.59
2003	310,200	595,207	0.52
2004	216,300	281,876	0.77
2005	239,800	234,915	1.02
2006	110,000	159,286	0.69
2007	546,200	413,501	1.32
2008	190,700	152,326	1.25
2009	505,700	268,977	1.88
2010	331,500	255,356	1.30
2011	371,100	307,545	1.21
2012	1,651,800	878,856	1.88
2013	727,700	636,795	1.14
2014	299,300	404,787	0.74
2015	423,800	184,768	2.29
2016	142,200	58,589	2.43
2017	54,200	75,098	0.72
2018	359,200	206,661	1.74
2019 <sup>c/</sup>	274,200	156,244	1.75
2020	186,600	--	--

a/ Original preseason forecasts for years 1985-2001 were for May 1 (t); converted to Sept. 1 (t-1) forecasts by dividing the May 1 (t) number by the assumed Sept. 1 (t-1) through May 1 (t) survival rate in those years: 0.5 age-3, 0.8 age-4, 0.8 age-5.

b/ A scalar of 0.75 was applied to the jack count to produce the forecast because, (1) most jacks returned to the Trinity River, and (2) the jack count was outside the database range.

c/ Postseason estimates are preliminary.

d/ Does not include age-5 adults.

TABLE II-5. Summary of management objectives and predictor performance for Klamath River fall Chinook.

Year (t)	Preseason Ocean Abundance		Postseason Ocean Abundance		Preseason Age-4 Harvest Rate		Postseason Age-4 Harvest Rate		Preseason Adult Harvest		Postseason Adult Harvest	
	Sept. 1 (t-1) Forecast <sup>a/</sup>		Sept. 1 (t-1) Estimate		Forecast <sup>b/</sup>		Estimate <sup>c/</sup>		Forecast		Estimate	
	Age-3	Age-4	Age-3	Age-4	Ocean	River	Ocean	River	Ocean	River	Ocean	River
1986-90	447,640	144,880	677,548	199,729	0.30	0.51	0.44	0.54	104,100	56,020	214,598	51,814
1991-95	185,520	52,320	236,925	30,168	0.09	0.28	0.13	0.34	12,980	14,460	13,095	13,667
1996-00	262,960	97,220	246,677	81,693	0.11	0.44	0.10	0.33	30,500	44,180	21,336	31,382
2001	187,200	247,000	356,128	133,801	0.14	0.61	0.09	0.29	45,600	105,300	21,747	50,780
2002	209,000	143,800	513,604	98,927	0.13	0.57	0.15	0.26	30,000	70,900	28,896	35,069
2003	171,300	132,400	401,112	192,180	0.16	0.50	0.21	0.28	30,600	52,200	70,995	39,715
2004	72,100	134,500	159,446	105,246	0.15	0.38	0.35	0.48	26,500	35,800	64,226	29,807
2005	185,700	48,900	189,977	38,079	0.08	0.16	0.20	0.19	7,100	9,600	12,807	10,001
2006	44,100	63,700	90,666	63,384	0.11	0.23	0.10	0.18	10,000	10,000	10,401	10,345
2007	515,400	26,100	376,940	33,650	0.16	0.63	0.21	0.56	30,200	51,400	30,275	33,884
2008	31,600	157,200	68,015	81,411	0.02	0.43	0.10	0.38	4,500	49,500	8,716	24,180
2009	474,900	25,200	240,787	21,131	0.00	0.57	0.00	0.40	100	61,700	53	34,040
2010	223,400	106,300	192,750	62,089	0.12	0.49	0.04	0.40	22,600	46,600	4,489	32,920
2011	304,600	61,600	240,222	64,570	0.16	0.54	0.08	0.34	26,900	42,700	12,011	30,502
2012	1,567,600	79,600	799,446	74,300	0.16	0.77	0.08	0.51	92,400	227,600	34,719	109,263
2013	390,700	331,200	438,443	194,407	0.16	0.62	0.20	0.51	74,800	154,800	59,511	82,835
2014	219,800	67,400	216,493	180,669	0.16	0.40	0.17	0.25	23,200	31,400	40,158	31,353
2015	342,200	71,100	110,506	60,979	0.16	0.59	0.22	0.47	29,400	57,700	20,019	35,890
2016	93,400	45,100	32,670	24,777	0.08	0.19	0.09	0.31	6,300	8,500	3,025	6,470
2017	42,000	10,600	63,253	9,821	0.03	0.06	0.04	0.08	700	900	1,783	1,951
2018 <sup>d/</sup>	330,000	28,400	196,070	10,541	0.12	0.34	0.24	0.36	14,600	21,600	13,312	18,879
2019 <sup>e/</sup>	167,500	106,100	138,941	17,078	0.16	0.47	0.34	0.38	24,800	40,000	9,203	11,339
2020	149,600	36,200	-	-	-	-	-	-	-	-	-	-

a/ Original preseason forecasts for years 1990-2001 were for May 1 (t); converted to Sept. 1 (t-1) forecasts by dividing the May 1 (t) number by the assumed Sept. 1 (t-1) through May 1 (t) survival rate in those years: 0.5 age-3, 0.8 age-4, 0.8 age-5.

b/ Ocean harvest rate forecast is the fraction of the predicted ocean abundance expected to be harvested Sept. 1 (t-1) through August 31(t). River harvest rate forecast is the fraction of the predicted river run expected to be harvested in river fisheries. Original ocean harvest rate forecasts for year (t), 1990-2001, were based on a May 1 (t) ocean abundance denominator; converted to Sept. 1 (t-1) abundance denominator by multiplying former values by 0.8

c/ Ocean harvest rate is the fraction of the postseason ocean abundance harvested Sept. 1 (t-1) through August 31 (t). River harvest rate is the fraction of the river run harvested by river fisheries.

d/ Postseason estimates are preliminary for age-3.

e/ Postseason estimates are preliminary for age-3 and age-4.

TABLE II-6. Harvest levels and rates of age-3 and age-4 Klamath River fall Chinook. (Page 1 of 4)

Year (t) or Average	Ocean Fisheries (Sept. 1 (t-1) - Aug. 31 (t) )						River Fisheries (t)			
	KMZ			North of	South of	Subtotal	Ocean Total	Net	Sport	Total
	Troll	Sport	Subtotal	KMZ	KMZ					
<b>HARVEST (numbers of fish)</b>										
<b>Age-3</b>										
1986-90	15,081	6,253	21,334	38,683	64,397	103,080	124,414	7,200	9,480	16,680
1991-95	8	689	698	3,055	5,086	8,141	8,839	4,980	2,189	7,170
1996-00	93	740	833	2,157	7,326	9,483	10,316	8,840	3,764	12,604
2001	113	105	218	2,749	6,082	8,831	9,049	17,885	7,294	25,179
2002	220	784	1,004	1,501	9,916	11,417	12,421	11,734	6,258	17,992
2003	176	669	845	1,921	27,586	29,507	30,352	6,996	5,061	12,057
2004	402	970	1,372	9,710	7,324	17,034	18,406	4,679	2,051	6,730
2005	0	568	568	619	2,381	3,000	3,568	4,394	1,641	6,035
2006	0	478	478	32	341	373	851	2,388	13	2,401
2007	770	8,101	8,871	4,194	9,366	13,560	22,431	17,543	5,734	23,277
2008	0	0	0	0	0	0	0	3,225	608	3,833
2009	0	53	53	0	0	0	53	19,820	4,715	24,535
2010	106	28	134	0	1,664	1,664	1,798	13,132	1,884	15,016
2011	334	1,119	1,453	48	4,829	4,877	6,330	13,286	2,630	15,916
2012	1,116	11,350	12,466	928	13,089	14,017	26,483	70,409	12,104	82,513
2013	390	5,574	5,964	868	12,053	12,921	18,885	18,996	7,675	26,671
2014	0	566	566	4,144	1,550	5,694	6,260	3,386	1,778	5,164
2015	48	293	341	652	1,597	2,249	2,590	10,604	4,509	15,113
2016	0	0	0	14	308	322	322	918	430	1,348
2017	0	0	0	115	1,264	1,379	1,379	1,261	23	1,284
2018 <sup>af</sup>	1,523	1,640	3,163	3,991	3,604	7,595	10,758	12,954	3,931	16,885
2019 <sup>af</sup>	160	401	561	195	2,562	2,757	3,318	4,060	4,619	8,679

TABLE II-6. Harvest levels and rates of age-3 and age-4 Klamath River fall Chinook. (Page 2 of 4)

Year (t) or Average	Ocean Fisheries (Sept. 1 (t-1) - Aug. 31 (t))						River Fisheries (t)			
	KMZ			North of	South of	Subtotal	Ocean Total	Net	Sport	Total
	Troll	Sport	Subtotal	KMZ	KMZ					
<b>HARVEST (numbers of fish)</b>										
<b>Age-4</b>										
1986-90	10,282	4,358	14,640	38,450	31,653	70,103	84,743	28,720	5,500	34,220
1991-95	34	484	519	1,438	1,807	3,245	3,764	5,072	856	5,928
1996-00	200	1,002	1,202	3,833	5,093	8,926	10,128	15,076	2,948	18,023
2001	1,312	1,604	2,916	5,819	3,926	9,745	12,661	20,759	4,819	25,578
2002	1,938	827	2,765	2,811	9,416	12,227	14,992	11,929	4,063	15,992
2003	834	919	1,753	7,856	30,011	37,867	39,620	22,754	4,592	27,346
2004	1,429	1,234	2,663	11,645	22,132	33,777	36,440	17,623	1,751	19,374
2005	247	317	564	5,243	1,909	7,152	7,716	3,048	304	3,352
2006	196	725	921	4,192	985	5,177	6,098	7,569	42	7,611
2007	270	2,336	2,606	2,019	2,472	4,491	7,097	8,987	502	9,489
2008	6,378	1,105	7,483	581	113	694	8,177	17,891	1,260	19,151
2009	0	0	0	0	0	0	0	5,831	706	6,537
2010	36	113	149	889	1,482	2,371	2,520	16,630	1,134	17,764
2011	417	175	592	1,045	3,780	4,825	5,417	12,587	1,466	14,053
2012	334	2,085	2,419	759	2,960	3,719	6,138	23,285	1,718	25,003
2013	4,277	6,236	10,513	4,054	23,994	28,048	38,561	43,671	12,043	55,714
2014	1,292	1,434	2,726	19,822	8,977	28,799	31,525	21,303	3,404	24,707
2015	273	197	470	5,763	7,127	12,890	13,360	13,160	2,692	15,852
2016	0	56	56	633	1,571	2,204	2,260	3,966	870	4,836
2017	0	124	124	98	183	281	405	503	43	546
2018	638	91	729	928	853	1,781	2,510	1,815	179	1,994
2019 <sup>af</sup>	705	49	754	1,131	3,993	5,124	5,878	1,872	741	2,613

TABLE II-6. Harvest levels and rates of age-3 and age-4 Klamath River fall Chinook. (Page 3 of 4)

Year (t) or Average	Ocean Fisheries (Sept. 1 (t-1) - Aug. 31 (t))						River Fisheries (t)			
	KMZ		Subtotal	North of	South of	Subtotal	Ocean Total	Net	Sport	Total
Troll	Sport	KMZ		KMZ						
<b>HARVEST RATE<sup>b/</sup></b>										
<b>Age-3</b>										
1986-90	0.02	0.01	0.03	0.08	0.09	0.17	0.20	0.09	0.11	0.20
1991-95	0.00	0.01	0.01	0.01	0.02	0.03	0.03	0.13	0.06	0.18
1996-00	0.00	0.00	0.00	0.01	0.02	0.03	0.03	0.14	0.07	0.21
2001	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.18	0.07	0.25
2002	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.12	0.07	0.19
2003	0.00	0.00	0.00	0.00	0.07	0.07	0.08	0.07	0.05	0.13
2004	0.00	0.01	0.01	0.06	0.05	0.11	0.12	0.14	0.06	0.20
2005	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.10	0.04	0.14
2006	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.13	0.00	0.13
2007	0.00	0.02	0.02	0.01	0.02	0.04	0.06	0.15	0.05	0.20
2008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.03	0.21
2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.06	0.31
2010	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.28	0.04	0.33
2011	0.00	0.00	0.01	0.00	0.02	0.02	0.03	0.23	0.04	0.27
2012	0.00	0.01	0.02	0.00	0.02	0.02	0.03	0.29	0.05	0.34
2013	0.00	0.01	0.01	0.00	0.03	0.03	0.04	0.34	0.14	0.48
2014	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.06	0.03	0.09
2015	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.29	0.12	0.41
2016	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.11	0.05	0.16
2017	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.05	0.00	0.05
2018 <sup>al</sup>	0.01	0.01	0.02	0.02	0.02	0.04	0.05	0.15	0.05	0.20
2019 <sup>al</sup>	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.13	0.15	0.29



TABLE II-6. Harvest levels and rates of age-3 and age-4 Klamath River fall Chinook. (Page 4 of 4)

Year (t) or Average	Ocean Fisheries (Sept. 1 (t-1) - Aug. 31 (t))						River Fisheries (t)			
	KMZ		Subtotal	North of	South of	Subtotal	Ocean Total	Net	Sport	Total
Troll	Sport	KMZ		KMZ						
<b>HARVEST RATE<sup>b/</sup></b>										
<b>Age-4</b>										
1986-90	0.05	0.02	0.07	0.21	0.16	0.37	0.44	0.45	0.09	0.54
1991-95	0.00	0.01	0.01	0.05	0.06	0.11	0.13	0.29	0.04	0.34
1996-00	0.00	0.01	0.01	0.05	0.04	0.09	0.10	0.28	0.05	0.33
2001	0.01	0.01	0.02	0.04	0.03	0.07	0.09	0.24	0.05	0.29
2002	0.02	0.01	0.03	0.03	0.10	0.12	0.15	0.19	0.06	0.26
2003	0.00	0.00	0.01	0.04	0.16	0.20	0.21	0.24	0.05	0.28
2004	0.01	0.01	0.03	0.11	0.21	0.32	0.35	0.43	0.04	0.48
2005	0.01	0.01	0.01	0.14	0.05	0.19	0.20	0.17	0.02	0.19
2006	0.00	0.01	0.01	0.07	0.02	0.08	0.10	0.18	0.00	0.18
2007	0.01	0.07	0.08	0.06	0.07	0.13	0.21	0.53	0.03	0.56
2008	0.08	0.01	0.09	0.01	0.00	0.01	0.10	0.36	0.03	0.38
2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.04	0.40
2010	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.37	0.03	0.40
2011	0.01	0.00	0.01	0.02	0.06	0.07	0.08	0.31	0.04	0.34
2012	0.00	0.03	0.03	0.01	0.04	0.05	0.08	0.47	0.03	0.51
2013	0.02	0.03	0.05	0.02	0.12	0.14	0.20	0.40	0.11	0.51
2014	0.01	0.01	0.02	0.11	0.05	0.16	0.17	0.22	0.03	0.25
2015	0.00	0.00	0.01	0.09	0.12	0.21	0.22	0.39	0.08	0.47
2016	0.00	0.00	0.00	0.03	0.06	0.09	0.09	0.26	0.06	0.31
2017	0.00	0.01	0.01	0.01	0.02	0.03	0.04	0.07	0.01	0.08
2018	0.06	0.01	0.07	0.09	0.08	0.17	0.24	0.33	0.03	0.36
2019 <sup>a/</sup>	0.04	0.00	0.04	0.07	0.23	0.30	0.34	0.27	0.11	0.38

a/ Preliminary (incomplete cohort).

b/ Ocean harvest rates are the fraction of Sept. 1 (t-1) ocean abundance harvested in these fisheries. River harvest rates are the fraction of the river run (t) harvested in these fisheries.

TABLE II-7. Rogue River fall Chinook inriver run and ocean population indices.

Return Year	Inriver Run Index in Thousands of Fish <sup>a/</sup>					Ocean Harvest Rate by Age <sup>b/</sup>		Rogue Ocean Population Index (ROPI) in Thousands of Fish <sup>c/d/</sup>			
	Age-2	Age-3	Age-4	Age-5-6	Total <sup>d/</sup>	Age-3	Age-4-6	Age-3	Age-4	Age-5-6	Total
1977-80	1.0	2.3	2.2	0.2	5.7	0.23	0.55	14.1	6.5	0.5	21.1
1981-85	21.4	17.6	22.9	2.3	64.1	0.18	0.45	197.5	60.0	16.6	274.1
1986-90	30.8	47.2	37.5	4.5	120.0	0.20	0.44	485.0	112.0	30.3	627.2
1991-95	16.7	28.9	17.2	3.5	66.4	0.03	0.13	165.1	51.2	11.8	228.2
1996-00	15.1	31.2	18.2	4.6	69.1	0.03	0.10	199.1	66.6	13.6	279.3
2001	27.9	29.5	33.9	16.6	107.9	0.03	0.09	164.8	146.2	18.6	329.6
2002	43.8	64.1	63.1	30.6	201.6	0.02	0.15	337.9	70.0	28.4	436.3
2003	20.1	66.9	99.0	47.0	233.0	0.08	0.21	530.4	151.9	52.2	734.5
2004	20.3	30.6	69.5	35.4	155.8	0.12	0.34	243.3	158.4	82.5	484.3
2005 <sup>f/</sup>	5.0	17.7	28.7	11.6	63.0	0.02	0.20	245.2	72.6	58.2	376.0
2006	7.4	11.6	19.6	7.1	45.7	0.01	0.10	60.4	42.1	23.5	126.0
2007	3.4	15.8	16.6	12.7	48.5	0.06	0.21	89.5	27.5	15.8	132.9
2008	16.2	7.6	14.1	4.2	42.1	0.00	0.10	41.3	37.6	15.4	94.2
2009	15.2	34.3	28.0	4.5	82.0	0.00	0.00	195.9	18.0	11.4	225.3
2010	15.1	23.6	26.5	2.7	67.9	0.01	0.04	183.4	81.3	21.5	286.2
2011	31.9	25.1	41.1	5.5	103.6	0.03	0.08	183.2	56.0	19.9	259.1
2012	11.0	39.9	28.0	5.3	84.2	0.03	0.08	385.6	59.4	31.2	476.2
2013	24.3	17.0	66.1	3.1	110.5	0.04	0.20	133.4	94.5	21.7	249.6
2014	12.5	20.5	29.2	6.7	68.9	0.03	0.17	295.5	40.5	49.0	385.0
2015	8.5	6.8	23.1	3.0	41.4	0.02	0.22	151.5	48.5	22.8	222.8
2016	17.7	8.1	17.7	2.9	46.5	0.01	0.09	102.6	16.2	17.6	136.4
2017	25.0	58.6	24.4	12.7	122.5	0.02	0.04	214.0	19.2	13.6	246.9
2018	23.9	27.7	11.4	0.4	63.4	0.05 <sup>e/</sup>	0.24	303.0 <sup>e/</sup>	138.8	21.0	462.8 <sup>e/</sup>
2019	18.0	14.8	6.2	0.1	39.1	-	0.3 <sup>e/</sup>	305.4 <sup>f/</sup>	69.2 <sup>e/</sup>	8.9	383.5 <sup>e/</sup>
2020	NA	NA	NA	NA	NA	-	-	217.2 <sup>f/</sup>	35.1 <sup>f/</sup>	4.6 <sup>f/</sup>	256.9 <sup>f/</sup>

a/ Huntley Park passage estimate and estuary harvest. Age composition from Huntley Park scale analysis.

b/ Exploitation rates since 1981 are based on Klamath River fall Chinook cohort analysis.

c/ Based on cohort reconstruction methods. Index values predicted from regression equations; postseason estimates are not available.

d/ Rogue ocean abundances initially reconstructed to May 1 (t); converted to Sept. 1 (t-1) forecasts by dividing the May 1 (t) number by the assumed Sept. 1 (t-1) through May 1 (t) survival rate: 0.5 age-3, 0.8 age-4, 0.8 age-5, 0.8 age-6.

e/ Preliminary, complete cohort not available.

f/ Preseason forecast.

TABLE II-8. Predicted and postseason returns of Columbia River adult summer and fall Chinook in thousands of fish. (Page 1 of 3)

Year or Average	March Preseason Forecast <sup>a/</sup>	April STT Modeled Forecast <sup>b/</sup>	Postseason Return	March Pre/Postseason	April Pre/Postseason
<b>URB</b>					
1984-85	124.6	126.1	163.9	0.75	0.76
1986-90	306.8	305.5	291.4	1.02	1.02
1991-95	86.2	91.5	105.3	0.83	0.87
1996-00	144.9	140.9	153.8	0.94	0.92
2001	127.2	132.7	232.6	0.55	0.57
2002	281.0	273.8	276.9	1.01	0.99
2003	280.4	253.2	373.2	0.75	0.68
2004	292.2	287.0	367.9	0.79	0.78
2005	352.2	354.6	268.7	1.31	1.32
2006	253.9	249.1	230.4	1.10	1.08
2007	182.4	185.2	112.6	1.62	1.64
2008	162.5	165.9	196.9	0.83	0.84
2009	259.9	269.8	212.0	1.23	1.27
2010	310.8	319.1	324.9	0.96	0.98
2011	398.2	399.5	324.1	1.23	1.23
2012	353.5	353.0	298.1	1.19	1.18
2013	432.5	434.7	784.1	0.55	0.55
2014	973.3	919.4	684.2	1.42	1.34
2015	500.3	516.2	795.9	0.63	0.65
2016	589.0	579.4	406.6	1.45	1.42
2017	260.0	275.1	297.1	0.88	0.93
2018	200.1	205.8	149.0	1.34	1.38
2019 <sup>c/</sup>	158.4	162.6	212.2	0.7	0.8
2020	233.4	-	-	-	-
<b>LRW</b>					
1984-85	14.8	NA	13.3	1.12	NA
1986-90	27.8	30.8	32.6	0.86	0.95
1991-95	13.9	13.2	14.8	0.99	0.93
1996-00	6.1	5.5	9.5	0.69	0.62
2001	16.7	18.5	15.7	1.06	1.18
2002	18.7	18.3	24.9	0.75	0.73
2003	24.6	23.4	26.0	0.95	0.90
2004	24.1	24.2	22.3	1.08	1.09
2005	20.2	21.4	16.8	1.20	1.27
2006	16.6	16.6	18.1	0.92	0.92
2007	10.1	10.0	4.3	2.35	2.33
2008	3.8	3.8	7.1	0.54	0.54
2009	8.5	8.6	7.5	1.13	1.15
2010	9.7	10.0	10.9	0.89	0.92
2011	12.5	13.1	15.2	0.82	0.86
2012	16.2	16.2	13.9	1.17	1.17
2013	14.2	14.3	25.8	0.55	0.55
2014	34.2	33.4	25.8	1.33	1.29
2015	18.9	19.4	32.4	0.58	0.60
2016	22.2	22.4	13.0	1.71	1.72
2017	12.5	13.6	7.8	1.60	1.74
2018	7.6	7.9	8.3	0.92	0.95
2019 <sup>c/</sup>	13.7	14.1	16.6	0.83	0.85
2020	19.7	-	-	-	-

TABLE II-8. Predicted and postseason returns of Columbia River adult summer and fall Chinook in thousands of fish.  
(Page 2 of 3)

Year	March Preseason Forecast <sup>a/</sup>	April STT Modeled Forecast <sup>b/</sup>	Postseason Return	March Pre/Postseason	April Pre/Postseason
<b>LRH</b>					
1984-85	76.0	87.9	106.7	0.71	0.83
1986-90	209.8	204.2	234.9	0.91	0.88
1991-95	67.2	72.2	55.5	1.18	1.28
1996-00	33.9	40.8	49.0	0.72	0.86
2001	32.2	30.5	94.3	0.34	0.32
2002	137.6	133.0	156.4	0.88	0.85
2003	115.9	116.9	155.0	0.75	0.75
2004	77.1	79.0	108.9	0.71	0.73
2005	74.1	78.4	78.3	0.95	1.00
2006	55.8	57.5	58.3	0.96	0.99
2007	54.9	54.4	32.7	1.68	1.66
2008	59.0	55.9	60.3	0.98	0.93
2009	88.8	88.2	76.7	1.16	1.15
2010	90.6	85.6	103.0	0.88	0.83
2011	133.5	128.9	109.0	1.22	1.18
2012	127.0	128.4	84.8	1.50	1.51
2013	88.0	87.4	103.2	0.85	0.85
2014	110.0	100.7	101.8	1.08	0.99
2015	94.9	96.8	128.7	0.74	0.75
2016	133.7	142.5	81.9	1.63	1.74
2017	92.4	98.8	64.6	1.43	1.53
2018	62.4	63.9	50.4	1.2	1.27
2019 <sup>c/</sup>	54.5	55.1	48.9	1.1	1.13
2020	51.0	-	-	-	-
<b>SCH</b>					
1984-85	28.1	32.1	40.4	0.75	0.85
1986-90	17.7	15.6	16.7	1.01	0.92
1991-95	31.0	34.5	30.2	1.05	1.18
1996-00	30.3	32.6	30.3	0.94	1.05
2001	56.6	61.9	125.0	0.45	0.50
2002	144.4	136.0	160.8	0.90	0.85
2003	96.9	101.9	180.6	0.54	0.56
2004	138.0	150.0	175.3	0.79	0.86
2005	114.1	115.8	93.1	1.23	1.24
2006	50.0	51.8	27.9	1.79	1.86
2007	21.8	21.3	14.6	1.49	1.46
2008	87.2	86.2	91.9	0.95	0.94
2009	59.3	56.5	49.0	1.21	1.15
2010	169.0	162.9	130.8	1.29	1.25
2011	116.4	116.7	70.1	1.66	1.66
2012	63.8	60.0	56.8	1.12	1.06
2013	38.0	36.7	86.6	0.44	0.42
2014	115.1	103.3	127.0	0.91	0.81
2015	160.5	163.9	166.4	0.96	0.98
2016	89.5	100.7	44.6	2.01	2.26
2017	158.4	164.4	48.2	3.29	3.41
2018	50.1	51.4	28.9	1.73	1.78
2019 <sup>c/</sup>	46.0	48.4	29.0	1.59	1.67
2020	46.2	-	-	-	-

TABLE II-8. Predicted and postseason returns of Columbia River adult summer and fall Chinook in thousands of fish.  
(Page 3 of 3)

Year	March Preseason Forecast <sup>a/</sup>	April STT Modeled Forecast <sup>b/</sup>	Postseason Return	March Pre/Postseason	April Pre/Postseason
<b>MCB</b>					
1991-95	34.6	35.6	32.4	1.08	1.10
1996-00	49.9	47.9	48.6	1.07	1.04
2001	43.5	45.3	76.4	0.57	0.59
2002	96.2	91.8	108.4	0.89	0.85
2003	104.8	94.6	150.2	0.70	0.63
2004	90.4	88.8	117.6	0.77	0.76
2005	89.4	89.7	98.0	0.91	0.92
2006	88.3	86.6	80.4	1.10	1.08
2007	68.0	69.1	46.9	1.45	1.47
2008	54.0	55.1	75.5	0.72	0.73
2009	94.4	97.9	73.1	1.29	1.34
2010	79.0	74.6	79.0	1.00	0.94
2011	100.0	100.4	85.4	1.17	1.18
2012	90.8	90.7	58.7	1.55	1.55
2013	105.2	96.3	243.4	0.43	0.40
2014	360.1	340.2	203.8	1.77	1.67
2015	113.3	116.9	170.6	0.66	0.69
2016	101.0	99.4	88.3	1.14	1.13
2017	45.6	48.3	47.4	0.96	1.02
2018	36.4	41.2	36.0	1.01	1.14
2019 <sup>c/</sup>	56.7	66.4	58.1	0.98	1.14
2020	71.8	-	-	-	-
<b>SUMMER</b>					
2008	52.0		55.5	0.94	
2009	70.7		53.9	1.31	
2010	88.8		72.3	1.23	
2011	91.1		80.6	1.13	
2012	91.2	92.6	58.3	1.56	1.59
2013	73.5	78.5	67.6	1.09	1.16
2014	67.5	64.7	78.3	0.86	0.83
2015	73.0	100.1	126.9	0.58	0.79
2016	93.3	95.6	91.0	1.03	1.05
2017	63.1	64.8	68.2	0.93	0.95
2018	67.3	70.5	42.1	1.60	1.67
2019 <sup>c/</sup>	35.9	36.3	34.6	1.0	1.0
2020	38.3	-	-	-	-

a/ March preseason forecasts are ocean escapements based on terminal run size and stock-specific cohort relationships affected by the historical "normal" ocean fisheries, generally between 1979 and the most recent complete broods.

b/ STT-modeled forecasts adjust March preseason forecasts for Council-adopted ocean regulations each year, and should provide a more accurate estimate of expected ocean escapement.

c/ Postseason estimates are preliminary.

TABLE II-9. Preseason forecasts and postseason estimates of Puget Sound run size for summer/fall Chinook in thousands of fish.<sup>a/</sup> (Page 1 of 4)

Year or Average	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season
	<b>Nooksack-Samish Hatchery and Natural</b>			<b>East Sound Bay Hatchery</b>			<b>Skagit Hatchery</b>			<b>Skagit Natural</b>		
1993-95	45.2	27.6	1.65	3.3	1.6	9.41	1.3	3.4	0.47	9.1	7.3	1.33
1996-00	27.0	35.4	0.77	2.1	0.5	13.35	0.2	0.2	0.87	7.0	10.9	0.80
2001	34.9	65.6	0.53	1.6	0.9	1.85	0.0	0.0	-	9.1	14.1	0.64
2002	52.8	57.0	0.93	1.6	0.9	1.87	0.0	0.1	0.00	13.8	20.0	0.69
2003	45.8	30.0	1.53	1.6	0.2	7.51	0.0	0.3	0.00	13.7	10.3	1.33
2004	34.2	18.1	1.89	0.8	0.0	200.00	0.5	0.0	-	20.3	24.3	0.84
2005	19.5	16.5	1.18	0.4	0.0	13.33	0.7	0.4	1.88	23.4	23.4	1.00
2006	16.9	31.9	0.53	0.4	0.0	25.00	0.6	0.4	1.51	24.1	22.5	1.07
2007	18.8	26.5	0.71	0.4	0.0	66.67	1.1	0.4	2.75	15.0	13.0	1.15
2008	35.3	29.1	1.21	0.8	0.0	-	0.7	0.2	3.50	23.8	15.0	1.59
2009	23.0	20.9	1.10	0.1	0.0	25.00	0.6	0.1	6.00	23.4	12.5	1.87
2010	30.3	35.8	0.85	2.3	0.7	3.29	0.9	0.1	11.25	13.0	10.0	1.30
2011	37.5	33.3	1.13	0.4	0.7	0.57	1.5	0.1	15.00	14.3	9.2	1.55
2012	44.0	32.6	1.35	0.4	1.6	0.25	1.3	0.1	13.00	8.3	15.8	0.53
2013	47.2	31.4	1.50	2.0	1.1	1.82	0.3	0.1	3.00	12.9	13.0	0.99
2014	43.9	25.5	1.72	1.2	0.3	4.00	0.3	0.0	7.50	18.0	10.1	1.78
2015	38.6	18.1	2.13	1.2	0.9	1.33	0.6	0.0	-	11.8	14.8	0.80
2016	27.9	15.8	1.77	0.7	0.7	1.00	0.4	0.1	4.00	15.1	21.1	0.72
2017	21.2	17.2	1.23	0.8	0.5	1.70	0.4	0.1	4.08	15.8	13.6	1.16
2018 <sup>b/</sup>	24.6	17.1	1.44	0.7	0.0	77.78	0.3	0.1	3.09	13.3	12.3	1.09
2019	21.3	-	-	0.3	-	-	0.3	-	-	13.6	-	-
2020	18.2	-	-	0.3	-	-	0.5	-	-	12.9	-	-

TABLE II-9. Preseason forecasts and postseason estimates of Puget Sound run size for summer/fall Chinook in thousands of fish.<sup>a/</sup> (Page 2 of 4)

Year or Average	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season
Stillaguamish <sup>c/</sup>			Snohomish <sup>c/</sup>			Snohomish <sup>c/</sup>			Tulalip <sup>c/</sup>			
Natural			Hatchery			Natural			Hatchery			
1993-95	1.8	1.2	1.92	2.0	4.1	0.29	4.6	4.8	0.96	2.6	3.9	1.30
1996-00	1.6	1.3	1.20	7.0	5.6	1.67	5.3	5.5	0.98	3.7	10.1	0.39
2001	1.7	1.4	1.22	4.1	0.9	4.57	5.8	8.4	0.69	5.5	5.1	1.08
2002	2.0	1.6	1.25	6.8	2.6	2.66	6.7	7.3	0.92	5.8	5.2	1.12
2003	2.0	1.0	1.98	9.4	5.8	1.63	5.5	5.6	0.99	6.0	8.7	0.69
2004	3.3	1.6	2.06	10.1	6.4	1.58	15.7	11.2	1.40	6.8	6.5	1.05
2005	2.0	1.2	1.67	9.9	4.0	2.48	14.2	5.0	2.84	6.4	7.4	0.86
2006	1.6	1.3	1.26	9.6	4.3	2.23	8.7	8.8	0.99	9.3	5.8	1.60
2007	1.9	0.8	2.38	8.7	6.6	1.32	12.3	4.0	3.08	8.4	6.1	1.38
2008	1.1	1.8	0.61	8.8	6.3	1.40	6.5	8.7	0.75	2.7	3.2	0.84
2009	1.7	1.2	1.42	4.9	2.2	2.23	8.4	2.3	3.65	4.0	1.7	2.35
2010	1.4	1.0	1.40	5.6	2.7	2.07	9.9	4.8	2.06	3.4	3.2	1.06
2011	1.8	1.3	1.38	5.2	3.1	1.68	7.4	2.0	3.70	3.5	5.8	0.60
2012	0.9	1.7	0.53	3.9	8.4	0.46	2.8	3.4	0.82	5.9	0.6	9.83
2013	1.3	0.9	1.44	5.9	6.1	0.97	3.6	2.6	1.38	10.9	1.9	5.74
2014	1.6	0.4	4.00	5.4	6.2	0.87	5.3	2.4	2.21	4.7	1.8	2.61
2015	0.5	0.6	0.83	3.3	4.8	0.69	4.2	2.3	1.83	1.3	2.0	0.65
2016	0.5	0.5	1.00	5.0	10.0	0.50	3.3	3.5	0.94	1.4	6.0	0.23
2017	1.5	1.7	0.89	4.8	9.0	0.53	3.4	4.4	0.78	5.3	11.3	0.47
2018 <sup>b/</sup>	1.6	1.2	1.33	6.5	6.0	1.08	3.5	3.3	1.05	7.5	9.6	0.77
2019	0.9	-	-	7.0	-	-	3.2	-	-	12.5	-	-
2020	0.9	-	-	6.8	-	-	3.0	-	-	6.0	-	-

TABLE II-9. Preseason forecasts and postseason estimates of Puget Sound run size for summer/fall Chinook in thousands of fish.<sup>a/</sup> (Page 3 of 4)

Year or Average	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season
South Puget Sound Hatchery			South Puget Sound Natural			Strait of Juan de Fuca Hatchery			Strait of Juan de Fuca Natural			
1993-95	54.7	56.1	1.05	22.1	15.0	1.78	2.5	0.9	2.85	1.7	1.6	1.10
1996-00	64.3	51.1	1.31	19.2	24.0	0.96	2.1	1.2	1.91	0.9	2.3	0.43
2001	73.7	76.6	0.96	16.2	60.6	0.27	0.0	1.7	0.00	3.5	2.0	1.79
2002	90.8	69.3	1.31	16.9	57.0	0.30	0.0	1.6	0.00	3.6	2.2	1.65
2003	86.6	57.2	1.51	19.6	38.6	0.51	0.0	1.3	0.00	3.4	2.8	1.21
2004	86.5	66.6	1.30	17.5	42.3	0.41	0.0	1.4	0.00	3.6	4.1	0.89
2005	83.1	73.9	1.12	17.7	19.0	0.93	0.0	1.4	0.00	4.2	2.1	2.00
2006	85.8	104.1	0.82	21.3	37.0	0.58	0.0	1.2	0.00	4.2	3.2	1.31
2007	83.0	140.3	0.59	17.0	30.1	0.56	0.0	0.8	0.00	4.4	1.3	3.38
2008	101.6	90.6	1.12	21.1	32.2	0.65	0.0	0.7	0.00	3.2	1.2	2.67
2009	93.0	72.7	1.28	17.2	13.3	1.29	0.0	1.5	0.00	2.4	1.3	1.85
2010	97.4	82.9	1.17	12.7	15.8	0.80	0.0	0.7	0.00	1.9	2.6	0.73
2011	118.6	83.9	1.41	8.9	20.6	0.43	0.0	0.7	0.00	2.5	2.9	0.86
2012	95.8	61.9	1.55	8.9	23.0	0.39	0.0	1.2	0.00	2.9	2.1	1.38
2013	102.0	75.5	1.35	5.0	22.2	0.23	2.7	2.1	1.29	1.6	4.8	0.33
2014	96.7	37.1	2.61	4.8	7.1	0.68	3.8	2.0	1.90	1.5	4.2	0.36
2015	62.4	47.1	1.32	3.8	5.5	0.69	4.9	2.8	1.75	3.5	4.5	0.78
2016	43.1	83.8	0.51	4.5	6.0	0.75	4.3	1.9	2.26	2.3	2.6	0.88
2017	80.4	143.4	0.56	4.7	8.7	0.54	3.8	2.0	1.94	0.8	3.3	0.24
2018 <sup>b/</sup>	123.6	109.9	1.12	4.8	8.5	0.57	6.0	4.8	1.26	1.4	6.3	0.23
2019	99.9	-	-	8.4	-	-	7.7	-	-	0.6	-	-
2020	100.7	-	-	5.8	-	-	4.5	-	-	0.5	-	-



TABLE II-9. Comparison of preseason forecasts and postseason estimates of Puget Sound run size for summer/fall Chinook in thousands of fish.<sup>a/</sup> (Page 4 of 4)

Year or Average	Preseason Forecast	Postseason Return	Pre/Post-season
<b>Hood Canal</b>			
<b>Hatchery and Natural</b>			
1993-95	11.6	8.4	1.46
1996-00	7.3	26.4	0.26
2001	19.2	26.1	0.74
2002	25.3	30.2	0.84
2003	24.0	33.0	0.73
2004	29.6	34.3	0.86
2005	30.6	54.7	0.56
2006	30.2	40.7	0.74
2007	47.5	32.5	1.46
2008	36.8	33.1	1.11
2009	42.6	38.0	1.12
2010	45.0	37.8	1.19
2011	40.6	53.2	0.76
2012	46.8	90.3	0.52
2013	66.2	71.7	0.92
2014	84.1	25.2	3.34
2015	62.1	33.0	1.88
2016	45.0	63.6	0.71
2017	50.8	111.0	0.46
2018 <sup>b/</sup>	61.4	74.7	0.82
2019	67.2	-	-
2020	72.2	-	-

a/ Puget Sound run size is defined as the run available to Puget Sound net fisheries. Does not include fish caught by troll and recreational fisheries inside Puget Sound.

b/ Postseason returns are preliminary.

c/ These numbers are in terms of terminal run of Chinook returning to area 8A. This includes all adult Chinook harvested in the net fisheries in Areas 8A, 8D, the Stillaguamish and Snohomish Rivers harvest in sport fisheries in Area 8D and the Stillaguamish and Snohomish Rivers and escapement.

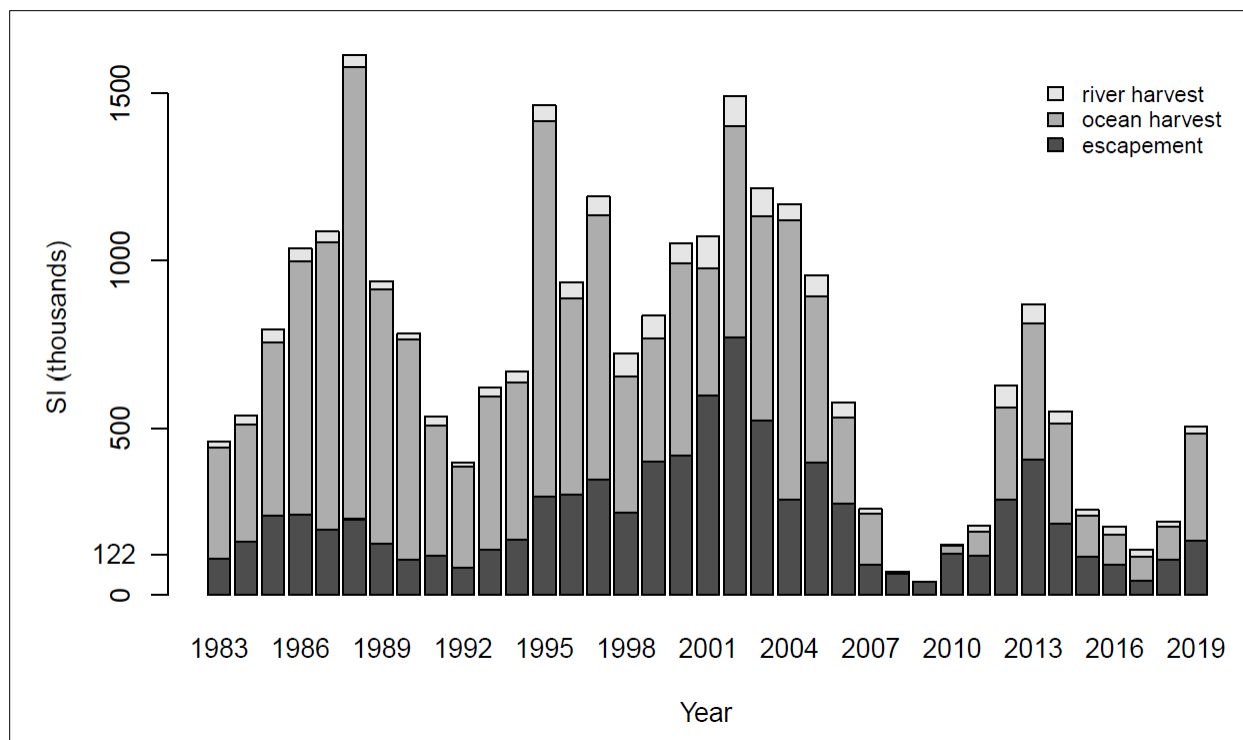


FIGURE II-1. The Sacramento Index (SI) and relative levels of its components. The Sacramento River fall Chinook  $S_{MSY}$  of 122,000 adult spawners is noted on the vertical axis.

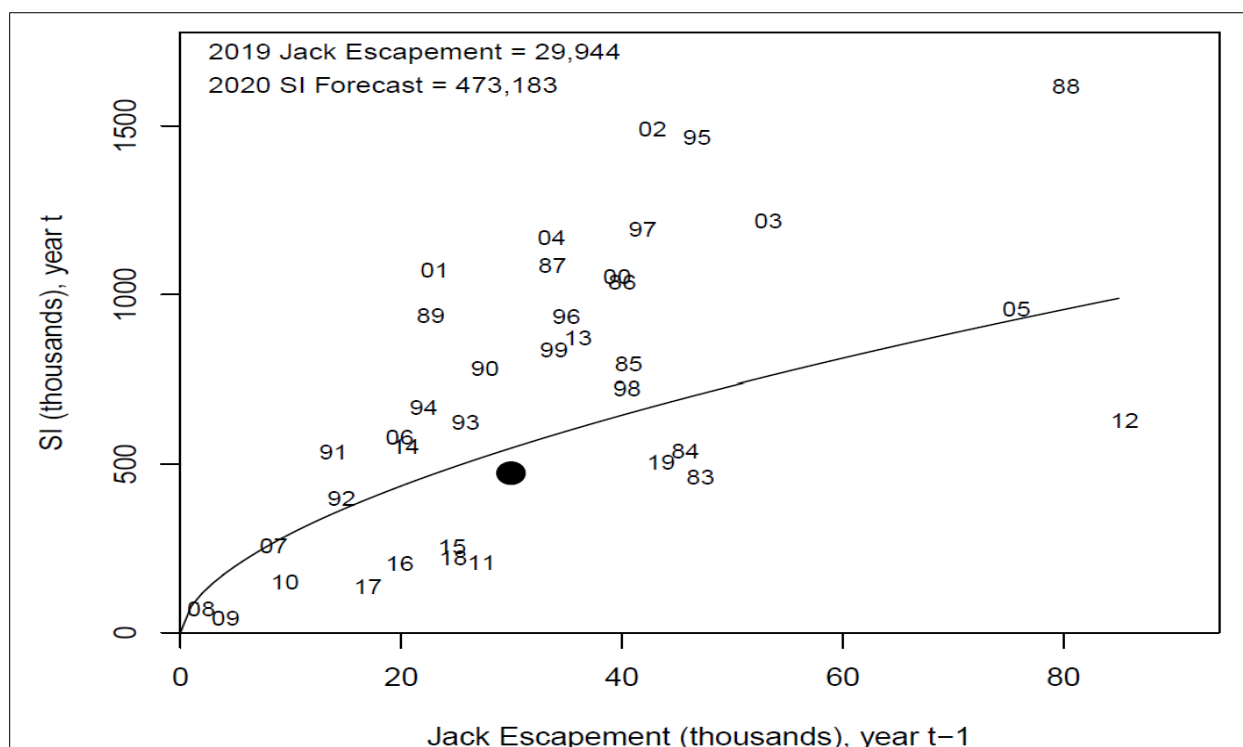


FIGURE II-2. Sacramento Index (SI) forecast based on log-log regression of the SI on jack escapement from the previous year, accounting for autocorrelated errors. The solid line represents the fitted model and the black dot denotes the SI forecast. Years shown are SI years.

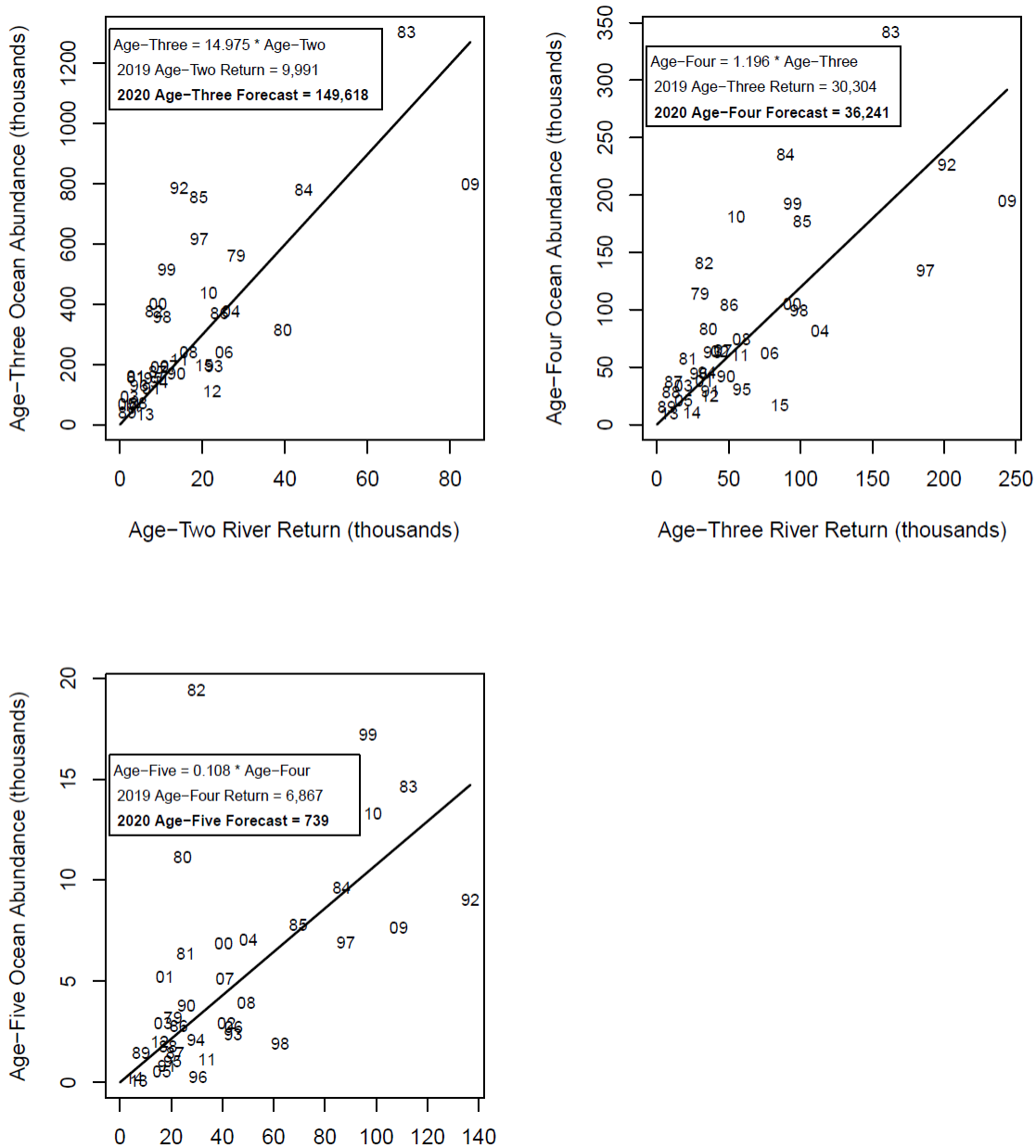


FIGURE II-3. Regression estimators for Klamath River fall Chinook ocean abundance (September 1) based on that year's river return of same cohort. Numbers in plots denote brood years.

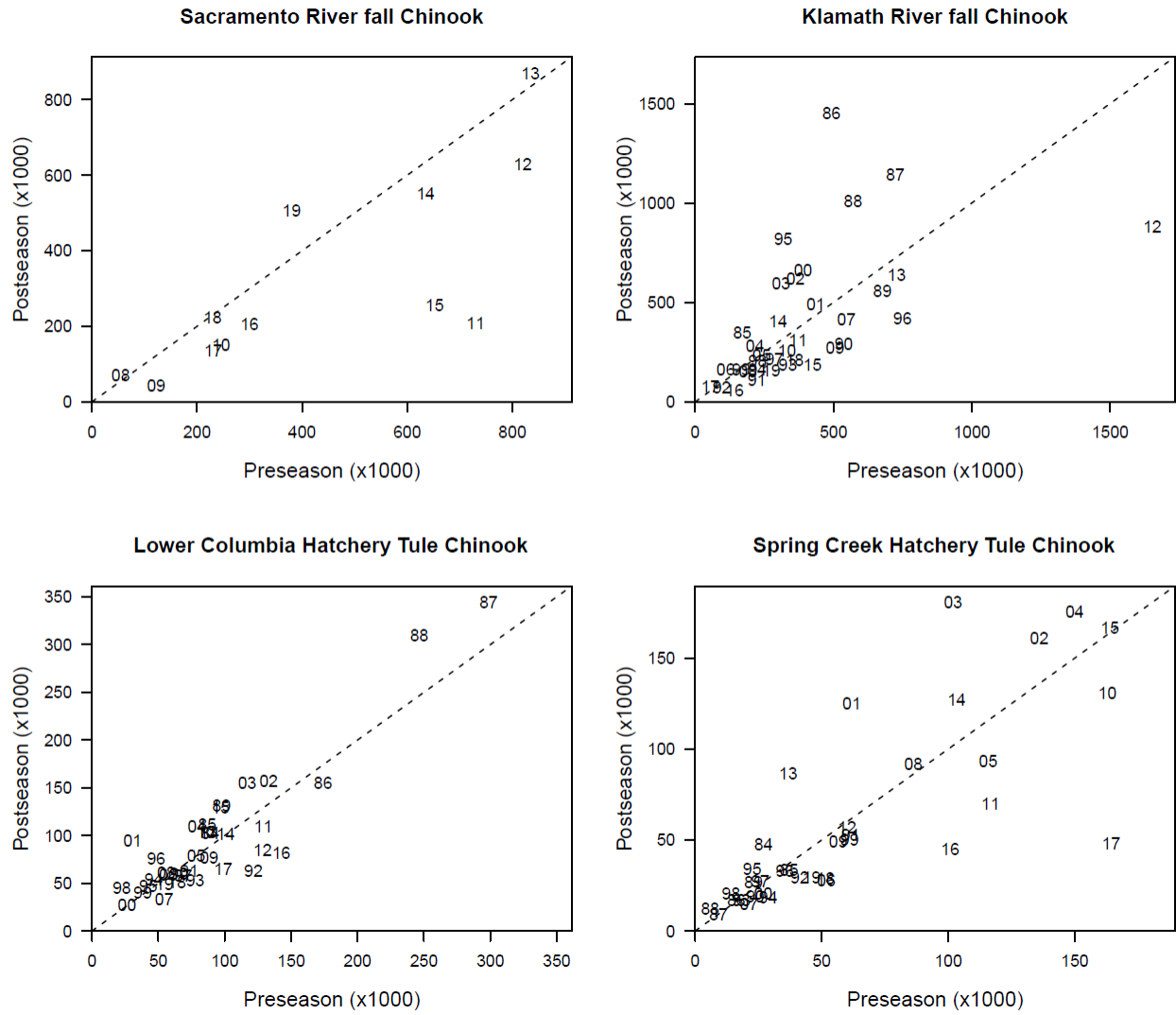


FIGURE II-4. Selected preseason vs. postseason forecasts for Chinook stocks with substantial contribution to Council area fisheries.

## CHAPTER III - COHO SALMON ASSESSMENT

### COLUMBIA RIVER AND OREGON/CALIFORNIA COAST COHO

#### OREGON PRODUCTION INDEX AREA

The majority of coho harvested in the Oregon Production Index (OPI) area originate from stocks produced in rivers located within the OPI area (Leadbetter Point, Washington to the U.S./Mexico border). These stocks include hatchery and natural production from the Columbia River, Oregon Coast, and northern California, and are divided into the following components: (1) public hatchery (OPIH), (2) Oregon coastal natural (OCN), including river and lake components, (3) Lower Columbia natural (LCN), and (4) natural and hatchery stocks south of Cape Blanco, Oregon, which include the Rogue, Klamath, and Northern California coastal stocks. Direct comparisons of 2019 abundance forecasts with recent year preseason abundance forecasts and postseason estimates are reported in Table III-1.

Beginning in 2008, a new method was developed to estimate coho abundances for both the natural and hatchery components of the Columbia River and the Oregon coast. The traditional method of stock abundance estimation used only catch data from Leadbetter Point, Washington, to the U.S./Mexico border. The assumption prior to 2008 was that OPI stocks that were caught north of the OPI area were balanced by northern stocks that were caught inside the OPI area. This assumption was valid as long as fisheries north and south were balanced. However, in some recent years, fisheries to the south have been more restricted than those to the north, leading to underestimation of harvest of OPI area stocks. In addition, the estimation technique was not consistent with the methods used in Coho FRAM. The Mixed Stock Model (MSM) for constructing the FRAM base period data was used to estimate the contribution of various coho stocks, including the OPI area stocks, to ocean fisheries. MSM is based on CWT recoveries (release years 1986-1992) and associated tag rates. FRAM includes all fisheries that impact a particular stock, and therefore should provide a better overall accounting of total harvest and mortality of both Columbia River and Oregon coast coho stocks. The new run size estimates are based on Backwards FRAM (BKFRAM) run reconstructions. BKFRAM is used to estimate the pre-fishing abundances and post-season exploitation rates of OPI stocks. FRAM is populated with post-season estimates of escapements and catches/non-retention mortalities for OPI fisheries. When run in BKFRAM mode, stock specific mortalities are added to escapements to reconstruct pre-fishing abundances and to estimate exploitation rates.

#### Hatchery Coho

OPI area public hatchery coho smolt production occurs primarily in Columbia River facilities and net pens. Several facilities located in Oregon coastal rivers and in the Klamath River Basin, California, collectively produce fewer coho. Salmon Trout Enhancement Hatchery Coho Smolt Program (STEP) program releases were discontinued after the 2004 brood. OPI area smolt releases since 1960 are reported by geographic area in Appendix C, Table C-1.

There have been no Oregon coastal private hatchery coho (PRIH) smolt releases since 1990.

#### *Predictor Description*

Prior to 2008, the OPIH stock predictor was a multiple linear regression with the following variables: (1) Columbia River jacks (Jack CR), (2) Oregon coastal and Klamath River Basin jacks (Jack OC), and (3) a correction term for the proportion of delayed smolts released from Columbia River hatcheries (Jack CR \* [SmD/SmCR]).

In 2008, the stock predictor was modified slightly from that used in previous years. Because of the shorter data set (1986-2007 vs. 1970-2007) and the near-total phase-out of coastal coho salmon hatcheries, the factor for Oregon and California jacks (Jack OC) was not statistically significant in the regression. A

simplified model with all OPI jacks combined into one term (Jack OPI) was used, and all parameters were statistically significant. In 2011, the longer (1970-2010) time series was used with the simplified model.

The OPIH stock predictor is partitioned into Columbia River early and late stocks based on the proportion of the 2019 jack returns of each stock adjusted for stock-specific maturation rates. The coastal hatchery stock is partitioned into northern and southern coastal stock components. The northern OPIH coastal stock is comprised of hatchery production from the central Oregon Coast. The southern OPIH coastal stock is comprised of hatchery production from the Rogue River basin in southern Oregon and the Klamath and Trinity basins in northern California. The 2020 partition was based on the proportion of the smolt releases in 2019.

For the 2020 abundance forecast, the database includes 1970-2019 recruits and 1969-2018 jack returns (in thousands of fish). The model was:

$$\text{OPIH}(t) = a (\text{Jack OPI}(t-1)) + b ((\text{Jack CR}(t-1) ([\text{SmD}(t-1)/\text{SmCR}(t-1)])) + c$$

Where:

$$\begin{aligned} a &= 19.23 \\ b &= 28.53 \\ c &= -112.28 \\ \text{adjusted } r^2 &= 0.93 \end{aligned}$$

The OPIH stock data set and a definition of the above terms are presented in Appendix C, Table C-2.

### *Predictor Performance*

Recent year OPIH stock preseason abundance forecasts partitioned by production area, stock, and as a total, are compared with postseason estimates in Table III-1. The 2019 preseason abundance prediction of 933,500 OPIH coho was about 3 times higher than the preliminary postseason estimate of 300,500 coho.

Since 1983, the OPIH predictor has performed well but since 2015 has over-predicted and performed poorly in most of these years (Figure III-1a). The years with the highest variations were due principally to high interannual variability in the jack-to-adult ratios.

### *Stock Forecast and Status*

Using the appropriate values from Appendix C, Table C-2, the OPIH abundance forecast for 2020 is 185,700 coho, 20 percent of the 2019 prediction and 62 percent of the preliminary 2019 postseason estimate.

### **Oregon Coastal Natural Coho**

The OCN stock is composed of natural production north of Cape Blanco, Oregon from river (OCNR) and lake (OCNL) systems, which are forecasted independently.

Under the FMP, ESA consultation standards are used in place of ACLs for ESA-listed stocks like OCN (and Southern Oregon/Northern California (SONCC) and Central California Coho (CCC)) coho.

### *Predictor Description*

#### **Oregon Coastal Natural Rivers**

Prior to 2010, a variety of methods were used to forecast OCNR coho abundance. Beginning in 2011, generalized additive models (GAMs) were used to relate OCNR recruitment to ocean environment indices.

Nine variables were evaluated, ranging from indices of large-scale ocean patterns (e.g., Pacific Decadal Oscillation [PDO]) to local ecosystem variables (e.g., sea surface temperature at Charleston, OR). It was found that high explanatory power and promising forecast skill could be achieved when the mean May-July PDO averaged over the four years prior to the return year was used in combination with two other variables in a GAM. The multi-year average of the PDO, in essence, explains the lower frequency (multi-year) variability in recruitment, and can be viewed as a replacement of the Regime Index used previously. A final set of six models using six different environmental indices plus parent spawner abundance was chosen from the possible model combinations. When averaging the predictions from the set of models (the ensemble mean), a higher skill (in terms of variance explained or cross-validation) was achieved than by selecting any single model. Making multiple forecasts from a set of models also provides a range of possible outcomes that reflects, to some degree, the uncertainty in understanding how salmon productivity is driven by ocean conditions.

The GAM with 6 predictor variables can be expressed in the following general form:

$$\hat{Y} = f(X_1) + f(X_2) + f(X_3) + \varepsilon$$

Where  $\hat{Y}$  is the prediction,  $X_1$  through  $X_3$  are the predictor variables, and  $\varepsilon$  is the deviation of  $\hat{Y}$  from the observation  $Y$ . For the prediction,  $Y$  was the log-transformation of annual recruit abundance. The term  $f$  represents a smooth function, which in this case is a cubic spline.

The ensemble mean predictor used for the 2020 forecast was the geometric mean of the six GAM predictors:

Ensemble Mean of the six predictors based on environmental conditions and spawners.

Variables			Prediction	r <sup>2</sup>	OCV <sup>a/</sup>
PDO	Spring Transition (Julian date; t-1)	Log Spawners (t-3)	78,338	0.64	0.55
PDO	Multivariate ENSO Index (Oct-Dec; t-1)	Upwelling (July-Sept; t-1)	78,203	0.68	0.59
PDO	Spring Transition (Julian date; t-1)	Multivariate ENSO Index (Oct-Dec; t-1)	75,124	0.67	0.6
PDO	Upwelling (July-Sept; t-1)	Sea Surface Temperature (May-Jul; t-1)	83,776	0.63	0.51
PDO	Sea Surface Height (Apr-June; t-1)	Upwelling (July-Sept; t-1)	89,787	0.67	0.55
PDO	Upwelling (Sept-Nov; t-1)	Sea Surface Temperature (Jan; t)	60,901	0.65	0.52
Ensemble Mean			77,148		
(90% prediction intervals)			(36,540-162,186)	0.7	0.6

a/ OCV – ordinary cross-validation score

The OCNR stock data set and a definition of the above terms are presented in Appendix C, Table C-4.

### Oregon Coastal Natural Lakes

Since 1988, except for 2008, the abundance of OCNL index coho has been predicted using the most recent three-year average adult stock abundance. OCNL coho production occurs from three lake systems (Tennile, Siltcoos, and Tahkenitch). Following the same reasoning used for the OCN Rivers predictor in 2008, OPITT chose to use the 2007 postseason abundance estimate of 10,000 coho for the 2008 preseason prediction instead of using the most recent three-year average. For 2020, OPITT chose to use the most recent three-year average adult stock abundance, which predicts 5,900 coho.

### Predictor Performance

Recent year OCN preseason abundance predictions are compared to postseason estimates in Table III-1. The 2019 preseason abundance prediction of 76,100 OCN coho was 71 percent of the preliminary postseason estimate of 107,600 coho.

### ***Stock Forecasts and Status***

The 2020 preseason prediction for OCN (river and lake systems combined) is 83,000 coho, 9 percent higher than the 2019 preseason prediction and 77 percent of the 2019 postseason estimate (Table III-1). The 2020 preseason prediction for OCNR and OCNL components are 77,100 and 5,900 coho, respectively.

Based on parent escapement levels and observed OPI smolt-to-jack survival for 2017 brood OPI smolts, the total allowable OCN coho exploitation rate for 2020 fisheries is no greater than 15.0 percent under the Salmon FMP (Amendment 13) and no greater than 15.0 percent under the matrix developed by the OCN Coho Work Group during their review of Amendment 13 (Table V-8; Appendix A, Tables A-2 and A-3, respectively). The work group recommendation was accepted by the Council as expert biological advice in November 2000.

In November 2013, the Council approved a methodology change for a new marine survival index for the OCN coho harvest matrix that uses biological and oceanographic indicators for preseason planning beginning in 2014<sup>1</sup>. Based on this methodology, the marine survival index of 4.1 percent allows for a total allowable exploitation rate for 2020 fisheries that is no greater than 15.0 percent (Table V-8: Appendix Table A-4).

### **Lower Columbia River Natural**

LCN coho consist of naturally produced coho mostly from Columbia River tributaries below Bonneville dam; however, coho produced in the upper Willamette are not part of the ESA-listed ESU and are not included in the LCN coho forecast. LCN coho were listed as endangered under the Oregon State ESA in 2002, and as threatened under the Federal ESA on June 28, 2005. Under the FMP, ESA consultation standards are used in place of ACLs for ESA-listed stocks like LCN coho.

#### ***Predictor Description***

The 2020 predictions for the Oregon LCN coho populations are derived by the recent 2-year average abundances based on spawning ground counts. The 2020 adult abundance forecast for Oregon LCN coho is 5,800.

The 2020 predictions for the Washington LCN coho populations are derived by combining estimates of the 2017 brood year natural smolt production based on watershed area and the marine survival rate of 2.5 percent. The 2020 adult abundance forecast for Washington LCN coho is 18,800.

#### ***Predictor Performance***

The LCN stock predictor methodology was developed in 2007. The preseason abundance compared to the postseason estimate is presented in Table III-1. The 2019 preseason abundance prediction of 36,900 LCN coho was higher than the preliminary postseason estimate of 34,100 coho.

### ***Stock Forecast and Status***

The 2020 prediction for LCN coho is 24,600 coho (Table III-1). This abundance estimate includes both Oregon and Washington LCN components.

NMFS ESA guidance for harvest of LCN coho in marine and mainstem Columbia River fisheries is based on a matrix describing parent escapement levels for multiple populations and the observed Columbia River

---

<sup>1</sup> For additional information see the November 2013 PFMC Briefing Book, Agenda Item C.2.a, Attachment 1: Technical Revision to the OCN Coho Work Group Harvest Matrix.



OPI smolt-to-jack survival rate. Based on this matrix, the total allowable marine and mainstem Columbia River exploitation rate for LCN coho in 2020 fisheries would be no more than 18.0 percent.

### **Oregon Production Index Area Summary of 2020 Stock Forecasts**

The 2020 combined OPI area stock abundance is predicted to be 268,700 coho, which is 73 percent lower than the 2019 preseason prediction of 1,009,600 coho and 34 percent lower than the 2019 preliminary postseason estimate of 408,100 coho. The historical OPI abundances are reported in Table III-2.

#### **WASHINGTON COAST COHO**

Washington coastal coho stocks include all natural and hatchery stocks originating in Washington coastal streams north of the Columbia River to the western Strait of Juan de Fuca (west of the Sekiu River). The stocks in this group most pertinent to ocean salmon fishery management are Willapa Bay (hatchery), Grays Harbor, Quinault (hatchery), Queets, Hoh, and Quillayute coho. These stocks contribute primarily to ocean fisheries off Washington and B.C.

A variety of preseason abundance estimators currently are employed for Washington coast and Puget Sound coho stocks, primarily based on smolt production and survival (Table I-2). These estimators are used to forecast preseason abundance of adult ocean (age-3) recruits.

A comparison was made of preseason ocean age-3 forecasts with postseason estimates derived from run reconstructions using FRAM (“Backwards” mode) to expand observed escapements to ocean abundance from CWT recovery data. It should be noted that forecast methodology has changed over time, and the overall trends and biases may not reflect the current methods.

Except for Willapa Bay, Washington Coast coho fall within an exception to the ACL requirements of the MSA because they are managed under an international agreement (the PST); therefore, specification of ACLs is not necessary for these stocks.

#### **Willapa Bay**

##### *Predictor Description*

The natural forecast was calculated by multiplying the estimate of smolts emigrating from Willapa Bay in 2019 (595,000) by the anticipated marine survival rate of 3.0%. This results in a natural coho forecast of 17,850 ocean age-3 recruits.

The hatchery forecast was calculated by multiplying the estimated 2017 brood year smolts (1,726,183) released in the spring of 2019 from all Willapa Bay hatchery facilities by the anticipated marine survival rate of 3.0%. This results in a hatchery coho forecast of 51,785 ocean age-3 recruits. .

The anticipated marine survival rate of 3.0% was developed by the WDFW Fish Science Division and was based on the PDO index between May and September of ocean entry and timing of the hydrographic physical spring transition from predominantly downwelling to upwelling conditions.

##### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates for Willapa Bay natural coho indicated no notable bias. The 2018 forecast was higher than the 2018 postseason return estimate (Table III-3; Figure III-1).

### ***Stock Forecasts and Status***

The 2020 natural coho ocean age-3 abundance forecast is 17,850, compared to a 2019 preseason forecast of 63,448.

The 2020 Willapa Bay hatchery coho ocean age-3 abundance forecast is 51,785 compared to a 2019 preseason forecast of 94,019.

### ***OFL, ABC, and ACL***

The OFL, ABC, and ACL are defined in terms of spawner escapement ( $S_{OFL}$ ,  $S_{ABC}$ , and  $S_{ACL}$ ), and are calculated using potential spawner abundance forecasts and established exploitation rates. Potential Willapa Bay coho natural area spawner abundance was derived by adding the current forecast of natural origin coho ocean age-3 abundance, 17,850, to the predicted abundance of ocean age-3 hatchery origin coho spawning in natural areas. The forecast of ocean age-3 naturally spawning, hatchery origin coho is 15,018 and was calculated by multiplying the ocean age-3 hatchery coho abundance forecast, 51,785, by the most recent 3-year average stray rate (0.290). Stray rates in each of 2016, 2017, and 2018 were 0.261, 0.329, and 0.280, respectively. Annual stray rates were estimated by dividing the number of hatchery origin spawners in natural areas by the number of hatchery origin river mouth returns. For Willapa Bay natural coho,  $F_{MSY} = 0.74$ , the value estimated from a stock-specific spawner-recruit analysis. The OFL for Willapa Bay natural coho is  $S_{OFL} = 32,868 \times (1 - 0.74) = 8,546$ . Because Willapa Bay natural coho are a Tier-1 stock,  $F_{ABC} = F_{MSY} \times 0.95 = 0.70$ , and  $F_{ACL} = F_{ABC}$ . The ABC for Willapa Bay natural coho is  $S_{ABC} = 32,868 \times (1 - 0.70) = 9,860$ , with  $S_{ACL} = S_{ABC}$ . These preseason estimates will be recalculated with postseason abundance estimates (when available) to assess ACL and OFL compliance.

### **Grays Harbor**

Preseason abundance forecasts are made for natural fish throughout the system and for hatchery fish returning to three freshwater rearing complexes and three saltwater net-pen sites. The forecasts include fish originating from numerous volunteer production projects.

### ***Predictor Description***

The natural forecast is the sum of the Chehalis River natural, Humptulips River natural, and South Bay tributary natural forecasts. The Chehalis River coho forecast was developed by applying the Queets River natural coho January age-3 marine survival prediction to the Grays Harbor coho smolt production estimate. The Grays Harbor coho smolt production estimate was developed by scaling the 2019 Queets River natural coho smolt production to the Chehalis River production based on the relationship between the Backward FRAM January age-3 ocean abundances of Queets and Chehalis natural coho abundances. The Humptulips and South Bay tributary forecasts are based on recruit densities scaled from Clearwater and Chehalis basins, respectively.

The hatchery forecast is the sum of the Chehalis River, Humptulips River, and Grays Harbor net pen and off-site hatchery program hatchery-origin forecasts. The Chehalis River, Humptulips River, and Grays Harbor net-pen and off-site hatchery program hatchery-origin forecasts were based on recent 3 year average return/smolt rates expanded to January age-3 recruits.

### ***Predictor Performance***

A comparison of preseason ocean age-3 forecasts with postseason estimates for Grays Harbor natural coho derived from FRAM run reconstruction indicated no notable bias. The 2018 forecast was lower than the postseason return estimate (Table III-3; Figure III-1).

### ***Stock Forecasts and Status***

The 2020 Grays Harbor natural ocean age-3 abundance forecast is 49,965, compared to a 2019 preseason forecast of 71,527. This ocean abundance results in classification of this stock's status as "Moderate" under the 2019 PST Southern Coho Management Plan (Table III-5).

The 2020 Grays Harbor hatchery coho ocean age-3 abundance forecast is 42,325, compared to a 2019 preseason forecast of 64,347.

### ***OFL***

The OFL is defined in terms of spawner escapement ( $S_{OFL}$ ). For Grays Harbor natural coho  $MFMT = 0.65$  and the OFL is  $S_{OFL} = 49,965 \times (1-0.65) = 17,488$ . The preseason  $S_{OFL}$  will also be recalculated with postseason abundance estimates (when available) to assess OFL compliance.

## **Quinault River**

### ***Predictor Description***

The 2020 natural forecast is based on a 3-year geometric mean of 1999, 2007, and 2012 recruits of Queets January age-3 coho abundance per Queets terminal return each year, which were calculated from Backwards FRAM estimates. The subsequent Quinault River natural returns for each of the same seasons was assumed to result in the same ratio of January ocean age-3 run size compared to its terminal run sizes as the Queets natural run. Thus,  $Year(n) \text{ Quinault } JOA3 = Year(n) \text{ Queets coho } JOA3 / \text{Queets natural Terminal Abundance} * Year(n) \text{ Quinault natural Terminal Abundance}$ .

The hatchery forecast is based on the smolt releases from the Quinault (Cook Creek) Hatchery (664,339) multiplied by the marine survival rate of 4.06 percent. The marine survival rate is based on the 10-year smolt to ocean age-3 survival (excluding 2009 and 2014). This is a similar marine survival rate to the 4.03 percent used in 2019, but a lower marine survival rate than the 4.38 and 4.54 percent used in 2017 and 2018, respectively.

### ***Predictor Performance***

There was no information available to evaluate performance of predictors for these stocks.

### ***Stock Forecasts and Status***

The 2020 forecast for Quinault natural coho is 17,464 ocean age-3 recruits, an increase from the 2019 forecast of 13,888.

The Quinault hatchery coho forecast is 26,969 ocean age-3 recruits, a slight increase from the 2019 forecast of 26,904. All hatchery smolts were marked with an adipose fin clip.

## **Queets River**

### ***Predictor Description***

The natural forecast was developed by applying the 2019 smolt outmigration of 226,242 by the predicted marine survival rate of 3.9091 percent, which results in an abundance prediction of 8,844. The model uses run reconstructions developed by the Quinault Department of Fisheries as a response. These run reconstructions do not include estimates of release mortalities in ocean mark selective fisheries. A full review of the post-season FRAM estimates prior to the 2010 return year has not been completed; however, post season FRAM estimates of ocean abundance include selective fishery mortality so the abundance prediction is corrected using parameters from the regression:  $\text{Post Season FRAM} \sim \text{Quinault run}$ . The

predicted 2020 January age-3 return based on this correction is  $\exp(8.5319943226 + 0.0000726763 * 8843.96) = 9,650$ .

The hatchery forecast is based on the smolt releases from 2019 (662,063) multiplied by a marine survival rate of 1.64 percent. This is a lower marine survival rate than the 2.27 percent and 1.96 percent used in 2018 and 2019, respectively.

The hatchery forecast is based on the smolt releases from 2019 (662,063) multiplied by a marine survival rate of 1.64 percent. This is a lower marine survival rate than the 2.27 percent and 1.96 percent used in 2018 and 2019, respectively.

### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates derived from FRAM run reconstruction indicated no persistent tendency to under- or over- predict abundance. The 2018 forecast was higher than the postseason return estimate (Table III-3; Figure III-1).

### *Stock Forecasts and Status*

The 2020 Queets natural coho forecast is 7,834 ocean age-3 recruits, a decrease compared to the 2019 forecast of 11,100. This ocean abundance results in classification of this stock's status as "Moderate" under the 2019 PST Southern Coho Management Plan (Table III-5).

The 2020 Queets hatchery (Salmon River) coho forecast is 10,881 ocean age-3 recruits, a decrease compared to the 2019 forecast of 13,175. Approximately 85 percent of the fish released from the Salmon River facility were marked with an adipose fin clip.

### *OFL*

The OFL is defined in terms of spawner escapement ( $S_{OFL}$ ). For Queets River coho, MFMT = 0.65, and the OFL is  $S_{OFL} = 7,834 \times (1 - 0.65) = 2,742$ . The preseason  $S_{OFL}$  value will be recalculated with postseason abundance estimates (when available) to assess OFL compliance.

## **Hoh River**

### *Predictor Description*

The natural coho forecast is based on estimated average smolt production per square mile of watershed from the Clearwater tributary which lies between the Queets River mainstem and the Hoh River. The Quinault Fisheries Department has a long-standing trapping program on the Clearwater River to estimate smolt production; it is assumed the two rivers produce smolts at a comparable rate per square mile of watershed. The Clearwater produced 62,236 smolts at the rate of 445 smolts/mi<sup>2</sup>. Applying that rate to the Hoh watershed of 299 mi<sup>2</sup> yields 133,055 natural coho smolts emigrating from the Hoh River in 2019.

A marine survival estimate to January age-3 of 3.85 percent was applied to the 2020 return of Hoh River wild coho. This is the same marine survival rate that was used to forecast 2020 Quillayute system natural coho abundance and it is similar to the rate used in the WDFW report '2020 Wild Coho Forecasts for Puget Sound, Washington Coast, and Lower Columbia' (WDFW 2020).

No hatchery production is projected for the Hoh system for 2020.

### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates derived from FRAM run reconstruction indicated no persistent tendency to under- or over- predict abundance. The 2018 forecast was higher than the postseason return estimate (Table III-3; Figure III-1).

### *Stock Forecasts and Status*

The 2020 Hoh River natural coho forecast is 4,159 ocean age-3 recruits, a decrease compared to the 2018 and 2019 forecasts of 5,816 and 6,963, respectively. This ocean abundance results in classification of this stock's status as "Abundant" under the 2019 PST Southern Coho Management Plan (Table III-5).

### *OFL*

The OFL is defined in terms of spawner escapement ( $S_{OFL}$ ). For Hoh River coho,  $MFMT = 0.65$ , and the OFL is  $S_{OFL} = 4,159 \times (1-0.65) = 1,456$ . The preseason  $S_{OFL}$  value will be recalculated with postseason abundance estimates (when available) to assess OFL compliance.

### **Quillayute River**

Quillayute River coho consist of a summer run that is managed primarily for hatchery production, and a fall run that is managed primarily for natural production. Quillayute River coho have both natural and hatchery components to both runs.

### *Predictor Description*

The natural coho forecast is based on a scalar and average smolt production when the Quillayute system had smolt traps. The Clearwater River smolt production, obtained from Quinault Fisheries Department, is used as a scalar to adjust the smolt production up or down from average production during the years the Bogachiel and Dickey Rivers had smolt traps which include 1987-88, 1990 and 1992-94. This process yields an estimate of 90,173 smolts emigrating from the Dickey and 213,586 smolts from the rest of the Quillayute system (total of 303,760 natural smolts). Total smolts were separated into summer and fall natural coho smolts by the relative number of natural brood year 2017 spawners, 8.47 percent and 91.53 percent, respectively. Results from this separation yield estimates of 25,715 natural summer coho smolts and 278,045 natural fall coho smolts.

The January age-3 natural marine survival estimate is 4.058 percent (ocean age-3 3.293 percent) for the Quillayute System natural coho. This estimate is an average of the smolt to adult marine survival rate used to predict the 2020 Strait of Juan de Fuca coho returns (Hap Leon, Makah Fisheries) and the marine survival rate used to predict the 2020 Queets coho returns (Tyler Jurasin, Quinault Fisheries Department, personal communication with Chris Wagemann). This estimate is higher than the January age-3 rate of 3.7 percent predicted in the WDFW report '2020 Wild Coho Forecasts for Puget Sound, Washington Coast, and Lower Columbia' (WDFW 2020)

An examination of the return rates of both hatchery releases and natural smolts indicate hatchery return rates are slightly below natural returns. Thus, for the hatchery component, a marine survival rate of 3.058 percent was applied.

### **Summer Coho**

The summer natural coho forecast is based on the estimated total summer coho smolt production (25,715) and a January age-3 projected marine survival rate of 4.058 percent.

The summer hatchery production forecast was based on a marine survival estimate of 3.058 percent multiplied by a release of 137,191 smolts from the Sol Duc Hatchery.

## **Fall Coho**

The forecast for the natural component was based on the estimated total fall coho smolt production (278,045) multiplied by an expected marine survival rate of 4.058 percent, the same survival rate used to forecast summer natural returns.

The fall hatchery production forecast was based on a marine survival estimate of 3.058 percent multiplied by a release of 522,002 smolts.

### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates for fall natural coho derived from FRAM run reconstruction indicated a tendency to over-predict actual run size. The 2018 Quillayute fall forecast was higher than the postseason return estimate (Table III-3; Figure III-1).

### *Stock Forecasts and Status*

The 2020 Quillayute River summer natural and hatchery coho forecasts are 846 and 3,406 ocean age-3 recruits, respectively; 99 percent of the hatchery smolts were marked with an adipose fin clip. The 2020 forecast abundance of natural summer coho is lower than the 2019 forecast of 1,180.

The 2020 Quillayute River fall natural and hatchery coho forecasts are 9,160 and 12,958 ocean age-3 recruits, respectively. The 2020 forecast abundance of Quillayute fall natural and hatchery coho forecasts are lower than the respective 2019 forecasts of 14,724 and 16,953, respectively. The hatchery smolts were marked as follows: 364,061 (69.7 percent) adipose fin clip only; 76,883 (14.73 percent) adipose fin clip + CWT; and 78,123 (14.97 percent CWT only).

The ocean abundance forecast for Quillayute fall natural coho results in classification of the stock abundance as "Moderate" under the 2019 PST Southern Coho Management Plan (Table III-5).

## **North Washington Coast Independent Tributaries**

### *Predictor Description*

Production from several smaller rivers and streams along the North Washington Coast (Waatch River, Sooes River, Ozette River, Goodman Creek, Mosquito Creek, Cedar Creek, Kalaloch Creek, Raft River, Camp Creek, Duck Creek, Moclips River, Joe Creek, Copalis River, and Conner Creek), which flow directly into the Pacific Ocean, is forecast as an aggregate. Generally, stock assessment programs on these systems are minimal.

The 2020 forecast of natural coho production for these independent streams is based on a prediction of 400 smolts per square mile of watershed drainage, 424 square miles of watershed, and resulting in 170,000 smolts multiplied by an expected marine survival rate of 3.0 percent.

The 2020 hatchery forecast is based on the predicted marine survival of 5.23 percent for the brood year 2019 multiplied by a proxy brood year smolt release (30,500) into the Tsoo-Yess River from the Makah National Fish Hatchery. As a result of changing climate conditions and increasing difficulty with rearing coho in the hatchery over the summer, Makah National Fish Hatchery and the Makah Tribe proposed to no longer rear coho to the smolt stage, but to replace it with a coho fry plant operation. This operation is intended to eventually replace traditional rearing strategies of coho in the Tsoo-Yess River. A fry-to-smolt conversion was used to estimate the smolt outmigration.

Ocean indicators suggest the 2017 brood encountered less favorable ocean conditions upon entry in 2019, than were seen in recent years. The forecast model predicts marine survival using the natural log of the



brood's jack return rate. The jack return in 2019 was very low, ranking number 22 out of the last 29 years in which jack returns have been counted at the hatchery. The forecast model using the jack return rate predicted a marine survival rate of 5.23 percent.

### *Predictor Performance*

There was no information available to evaluate performance of predictors for these stocks.

### *Stock Forecasts and Status*

The 2020 forecast of natural coho production for these independent streams is 5,100 age-3 ocean recruits, compared to the 2019 preseason forecast of 8,133.

The 2020 hatchery forecast is 1,296 ocean age-3 recruits, compared to 12,505 ocean age-3 recruits in 2019. All smolts released were marked with an adipose fin clip

## **PUGET SOUND COHO STOCKS**

Puget Sound coho salmon stocks include natural and hatchery stocks originating from U.S. tributaries in Puget Sound and the Strait of Juan de Fuca. The primary stocks in this group that are most pertinent to ocean salmon fishery management are Strait of Juan de Fuca, Hood Canal, Skagit, Stillaguamish, Snohomish, and South Puget Sound (hatchery) coho. These stocks contribute primarily to ocean fisheries off Washington and B.C.

A variety of preseason abundance estimators currently are employed for Puget Sound coho stocks, primarily based on smolt production and survival (Table I-2). These estimators are used to forecast preseason abundance of adult ocean age-3 recruits. Forecasts for natural Puget Sound coho stocks were generally derived by measured or predicted smolt production from each major watershed or region, multiplied by stock-specific marine survival rate predictions based on a jack return model from the WDFW Big Beef Creek Research Station in Hood Canal, natural coho CWT tagging programs at Baker Lake (Skagit River basin) and South Fork Skykomish River, adult recruits/smolt data generated from the WDFW Deschutes River Research Station, or other information. Puget Sound hatchery forecasts were generally the product of 2017 brood year (BY) smolt releases from each facility, and a predicted marine survival rate for each program. Hatchery marine survival rates were typically based on recent year average survival rates derived from CWT recovery information and/or run reconstructions.

The 2020 total Puget Sound region natural and hatchery coho ocean recruit forecast is 500,965, compared to a 2019 preseason forecast of 649,560. The 2020 natural forecast is 154,639, compared to the 2019 preseason forecast of 248,848. The 2020 hatchery forecast is 346,326, compared to the 2019 preseason forecast of 400,712.

A comparison was made of preseason ocean age-3 forecasts with postseason estimates derived from run reconstructions using FRAM ("Backwards" mode). This method expands observed escapements and actual catch to produce a FRAM estimate of post-season ocean abundance. This post-season FRAM estimate is dependent upon Base Period (1986-1992 fishing years) CWT recovery data. It should be noted that forecast methodology has changed over time, and the overall trends and biases may not reflect the current methods.

Puget Sound coho fall within an exception to the ACL requirements of the MSA because they are managed under an international agreement (the PST); therefore, specification of ACLs is not necessary for these stocks.

## **Strait of Juan de Fuca**

### *Predictor Description*

The natural forecast includes both Eastern and Western Strait of Juan de Fuca drainages. The forecast is based on a January age-3 ocean survival rate of 3.85 percent. The marine survival rate was predicted by a multiple linear regression model using two independent predictor variables: the natural log of the Elwha Hatchery coho jack return rate, and the NPGO sum January-April average of the year of smolt outmigration. The marine survival rate was then applied to the coho smolt outmigration (241,027) to produce the forecast of January age-3 recruits and converted to ocean age-3.

### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates derived from FRAM run reconstruction in recent years indicated no notable bias. The 2018 preseason forecast over-predicted the postseason estimate by a factor of 1.21 (Table III-4; Figure III-1b).

### *Stock Forecasts and Status*

The 2020 Strait of Juan de Fuca natural ocean age-3 abundance forecast is 7,525 compared to the 2019 preseason forecast of 8,800.

The 2020 Strait of Juan de Fuca hatchery ocean age-3 abundance forecast is 20,618.

The preseason forecast of 7,525 age-3 ocean recruits places Strait of Juan de Fuca natural coho in the Critical category under the FMP and in the Low category under the PST. This results in an allowable total exploitation rate of no more than 20 percent under both the Council-adopted exploitation rate matrix (Appendix A, Table A-5) and the 2019 PST Southern Coho Management Plan (Table III-5).

### *OFL*

The OFL is defined in terms of spawner escapement ( $S_{OFL}$ ). For Strait of Juan de Fuca coho  $MFMT = 0.60$ , and the OFL is  $S_{OFL} = 7,525 \times (1-0.60) = 3,010$ . The preseason  $S_{OFL}$  value will be recalculated with postseason abundance estimates (when available) to assess OFL compliance.

## **Nooksack-Samish**

### *Predictor Description*

The natural coho forecast is the product of projected natural smolt production from each stream basin in the region, multiplied by stock-specific marine survival rate expectations.

The hatchery forecast is based on median marine survival rate expectations for Lummi Bay Hatchery or Skookum Hatchery multiplied by the number of smolts released.

### *Predictor Performance*

There was no information available to evaluate performance of predictors for Nooksack-Samish coho stocks.

### *Stock Forecasts and Status*

The 2020 Nooksack-Samish natural ocean age-3 abundance forecast is 15,447, compared to the 2019 preseason forecast of 25,133.



The 2020 Nooksack-Samish hatchery ocean age-3 abundance forecast is 42,479, compared to the 2019 preseason forecast of 59,790.

## **Skagit**

### *Predictor Description*

This natural forecast is based on weighted regression results of Saratoga Passage chlorophyll and light transmissivity in May, ONI in January - June, PDO in May – September and NPGO in May - September. The range of brood years used in this analysis was 1996 to 2015; brood years 1998 and 1999 were excluded because no Baker natural smolts were tagged in those years. The analysis produced a weighted average marine survival of 2.58 percent; this was multiplied by the measured smolt production from the Skagit basin (56,785 Baker natural smolts and 1,143,088 Skagit natural smolts).

The hatchery forecast is based on weighted regression results of Saratoga Passage chlorophyll and light transmissivity in May, PDO in May - September and NPGO in May - September. Analysis of Marblemount Hatchery CWT recoveries for brood years 1996-2015 produced an average marine survival rate of 2.98 percent; this was multiplied by the total number of 2019 smolts released from all regional hatcheries (105,550 Baker marked hatchery smolts, 45,145 Marblemount unmarked hatchery smolts, and 459,378 Marblemount marked hatchery smolts).

### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates derived from FRAM run reconstruction indicated a tendency to over-predict actual run size, especially early in the time series. The 2018 preseason forecast over-predicted the postseason estimate by a factor of 1.61 (Table III-4; Figure III-1b).

### *Stock Forecasts and Status*

The 2020 Skagit natural ocean age-3 abundance forecast is 30,957, compared to the 2019 preseason forecast of 57,933.

The 2020 Skagit hatchery ocean age-3 abundance forecast is 18,180, compared to the 2019 preseason forecast of 9,917.

The preseason forecast of 30,957 age-3 ocean recruits places Skagit natural coho in the Low category under the FMP and in the Moderate category under the PST. This results in an allowable total exploitation rate of no more than 35 percent under both the Council adopted exploitation rate matrix (Appendix A, Table A-5) and the 2019 PST Southern Coho Management Plan (Table III-5).

### *OFL*

The OFL is defined in terms of spawner escapement ( $S_{OFL}$ ). For Skagit River coho, MFMT = 0.60 and the OFL is  $S_{OFL} = 30,957 \times (1-0.60) = 12,383$ . The preseason  $S_{OFL}$  value will be recalculated with postseason abundance estimates (when available) to assess OFL compliance.

## **Stillaguamish**

### *Predictor Description*

Regressing annual coho smolt trap CPUE (total fish/total hours fished) against terminal run size one year later, generates a relationship that could be used to predict Stillaguamish adult returns. However, due to the high variability in marine survival (MS), coho smolt numbers at the trap are not a very precise predictor

of adult returns one year later. Therefore, we corrected the Stillaguamish smolt trap CPUE with the SF Skykomish MS estimate for each brood and log transformed the data, which tightened the regression relationship with the terminal run.

The natural coho marine survival rate is estimated at 2.5 percent, based on preliminary 2019 South Fork Skykomish marine survival estimates. Due to consecutive years of low returns, discussion with the co-managers concluded that a marine survival of 2.5 percent is most risk-averse for harvest management purposes.

The Stillaguamish Hatchery released 70,672 marked and 3,088 unmarked yearlings in 2019, with an estimated 2,191 marked and 96 unmarked adults returning based on current a hatchery marine survival estimate of 3.1 percent.

### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates derived from FRAM run reconstruction in recent years indicated no notable bias. The 2018 preseason forecast under-predicted the postseason estimate by a factor of 0.62 (Table III-4; Figure III-1b).

### *Stock Forecasts and Status*

The 2020 Stillaguamish natural ocean age-3 abundance forecast is 19,462, compared to the 2019 preseason forecast of 23,820.

The 2020 Stillaguamish hatchery ocean age-3 abundance is 2,287, compared to the 2019 preseason forecast of 2,234.

The preseason forecast of 19,462 age-3 ocean recruits places Stillaguamish natural coho in the Low category under the FMP and in the Moderate category under the PST. This results in an allowable total exploitation rate of no more than 35 percent under both the Council-adopted exploitation rate matrix (Appendix A, Table A-5) and the 2019 PST Southern Coho Management Plan (Table III-5).

### *OFL*

The OFL is defined in terms of spawner escapement ( $S_{OFL}$ ). For Stillaguamish coho,  $MFMT = 0.50$  and the OFL is  $S_{OFL} = 19,462 \times (1 - 0.50) = 9,731$ . The preseason  $S_{OFL}$  value will be recalculated with postseason abundance estimates (when available) to assess OFL compliance.

## **Snohomish**

### *Predictor Description*

The natural forecast is based on production of 2019 out-migrant smolts estimated from rotary screwtraps in the Skykomish and Snoqualmie rivers, and expanded to account for the “unsampled” spawning habitat downstream of the traps and a 2.0 percent marine survival. The total smolt production estimate for the Snohomish watershed during 2019 is 1,951,000 smolts.

The hatchery forecast is based on 2019 hatchery releases of smolts from the WDFW Wallace River Hatchery, the Everett Net Pens, Eagle Creek and Tulalip Bernie Kai Kai Gobin Hatchery and marine survival rates. For the 2020 forecasts co-managers agreed to use 3.1% marine survival in calculating adult returns of Snohomish Hatchery fish and 2.0% for Tulalip Bernie Kai Kai Gobin fish.

### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates derived from FRAM run reconstruction indicated no notable bias. The 2018 forecast under-estimated the postseason estimate by a factor of 0.85 (Table III-4; Figure III-1b)..

### *Stock Forecasts and Status*

The 2020 Snohomish natural ocean age-3 abundance forecast is 39,000, compared to the 2019 preseason forecast of 62,600.

The 2020 Snohomish hatchery ocean age-3 abundance forecast is 26,558, compared to the 2019 preseason forecast of 43,662.

The preseason forecast of 39,000 age-3 ocean recruits places Snohomish natural coho in the Critical category under the FMP and in the Low category under the PST. This results in an allowable total exploitation rate of no more than 20 percent under both the Council-adopted exploitation rate matrix (Appendix A, Table A-5) and the 2019 PST Southern Coho Management Plan (Table III-5).

### *OFL*

The OFL is defined in terms of spawner escapement ( $S_{OFL}$ ). For Snohomish coho, MFMT = 0.60 and the OFL is  $S_{OFL} = 39,000 \times (1-0.60) = 15,600$ . The preseason  $S_{OFL}$  value will be recalculated with postseason abundance estimates (when available) to assess OFL compliance.

## **Hood Canal**

### *Predictor Description*

The natural forecast is based on a linear regression model that related the return of tagged natural jack coho at Big Beef Creek to Hood Canal December age-2 recruits, using brood years 1983-1998 and 2002-2015. This forecast was then converted to ocean age-3. The 1999-2001 broods were excluded because of the unusually high recruit-per-tagged jack ratio, which is not expected to occur this year. For 2020, as was done in the previous four years, the co-managers agreed to apply a conservative bias correction for forecasting natural coho in Hood Canal.

The hatchery forecast is based on average cohort reconstruction-based December age-2 recruits/smolt for the six most recent available broods from each facility, applied to the 2017 brood smolt releases for each facility and converted to ocean age-3.

### *Predictor Performance*

A comparison of preseason ocean age-3 forecasts with postseason estimates derived from FRAM run reconstruction indicated no notable bias. The 2018 preseason forecast over-predicted the postseason estimate by a factor of 3.20 (Table III-4; Figure III-1b).

### *Stock Forecasts and Status*

The 2020 Hood Canal natural ocean age-3 abundance forecast is 34,980, compared to the 2019 preseason forecast of 40,140.

The 2019 Hood Canal hatchery ocean age-3 abundance forecast is 72,189, compared to the 2019 preseason forecast of 87,869.

The 2019 preseason forecast of 34,980 age-3 ocean recruits places Hood Canal natural coho in the Low category under the FMP and in the Moderate category under the PST. This results in an allowable total exploitation rate of no more than 45 percent under both the Council adopted exploitation rate matrix (Appendix A, Table A-5) and the 2019 PST Southern Coho Management Plan (Table III-5).

### **OFL**

The OFL is defined in terms of spawner escapement ( $S_{OFL}$ ). For Hood Canal coho  $MFMT = 0.65$ , and the OFL is  $S_{OFL} = 34,980 \times (1 - 0.65) = 12,243$ . The preseason  $S_{OFL}$  value will be recalculated with postseason abundance estimates (when available) to assess OFL compliance.

## **South Sound**

### *Predictor Description*

The natural forecast is the product of projected smolt production from each of the stream basins in the region multiplied by a marine survival rate expectation for natural coho in the region. The upper South Sound natural stocks' marine survival rates ranged from 1.4 to 2.0 percent and were based upon a recent year average smolt to adult ratio. The deep South Sound stocks' marine survival predictions ranged from 0.9 to 2.1 percent and were derived using the methods described in the WDFW report 'Coho Forecasts for Puget Sound, Washington Coast, and Lower Columbia' (WDFW 2020).

The hatchery forecast is the product of projected smolt production from each of the stream basins in the region multiplied by a marine survival rate expectation for hatchery coho in the region. The upper South Sound hatchery stocks' marine survival rates ranged from 1.7 to 4.9 percent and were based upon a recent year average smolt to adult ratio expanded to ocean age-3. The deep South Sound stocks' marine survival predictions ranged from 0.9 to 2.1 percent.

### *Stock Forecasts and Status*

The 2020 South Sound natural ocean age-3 abundance forecast is 7,268 compared to the 2019 preseason forecast of 30,422.

The 2020 South Sound hatchery ocean age-3 abundance forecast is 164,015, compared to the 2019 preseason forecast of 180,394.

## **STOCK STATUS DETERMINATION UPDATES**

Queets River natural coho, Strait of Juan de Fuca natural coho, and Snohomish River natural coho were found to meet the criteria for being classified as overfished in the PFMC *Review of 2017 Ocean Salmon Fisheries*, released in February 2018. Queets River and Strait of Juan de Fuca natural coho remain overfished at the current time, and Snohomish natural coho are currently not overfished/rebuilding based on escapement estimates detailed in the PFMC *Review of 2019 Ocean Salmon Fisheries*, released in February 2020.

## **SELECTIVE FISHERY CONSIDERATIONS FOR COHO**

As the region has moved forward with mass marking of hatchery coho salmon stocks, selective fishing options have become an important consideration for fishery managers. Projected coho mark rates in Puget Sound and north Washington Coast fisheries are generally lower than 2019 projections. Table III-6 summarizes projected 2020 mark rates for coho fisheries by month from Southern British Columbia, Canada to the Oregon Coast, based on preseason abundance forecasts.

TABLE III-1. Preliminary preseason and postseason coho stock abundance estimates for Oregon production index area stocks in thousands of fish. (Page 1 of 2)

Year or Average	Columbia River Hatchery			Columbia River Hatchery			Lower Columbia River Natural (LCN)			Oregon Coast Natural (OCN) (Rivers and Lakes)		
	Preseason	Postseason <sup>a/</sup>	Pre/Post season <sup>a/</sup>	Preseason	Postseason <sup>a/</sup>	Pre/Post season <sup>a/</sup>	Preseason	Postseason <sup>a/</sup>	Pre/Post season <sup>a/</sup>	Preseason	Postseason <sup>a/</sup>	Pre/Post season <sup>a/</sup>
	Columbia River Hatchery			Columbia River Hatchery			Lower Columbia River			Oregon Coast Natural (OCN)		
	Early			Late			Natural (LCN)			(Rivers and Lakes)		
1996-00	212.9	181.4	1.3	128.9	102.5	1.6				62.7	52.8	1.5
2001	1036.5	873.0	1.2	491.8	488.3	1.0				50.1	163.2	0.3
2002	161.6	324.7	0.5	143.5	271.8	0.5				71.8	304.5	0.2
2003	440.0	645.7	0.7	377.9	248.0	1.5				117.9	278.8	0.4
2004	313.6	389.0	0.8	274.7	203.0	1.4				150.9	197.0	0.8
2005	284.6	282.7	1.0	78.0	111.6	0.7				152.0	150.1	1.0
2006	245.8	251.4	1.0	113.8	156.3	0.7				60.8	116.4	0.5
2007	424.9	291.0	1.5	139.5	171.0	0.8	21.5	20.5	1.0	255.4	60.0	4.3
2008	110.3	333.9	0.3	86.4	207.6	0.4	13.4	28.7	0.5	60.0	170.9	0.4
2009	672.7	681.4	1.0	369.7	374.1	1.0	32.7	37.6	0.9	211.6	257.0	0.8
2010	245.3	274.3	0.9	144.2	263.6	0.5	15.1	53.2	0.3	148.0	266.8	0.6
2011	216.0	288.5	0.7	146.5	141.2	1.0	22.7	29.5	0.8	249.4	311.6	0.8
2012	229.8	114.7	2.0	87.4	55.6	1.6	30.1	12.9	2.3	291.0	123.8	2.4
2013	331.6	190.8	1.7	169.5	110.7	1.5	46.5	36.8	1.3	191.0	128.4	1.5
2014	526.6	760.5	0.7	437.5	480.3	0.9	33.4	108.7	0.3	230.6	403.3	0.6
2015	515.2	150.5	3.4	261.9	91.8	2.9	35.9	20.9	1.7	206.6	70.4	2.9
2016	153.7	127.0	1.2	226.9	96.1	2.4	40.0	25.1	1.6	152.7	83.2	1.8
2017	231.7	170.9	1.4	154.6	108.4	1.4	30.1	31.2	1.0	101.9	65.6	1.6
2018	164.7	82.7	2.0	121.5	64.6	1.9	21.9	29.7	0.7	54.9	81.3	0.7
2019	545.0	191.4	2.8	360.6	106.1	3.4	36.9	34.1	1.1	76.1	107.6	0.7
2020	130.7	-	-	50.3	-	-	24.6	-	-	83.0	-	-

TABLE III-1. Preliminary preseason and postseason coho stock abundance estimates for Oregon production index area stocks in thousands of fish. (Page 2 of 2)

Year or Average	Pre/Post			Pre/Post			Pre/Post			Pre/Post		
	Preseason	Postseason <sup>a/</sup>	season <sup>a/</sup>	Preseason	Postseason <sup>a/</sup>	season <sup>a/</sup>	Preseason	Postseason <sup>a/</sup>	season <sup>a/</sup>	Preseason	Postseason <sup>a/</sup>	season <sup>a/</sup>
	Salmon Trout Enhancement Program (STEP) <sup>c/</sup>			Oregon Coast North of Cape Blanco			California and Oregon Coast South of Cape Blanco			Oregon Production Index (OPI) Area Hatchery Total <sup>b/</sup>		
1996-00	0.6											
2001	1.0	1.4	0.7	127.3	46.9	2.7	52.0	46.0	1.1	1707.6	1454.2	1.2
2002	0.6	3.0	0.2	36.6	41.6	0.9	20.0	22.0	0.9	361.7	660.1	0.5
2003	3.6	3.6	1.0	29.3	34.5	0.8	15.9	24.3	0.7	863.1	952.5	0.9
2004	3.1	1.0	3.1	16.6	21.7	0.8	19.0	29.9	0.6	623.9	634.6	1.0
2005	1.0	0.4	2.5	11.5	10.7	1.1	15.8	38.1	0.4	389.9	443.1	0.9
2006	0.6	0.1	6.0	8.6	7.9	1.1	30.6	25.0	1.2	398.8	440.6	0.9
2007	0.2	0.0	-	7.0	1.3	5.4	22.2	13.2	1.7	593.6	476.5	1.2
2008				1.7	7.1	0.2	17.7	16.8	1.1	216.1	565.4	0.4
2009				7.3	7.5	1.0	23.4	3.1	7.5	1073.1	1066.2	1.0
2010				4.4	8.6	0.5	14.1	4.8	2.9	408.0	551.3	0.7
2011				3.6	3.6	1.0	9.0	9.0	1.0	375.1	442.3	0.8
2012				6.4	3.1	2.1	18.1	8.6	2.1	341.7	182.3	1.9
2013				5.6	5.7	1.0	18.7	7.6	2.5	525.4	316.9	1.7
2014				4.8	19.3	0.2	14.2	3.4	4.2	983.1	1263.6	0.8
2015				6.9	5.6	1.2	24.4	3.8	6.4	808.4	251.7	3.2
2016				5.5	9.3	0.6	10.4	1.5	6.9	396.5	233.8	1.7
2017				3.5	1.9	1.8	4.5	3.6	1.3	394.3	284.8	1.4
2018				3.3	1.1	3.0	4.6	1.0	4.6	294.1	149.4	2.0
2019				12.0	2.2	5.5	15.9	0.8	19.9	933.5	300.5	3.1
2020				2.4	-	-	2.3	-	-	185.7	-	-

a/ Postseason estimates are based on preliminary data and not all stocks have been updated.  
 b/ LCN abundance is included as a subset of early/late hatchery abundance beginning in 2007. STEP estimates not included.  
 c/ Program was discontinued in 2005.

EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE III-2. Oregon production index (OPI) area coho harvest impacts, spawning, abundance, and exploitation rate estimates in thousands of fish.<sup>a/</sup>

Year or Avg.	Oregon and California Coastal Returns							Ocean Exploitation Rate Based on OPI Abundance <sup>f/</sup>
	Ocean Fisheries <sup>b/</sup>		Hatcheries and Freshwater	Columbia River			Abundance <sup>e/</sup>	
	Troll	Sport	Harvest <sup>c/</sup>	OCN Spawners <sup>d/</sup>	Private Hatcheries	Returns		
1970-1975	1,629.6	558.4	45.8	55.2	-	460.4	2,749.3	0.80
1976-1980	1,253.6	555.0	31.2	31.1	26.1	263.3	2,154.2	0.85
1981-1985	451.2	274.0	37.2	56.0	176.8	305.3	1,328.6	0.63
1986-1990	574.6	339.3	55.1	45.5	154.3	705.0	1,602.2	0.70
1991-1995	107.4	182.7	46.6	53.2	35.1	315.1	668.4	0.35
1996	7.0	31.8	45.8	87.5	-	117.1	260.3	0.15
1997	5.5	22.4	27.9	31.6	-	156.4	230.5	0.12
1998	3.5	12.8	31.2	34.9	-	175.9	270.8	0.06
1999	3.6	36.5	23.4	48.6	-	289.1	432.0	0.09
2000	25.2	74.6	37.0	84.8	-	558.3	762.4	0.13
2001	38.1	216.8	75.7	174.7	-	1128.3	1,673.2	0.15
2002	15.0	118.7	53.9	266.9	-	535.8	972.2	0.14
2003	28.8	252.4	44.9	236.2	-	713.2	1,266.9	0.22
2004	26.2	159.3	38.1	197.3	-	463.5	904.5	0.21
2005	10.5	58.2	42.7	164.6	-	354.7	629.9	0.11
2006	4.5	47.5	29.5	132.7	-	409.7	674.1	0.08
2007	26.2	128.5	10.9	71.4	-	349.0	631.3	0.25
2008	0.6	26.4	16.0	180.1	-	520.8	769.8	0.04
2009	27.7	201.2	16.5	265.3	-	760.2	1,341.3	0.17
2010	5.8	48.8	18.5	287.1	-	466.5	848.4	0.06
2011	4.2	54.7	20.0	360.8	-	378.1	836.4	0.07
2012	4.7	45.5	18.5	104.6	-	152.4	311.3	0.16
2013	8.4	48.3	26.5	135.6	-	252.8	494.1	0.11
2014	35.6	197.4	42.0	362.1	-	1,019.5	1,724.8	0.14
2015	11.7	84.4	11.8	61.2	-	169.5	336.3	0.29
2016	2.8	31.7	11.4	82.2	-	203.6	334.8	0.10
2017	2.1	50.0	3.9	65.9	-	235.9	355.4	0.15
2018	1.5	53.8	3.1	82.3	-	137.9	232.4	0.24
2019 <sup>g/</sup>	5.0	135.4	4.1	94.1	-	210.9	414.1	0.34

a/ The OPI area includes ocean and inside harvest impacts and escapement to streams and lakes south of Leadbetter Pt., Washington.

b/ Includes estimated non-retention mortalities; troll: release mort.(1982-present) and drop-off mort.(all yrs.); sport: release mort.(1994-present) and drop-off mort.(all yrs.).

c/ Includes STEP smolt releases through the 2007 return year, after which the program was terminated.

d/ Includes Rogue River.

e/ FRAM post-season runs used after 1985 and includes OPI origin stock catches in all fisheries.

f/ Private hatchery stocks are excluded in calculating the OPI area stock aggregate ocean exploitation rate index.

g/ Preliminary.

TABLE III-3. Preseason forecasts and postseason estimates of ocean abundance for selected Washington coastal adult natural coho stocks in thousands of fish. (Page 1 of 2)

Year or Ave.	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season
	<b>Quillayute River Fall</b>			<b>Hoh River</b>			<b>Queets River</b>		
1991-1995	15.4	16.2	1.07	7.1	8.5	1.32	11.9	14.0	1.2
1996	13.0	20.3	0.64	4.2	7.7	0.54	8.3	22.6	0.37
1997	8.9	5.8	1.53	2.8	4.1	0.68	4.3	2.2	1.92
1998	8.0	17.4	0.46	3.4	5.6	0.61	4.2	6.3	0.66
1999	14.5	16.1	0.90	3.2	6.8	0.47	4.3	8.6	0.50
2000	8.7	16.5	0.53	3.5	9.3	0.38	2.7	12.1	0.22
2001	23.0	28.4	0.81	8.5	16.2	0.52	12.0	35.8	0.33
2002	22.3	33.2	0.67	8.5	13.2	0.64	12.5	26.3	0.47
2003	24.9	22.5	1.11	12.5	8.7	1.44	24.0	15.7	1.52
2004	21.2	20.7	1.02	8.1	6.9	1.17	18.5	13.3	1.39
2005	18.6	20.9	0.89	7.6	8.2	0.93	17.1	11.9	1.43
2006	14.6	9.9	1.48	6.4	2.7	2.36	8.3	9.2	0.90
2007	10.8	10.7	1.01	5.4	5.8	0.93	13.6	7.1	1.92
2008	10.5	11.1	0.95	4.3	4.3	1.00	10.2	7.4	1.39
2009	19.3	15.5	1.24	9.5	9.5	1.00	31.4	16.0	1.97
2010	22.0	17.1	1.29	7.6	11.4	0.67	21.8	19.9	1.09
2011	28.2	13.3	2.11	11.6	13.0	0.89	13.3	15.1	0.88
2012	33.5	12.8	2.61	14.3	8.1	1.77	37.2	9.1	4.08
2013	17.2	15.8	1.09	8.6	9.2	0.94	24.5	9.9	2.48
2014	18.4	17.3	1.07	8.9	9.1	0.97	10.3	12.8	0.80
2015	10.5	4.8	2.19	5.1	2.9	1.74	7.5	2.7	2.75
2016	4.5	11.7	0.38	2.1	5.4	0.39	3.5	6.5	0.54
2017	15.8	12.9	1.22	6.2	6.0	1.03	6.5	6.8	0.96
2018	10.6	8.7	1.22	5.8	3.7	1.56	7.0	3.4	2.04
2019	14.7	-	-	7.0	-	-	11.1	-	-
2020	9.2	-	-	4.2	-	-	7.8	-	-



EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE III-3. Preseason forecasts and postseason estimates of age-3 ocean abundance for selected Washington coastal adult natural coho stocks in thousands of fish.<sup>a/</sup> (Page 2 of 2)

Year or Ave.	Preseason Forecast	Postseason Return	Pre/Post-season	Preseason Forecast	Postseason Return	Pre/Post-season
	<b>Grays Harbor</b>			<b>Willapa Bay</b>		
1991-1995	122.8	68.0	2.2			
1996	121.4	89.7	1.4			
1997	26.1	20.2	1.3			
1998	30.1	46.4	0.6			
1999	57.7	42.7	1.4			
2000	47.8	51.9	0.9			
2001	51.3	103.2	0.5			
2002	55.4	142.0	0.4			
2003	58.0	108.4	0.5			
2004	117.9	90.8	1.3			
2005	91.1	65.9	1.4			
2006	67.3	30.6	2.2			
2007	59.4	34.6	1.7			
2008	42.7	49.0	0.9			
2009	59.2	104.6	0.6			
2010	67.9	117.4	0.6	20.4	101.1	0.20
2011	89.1	86.2	1.0	47.8	61.6	0.78
2012	150.2	103.9	1.4	81.3	40.6	2.00
2013	196.8	80.3	2.4	58.6	36.7	1.60
2014	108.8	152.9	0.7	58.9	95.6	0.62
2015	142.6	31.7	4.5	42.9	18.6	2.30
2016	35.7	35.3	1.0	39.5	40.6	0.97
2017	50.0	37.3	1.3	36.7	14.3	2.56
2018	42.5	60.8	0.7	20.9	17.0	1.22
2019	71.5	-	-	63.4	-	-
2020	50.0	-	-	17.9	-	-

a/ Coho FRAM was used to estimate post-season ocean abundance.

b/ In 1993 and 1994 preseason forecasts were a range of 144-153 and 53.8-60.2 respectively. The midpoint of each range was used in calculating the 1991-1995 average.

EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE III-4. Preseason forecasts and postseason estimates of ocean abundance for selected Puget Sound adult natural coho stocks in thousands of fish<sup>a/</sup>. (Page 1 of 2)

Year or Ave.	Preseason Forecast <sup>b/</sup>	Postseason Return	Pre/Postseason	Preseason Forecast	Postseason Return	Pre/Postseason	Preseason Forecast	Postseason Return	Pre/Postseason	
		<b>Skagit River</b>			<b>Stillaguamish River</b>			<b>Hood Canal</b>		
1991-1995	NA	82.0	-	53.6	18.1	3.74	94.2	14.2	6.63	
1996	NA	48.3	-	51.6	12.5	4.13	25.1	37.2	0.67	
1997	70.9	63.1	1.12	36.0	14.1	2.56	78.4	101.8	0.77	
1998	55.0	95.1	0.58	47.8	31.1	1.54	108.0	118.5	0.91	
1999	75.7	40.9	1.85	35.7	7.5	4.77	65.1	17.6	3.70	
2000	30.2	95.2	0.32	17.7	31.2	0.57	61.0	39.7	1.54	
2001	87.2	132.5	0.66	24.4	81.8	0.30	62.0	110.0	0.56	
2002	98.5	71.8	1.37	19.7	30.4	0.65	34.9	81.0	0.43	
2003	116.6	114.1	1.02	37.8	49.8	0.76	33.4	199.9	0.17	
2004	155.8	145.3	1.07	38.0	73.9	0.51	98.7	219.7	0.45	
2005	61.8	52.4	1.18	56.7	29.1	1.95	98.4	68.3	1.44	
2006	106.6	11.5	9.25	45.0	11.8	3.81	59.4	49.7	1.20	
2007	26.8	83.0	0.32	69.2	45.2	1.53	42.4	78.6	0.54	
2008	61.4	35.5	1.73	31.0	15.3	2.03	30.4	25.8	1.18	
2009	33.4	87.5	0.38	13.4	27.4	0.49	48.6	45.7	1.06	
2010	95.9	64.6	1.48	25.9	16.8	1.55	33.2	14.5	2.29	
2011	138.1	78.1	1.77	66.6	61.3	1.09	74.7	56.8	1.31	
2012	48.3	139.1	0.35	47.5	60.6	0.78	73.4	125.5	0.58	
2013	137.2	150.7	0.91	33.1	78.1	0.42	36.8	37.9	0.97	
2014	112.4	51.7	2.17	32.5	49.1	0.66	82.8	69.6	1.19	
2015	121.4	15.5	7.82	31.3	5.6	5.59	61.5	63.7	0.96	
2016	8.9	44.7	0.20	2.8	15.6	0.18	35.3	31.8	1.11	
2017	11.2	22.3	0.50	7.6	6.9	1.10	115.6	35.0	3.31	
2018	59.4	36.9	1.61	19.0	30.9	0.62	59.9	18.7	3.20	
2019	57.9	-	-	23.8	-	-	40.1	-	-	
2020	31.0	-	-	19.5	-	-	35.0	-	-	

TABLE III-4. Preseason and postseason estimates of ocean abundance for selected Puget Sound adult natural coho stocks in thousands of fish<sup>a/</sup>. (Page 2 of 2)

Year or Ave.	Preseason Forecast	Postseason Return	Pre/Postseason	Preseason Forecast	Postseason Return	Pre/Postseason	
		<b>Snohomish</b>			<b>Strait of Juan de Fuca</b>		
1991-1995	341.6	200.6	1.85	20.6	19.3	1.22	
1996	338.1	132.3	2.55	10.7	19.4	0.55	
1997	186.6	106.4	1.75	6.5	20.3	0.32	
1998	165.3	193.9	0.85	16.8	21.0	0.80	
1999	141.6	82.2	1.72	14.7	9.9	1.48	
2000	53.0	154.6	0.34	13.5	28.6	0.47	
2001	129.6	360.1	0.36	21.4	43.9	0.49	
2002	123.1	185.5	0.66	21.3	26.3	0.81	
2003	203.0	198.0	1.03	25.6	22.9	1.12	
2004	192.1	287.9	0.67	35.7	23.8	1.50	
2005	241.6	133.4	1.81	20.7	12.5	1.66	
2006	139.5	94.2	1.48	26.1	4.6	5.65	
2007	98.9	156.4	0.63	29.9	10.2	2.92	
2008	92.0	49.5	1.86	24.1	3.9	6.25	
2009	67.0	133.4	0.50	20.5	24.7	0.83	
2010	99.4	54.4	1.83	8.5	20.1	0.42	
2011	180.0	137.4	1.31	12.3	11.7	1.05	
2012	109.0	175.8	0.62	12.6	12.5	1.01	
2013	163.8	176.0	0.93	12.6	9.8	1.29	
2014	150.0	66.6	2.25	12.5	13.8	0.91	
2015	151.5	28.3	5.35	11.1	4.7	2.36	
2016	20.6	54.1	0.38	4.4	8.7	0.51	
2017	107.3	23.2	4.63	13.1	5.9	2.24	
2018	66.3	77.6	0.85	7.2	5.9	1.21	
2019	62.6	-	-	8.8	-	-	
2020	39.0	-	-	7.5	-	-	

a/ Coho FRAM was used to estimate post season ocean abundance.

b/ Preseason forecasts in 1986-1996 were based on accounting system that significantly underestimated escapement and are not comparable to post season.

TABLE III-5. Status categories and constraints for Puget Sound and Washington Coast coho under the FMP and PST Southern Coho Management Plan.

<b>FMP</b>		
FMP Stock	Total Exploitation Rate Constraint <sup>a/</sup>	Categorical Status <sup>a/</sup>
Skagit	35%	Low
Stillaguamish	35%	Low
Snohomish	20%	Critical
Hood Canal	45%	Low
Strait of Juan de Fuca	20%	Critical
Quillayute Fall	59%	
Hoh	65%	
Queets	65%	
Grays Harbor	65%	

<b>PST Southern Coho Management Plan</b>		
U.S. Management Unit	Total Exploitation Rate Constraint <sup>b/</sup>	Categorical Status <sup>c/</sup>
Skagit	35%	Moderate
Stillaguamish	35%	Moderate
Snohomish	20%	Low
Hood Canal	45%	Moderate
Strait of Juan de Fuca	20%	Low
Quillayute Fall <sup>c/</sup>	31%	Moderate
Hoh <sup>c/</sup>	52%	Abundant
Queets <sup>c/</sup>	26%	Moderate
Grays Harbor	29%	Moderate

a/ Preliminary. For Puget Sound stocks, the exploitation rate constraints and categorical status (Normal, Low, Critical) reflect application of Comprehensive Coho Agreement rules, as adopted in the FMP. For Washington Coast stocks, exploitation rate constraints represent MFMT. Note that under *U.S. v. Washington* and *Hoh v. Baldrige* case law, the management objectives can differ from FMP objectives provided there is an annual agreement among the state and tribal comanagers; therefore, the exploitation rates used to report categorical status do not necessarily represent maximum allowable rates for these stocks.

b/ Preliminary. For Puget Sound and Washington Coast management units, the exploitation rate constraints reflect application of the 2019 PST Southern Coho Management Plan.

c/ Categories (Abundant, Moderate, Low) correspond to the general exploitation rate ranges depicted in paragraph 8(b)(iii) of the 2019 PST Southern Coho Management Plan. For Washington Coast stocks, categorical status is determined by the exploitation rate associated with meeting the escapement goal (or the lower end of the escapement goal range). This also becomes the maximum allowable rate unless the stock is in the "Low" status. In that case, an ER of up to 20% is allowed.

TABLE III-6. Projected coho mark rates for 2020 U.S. forecasts under base period fishing patterns (percent marked).

Area	Fishery	June	July	August	Sept
Canada					
Johnstone Strait	Recreational	--	41%	39%	--
West Coast Vancouver Island	Recreational	56%	50%	46%	47%
North Georgia Strait	Recreational	57%	60%	59%	55%
South Georgia Strait	Recreational	29%	62%	47%	61%
Juan de Fuca Strait	Recreational	54%	54%	55%	52%
Johnstone Strait	Troll	65%	58%	48%	54%
NW Vancouver Island	Troll	54%	45%	46%	23%
SW Vancouver Island	Troll	58%	54%	54%	53%
Georgia Strait	Troll	64%	61%	62%	54%
Puget Sound					
Strait of Juan de Fuca (Area 5)	Recreational	55%	55%	55%	54%
Strait of Juan de Fuca (Area 6)	Recreational	55%	56%	56%	53%
San Juan Island (Area 7)	Recreational	57%	64%	57%	43%
North Puget Sound (Areas 6 & 7A)	Net	--	63%	63%	46%
Council Area					
Neah Bay (Area 4/4B)	Recreational	50%	56%	54%	56%
LaPush (Area 3)	Recreational	53%	56%	57%	55%
Westport (Area 2)	Recreational	57%	57%	56%	52%
Columbia River (Area 1)	Recreational	60%	59%	58%	58%
Tillamook	Recreational	55%	53%	48%	33%
Newport	Recreational	52%	49%	46%	34%
Coos Bay	Recreational	41%	39%	28%	16%
Brookings	Recreational	35%	25%	23%	7%
Neah Bay (Area 4/4B)	Troll	55%	56%	54%	51%
LaPush (Area 3)	Troll	56%	57%	54%	54%
Westport (Area 2)	Troll	53%	55%	55%	57%
Columbia River (Area 1)	Troll	57%	57%	56%	57%
Tillamook	Troll	55%	53%	51%	50%
Newport	Troll	52%	51%	46%	44%
Coos Bay	Troll	42%	39%	34%	23%
Brookings	Troll	31%	34%	36%	49%
Columbia River					
Buoy 10	Recreational	--	--	--	61%

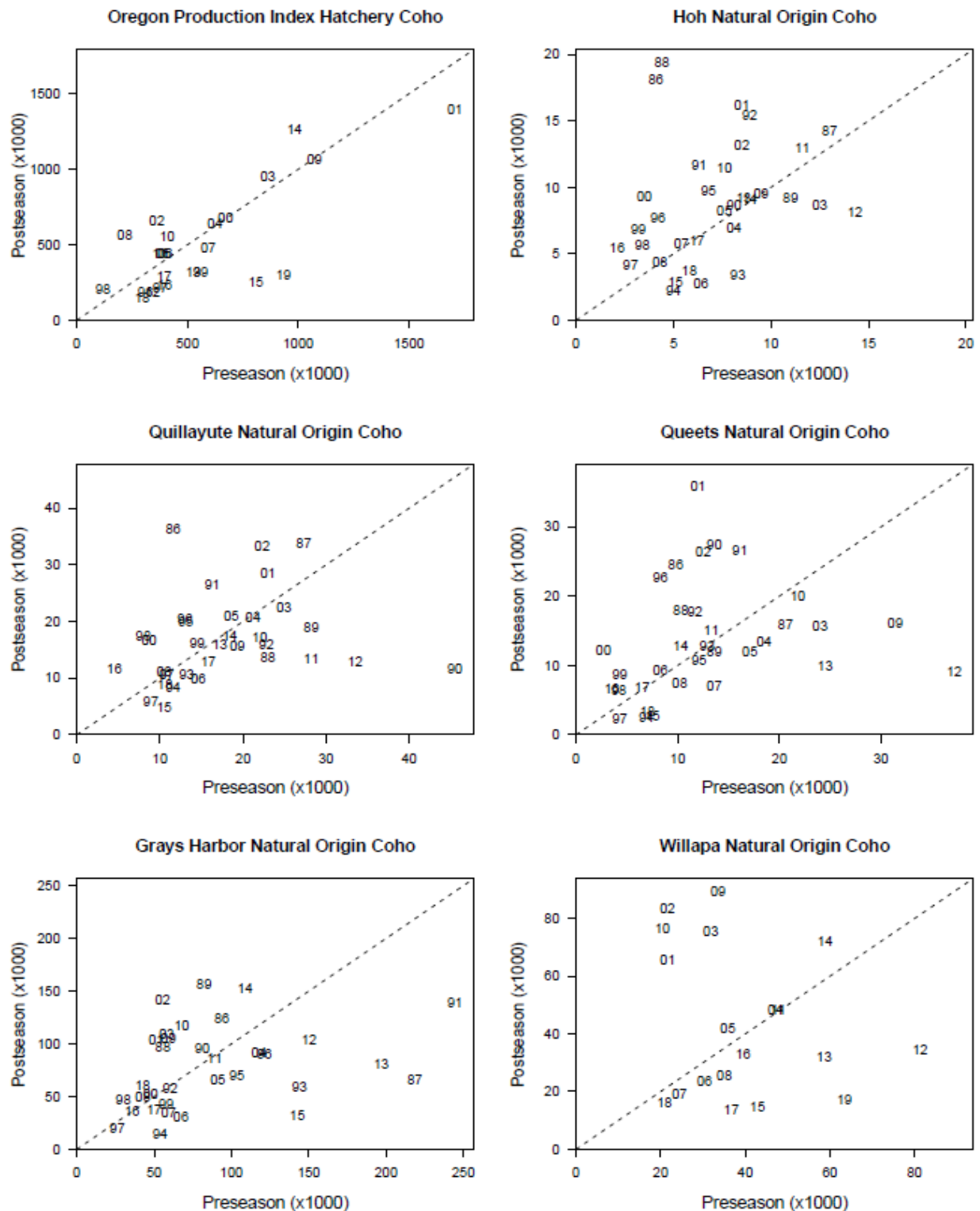


FIGURE III-1a. Selected preseason vs. postseason forecasts for coho stocks with substantial contribution to Council area fisheries.

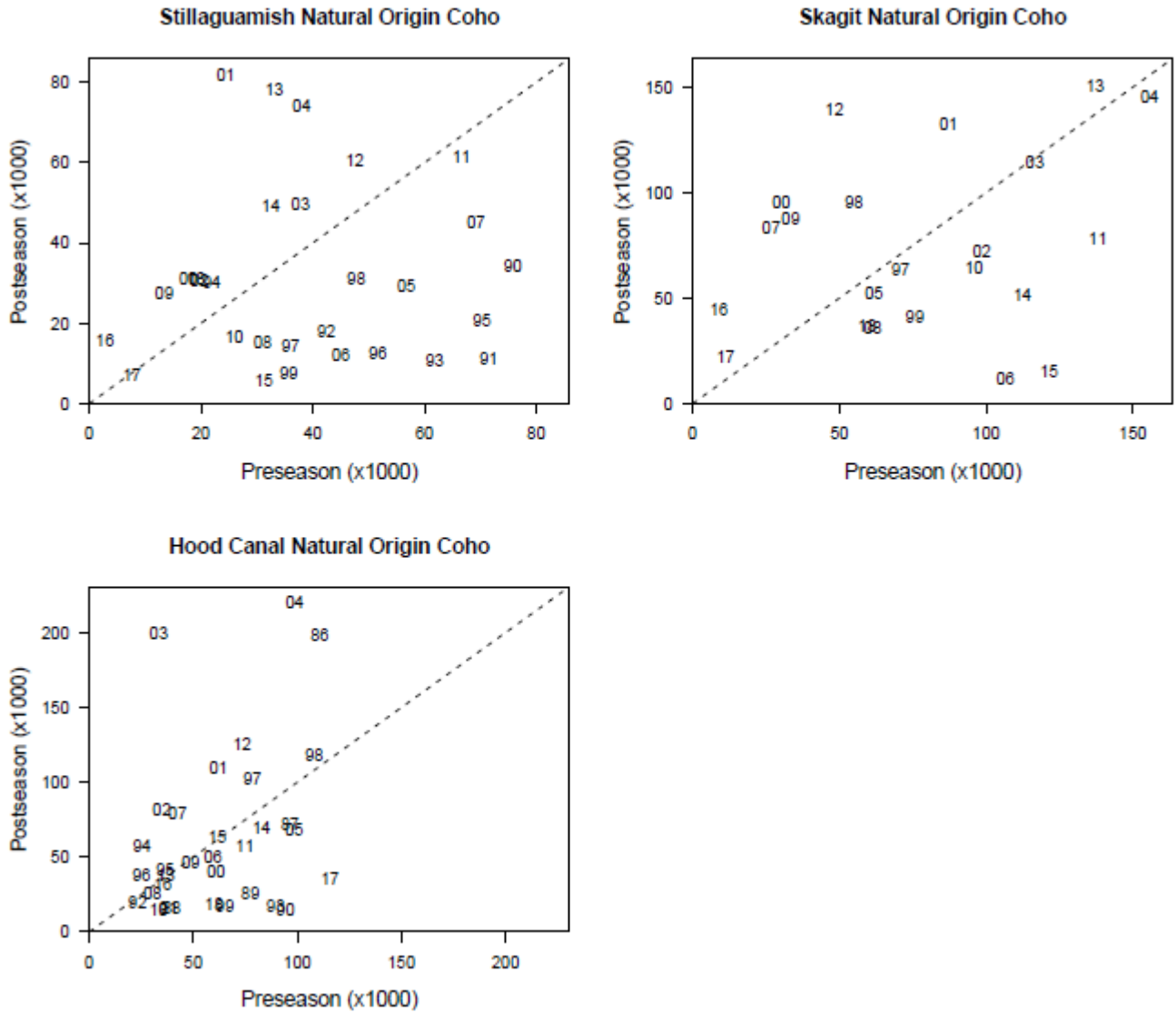


FIGURE III-1b. Selected preseason vs. postseason forecasts for coho stocks with substantial contribution to Council area fisheries.

**CHAPTER IV: AFFECTED ENVIRONMENT - PINK SALMON ASSESSMENT**

Two major runs comprise the pink salmon population available to Council fisheries during odd-numbered years: the Puget Sound run and the Fraser River (British Columbia) run, which is more abundant of the two runs. The 2019 pink salmon runsize forecasts included 608,388 for Puget Sound and 5.02 million for Fraser River. The 2019 Puget Sound forecast was the lowest on record, although there have been smaller actual returns in 1997 and 2017 (Table IV-1). The 2019 actual run sizes are not yet available

TABLE IV-1. Estimated annual (odd-numbered years) run sizes and forecasts for Fraser River and Puget Sound pink salmon in millions of fish.

Year	Puget Sound		Fraser River <sup>a/</sup>	
	Forecast	Actual	Forecast	Actual
1977	NA	0.88	NA	8.21
1979	NA	1.32	NA	14.40
1981	NA	0.50	NA	18.69
1983	NA	1.01	NA	15.35
1985	NA	1.76	NA	19.10
1987	NA	1.57	NA	7.17
1989	NA	1.93	NA	16.63
1991	NA	1.09	NA	22.18
1993	NA	1.06	NA	16.98
1995	3.4	2.08	NA	12.90
1997	NA	0.44	11.40	8.18
1999	NA	0.96	NA	3.59
2001	2.92	3.56	5.47	21.17
2003	2.32	2.90	17.30	26.00
2005	1.98	1.23	16.30	10.00
2007	3.34	2.45	19.60	11.00
2009	5.16	9.84	17.54	19.50
2011	5.98	5.27	17.50	20.65
2013	6.27	8.75	8.93	15.90
2015	6.76	3.70	14.50	5.78
2017	1.15	0.51	8.69	3.62
2019	0.61	NA	5.02	NA

a/ Total run size.



## **CHAPTER V: DESCRIPTION AND ANALYSIS OF THE NO-ACTION ALTERNATIVE**

The No-Action Alternative consists of the preseason management measures adopted by the Council and approved by the Secretary of Commerce for the 2019 ocean salmon season between the U.S./Canada border and the U.S./Mexico border. The management measures relate to three fishery sectors: non-Indian commercial (Table V-1), recreational (Table V-2), and treaty Indian (Table V-3). A description of the 2019 preseason management measures and analyses of their projected effects on the biological and socioeconomic environment are presented in Preseason Report III (PFMC 2019c). A description of the 2019 management measures as implemented, including inseason modifications, and an analysis of their effects on the environment, including a historical perspective, is presented in the SAFE document - Review of 2019 Ocean Salmon Fisheries (PFMC 2020).

### ***ANALYSIS OF EFFECTS ON THE ENVIRONMENT OF THE NO-ACTION ALTERNATIVE***

#### **Overview**

Table V-4 provides a summary, where possible, of Salmon FMP stock spawning escapement and exploitation rate projections for 2020 under the No-Action Alternative (2019 regulations), as well as postseason estimates of these quantities for earlier years, which are compared to FMP conservation objectives. For some stocks, postseason estimates of these metrics were either incomplete or unavailable when the Review of 2019 Ocean Salmon Fisheries (PFMC 2020) was published. A preliminary determination of stock status under the FMP Status Determination Criteria (SDC) was available for some of these stocks in time for this report; however, some estimates remain unavailable. The STT will report to the Council on the status of stocks at the March 2020 Council meeting, and may further update the status of stocks present in Table V-4 at that time.

Chinook escapements and fishery impacts were forecast using the Sacramento Harvest Model, the Winter Run Harvest Model, and the Klamath Ocean Harvest Model for SRFC, SRWC, and KRFC, respectively. Assessment of effects under the No-Action Alternative for Oregon Coast Chinook are not available. Columbia River Chinook stock assessments were based on qualitative assessment of the magnitude of forecasts, if available, in relation to escapement goals.

Initial analyses of the No-Action Alternative (2019 regulations) using the Coho FRAM indicated that it is biologically infeasible to support last year's catches/seasons given the extremely low 2020 ocean abundance forecasts for several stocks. In other words, target quotas exceed the abundance of fish available to some time-area fisheries, yielding extremely low or near-zero escapements for a number of stocks when using Coho FRAM in a traditional No-Action Alternative analysis. Based on these findings, it was determined that conservation objectives cannot be met for many coho stocks in 2020 under the No-Action Alternative.

#### **Sacramento River Fall Chinook**

A repeat of 2019 regulations would be expected to result in an escapement of 199,616 hatchery and natural area SRFC adults. This projection is higher than the minimum escapement level specified by the control rule for 2020 (141,955),  $S_{MSY}$  (122,000), and the 2020 preseason  $S_{ACL}$  (141,955; Tables V-4 and V-5). The geometric mean of the 2018 and 2019 spawning escapement estimates and the 2020 forecast spawning escapement under the No-Action Alternative is greater than the MSST and  $S_{MSY}$  (Table V-4). The predicted SRFC exploitation rate under the No-Action Alternative is 57.8 percent, which is below the MFMT (78.0 percent; Table V-4) and the maximum allowable rate specified by the control rule for 2020 (70 percent). If the ocean fisheries were closed from January through August 2020 between Cape Falcon and the U.S./Mexico border, and Sacramento Basin fisheries were closed in 2020, the expected number of hatchery and natural area adult spawners would be 464,224.

The 2019 estimate of SRFC adult escapement was 162,532, which exceeds the 2019 postseason  $S_{ACL}$  of 151,661 (Table V-5).

### **Sacramento River Winter Chinook**

A repeat of 2019 regulations would be expected to result in an age-3 impact rate of 15.5 percent for the area south of Point Arena, California. The 2020 forecast age-3 impact rate under the No-Action Alternative is lower than the 2020 maximum allowable rate of 20.0 percent.

### **Klamath River Fall Chinook**

A repeat of 2019 regulations, which included a river recreational harvest allocation of 23.6 percent of the non-tribal harvest and a tribal allocation of 50 percent of the overall adult harvest, would be expected to result in 24,178 natural area adult spawners. This projection is lower than the minimum escapement level specified by the control rule for 2020 (36,206 and  $S_{MSY}$  40,700), but greater than the 2020 preseason  $S_{ACL}$  (15,448; Tables V-4 and V-5). The geometric mean of the 2018 and 2019 natural area adult spawner escapement estimates and the 2020 forecast spawning escapement under the No-Action Alternative is lower than the  $MSST$  and  $S_{MSY}$  (Table V-4). The predicted KRFC exploitation rate under the No-Action Alternative is 49.9 percent, which is lower than the MFMT (71.0 percent; Table V-4) but greater than the maximum allowable rate specified by the control rule for 2020 (25.0 percent). If the ocean fisheries were closed from January through August 2020 between Cape Falcon and Point Sur, and the Klamath Basin fisheries (tribal and recreational) were closed in 2020, the expected number of natural area adult spawners would be 48,237.

The 2019 estimate of KRFC escapement was 20,245 natural area adults, which exceeds the 2019 postseason  $S_{ACL}$  of 11,079 (Table V-5).

### **California Coastal Chinook Stocks**

The NMFS ESA consultation standard restricts the KRFC age-4 ocean harvest rate to no more than 16.0 percent to limit impacts on these stocks. The postseason estimate of this rate for 2019 is 34.4 percent. Applying 2019 regulations to the 2020 KRFC abundance results in an age-4 ocean harvest rate forecast of 16.5 percent. If the ocean fisheries were closed from January through August 2020 between Cape Falcon and Point Sur, the expected age-4 ocean harvest rate would be 0.07 percent (26 age-4 KRFC were harvested during the September through November 2019 period).

### **Oregon Coast Chinook Stocks**

The FMP conservation objective for the northern and central Oregon coast Chinook stock complexes is based on a total goal of 150,000 to 200,000 natural adult spawners. For these two stock complexes attainment of goals are assessed using peak spawner counts observed in standard index reaches for the respective complexes. For the southern Oregon coast Chinook stock complex, the FMP conservation objective is assessed using the escapement estimate at Huntley Park on the Rogue River. Forecasts are not available for all of these stocks, but given recent trends, the escapement goals may not be met for all stocks in 2020 under 2019 fishing seasons.

### **Columbia River Chinook Stocks**

The 2020 forecast for Columbia River spring Chinook is less than the 2019 forecast. The 2020 forecasts for summer Chinook and bright fall Chinook are greater than the 2019 forecasts, but the 2020 forecast for Lower River Hatchery fall Chinook is less than the 2019 forecast. Given these increased forecasts in 2020 compared to 2019, applying 2019 regulations to the forecasted 2020 abundance of Columbia River Chinook would result in ocean escapements meeting spawning escapement goals for all summer and fall Chinook stocks (Table V-4).

### **Washington Coast and Puget Sound Chinook Stocks**

Council fisheries north of Cape Falcon have a negligible impact on Washington coast Chinook stocks and a minor impact on stocks that originate in Puget Sound. These stocks have northerly marine distribution patterns, and are therefore impacted primarily by Canadian and Alaskan fisheries. Thus, an evaluation of 2019 Council area management measures on projected 2020 abundance would not provide a useful comparison of fishery impacts in relation to conservation objectives.

### **Oregon Production Index Area Coho Stocks**

As stated above, analysis of the No-Action Alternative on coho stocks for 2020 using the Coho FRAM was not possible using 2020 coho abundance forecasts. The much lower coho abundance forecasts for 2020 would not support the coho harvest predicted under the 2019 fishery regulations. Qualitative analysis indicates that FMP spawning escapement and exploitation rate conservation objectives, in addition to PST Coho Agreement objectives, could not be met for many coho stocks in 2020 under the No-Action Alternative.

### **Washington Coast, Puget Sound, and Canadian Coho Stocks**

As stated above, analysis of the No-Action Alternative on coho stocks for 2020 using the Coho FRAM was not possible using 2020 coho abundance forecasts. The much lower coho abundance forecasts for 2020 would not support the coho harvest predicted under the 2019 fishery regulations. Qualitative analysis indicates that FMP spawning escapement and exploitation rate conservation objectives, in addition to PST Coho Agreement objectives, could not be met for many coho stocks in 2020 under the No-Action Alternative.

### **Summary**

The effects of projected impacts (where available) under 2019 fishery regulations and 2020 abundance forecasts are as follows:

- SRFC are not at risk of approaching an overfished condition and would be projected to meet the criteria for rebuilt status.
- For SRWC, the predicted age-3 impact rate is less than the maximum allowable rate specified by the control rule and thus meets the 2020 objective.
- KRFC meet the criteria for being at risk of approaching an over-fished condition.
- The KRFC age-4 ocean harvest rate would exceed the California Coastal Chinook ESA consultation standard.
- Although Coho FRAM analysis of 2019 fishery regulations was not possible due to low abundance forecasts in 2020, allowable exploitation rate limits are likely to be exceeded and spawning escapement objectives are unlikely to be met for many natural and hatchery coho stocks under the No-Action Alternative.

### **Conclusion**

The No-Action alternative would not meet the Purpose and Need for the proposed action because:

- The projected Klamath River fall Chinook exploitation rate is above the control rule defined maximum rate for 2020.
- The projected Klamath River fall Chinook age-4 ocean harvest rate exceeds the maximum value of 16 percent, which is the consultation standard for California coastal Chinook.
- Substantially lower coho abundance forecasts in 2020 relative to 2019 could not support the fishery regulations of 2019.

The No-Action alternative does not reflect consideration of changes in the status of salmon stocks from the previous year; therefore, over- or under- harvest of some salmon stocks would occur if this alternative were implemented. The analysis of the No-Action Alternative does, however, provide perspective that is useful in the planning process for 2020 ocean salmon fishery management measures. An understanding of stock shortfalls and surpluses under the No-Action Alternative helps managers, advisors, and constituents construct viable alternatives to the status-quo management measures.

TABLE V-I. 2019 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted. (Page 1 of 6)

<b>A. SEASON DESCRIPTIONS</b>
<b>North of Cape Falcon</b>
<b>Supplemental Management Information</b>
<p>1. Overall non-Indian TAC: 52,500 Chinook and 190,000 coho marked with a healed adipose fin clip (marked).                      2. Non-Indian commercial troll TAC: 26,250 Chinook and 30,400 marked coho                      3. Trade: May be considered.                      4. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>
<p>Model #: Coho-1925, Chinook 2719</p>
<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>• May 6 through the earlier of June 28, or 13,200 Chinook. No more than 5,000 of which may be caught in the area between the U.S./Canada border and the Queets River, and no more than 1,800 of which may be caught in the area between Leadbetter Pt. and Cape Falcon (C.8).</li> </ul> <p>Open seven days per week (C.1).</p> <p>In the area between the U.S./Canada border and the Queets River: during May 6-15 the landing and possession limit is 100 Chinook per vessel for the open period. During May 16-June 28 the landing and possession limit is 50 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p>In the area between Leadbetter Pt. and Cape Falcon: during May 6-15 the landing and possession limit is 100 Chinook per vessel for the open period. During May 16-June 28 the landing and possession limit is 50 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p>All salmon, except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p> <p>When it is projected that approximately 60% of the overall Chinook guideline has been landed, approximately 60% of the Chinook subarea guideline has been landed in the area between the U.S./Canada border and the Queets River, or approximately 60% of the Chinook subarea guideline has been landed in the area between Leadbetter Pt. and Cape Falcon, inseason action will be considered to ensure the guideline is not exceeded.</p>
<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>• July 1 through the earlier of September 30, or 13,050 Chinook or 30,400 marked coho (C.8).</li> </ul> <p>Open seven days per week. All salmon. Chinook minimum size limit of 28 inches total length. Coho minimum size limit of 16 inches total length (B, C.1). All coho must be marked with a healed adipose fin clip (C.8.d). No chum retention north of Cape Alava, Washington in August and September (C.4, C.7). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p> <p>Landing and possession limit of 150 marked coho per vessel per landing week (Thurs.-Wed.) (C.1).</p>
<p><b>For all commercial troll fisheries north of Cape Falcon:</b> Mandatory closed areas include: Salmon troll Yelloweye Rockfish Conservation Area, Cape Flattery and Columbia Control Zones, and beginning August 12, Grays Harbor Control Zone (C.5). Vessels must land and deliver their salmon within 24 hours of any closure of this fishery.</p> <p>Vessels fishing or in possession of salmon <u>north</u> of Leadbetter Point must land and deliver all species of fish in a <u>Washington port and must possess a Washington troll license</u>. Vessels may not land fish east of the Sekiu River or east of the Megler-Astoria bridge. For delivery to Washington ports south of Leadbetter Point, vessels must notify the Washington Department of Fish and Wildlife at 360-249-1215 prior to crossing the Leadbetter Point line with area fished, total Chinook, coho, and halibut catch aboard, and destination with approximate time of delivery. During any single trip, only one side of the Leadbetter Point line may be fished (C.11).</p> <p>Vessels fishing or in possession of salmon <u>south</u> of Leadbetter Point must land and deliver all species of fish within the area and south of Leadbetter Point, except that Oregon permitted vessels may also land all species of fish in Garibaldi, Oregon.</p> <p>Under state law, vessels must report their catch on a state fish receiving ticket. Oregon State regulations require all fishers landing salmon into Oregon from any fishery between Leadbetter Point, Washington and Cape Falcon, Oregon must notify ODFW within one hour of delivery or prior to transport away from the port of landing by either calling 541-867-0300 ext. 271 or sending notification via e-mail to nfallcon.trollreport@state.or.us. Notification shall include vessel name and number, number of salmon by species, port of landing and location of delivery, and estimated time of delivery.</p> <p>Inseason actions may modify harvest guidelines in later fisheries to achieve or prevent exceeding the overall allowable troll harvest impacts (C.8).</p> <p>Vessels in possession of salmon <u>north</u> of the Queets River may not cross the Queets River line without first notifying WDFW at 360-249-1215 with area fished, total Chinook, coho, and halibut catch aboard, and destination.                      Vessels in possession of salmon <u>south</u> of the Queets River may not cross the Queets River line without first notifying WDFW at 360-249-1215 with area fished, total Chinook, coho, and halibut catch aboard, and destination.</p>

TABLE 1. 2019 Commercial troll management measures for non-Indian ocean salmon fisheries – Council Adopted. (Page 2 of 6)
<b>A. SEASON DESCRIPTIONS</b>
<b>South of Cape Falcon</b>
<b>Supplemental Management Information</b>
<p>1. Sacramento River fall Chinook spawning escapement of 160,159 hatchery and natural area adults.                      2. Sacramento Index exploitation rate of 57.8%.                      3. Klamath River recreational fishery allocation: 7,637 adult Klamath River fall Chinook.                      4. Klamath tribal allocation: 32,401 adult Klamath River fall Chinook.                      5. CA/OR share of Klamath River fall Chinook commercial ocean harvest: 70% / 30%.                      6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the California Fish and Game Commission.</p>
<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• April 20-30;</li> <li>• May 6-30;</li> <li>• June 1-August 29;</li> <li>• September 1-October 31 (C.9.a).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B, C.1). All vessels fishing in the area must land their salmon in the State of Oregon. See gear restrictions and definitions (C.2, C.3).</p> <p>Beginning September 1 no more than 75 Chinook allowed per vessel per landing week (Thurs.-Wed.).</p> <p>In 2020, the season will open March 15 for all salmon except coho. Chinook minimum size limit of 28 inches total length. Gear restrictions same as in 2019. This opening could be modified following Council review at its March 2020 meeting.</p>
<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• April 20-30;</li> <li>• May 6-30;</li> <li>• June 1 through the earlier of June 30, or a 3,200 Chinook quota;</li> <li>• July 1 through the earlier of July 31, or a 2,500 Chinook quota;</li> <li>• August 1 through the earlier of August 29, or a 1,200 Chinook quota (C.9.a).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). Prior to June 1, all salmon caught in this area must be landed and delivered in the State of Oregon.</p> <p>June 1-August 29 weekly landing and possession limit of 50 Chinook per vessel per landing week (Thurs.-Wed.). Any remaining portion of Chinook quotas may be transferred inseason on an impact neutral basis to the next open quota period (C.8.b).</p> <p>All vessels fishing in this area during June, July, and August must land and deliver all salmon within this area or into Port Orford within 24 hours of any closure of this fishery and prior to fishing outside of this area.</p> <p>For all quota managed seasons (June, July, and August), Oregon state regulations require fishers to notify ODFW within one hour of landing and prior to transport away from the port of landing by calling 541-867-0300 Ext. 252 or sending notification via e-mail to kmzor.trollreport@state.or.us, with vessel name and number, number of salmon by species, location of delivery, and estimated time of delivery.</p> <p>In 2020, the season will open March 15 for all salmon except coho. Chinook minimum size limit of 28 inches total length. Gear restrictions same as in 2019. This opening could be modified following Council review at its March 2020 meeting.</p>
<p><b>OR/CA Border to Humboldt South Jetty (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• June 1 through the earlier of June 30, or a 2,500 Chinook quota;</li> <li>• July 1 through the earlier of July 30, or a 2,500 Chinook quota;</li> <li>• August 2 through the earlier of August 31, or a 2,000 Chinook quota (C.9.b).</li> </ul> <p>Open five days per week (Fri.-Tue.). All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length (B, C.1).</p> <p>Landing and possession limit of 20 Chinook per vessel per day (C.8.f).</p> <p>Any remaining portion of Chinook quotas may be transferred inseason on an impact neutral basis to the next open quota period (C.8.b).</p> <p>All fish caught in this area must be landed within the area, within 24 hours of any closure of the fishery, and prior to fishing outside the area (C.10). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). Klamath Control Zone closed (C.5.e). See California State regulations for additional closures adjacent to the Smith and Klamath rivers.</p>
<p><b>Humboldt South Jetty to Horse Mt.</b></p> <ul style="list-style-type: none"> <li>• Closed.</li> </ul> <p>When the fishery is closed between the OR/CA border and Humbug Mountain and open to the south, vessels with fish on board caught in the open area off California may seek temporary mooring in Brookings, Oregon prior to landing in California only if such vessels first notify the Chetco River Coast Guard Station via VHF channel 22A between the hours of 0500 and 2200 and provide the vessel name, number of fish on board, and estimated time of arrival (C.6).</p>

TABLE 1. 2019 Commercial troll management measures for non-Indian ocean salmon fisheries – Council Adopted. (Page 3 of 6)
A. SEASON DESCRIPTIONS
<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• June 4-30;</li> <li>• July 11-31;</li> <li>• August 1-28 (C.9.b).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California.</p> <p>All salmon caught in the area must be landed and offloaded no later than 11:59 p.m., August 30 (C.6).</p> <p>When the CA KMZ fishery is open, all fish caught in the area must be landed south of Horse Mountain until the CA KMZ fishery has been closed for at least 24 hours (C.6).</p> <p>In 2020, the season will open April 16-30 for all salmon except coho, with a 27 inch Chinook minimum size limit and the same gear restrictions as in 2019. All salmon caught in the area must be landed in the area. This opening could be modified following Council review at its March 2020 meeting.</p>
<p><b>Point Arena to Pigeon Point (San Francisco)</b></p> <ul style="list-style-type: none"> <li>• May 16-31;</li> <li>• June 4-30;</li> <li>• July 11-31;</li> <li>• August 1-28;</li> <li>• September 1-30 (C.9.b).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California.</p> <p>All salmon caught in the area prior to September 1 must be landed and offloaded no later than 11:59 p.m., August 30 (C.6).</p> <p>When the CA KMZ fishery is open, all fish caught in the area must be landed south of Horse Mountain until the CA KMZ fishery has been closed for at least 24 hours (C.6).</p> <p><b>Point Reyes to Point San Pedro (Fall Area Target Zone)</b></p> <ul style="list-style-type: none"> <li>• October 1-4, 7-11, 14-15.</li> </ul> <p>Open five days per week (Mon.-Fri.). All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length (B, C.1). All salmon caught in this area must be landed between Point Arena and Pigeon Point (C.6). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p>
<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>• May 1-31;</li> <li>• June 4-30;</li> <li>• July 11-31 (C.9.b).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California.</p> <p>All salmon caught in the area must be landed and offloaded no later than 11:59 p.m., August 5 (C.6).</p> <p>When the CA KMZ fishery is open, all fish caught in the area must be landed south of Horse Mountain until the CA KMZ fishery has been closed for at least 24 hours (C.6).</p>
<p><b>For all commercial troll fisheries in California:</b> California State regulations require all salmon be made available to a CDFW representative for sampling immediately at port of landing. Any person in possession of a salmon with a missing adipose fin, upon request by an authorized agent or employee of the CDFW, shall immediately relinquish the head of the salmon to the State (California Fish and Game Code §8226).</p>



TABLE V-1. 2019 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted.  
(Page 4 of 6)

**B. MINIMUM SIZE (Inches) (See C.1)**

Area (when open)	Chinook		Coho		Pink
	Total Length	Head-off	Total Length	Head-off	
North of Cape Falcon	28	21.5	16	12	None
Cape Falcon to Humberg Mt.	28	21.5	-	-	None
Humberg Mt. to OR/CA Border	28	21.5	-	-	None
OR/CA Border to Humboldt South Jetty	27	20.5	-	-	27
Horse Mt. to Pt. Arena	27	20.5	-	-	27
Pt. Arena to Pigeon Pt.	27	20.5	-	-	27
Pigeon Pt. to U.S./Mexico Border	27	20.5	-	-	27

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS**

C.1. Compliance with Minimum Size or Other Special Restrictions: All salmon on board a vessel must meet the minimum size, landing/possession limit, or other special requirements for the area being fished and the area in which they are landed if the area is open or has been closed less than 48 hours for that species of salmon. Salmon may be landed in an area that has been closed for a species of salmon more than 48 hours only if they meet the minimum size, landing/possession limit, or other special requirements for the area in which they were caught. Salmon may not be filleted prior to landing.

Any person who is required to report a salmon landing by applicable state law must include on the state landing receipt for that landing both the number and weight of salmon landed by species. States may require fish landing/receiving tickets be kept on board the vessel for 90 days or more after landing to account for all previous salmon landings.

C.2. Gear Restrictions:

- a. Salmon may be taken only by hook and line using single point, single shank, barbless hooks.
- b. Cape Falcon, Oregon, to the OR/CA border: No more than 4 spreads are allowed per line.
- c. OR/CA border to U.S./Mexico border: No more than 6 lines are allowed per vessel, and barbless circle hooks are required when fishing with bait by any means other than trolling.

C.3. Gear Definitions:

*Trolling defined:* Fishing from a boat or floating device that is making way by means of a source of power, other than drifting by means of the prevailing water current or weather conditions.

*Troll fishing gear defined:* One or more lines that drag hooks behind a moving fishing vessel engaged in trolling. In that portion of the fishery management area off Oregon and Washington, the line or lines must be affixed to the vessel and must not be intentionally disengaged from the vessel at any time during the fishing operation.

*Spread defined:* A single leader connected to an individual lure and/or bait.

*Circle hook defined:* A hook with a generally circular shape and a point which turns inward, pointing directly to the shank at a 90° angle.

C.4. Vessel Operation in Closed Areas with Salmon on Board:

- a. Except as provided under C.4.b below, it is unlawful for a vessel to have troll or recreational gear in the water while in any area closed to fishing for a certain species of salmon, while possessing that species of salmon; however, fishing for species other than salmon is not prohibited if the area is open for such species, and no salmon are in possession.
- b. When Genetic Stock Identification (GSI) samples will be collected in an area closed to commercial salmon fishing, the scientific research permit holder shall notify NOAA OLE, USCG, CDFW, WDFW, ODFW and OSP at least 24 hours prior to sampling and provide the following information: the vessel name, date, location and time collection activities will be done. Any vessel collecting GSI samples in a closed area shall not possess any salmon other than those from which GSI samples are being collected. Salmon caught for collection of GSI samples must be immediately released in good condition after collection of samples.

C.5. Control Zone Definitions:

- a. *Cape Flattery Control Zone* - The area from Cape Flattery (48°23'00" N. lat.) to the northern boundary of the U.S. EEZ; and the area from Cape Flattery south to Cape Alava (48°10'00" N. lat.) and east of 125°05'00" W. long.
- b. *Mandatory Yelloweye Rockfish Conservation Area* - The area in Washington Marine Catch Area 3 from 48°00.00' N. lat.; 125°14.00' W. long. to 48°02.00' N. lat.; 125°14.00' W. long. to 48°02.00' N. lat.; 125°16.50' W. long. to 48°00.00' N. lat.; 125°16.50' W. long. and connecting back to 48°00.00' N. lat.; 125°14.00' W. long.
- c. *Grays Harbor Control Zone* - The area defined by a line drawn from the Westport Lighthouse (46° 53'18" N. lat., 124° 07'01" W. long.) to Buoy #2 (46° 52'42" N. lat., 124°12'42" W. long.) to Buoy #3 (46° 55'00" N. lat., 124°14'48" W. long.) to the Grays Harbor north jetty (46° 55'36" N. lat., 124°10'51" W. long.).
- d. *Columbia Control Zone* - An area at the Columbia River mouth, bounded on the west by a line running northeast/southwest between the red lighted Buoy #4 (46°13'35" N. lat., 124°06'50" W. long.) and the green lighted Buoy #7 (46°15'09" N. lat., 124°06'16" W. long.); on the east, by the Buoy #10 line which bears north/south at 357° true from the south jetty at 46°14'00" N. lat., 124°03'07" W. long. to its intersection with the north jetty; on the north, by a line running



TABLE V-1. 2019 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted.  
(Page 5 of 6)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS** *(continued)*

**C.5. Control Zone Definitions** *(continued)*:

northeast/southwest between the green lighted Buoy #7 to the tip of the north jetty (46°15'48" N. lat., 124°05'20" W. long.), and then along the north jetty to the point of intersection with the Buoy #10 line; and, on the south, by a line running northeast/southwest between the red lighted Buoy #4 and tip of the south jetty (46°14'03" N. lat., 124°04'05" W. long.), and then along the south jetty to the point of intersection with the Buoy #10 line.

- e. **Klamath Control Zone** - The ocean area at the Klamath River mouth bounded on the north by 41°38'48" N. lat. (approximately 6 nautical miles north of the Klamath River mouth); on the west by 124°23'00" W. long. (approximately 12 nautical miles off shore); and on the south by 41°26'48" N. lat. (approximately 6 nautical miles south of the Klamath River mouth).

- f. **Waypoints for the 40 fathom regulatory line from Cape Falcon to Humbug Mt.** (50 CFR 660.71 (k) (12)-(70).

45°46.00' N. lat., 124°04.49' W. long.;	44°41.68' N. lat., 124°15.38' W. long.;	43°17.96' N. lat., 124°28.81' W. long.;
45°44.34' N. lat., 124°05.09' W. long.;	44°34.87' N. lat., 124°15.80' W. long.;	43°16.75' N. lat., 124°28.42' W. long.;
45°40.64' N. lat., 124°04.90' W. long.;	44°33.74' N. lat., 124°14.44' W. long.;	43°13.97' N. lat., 124°31.99' W. long.;
45°33.00' N. lat., 124°04.46' W. long.;	44°27.66' N. lat., 124°16.99' W. long.;	43°13.72' N. lat., 124°33.25' W. long.;
45°32.27' N. lat., 124°04.74' W. long.;	44°19.13' N. lat., 124°19.22' W. long.;	43°12.26' N. lat., 124°34.16' W. long.;
45°29.26' N. lat., 124°04.22' W. long.;	44°15.35' N. lat., 124°17.38' W. long.;	43°10.96' N. lat., 124°32.33' W. long.;
45°20.25' N. lat., 124°04.67' W. long.;	44°14.38' N. lat., 124°17.78' W. long.;	43°05.65' N. lat., 124°31.52' W. long.;
45°19.99' N. lat., 124°04.62' W. long.;	44°12.80' N. lat., 124°17.18' W. long.;	42°59.66' N. lat., 124°32.58' W. long.;
45°17.50' N. lat., 124°04.91' W. long.;	44°09.23' N. lat., 124°15.96' W. long.;	42°54.97' N. lat., 124°36.99' W. long.;
45°11.29' N. lat., 124°05.20' W. long.;	44°08.38' N. lat., 124°16.79' W. long.;	42°53.81' N. lat., 124°38.57' W. long.;
45°05.80' N. lat., 124°05.40' W. long.;	44°08.30' N. lat., 124°16.75' W. long.;	42°50.00' N. lat., 124°39.68' W. long.;
45°05.08' N. lat., 124°05.93' W. long.;	44°01.18' N. lat., 124°15.42' W. long.;	42°49.13' N. lat., 124°39.70' W. long.;
45°03.83' N. lat., 124°06.47' W. long.;	43°51.61' N. lat., 124°14.68' W. long.;	42°46.47' N. lat., 124°38.89' W. long.;
45°01.70' N. lat., 124°06.53' W. long.;	43°42.66' N. lat., 124°15.46' W. long.;	42°45.74' N. lat., 124°38.86' W. long.;
44°58.75' N. lat., 124°07.14' W. long.;	43°40.49' N. lat., 124°15.74' W. long.;	42°44.79' N. lat., 124°37.96' W. long.;
44°51.28' N. lat., 124°10.21' W. long.;	43°38.77' N. lat., 124°15.64' W. long.;	42°45.01' N. lat., 124°36.39' W. long.;
44°49.49' N. lat., 124°10.90' W. long.;	43°34.52' N. lat., 124°16.73' W. long.;	42°44.14' N. lat., 124°35.17' W. long.;
44°44.96' N. lat., 124°14.39' W. long.;	43°28.82' N. lat., 124°19.52' W. long.;	42°42.14' N. lat., 124°32.82' W. long.;
44°43.44' N. lat., 124°14.78' W. long.;	43°23.91' N. lat., 124°24.28' W. long.;	42°40.50' N. lat., 124°31.98' W. long.;
44°42.26' N. lat., 124°13.81' W. long.;	43°20.83' N. lat., 124°26.63' W. long.;	

- C.6. **Notification When Unsafe Conditions Prevent Compliance with Regulations:** If prevented by unsafe weather conditions or mechanical problems from meeting special management area landing restrictions, vessels must notify the U.S. Coast Guard and receive acknowledgment of such notification prior to leaving the area. This notification shall include the name of the vessel, port where delivery will be made, approximate number of salmon (by species) on board, the estimated time of arrival, and the specific reason the vessel is not able to meet special management area landing restrictions.

In addition to contacting the U.S. Coast Guard, vessels fishing south of the Oregon/California border must notify CDFW within one hour of leaving the management area by calling 800-889-8346 and providing the same information as reported to the U.S. Coast Guard. All salmon must be offloaded within 24 hours of reaching port.

- C.7. **Incidental Halibut Harvest:** During authorized periods, the operator of a vessel that has been issued an incidental halibut harvest license may retain Pacific halibut caught incidentally in Area 2A while trolling for salmon. Halibut retained must be no less than 32 inches in total length, measured from the tip of the lower jaw with the mouth closed to the extreme end of the middle of the tail, and must be landed with the head on. When halibut are caught and landed incidental to commercial salmon fishing by an IPHC license holder, any person who is required to report the salmon landing by applicable state law must include on the state landing receipt for that landing both the number of halibut landed, and the total dressed, head-on weight of halibut landed, in pounds, as well as the number and species of salmon landed.

License applications for incidental harvest must be obtained from the International Pacific Halibut Commission (phone: 206-634-1838). Applicants must apply prior to mid-March 2019 for 2019 permits (*exact date to be set by the IPHC in early 2019*). Incidental harvest is authorized only during April, May, and June of the 2019 troll seasons, and after June 30 in 2019 if quota remains and if announced on the NMFS hotline (phone: 800-662-9825 or 206-526-6667). WDFW, ODFW, and CDFW will monitor landings. If the landings are projected to exceed the IPHC's 44,899 pound preseason allocation or the total Area 2A non-Indian commercial halibut allocation, NMFS will take inseason action to prohibit retention of halibut in the non-Indian salmon troll fishery.

May 1, 2019 until the end of the 2019 salmon troll season, and April 1-30, 2020, license holders may land or possess no more than one Pacific halibut per two Chinook, except one halibut may be possessed or landed without meeting the ratio requirement, and no more than 35 halibut may be possessed or landed per trip. Halibut retained must be no less than 32 inches in total length (with head on).

Incidental Pacific halibut catch regulations in the commercial salmon troll fishery adopted for 2019, prior to any 2019 inseason action, will be in effect when incidental Pacific halibut retention opens on April 1, 2020 unless otherwise modified by inseason action at the March 2020 Council meeting.

TABLE V-1. 2019 Commercial troll management measures for non-Indian ocean salmon fisheries- - Council adopted.  
(Page 6 of 6)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS** *(continued)*

- a. "C-shaped" yelloweye rockfish conservation area is an area to be voluntarily avoided for salmon trolling. NMFS and the Council request salmon trollers voluntarily avoid this area in order to protect yelloweye rockfish. The area is defined in the Pacific Council Halibut Catch Sharing Plan in the North Coast subarea (Washington marine area 3), with the following coordinates in the order listed:
- 48°18' N. lat.; 125°18' W. long.;  
 48°18' N. lat.; 124°59' W. long.;  
 48°11' N. lat.; 124°59' W. long.;  
 48°11' N. lat.; 125°11' W. long.;  
 48°04' N. lat.; 125°11' W. long.;  
 48°04' N. lat.; 124°59' W. long.;  
 48°00' N. lat.; 124°59' W. long.;  
 48°00' N. lat.; 125°18' W. long.;  
 and connecting back to 48°18' N. lat.; 125°18' W. long.
- C.8. Inseason Management: In addition to standard inseason actions or modifications already noted under the season description, the following inseason guidance is provided to NMFS:
- Chinook remaining from the May through June non-Indian commercial troll harvest guideline north of Cape Falcon may be transferred to the July through September harvest guideline if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - Chinook remaining from May, June, and /or July non-Indian commercial troll quotas in the Oregon or California KMZ may be transferred to the Chinook quota for the next open period if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - NMFS may transfer salmon between the recreational and commercial fisheries north of Cape Falcon if there is agreement among the areas' representatives on the Salmon Advisory Subpanel (SAS), and if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - At the March 2020 meeting, the Council will consider inseason recommendations for special regulations for any experimental fisheries (proposals must meet Council protocol and be received in November 2019).
  - If retention of unmarked coho (adipose fin intact) is permitted by inseason action, the allowable coho quota will be adjusted to ensure preseason projected impacts on all stocks is not exceeded.
  - Landing limits may be modified inseason to sustain season length and keep harvest within overall quotas.
- C.9. State Waters Fisheries: Consistent with Council management objectives:
- The State of Oregon may establish additional late-season fisheries in state waters.
  - The State of California may establish limited fisheries in selected state waters.
  - Check state regulations for details.
- .10. For the purposes of California Fish and Game Code, Section 8232.5, the definition of the Klamath Management Zone (KMZ) for the ocean salmon season shall be that area from Humbug Mountain, Oregon, to Horse Mountain, California.
- .11. Latitudes for geographical reference of major landmarks along the west coast. Source: 2018 West Coast federal salmon regulations. <https://www.govinfo.gov/content/pkg/FR-2018-05-01/pdf/2018-09164.pdf>
- |                          |                  |                           |                  |
|--------------------------|------------------|---------------------------|------------------|
| Cape Flattery, WA        | 48°23'00" N lat. | Humboldt South Jetty, CA. | 40°45'53" N lat. |
| Cape Alava, WA           | 48°10'00" N lat. | Horse Mountain, CA        | 40°05'00" N lat. |
| Queets River, WA         | 47°31'42" N lat. | Point Arena, CA           | 38°57'30" N lat. |
| Leadbetter Point, WA     | 46°38'10" N lat. | Point Reyes, CA           | 37°59'44" N lat. |
| Cape Falcon, OR          | 45°46'00" N lat. | Point San Pedro, CA       | 37°35'40" N lat. |
| Florence South Jetty, OR | 44°00'54" N lat. | Pigeon Point, CA          | 37°11'00" N lat. |
| Humbug Mountain, OR      | 42°40'30" N lat. | Point Sur, CA             | 36°18'00" N lat. |
| Oregon-California border | 42°00'00" N lat. | Point Conception, CA      | 34°27'00" N lat. |

TABLE V-2. 2019 Recreational management measures for non-Indian ocean salmon fisheries - Council adopted.  
(Page 1 of 5)

<b>A. SEASON DESCRIPTIONS</b>
<b>North of Cape Falcon</b>
<b>Supplemental Management Information</b>
<p>1. Overall non-Indian TAC: 52,500 Chinook and 190,000 coho marked with a healed adipose fin clip (marked).                  2. Recreational TAC: 26,250 Chinook and 159,600 marked coho; all retained coho must be marked.                  3. Trade: May be considered                  4. No Area 4B add-on fishery.                  5. Buoy 10 fishery opens August 1 with an expected landed catch of 50,000 marked coho in August and September.                  6. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>
<p><b>U.S./Canada Border to Cape Alava (Neah Bay Subarea)</b></p> <ul style="list-style-type: none"> <li>June 22 through earlier of September 30, or 16,600 marked coho subarea quota, with a subarea guideline of 5,200 Chinook (C.5).</li> </ul> <p>Open seven days per week. All salmon, except no chum beginning August 1; two salmon per day. All coho must be marked with a healed adipose fin clip (B, C.1).</p> <p>Beginning August 1, Chinook non-retention east of the Bonilla-Tatoosh line (C.4.a) during Council managed ocean fishery. See gear restrictions and definitions (C.2, C.3). Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>
<p><b>Cape Alava to Queets River (La Push Subarea)</b></p> <ul style="list-style-type: none"> <li>June 22 through earlier of September 30, or 4,050 marked coho subarea quota, with a subarea guideline of 1,100 Chinook (C.5).</li> <li>October 1 through earlier of October 13, or 100 marked coho quota, or 100 Chinook quota (C.5) in the area north of 47°50'00" N. lat. and south of 48°00'00" N. lat.</li> </ul> <p>Open seven days per week. All salmon, two salmon per day. All coho must be marked with a healed adipose fin clip (C.1). See gear restrictions and definitions (B, C.2, C.3).</p> <p>Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>
<p><b>Queets River to Leadbetter Point (Westport Subarea)</b></p> <ul style="list-style-type: none"> <li>June 22 through earlier of September 30, or 59,050 marked coho subarea quota, with a subarea guideline of 12,700 Chinook (C.5)</li> </ul> <p>Open seven days per week. All salmon; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (B, C.1).</p> <p>See gear restrictions and definitions (C.2, C.3). Grays Harbor Control Zone closed beginning August 12 (C.4.b). Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>
<p><b>Leadbetter Point to Cape Falcon (Columbia River Subarea)</b></p> <ul style="list-style-type: none"> <li>June 22 through earlier of September 30, or 79,800 marked coho subarea quota, with a subarea guideline of 7,150 Chinook (C.5).</li> </ul> <p>Open seven days per week. All salmon; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (B, C.1). See gear restrictions and definitions (C.2, C.3). Columbia Control Zone closed (C.4.c). Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>

TABLE 2. 2019 Recreational management measures for non-Indian ocean salmon fisheries - Council adopted. (Page 2 of 5)
<b>A. SEASON DESCRIPTIONS</b>
<b>South of Cape Falcon</b>
<b>Supplemental Management Information</b>
<p>Sacramento River fall Chinook spawning escapement of 160,159 hatchery and natural area adults.</p> <p>2. Sacramento Index exploitation rate of 57.8%.</p> <p>3. Klamath River recreational fishery allocation: 7,637 adult Klamath River fall Chinook.</p> <p>4. Klamath tribal allocation: 32,401 adult Klamath River fall Chinook.</p> <p>5. Overall recreational coho TAC: 90,000 coho marked with a healed adipose fin clip (marked), and 9,000 coho in the non-mark-selective coho fishery.</p> <p>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the CFGC.</p>
<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>March 15-October 31 (C.6), except as provided below during the all-salmon mark-selective fishery and the non-mark-selective coho fishery (C.5).</li> </ul> <p>Open seven days per week. All salmon except coho, two fish per day (C.1). Chinook minimum size limit of 24 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2020, the season will open March 15 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B); and the same gear restrictions as in 2019 (C.2, C.3). This opening could be modified following Council review at its March 2020 meeting.</p>
<p><b>Cape Falcon to OR/CA Border</b> <u>Mark-selective coho fishery:</u></p> <ul style="list-style-type: none"> <li>June 22 through the earlier of August 25, or 90,000 marked coho quota.</li> </ul> <p>Open seven days per week. All salmon, two salmon per day. All retained coho must be marked with a healed adipose fin clip (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p> <p>Any remainder of the mark-selective coho quota may be transferred inseason on an impact neutral basis to the non-selective coho quota from Cape Falcon to Humbug Mountain (C.5).</p>
<p><b>Cape Falcon to Humbug Mt.</b> <u>Non-mark-selective coho fishery:</u></p> <ul style="list-style-type: none"> <li>August 31-September 30, open each Friday through Sunday, or 9,000 non-mark-selective coho quota (C.6). Open days may be modified inseason (C.5).</li> </ul> <p>All salmon, two salmon per day (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p>
<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>May 25-September 2 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, <u>except</u> as described above in the "Cape Falcon to OR/CA Border all-salmon mark-selective coho fishery." Two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p>
<p><b>For Recreational Fisheries from Cape Falcon to Humbug Mt.:</b> Fishing in the Stonewall Bank yelloweye rockfish conservation area restricted to trolling only on days the all depth recreational halibut fishery is open (call the halibut fishing hotline 1-800-662-9825 for specific dates) (C.3.b, C.4.d).</p>

TABLE 2. 2019 Recreational management measures for non-Indian ocean salmon fisheries - Council adopted. (Page 3 of 5)
A. SEASON DESCRIPTIONS
<p><b>OR/CA Border to Horse Mt. (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• May 25-September 2 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>Klamath Control Zone closed in August (C.4.e). See California State regulations for additional closures adjacent to the Smith, Eel, and Klamath Rivers.</p>
<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• April 13-30;</li> <li>• May 18-October 31 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2020, season opens April 4 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B); and the same gear restrictions as in 2019 (C.2, C.3). This opening could be modified following Council review at its March 2020 meeting.</p>
<p><b>Point Arena to Pigeon Point (San Francisco)</b></p> <ul style="list-style-type: none"> <li>• April 13-30;</li> <li>• May 18-October 31 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length through April 30, then 20 inches thereafter (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2020, season opens April 4 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B); and the same gear restrictions as in 2019 (C.2, C.3). This opening could be modified following Council review at its March 2020 meeting.</p>
<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>• April 6-August 28 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2020, season opens April 4 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B); and the same gear restrictions as in 2019 (C.2, C.3). This opening could be modified following Council review at its March 2020 meeting.</p> <p>California State regulations require all salmon be made available to a CDFW representative for sampling immediately at port of landing. Any person in possession of a salmon with a missing adipose fin, upon request by an authorized agent or employee of the CDFW, shall immediately relinquish the head of the salmon to the State (California Code of Regulations Title 14 Section 1.73).</p>

**B. MINIMUM SIZE (Inches) (See C.1)**

Area (when open)	Chinook	Coho	Pink
North of Cape Falcon	24	16	None
Cape Falcon to Humbug Mt.	24	16	None
Humbug Mt. to OR/CA Border	24	16	None
OR/CA Border to Horse Mt.	20	-	20
Horse Mt. to Pt. Arena	20	-	20
Pt. Arena to Pigeon Pt. (April 13-30)	24	-	24
Pt. Arena to Pigeon Pt. (May 18-October 31)	20	-	20
Pigeon Pt. to U.S./Mexico Border	24	-	24

TABLE V-2. 2019 Recreational management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 4 of 5)
--

### C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS

C.1. Compliance with Minimum Size and Other Special Restrictions: All salmon on board a vessel must meet the minimum size or other special requirements for the area being fished and the area in which they are landed if that area is open. Salmon may be landed in an area that is closed only if they meet the minimum size or other special requirements for the area in which they were caught. Salmon may not be filleted prior to landing.

*Ocean Boat Limits:* Off the coast of Washington, Oregon, and California, each fisher aboard a vessel may continue to use angling gear until the combined daily limits of Chinook and coho salmon for all licensed and juvenile anglers aboard have been attained (additional state restrictions may apply).

C.2. Gear Restrictions: Salmon may be taken only by hook and line using barbless hooks. All persons fishing for salmon, and all persons fishing from a boat with salmon on board must meet the gear restrictions listed below for specific areas or seasons.

- a. *U.S./Canada Border to Pt. Conception, California:* No more than one rod may be used per angler; and no more than two single point, single shank, barbless hooks are required for all fishing gear.
- b. *Horse Mt., California, to Pt. Conception, California:* Single point, single shank, barbless circle hooks (see gear definitions below) are required when fishing with bait by any means other than trolling, and no more than two such hooks shall be used. When angling with two hooks, the distance between the hooks must not exceed five inches when measured from the top of the eye of the top hook to the inner base of the curve of the lower hook, and both hooks must be permanently tied in place (hard tied). Circle hooks are not required when artificial lures are used without bait.

C.3. Gear Definitions:

- a. *Recreational fishing gear defined:* Off Oregon and Washington, angling tackle consists of a single line that must be attached to a rod and reel held by hand or closely attended; the rod and reel must be held by hand while playing a hooked fish. No person may use more than one rod and line while fishing off Oregon or Washington. Off California, the line must be attached to a rod and reel held by hand or closely attended; weights directly attached to a line may not exceed four pounds (1.8 kg). While fishing off California north of Pt. Conception, no person fishing for salmon, and no person fishing from a boat with salmon on board, may use more than one rod and line. Fishing includes any activity which can reasonably be expected to result in the catching, taking, or harvesting of fish.
- b. *Trolling defined:* Angling from a boat or floating device that is making way by means of a source of power, other than drifting by means of the prevailing water current or weather conditions.
- c. *Circle hook defined:* A hook with a generally circular shape and a point which turns inward, pointing directly to the shank at a 90° angle.

C.4. Control Zone Definitions:

- a. *The Bonilla-Tatoosh Line:* A line running from the western end of Cape Flattery to Tatoosh Island Lighthouse (48°23'30" N. lat., 124°44'12" W. long.) to the buoy adjacent to Duntze Rock (48°24'37" N. lat., 124°44'37" W. long.), then in a straight line to Bonilla Pt. (48°35'39" N. lat., 124°42'58" W. long.) on Vancouver Island, British Columbia.
- b. *Grays Harbor Control Zone -* The area defined by a line drawn from the Westport Lighthouse (46° 53'18" N. lat., 124° 07'01" W. long.) to Buoy #2 (46° 52'42" N. lat., 124°12'42" W. long.) to Buoy #3 (46° 55'00" N. lat., 124°14'48" W. long.) to the Grays Harbor north jetty (46° 55'36" N. lat., 124°10'51" W. long.).
- c. *Columbia Control Zone:* An area at the Columbia River mouth, bounded on the west by a line running northeast/southwest between the red lighted Buoy #4 (46° 13'35" N. lat., 124°06'50" W. long.) and the green lighted Buoy #7 (46° 15'09" N. lat., 124°06'16" W. long.); on the east, by the Buoy #10 line which bears north/south at 357° true from the south jetty at 46° 14'00" N. lat., 124°03'07" W. long. to its intersection with the north jetty; on the north, by a line running northeast/southwest between the green lighted Buoy #7 to the tip of the north jetty (46° 15'48" N. lat., 124°05'20" W. long. and then along the north jetty to the point of intersection with the Buoy #10 line; and on the south, by a line running northeast/southwest between the red lighted Buoy #4 and tip of the south jetty (46°14'03" N. lat., 124°04'05" W. long.), and then along the south jetty to the point of intersection with the Buoy #10 line.
- d. *Stonewall Bank Yelloweye Rockfish Conservation Area:* The area defined by the following coordinates in the order listed:  
44°37.46' N. lat.; 124°24.92' W. long.  
44°37.46' N. lat.; 124°23.63' W. long.  
44°28.71' N. lat.; 124°21.80' W. long.  
44°28.71' N. lat.; 124°24.10' W. long.  
44°31.42' N. lat.; 124°25.47' W. long.  
and connecting back to 44°37.46' N. lat.; 124°24.92' W. long.
- e. *Klamath Control Zone:* The ocean area at the Klamath River mouth bounded on the north by 41°38'48" N. lat. (approximately 6 nautical miles north of the Klamath River mouth); on the west by 124°23'00" W. long. (approximately 12 nautical miles off shore); and, on the south by 41°26'48" N. lat. (approximately 6 nautical miles south of the Klamath River mouth).



TABLE V-2. 2019 Recreational management Alternatives for non-Indian ocean salmon fisheries - Council adopted.  
(Page 5 of 5)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS** *(continued)*

f. Waypoints for the 40 fathom regulatory line from Cape Falcon to Humbug Mt. (50 CFR 660.71 (k) (12)-(70).

45°46.00' N. lat., 124°04.49' W. long.;	44°41.68' N. lat., 124°15.38' W. long.;	43°17.96' N. lat., 124°28.81' W. long.;
45°44.34' N. lat., 124°05.09' W. long.;	44°34.87' N. lat., 124°15.80' W. long.;	43°16.75' N. lat., 124°28.42' W. long.;
45°40.64' N. lat., 124°04.90' W. long.;	44°33.74' N. lat., 124°14.44' W. long.;	43°13.97' N. lat., 124°31.99' W. long.;
45°33.00' N. lat., 124°04.46' W. long.;	44°27.66' N. lat., 124°16.99' W. long.;	43°13.72' N. lat., 124°33.25' W. long.;
45°32.27' N. lat., 124°04.74' W. long.;	44°19.13' N. lat., 124°19.22' W. long.;	43°12.26' N. lat., 124°34.16' W. long.;
45°29.26' N. lat., 124°04.22' W. long.;	44°15.35' N. lat., 124°17.38' W. long.;	43°10.96' N. lat., 124°32.33' W. long.;
45°20.25' N. lat., 124°04.67' W. long.;	44°14.38' N. lat., 124°17.78' W. long.;	43°05.65' N. lat., 124°31.52' W. long.;
45°19.99' N. lat., 124°04.62' W. long.;	44°12.80' N. lat., 124°17.18' W. long.;	42°59.66' N. lat., 124°32.58' W. long.;
45°17.50' N. lat., 124°04.91' W. long.;	44°09.23' N. lat., 124°15.96' W. long.;	42°54.97' N. lat., 124°36.99' W. long.;
45°11.29' N. lat., 124°05.20' W. long.;	44°08.38' N. lat., 124°16.79' W. long.;	42°53.81' N. lat., 124°38.57' W. long.;
45°05.80' N. lat., 124°05.40' W. long.;	44°08.30' N. lat., 124°16.75' W. long.;	42°50.00' N. lat., 124°39.68' W. long.;
45°05.08' N. lat., 124°05.93' W. long.;	44°01.18' N. lat., 124°15.42' W. long.;	42°49.13' N. lat., 124°39.70' W. long.;
45°03.83' N. lat., 124°06.47' W. long.;	43°51.61' N. lat., 124°14.68' W. long.;	42°46.47' N. lat., 124°38.89' W. long.;
45°01.70' N. lat., 124°06.53' W. long.;	43°42.66' N. lat., 124°15.46' W. long.;	42°45.74' N. lat., 124°38.86' W. long.;
44°58.75' N. lat., 124°07.14' W. long.;	43°40.49' N. lat., 124°15.74' W. long.;	42°44.79' N. lat., 124°37.96' W. long.;
44°51.28' N. lat., 124°10.21' W. long.;	43°38.77' N. lat., 124°15.64' W. long.;	42°45.01' N. lat., 124°36.39' W. long.;
44°49.49' N. lat., 124°10.90' W. long.;	43°34.52' N. lat., 124°16.73' W. long.;	42°44.14' N. lat., 124°35.17' W. long.;
44°44.96' N. lat., 124°14.39' W. long.;	43°28.82' N. lat., 124°19.52' W. long.;	42°42.14' N. lat., 124°32.82' W. long.;
44°43.44' N. lat., 124°14.78' W. long.;	43°23.91' N. lat., 124°24.28' W. long.;	42°40.50' N. lat., 124°31.98' W. long.;
44°42.26' N. lat., 124°13.81' W. long.;	43°20.83' N. lat., 124°26.63' W. long.;	

C.5. Inseason Management: Regulatory modifications may become necessary inseason to meet preseason management objectives such as quotas, harvest guidelines, and season duration. In addition to standard inseason actions or modifications already noted under the season description, the following inseason guidance is provided to NMFS:

- a. Actions could include modifications to bag limits, or days open to fishing, and extensions or reductions in areas open to fishing.
- b. Coho may be transferred inseason among recreational subareas north of Cape Falcon to help meet the recreational season duration objectives (for each subarea) after conferring with representatives of the affected ports and the Council's SAS recreational representatives north of Cape Falcon, and if the transfer would not result in exceeding preseason impact expectations on any stocks.
- c. Chinook and coho may be transferred between the recreational and commercial fisheries north of Cape Falcon if there is agreement among the representatives of the SAS, and if the transfer would not result in exceeding preseason impact expectations on any stocks.
- d. Fishery managers may consider inseason action modifying regulations restricting retention of unmarked (adipose fin intact) coho. To remain consistent with preseason expectations, any inseason action shall consider, if significant, the difference between observed and preseason forecasted (adipose-clipped) mark rates. Such a consideration may also include a change in bag limit of two salmon, no more than one of which may be a coho.
- e. Marked coho remaining from the Cape Falcon to Oregon/California Border recreational mark-selective coho quota may be transferred inseason to the Cape Falcon to Humbug Mt. non-mark-selective recreational fishery if the transfer would not result in exceeding preseason impact expectations on any stocks.

C.6. Additional Seasons in State Territorial Waters: Consistent with Council management objectives, the States of Washington, Oregon, and California may establish limited seasons in state waters. Check state regulations for details.

TABLE V-3. 2019 Treaty Indian ocean troll management measures for ocean salmon fisheries - Council adopted.

<b>A. SEASON ALTERNATIVE DESCRIPTIONS</b>	
<b>Supplemental Management Information</b>	
1. Overall Treaty-Indian TAC: 35,000 Chinook and 55,000 coho. 2. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.	
<ul style="list-style-type: none"> <li>• May 1 through the earlier of June 30 or 17,500 Chinook quota.</li> </ul> All salmon may be retained except coho. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season (C.5). See size limit (B) and other restrictions (C).	
<ul style="list-style-type: none"> <li>• July 1 through the earlier of September 15, or 17,500 Chinook quota or 55,000 coho quota</li> </ul> All salmon. See size limit (B) and other restrictions (C).	

**B. MINIMUM SIZE (INCHES)**

Area (when open)	Chinook		Coho		Pink
	Total Length	Head-off	Total Length	Head-off	
North of Cape Falcon	24.0 (61.0 cm)	18.0 (45.7 cm)	16.0 (40.6 cm)	12.0 (30.5 cm)	None

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS**

C.1. Tribe and Area Boundaries. All boundaries may be changed to include such other areas as may hereafter be authorized by a Federal court for that tribe's treaty fishery.

S'KLALLAM - Washington State Statistical Area 4B (defined to include those waters of Puget Sound easterly of a line projected from the Bonilla Point light on Vancouver Island to the Tatoosh Island light, thence to the most westerly point on Cape Flattery and westerly of a line projected true north from the fishing boundary marker at the mouth of the Sekiu River [WAC 220-301-030]).

MAKAH - Washington State Statistical Area 4B and that portion of the FMA north of 48°02'15" N. lat. (Norwegian Memorial) and east of 125°44'00" W. long.

QUILEUTE - A polygon commencing at Cape Alava, located at latitude 48°10'00" north, longitude 124°43'56.9" west; then proceeding west approximately forty nautical miles at that latitude to a northwestern point located at latitude 48°10'00" north, longitude 125°44'00" west; then proceeding in a southeasterly direction mirroring the coastline at a distance no farther than forty nautical miles from the mainland Pacific coast shoreline at any line of latitude, to a southwestern point at latitude 47°31'42" north, longitude 125°20'26" west; then proceeding east along that line of latitude to the Pacific coast shoreline at latitude 47°31'42" north, longitude 124°21'9.0" west.

HOH - That portion of the FMA between 47°54'18" N. lat. (Quillayute River) and 47°21'00" N. lat. (Quinault River) and east of 125°44'00" W. long.

QUINAULT - A polygon commencing at the Pacific coast shoreline near Destruction Island, located at latitude 47°40'06" north, longitude 124°23'51.362" west; then proceeding west approximately thirty nautical miles at that latitude to a northwestern point located at latitude 47°40'06" north, longitude 125°08'30" west; then proceeding in a southeasterly direction mirroring the coastline no farther than thirty nautical miles from the mainland Pacific coast shoreline at any line of latitude, to a southwestern point at latitude 46°53'18" north, longitude 124°53'53" west; then proceeding east along that line of latitude to the Pacific coast shoreline at latitude 46°53'18" north, longitude 124°7'36.6" west.

C.2. Gear restrictions

- a. Single point, single shank, barbless hooks are required in all fisheries.
- b. No more than eight fixed lines per boat.
- c. No more than four hand held lines per person in the Makah area fishery (Washington State Statistical Area 4B and that portion of the FMA north of 48°02'15" N. lat. (Norwegian Memorial) and east of 125°44'00" W. long.)



EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE V-4. Stock status relative to overfished and overfishing criteria. A stock is approaching an overfished condition if the 3-year geometric mean of the most recent two years and the forecast spawning escapement is less than the minimum stock size threshold (MSST); a stock would experience overfishing if the total annual exploitation rate exceeds the maximum fishing mortality threshold (MFMT). Occurrences of stocks *at risk of* approaching an overfished condition or experiencing overfishing are indicated in **bold**. 2020 spawning escapement and exploitation rate estimates are based on preliminary 2020 preseason abundance forecasts and 2019 Council regulations.

	Estimated Adult Spawning Escapement										Total Exploitation Rate					
	2015	2016	2017	2018	2019 <sup>a/</sup>	Forecast 2020 <sup>b/</sup>	3-yr Geo Mean	MSST	S <sub>MSY</sub>	2015	2016	2017	2018	2019 <sup>a/</sup>	2020 <sup>b/</sup>	MFMT
	<b>Chinook</b>															
Sacramento Fall	113,468	89,699	43,466	105,531	162,532	199,616	150,720	91,500	122,000	0.55	0.56	0.68	0.53	0.68	0.58	0.78
Klamath River Fall	28,112	13,937	19,904	52,352	20,245	24,178	<b>29,482</b>	30,525	40,700	0.59	0.37	0.10	0.28	0.42	0.50	0.71
Southern Oregon <sup>c/</sup>	30,462	27,278	91,977	39,497	19,426	NA	41,325	20,500	34,992	NA	NA	NA	NA	NA	NA	0.54
Central and Northern OR	247	118	114	92	64	NA	88	30 fish/mi	60 fish/mi	0.43	0.48	0.46	NA	NA	NA	0.78
Upper River Bright - Fall <sup>d/</sup>	323,276	151,373	96,096	58,540	77,880	96,000	75,925	19,182	39,625	0.40	0.51	0.48	NA	NA	NA	0.86
Upper River - Summer <sup>d/</sup>	88,691	79,253	56,265	38,816	41,090	35,800	38,507	6,072	12,143	0.65	0.63	0.52	NA	NA	NA	0.75
Willapa Bay - Fall <sup>e/</sup>	2,824	1,887	3,078	2,853	NA	NA	2,549	1,696	3,393	0.48	0.61	0.55	NA	NA	NA	0.78
Grays Harbor Fall <sup>e/</sup>	17,305	11,248	17,145	20,741	NA	NA	15,874	5,694	13,326	0.48	0.61	0.55	NA	NA	NA	0.78
Grays Harbor Spring	1,841	926	1,384	493	1,185	NA	932	700	1,400	NA	NA	NA	NA	NA	NA	0.78
Queets - Fall <sup>d/</sup>	5,313	2,915	2,702	2,095	NA	NA	2,546	1,250	2,500	0.48	0.61	0.55	NA	NA	NA	0.87
Queets - Sp/Su	532	704	825	484	NA	NA	655	350	700	NA	NA	NA	NA	NA	NA	0.78
Hoh - Fall <sup>e/</sup>	1,795	2,831	1,808	2,478	NA	NA	2,332	600	1,200	0.48	0.61	0.55	NA	NA	NA	0.90
Hoh Sp/Su	1,070	1,144	1,364	793	NA	NA	1,074	450	900	NA	NA	NA	NA	NA	NA	0.78
Quillayute - Fall <sup>e/</sup>	3,440	3,654	3,604	3,937	7,256	NA	4,687	1,500	3,000	0.48	0.61	0.55	NA	NA	NA	0.87
Quillayute - Sp/Su	783	871	1,097	990	1,015	NA	1,033	600	1,200	NA	NA	NA	NA	NA	NA	0.78
Hoko -Su/Fa <sup>d/</sup>	2,877	1,324	1,188	2,062	1,815	NA	1,644	425	850	0.30	0.28	0.27	NA	NA	NA	0.78
<b>Coho</b>																
Willapa Bay	17,086	30,667	10,878	14,920	NA	NA	17,074	8,600	17,200	0.44	0.38	0.33	0.31	NA	NA	0.74
Grays Harbor	21,278	38,595	26,907	49,622	NA	NA	37,213	18,320	24,426	0.49	0.12	0.32	0.22	NA	NA	0.65
Queets	2,028	5,156	5,232	2,631	NA	NA	<b>4,140</b>	4,350	5,800	0.26	0.15	0.23	0.24	NA	NA	0.65
Hoh	1,794	5,009	4,478	2,463	NA	NA	3,809	1,890	2,520	0.39	0.08	0.43	0.34	NA	NA	0.65
Quillayute Fall	2,571	9,630	7,474	6,091	6,506	NA	6,666	4,725	6,300	0.47	0.18	0.42	0.30	NA	NA	0.59
Juan de Fuca	3,859	8,435	5,530	5,470	NA	NA	<b>6,343</b>	7,000	11,000	0.18	0.03	0.06	0.08	NA	NA	0.60
Hood Canal	26,926	24,313	23,283	NA	NA	NA	24,794	10,750	14,350	0.59	0.40	0.35	0.57	NA	NA	0.65
Skagit	5,794	35,822	20,184	19,047	NA	NA	23,970	14,875	25,000	<b>0.63</b>	0.20	0.09	0.49	NA	NA	0.60
Stillaguamish	2,914	13,048	6,099	23,937	NA	NA	12,396	6,100	10,000	0.48	0.16	0.12	0.22	NA	NA	0.50
Snohomish	12,804	44,141	18,195	58,135	NA	NA	36,009	31,000	50,000	0.55	0.18	0.21	0.25	NA	NA	0.60

a/ Preliminary.

b/ Preliminary approximations based on preseason forecasts and the previous year fishing regulations.

c/ MSST 18,440 (20,500 as measured at Huntley Park).

d/ CWT based exploitation rates from PSC-CTC 2019 Exploitation Rate Analysis and Model Calibration.

e/ Queets River fall Chinook CWT exploitation rates used as a proxy. Exploitation rates in the terminal fisheries will differ from those calculated for Queets fall CWTs.

TABLE V-5. Postseason  $S_{ACL}$ ,  $S_{OFL}$ , and spawner escapement estimates for Sacramento River fall Chinook (SRFC), Klamath River fall Chinook (KRFC) and Willapa Bay coho. For the current year,  $S_{ACL}$  and  $S_{OFL}$  are preseason values. Current year spawner escapements are preseason values based on current abundance forecasts and the previous year fishing regulations.

Year	SRFC			KRFC			Willapa Bay Coho		
	$S_{ACL}^{a/}$	$S_{OFL}$	Escapement <sup>tb/</sup>	$S_{ACL}^{a/}$	$S_{OFL}$	Escapement <sup>c/</sup>	$S_{ACL}^{a/}$	$S_{OFL}$	Escapement <sup>c/</sup>
2012	188,378	138,144	285,429	70,922	64,273	121,543	--	--	--
2013	260,798	191,251	406,846	52,032	47,154	59,156	--	--	--
2014	165,355	121,260	212,476	47,674	43,205	95,104	--	--	--
2015	76,485	56,089	113,468	22,202	20,120	28,112	9,183	7,958	17,086
2016	61,595	45,170	89,699	7,056	6,394	13,937	14,780	12,810	30,667
2017	40,860	29,964	43,466	7,114	6,447	19,904	6,189	5,364	10,878
2018	66,115	48,484	105,531	24,470	22,176	52,352	7,888	6,836	14,920
2019	151,661	111,218	162,532	11,079	10,041	20,245	NA	NA	NA
2020	141,955	104,100	199,616	15,448	13,999	24,178	9,860	8,546	NA

a/  $S_{ACL} = S_{ABC}$ .

b/ Hatchery and natural area adult spawners.

c/ Natural area adult spawners.

TABLE V-6. Comparison of projected ocean escapements and exploitation rates for critical natural and Columbia River hatchery coho stocks (thousands of fish) resulting from application of 2019 Council-adopted regulations to 2019 and 2020 ocean abundance forecasts.<sup>a/</sup>

Stock	Ocean Escapement and ER Estimates Under 2019 Regulations <sup>b/</sup>					2020 FMP Conservation Objective <sup>d/</sup>
	2019 Abundance Forecasts		2020 Abundance Forecasts <sup>c/</sup>		Exploitation Rate	
	Ocean Escapement	Exploitation Rate	Ocean Escapement	Exploitation Rate		
<b>Natural Coho Stocks</b>						
Skagit	54.2	32.5%	NA	NA	Exploitation Rate $\leq 35.0\%$ <sup>e/</sup>	
Stillaguamish	22.8	22.5%	NA	NA	Exploitation Rate $\leq 35.0\%$ <sup>e/</sup>	
Snohomish	59.8	19.4%	NA	NA	Exploitation Rate $\leq 20.0\%$ <sup>e/</sup>	
Hood Canal	37.2	44.3%	NA	NA	Exploitation Rate $\leq 45.0\%$ <sup>e/</sup>	
Strait of Juan de Fuca	8.3	8.9%	NA	NA	Exploitation Rate $\leq 20.0\%$ <sup>e/</sup>	
Quillayute Fall	13.7	50.8%	NA	NA	6.3 - 15.8 Spawners	
Hoh	5.8	54.6%	NA	NA	2.0 - 5.0 Spawners	
Queets	9.1	39.9%	NA	NA	5.8 - 14.5 Spawners	
Grays Harbor	65.9	42.1%	NA	NA	35.4 Spawners	
LCN	31.4	18.0%	NA	NA	Exploitation Rate $\leq 18.0\%$ <sup>f/</sup>	
OCN	66.0	13.7%	NA	NA	Exploitation Rate $\leq 15.0\%$ <sup>f/</sup>	
R/K	12.5	5.8%	NA	NA	Exploitation Rate $\leq 13.0\%$ <sup>f/</sup>	
<b>Hatchery Coho Stocks</b>						
Columbia Early	340.5	58.8%	NA	NA	6.2 Hatchery Escapement	
Columbia Late	213.3	52.2%	NA	NA	14.2 Hatchery Escapement	

a/ Quota levels include harvest and hooking mortality estimates used in planning the Council's 2019 ocean fisheries and a coho catch for the Canadian troll fishery off the West Coast of Vancouver Island (WCVI).

b/ 2019 preseason regulations with the following coho quotas: U.S. Canada Border to Cape Falcon: Treaty Indian troll-55,000; non-Indian troll-30,400 selective; recreational-159,600 selective; Cape Falcon to OR/CA border: recreational-90,000 selective and 9,000 non-selective; troll-none. Ocean escapement is generally the estimated number of coho escaping ocean fisheries and entering freshwater. For Puget Sound stocks, ocean escapement is the total abundance minus ocean fisheries (ie outside Puget Sound). For the OCN coho stock, this value represents the estimated spawner escapement in SRS accounting. For Columbia R. hatchery and LCN stocks, ocean escapement represents the number of coho after the Buoy 10 fishery; the LCN exploitation rates shown are total marine and mainstem Columbia R. fishery ERs.

c/ Analysis of 2019 preseason regulations combined with the much lower abundance forecasts for 2020 was beyond the capability of the FRAM model. For all stocks, substantially lower ocean escapement estimates and higher exploitation rates compared with 2019 abundances would be expected with 2020 forecast abundance.

d/ Goals represent FMP conservation objectives, ESA consultation standards, or hatchery escapement needs. Spawning escapement goals are not directly comparable to ocean escapement because the latter occur before inside fisheries.

e/ Assumed exploitation rate based on preliminary abundance forecasts.

f/ Pending confirmation of 2020 ESA consultation standard.

TABLE V-7. Comparison of Lower Columbia natural (LCN), Oregon coastal natural (OCN), and Rogue/Klamath (RK) coho projected harvest mortality and exploitation rates by fishery under Council-adopted 2019 management measures and preliminary 2020 preseason abundance estimates.

Fishery	Projected Harvest Mortality and Exploitation Rate					
	LCN		OCN		RK <sup>a/</sup>	
	Number	Percent	Number	Percent	Number	Percent
<b>SOUTHEAST ALASKA</b>	NA	NA	NA	NA	NA	NA
<b>BRITISH COLUMBIA</b>	NA	NA	NA	NA	NA	NA
<b>PUGET SOUND/STRAITS</b>	NA	NA	NA	NA	NA	NA
<b>NORTH OF CAPE FALCON</b>						
Recreational	NA	NA	NA	NA	NA	NA
Treaty Indian Troll	NA	NA	NA	NA	NA	NA
Non-Indian Troll	NA	NA	NA	NA	NA	NA
<b>SOUTH OF CAPE FALCON</b>						
Recreational:						
Cape Falcon to Humbug Mt.	NA	NA	NA	NA	NA	NA
Humbug Mt. to Horse Mt. (KMZ)	NA	NA	NA	NA	NA	NA
Fort Bragg	NA	NA	NA	NA	NA	NA
South of Pt. Arena	NA	NA	NA	NA	NA	NA
Troll:						
Cape Falcon to Humbug Mt.	NA	NA	NA	NA	NA	NA
Humbug Mt. to Horse Mt. (KMZ)	NA	NA	NA	NA	NA	NA
Fort Bragg	NA	NA	NA	NA	NA	NA
South of Pt. Arena	NA	NA	NA	NA	NA	NA
<b>BUOY 10</b>	NA	NA	NA	NA	NA	NA
<b>ESTUARY/FRESHWATER</b>	NA	NA	NA	NA	NA	NA
<b>TOTAL</b>	NA	NA	NA	NA	NA	NA

a/ Analysis of 2019 preseason regulations combined with the substantially lower abundance forecasts for 2020 was beyond the capability of the FRAM model.

b/ Unmarked hatchery production used as a surrogate for Rogue/Klamath natural stock coho.

TABLE V-8 Maximum allowable fishery impact rate for OCN coho under Amendment 13 matrix and the revised OCN work group matrix based on parent escapement levels by stock component and marine survival category.<sup>a/</sup>

Fishery Year (t)	OCN Coho Spawners by Stock Component				Marine Survival Indicator		Amendment 13 Matrix			OCN Work Group Matrix <sup>a/</sup>		
	Parent Spawner Year (t-3)	Northern	Central	South-Central	Jack Survival Rate (t-1)	OCN Adult Survival Rate	Marine Survival Category	Parental Spawner Category	Maximum Allowable Impacts	Marine Survival Category <sup>b/c/</sup>	Parental Spawner Category	Maximum Allowable Impacts
1998	1995	3,900	13,600	36,500	0.04%	-	Low	Very Low	≤10-13%	Extremely Low	Very Low	≤8%
1999	1996	3,300	18,100	52,600	0.10%	-	Med	Very Low	≤15%	Low	Critical	0-8%
2000	1997	2,100	2,800	18,400	0.12%	-	Med	Very Low	≤15%	Low	Critical	0-8%
2001	1998	2,600	3,300	25,900	0.27%	-	Med	Very Low	≤15%	Medium	Critical	0-8%
2002	1999	8,900	11,800	29,200	0.09%	-	Med	Low	≤15%	Low	Low	≤15%
2003	2000	17,900	14,300	36,500	0.20%	-	Med	Low	≤15%	Med	Low	≤15%
2004	2001	33,500	25,200	112,000	0.14%	-	Med	Low	≤15%	Med	Low	≤15%
2005	2002	52,500	104,000	104,100	0.11%	-	Med	High	≤20%	Low	High	≤15%
2006	2003	59,600	68,900	99,800	0.12%	-	Med	High	≤20%	Low	High	≤15%
2007	2004	28,800	42,100	101,900	0.17%	-	Med	Med	≤20%	Med	Med	≤20%
2008	2005	16,500	51,400	86,700	0.07%	-	Low	High	≤15%	Extremely Low	High	≤8%
2009	2006	24,100	21,200	83,500	0.27%	-	Med	Low	≤15%	Med	Low	≤15%
2010	2007	17,500	12,300	36,500	0.12%	-	Med	Low	≤15%	Low	Low	≤15%
2011	2008	25,600	68,100	86,000	0.12%	-	Med	High	≤20%	Low	High	≤15%
2012	2009	48,100	86,400	128,200	0.09%	-	Med	High	≤20%	Low	High	≤15%
2013	2010	55,000	56,500	171,900	0.14%	6.8%	Med	High	≤20%	Med	High	≤30%
2014	2011	45,900	119,100	191,300	0.26%	7.1%	Med	High	≤20%	Med	High	≤30%
2015	2012	7,500	33,800	57,800	0.20%	7.5%	Med	Low	≤15%	Med	Low	≤15%
2016	2013	11,000	39,700	73,700	0.10%	6.2%	Med	Med	≤20%	Med	Med	≤20%
2017	2014	67,400	121,900	170,400	0.13%	5.6%	Med	High	≤30%	Med	High	≤30%
2018	2015	6,700	22,700	27,700	0.11%	4.3%	Low	Low	≤15%	Low	Low	≤15%
2019	2016	18,700	26,500	30,700	0.27%	3.80%	Low	Low	≤15%	Low	Low	≤15%
2020	2017	13,600	22,800	24,900	0.09%	4.10%	Low	Low	≤15%	Low	Low	≤15%
2021	2018	8,000	22,000	44,100	-	-	Low	Low	-	-	Low	-
2022	2019	22,000	21,800	48,100	-	-	Low	Low	-	-	Low	-

a/ Developed by the OCN Coho Work Group as a result of the 2000 Review of Amendment 13. See Appendix A, tables A-2 and A-4 for details

b/ OCN workgroup matrix was modified during the 2012 methodology review. For 2013, the marine survival category is determined by a predicted OCN adult survival rate that is based on the natural smolt to jack relationship at Mill Creek in the Yaquina River basin.

c/ OCN workgroup matrix was modified during the 2013 methodology review. Beginning in 2014, the marine survival category is determined by a predicted OCN adult survival rate that is based on biologic and oceanographic indicators.

## CHAPTER VI: REFERENCES

- National Marine Fisheries Service (NMFS). 2003. Final Programmatic environmental impact statement for Pacific salmon fisheries management off the coasts of Southeast Alaska, Washington, Oregon, and California, and in the Columbia River basin. National Marine Fisheries Service Northwest Region, Seattle.
- NMFS. 2008. Endangered Species Act-section 7 formal consultation biological opinion: Effects of the 2008 Pacific Coast salmon plan fisheries on the southern resident killer whale distinct population segment (*Orcinus orca*) and their critical habitat. National Marine Fisheries Service Northwest Region, Seattle.
- O'Farrell, M., Hendrix, N., and Mohr, M. 2016. An evaluation of preseason abundance forecasts for Sacramento River winter Chinook salmon. Report prepared for the 2016 Salmon Methodology Review. Pacific Fishery Management Council, Portland, Oregon. [http://www.pcouncil.org/wp-content/uploads/2016/10/D2\\_Att1\\_SRWC\\_forecast\\_rev\\_doc\\_Oct032016\\_NOV2016BB.pdf](http://www.pcouncil.org/wp-content/uploads/2016/10/D2_Att1_SRWC_forecast_rev_doc_Oct032016_NOV2016BB.pdf)
- Pacific Fishery Management Council (PFMC). 2006. Environmental assessment for the proposed 2006 management measures for the ocean salmon fishery managed under the Pacific Coast salmon plan. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 2014. Preseason Report I: Stock Abundance Analysis and Environmental Assessment - Part 1 for 2014 Ocean Salmon Fishery Regulations. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 2019. Review of 2018 Ocean Salmon Fisheries: Stock Assessment and Fishery Evaluation Document for the Pacific Coast Salmon Fishery Management Plan. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 2019a. Preseason Report I: Stock Abundance Analysis and Environmental Assessment - Part 1 for 2018 Ocean Salmon Fishery Regulations. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 2019b. Preseason Report II: Proposed Alternatives and Environmental Assessment - Part 2 for 2018 Ocean Salmon Fishery Regulations. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 2019c. Preseason Report III: Council Adopted Management Measures and Environmental Assessment Part 3 for 2018 Ocean Salmon Fisheries. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 2020. Review of 2019 Ocean Salmon Fisheries: Stock Assessment and Fishery Evaluation Document for the Pacific Coast Salmon Fishery Management Plan. Pacific Fishery Management Council, Portland, Oregon.
- WDFW. 2020. 2020 Wild Coho Forecasts for Puget Sound, Washington Coast, and Lower Columbia. Washington Department of Fish and Wildlife, Olympia, Washington. <https://wdfw.wa.gov/publications/search.php?Cat=Fish/Shellfish%20Research%20and%20Management>

Page Intentionally Left Blank

**APPENDIX A  
SUMMARY OF COUNCIL STOCK MANAGEMENT GOALS**

**LIST OF TABLES**

	<u>Page</u>
TABLE A-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes.....	99
TABLE A-2. Allowable fishery impact rate criteria for OCN coho stock components under the Salmon Fishery Management Plan Amendment 13.....	106
TABLE A-3. Fishery impact rate criteria for OCN coho stock components based on the harvest matrix resulting from the OCN work group 2000 review of Amendment 13.....	107
TABLE A-4. Fishery impact rate criteria for OCN coho stock components based on the harvest matrix resulting from the OCN work group 2000 review of Amendment 13 including modifications to the marine survival index adopted during the 2012 and 2013 methodology reviews. ....	108
TABLE A-5. Council adopted management objectives for Puget Sound natural coho management units, expressed as exploitation rate ceilings for critical, low and normal abundance based status categories, with runsize breakpoints.....	109
TABLE A-6. Council recommended management objectives for Lower Columbia River natural tule Chinook, expressed as exploitation rate ceilings for abundance based status categories, with runsize forecast bins expressed as adult river mouth return forecasts of Lower Columbia River hatchery tule Chinook. ....	109

**LIST OF FIGURES**

	<u>Page</u>
FIGURE A-1. Sacramento River fall Chinook control rule. ....	110
FIGURE A-2. Klamath River fall Chinook control rule .....	110
FIGURE A-3. Sacramento River winter Chinook impact rate control rule.....	111

Page Intentionally Left Blank



TABLE A-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes<sup>a/</sup> (Page 1 of 7)

CHINOOK					
Stocks In The Fishery	Conservation Objective	S <sub>MSY</sub>	MSST	MFMT (F <sub>MSY</sub> )	ACL
Sacramento River Fall Indicator stock for the Central Valley fall (CVF) Chinook stock complex.	122,000-180,000 natural and hatchery adult spawners (MSY proxy adopted 1984). This objective is intended to provide adequate escapement of natural and hatchery production for Sacramento and San Joaquin fall and late-fall stocks based on habitat conditions and average run-sizes as follows: Sacramento River 1953-1960; San Joaquin River 1972-1977 (ASETf 1979; PFMC 1984; SRFCRT 1994). The objective is less than the estimated basin capacity of 240,000 spawners (Hallock 1977), but greater than the 118,000 spawners for maximum production estimated on a basin by basin basis before Oroville and Nimbus Dams (Reisenbichler 1986).	122,000	91,500	78% Proxy (SAC 2011a)	Based on F <sub>ABC</sub> and annual ocean abundance. F <sub>ABC</sub> is F <sub>MSY</sub> reduced by Tier 2 (10%) uncertainty
Sacramento River Spring ESA Threatened	NMFS ESA consultation standard/recovery plan: Conform to Sacramento River Winter Chinook ESA consultation standard (no defined objective for ocean management prior to listing).	Undefined	Undefined	Undefined	ESA consultation standard applies.
Sacramento River Winter ESA Endangered	NMFS ESA consultation standard/recovery plan: Recreational seasons: Point Arena to Pigeon Point between the first Saturday in April and the second Sunday in November; Pigeon Point to the U.S./Mexico Border between the first Saturday in April and the first Sunday in October. Minimum size limit ≥ 20 inches total length. Commercial seasons: Point Arena to the U.S./Mexico border between May 1 and September 30, except Point Reyes to Point San Pedro between October 1 and 15 (Monday through Friday). Minimum size limit ≥ 26 inches total length. In addition to these season and minimum size limit restrictions, annual limits to the preseason-predicted age-3 impact rate south of Point Arena, defined by a control rule, were implemented beginning in 2012 and updated in 2018 (See Figure A-3).	Undefined	Undefined	Undefined	
California Coastal Chinook ESA Threatened	NMFS ESA consultation standard/recovery plan: Limit ocean fisheries to no more than a 16.0% age-4 ocean harvest rate on Klamath River fall Chinook.	Undefined	Undefined	Undefined	
Klamath River Fall Indicator stock for the Southern Oregon Northern California (SONC) Chinook stock complex.	At least 32% of potential adult natural spawners, but no fewer than 40,700 naturally spawning adults in any one year. Brood escapement rate must average at least 32% over the long-term, but an individual brood may vary from this range to achieve the required tribal/nontribal annual allocation. Natural area spawners to maximize catch estimated at 40,700 adults (STT 2005).	40,700	30,525	71% (STT 2005)	Based on F <sub>ABC</sub> and annual ocean abundance. F <sub>ABC</sub> is F <sub>MSY</sub> reduced by Tier 1 (5%) uncertainty
Klamath River - Spring	Undefined	Undefined	Undefined	Undefined	Component stock of SONC complex; ACL indicator stock is KRFC
Smith River	Undefined	Undefined	Undefined	78% Proxy (SAC 2011a)	
Southern Oregon	At least 41,000 naturally-produced adults passing Huntley Park in the Rogue River to provide MSY spawning escapement. (PFMC 2015)	34,992	20,500	54% (PFMC 2015)	

TABLE A-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes.<sup>a/</sup> (Page 2 of 7)

CHINOOK						
Stocks In The Fishery	Conservation Objective	S <sub>MSY</sub>	MSST	MFMT (F <sub>MSY</sub> )	ACL	
Central and Northern Oregon	Unspecified portion of an aggregate 150,000 to 200,000 natural adult spawners for Oregon coast (Thompson 1977 and McGie 1982) measured by 60-90 fish per mile in index streams. ODFW developing specific conservation objectives for spring and fall stocks that may be implemented without plan amendment upon approval by the Council.	60 Fish per mile in index streams	30 Fish per mile in index streams	78% Proxy (SAC 2011a)	Component stock(s) of FNMC complex; international exception applies, ACLs are not applicable.	
Willapa Bay Fall	Undetermined in FMP. WDFW spawning escapement objective of 4,350.	3,393	1,697	78% Proxy (SAC 2011a)		
Grays Harbor Fall Indicator stock for the Far North Migrating Coastal (FNMC) Chinook stock complex	13,326 natural adult spawners in the Chehalis and Humptulips Rivers combined. (PFMC 2015)	Annual natural spawning escapement targets may vary from FMP conservation objectives if agreed to by WDFW and treaty tribes under the provisions of <i>Hoh v. Baldrige</i> and subsequent U.S. District Court orders.	13,326	6,663	63% (PFMC 2015)	FNMC complex; international exception applies, ACLs are not applicable.
Queets Fall Indicator stock for the FNMC Chinook stock complex	Manage terminal fisheries for 40% harvest rate, but no less than 2,500 natural adult spawners, the MSY level estimated by Cooney (1984).		2,500	1,250	87% (Cooney 1984)	
Hoh Fall Indicator stock for the FNMC Chinook stock complex	Manage terminal fisheries for 40% harvest rate, but no less than 1,200 natural adult spawners, the MSY level estimated by Cooney (1984).		1,200	600	90% (Cooney 1984)	
Quillayute Fall Indicator stock for the FNMC Chinook stock complex	Manage terminal fisheries for 40% harvest rate, but no less than 3,000 natural adult spawners, the MSY level estimated by Cooney (1984).		3,000	1,500	87% (Cooney 1984)	
Hoko Summer/Fall Indicator stock for the FNMC Chinook stock complex	850 natural adult spawners, the MSP level estimated by Ames and Phinney (1977). May include adults used for supplementation program.		850	425	78% Proxy (SAC 2011a)	
Grays Harbor Spring	1,400 natural adult spawners.		1,400	700	78% Proxy (SAC 2011a)	FNMC complex; international exception applies, ACLs are not applicable.
Queets Sp/Su	Manage terminal fisheries for 30% harvest rate, but no less than 700 natural adult spawners.		700	350	78% Proxy (SAC 2011a)	
Hoh Spring/Summer	Manage terminal fisheries for 31% harvest rate, but no less than 900 natural adult spawners.		900	450	78% Proxy (SAC 2011a)	
Quillayute Spring/Summer	1,200 natural adult spawners for summer component (MSY).		1,200	600	78% Proxy (SAC 2011a)	
Willapa Bay Fall (hatchery)	WDFW spawning escapement objective of 3,525 hatchery spawners	Not applicable to hatchery stocks				
Quinault Fall (hatchery)	Hatchery production.					

TABLE A-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes.<sup>a/</sup> (Page 3 of 7)

CHINOOK					
Stocks In The Fishery	Conservation Objective	S <sub>MSY</sub>	MSST	MFMT (F <sub>MSY</sub> )	ACL
North Lewis River Fall	NMFS consultation standard/recovery plan. McIsaac (1990) stock-recruit analysis supports MSY objective of 5,700 natural adult spawners.	5,700	ESA consultation standard applies.	76%	ESA consultation standard applies.
Snake River Fall	NMFS consultation standard/recovery plan. No more than 70.0% of 1988-1993 base period AEQ exploitation rate for all ocean fisheries.	Undefined		Undefined	
Upper Willamette Spring	NMFS consultation standard/recovery plan. Not applicable for ocean fisheries.	Undefined		Undefined	
Columbia Upper River Spring	NMFS consultation standard/recovery plan. Not applicable for ocean fisheries.	Undefined		Undefined	
Snake River - Spring/Summer	NMFS consultation standard/recovery plan. Not applicable for ocean fisheries.	Undefined		Undefined	
Columbia Lower River Hatchery - Fall	14,800 adults for hatchery egg-take. River mouth goal of 25,000.	Not applicable to hatchery stocks			
Columbia Lower River Hatchery Spring	3,500 adults to meet Cowlitz, Kalama, and Lewis Rivers broodstock needs.				
Columbia Mid-River Bright Hatchery Fall	7,900 for Little White Salmon Hatchery egg-take.				
Columbia Spring Creek Hatchery Fall	6,000 adults to meet hatchery egg-take goal.				
Columbia Upper River Bright Fall	40,000 natural bright adults above McNary Dam (MSY proxy adopted in 1984 based on CRFMP). The management goal has been increased to 60,000 by Columbia River managers in recent years.	39,625 (Langness and Reidinger 2003)	19,812	85.91% (Langness and Reidinger 2003)	International exception applies, ACLs are not applicable.
Columbia Upper River Summer	Hold ocean fishery impacts at or below base period; recognize CRFMP objective - MSY proxy of 80,000 to 90,000 adults above Bonneville Dam, including both Columbia and Snake River stocks (state and tribal management entities considering separate objectives for these stocks).	12,143 (CTC 1999)	6,071	75% (CTC 1999)	

TABLE A-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes.<sup>af</sup> (Page 4 of 7)

CHINOOK						
Stocks In The Fishery	Conservation Objective		S <sub>MSY</sub>	MSST	MFMT (F <sub>MSY</sub> )	ACL
Eastern Strait of Juan de Fuca Summer/Fall	NMFS consultation standard/recovery plan.	Annual natural spawning escapement targets may vary from FMP conservation objectives if agreed to by WDFW and treaty tribes under the provisions of <i>U.S. v. Washington</i> and subsequent U.S. District Court orders.	Undefined	ESA consultation standard applies	Undefined	ESA Consultation standard applies.
Skokomish Summer/Fall	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Mid Hood Canal Summer/Fall	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Nooksack Spring early	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Skagit Summer/Fall	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Skagit Spring	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Stillaguamish Summer/Fall	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Snohomish Summer/Fall	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Cedar River Summer/Fall	NMFS consultation standard/recovery plan.		Undefined		Undefined	
White River Spring	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Green River Summer/Fall	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Nisqually River Summer/Fall	NMFS consultation standard/recovery plan.		Undefined		Undefined	
Puyallup Summer/Fall	NMFS consultation standard/recovery plan.	Undefined	Undefined			

TABLE A-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes.<sup>a/</sup> (Page 5 of 7)

COHO					
Stocks In The Fishery	Conservation Objective	S <sub>M<sub>SY</sub></sub>	MSST	MFMT (F <sub>M<sub>SY</sub></sub> )	ACL
Central California Coast ESA Threatened	NMFS ESA consultation standard/recovery plan: No retention of coho south of the OR/CA border.	Undefined	ESA consultation standard applies	Undefined	ESA consultation standard applies.
Southern Oregon/Northern California Coast ESA Threatened	NMFS ESA consultation standard/recovery plan: No more than a 13.0% AEQ exploitation rate in ocean fisheries on Rogue/Klamath hatchery coho.	Undefined		Undefined	
Oregon Coastal Natural ESA Threatened	NMFS ESA consultation standard/recovery plan: Total AEQ exploitation rate limit based on parental seeding level and marine survival matrix in FMP Table 3-2.	Undefined		Undefined	
Lower Columbia Natural ESA Threatened	NMFS ESA consultation standard/recovery plan: AEQ exploitation rate limit on ocean and mainstem Columbia fisheries identified in annual NMFS guidance.	Undefined		Undefined	
Oregon Coast Hatchery	Hatchery production.	Not applicable to hatchery stocks			
Columbia River Late Hatchery	Hatchery rack return goal of 6,400 adults. River mouth goal of 9,700.				
Columbia River Early Hatchery	Hatchery rack return goal of 21,700 adults. River mouth goal of 77,200.				
Willapa Bay - Hatchery	Hatchery rack return goal of 6,100 adults.				
Quinault - Hatchery	Hatchery production.				
Quillayute - Summer Hatchery	Hatchery production.				
South Puget Sound Hatchery	Hatchery rack return goal of 52,000 adults.				
Willapa Bay Natural	17,200 natural area spawners.	17,200	8,600	74%	Based on F <sub>ABC</sub> and annual ocean abundance. F <sub>ABC</sub> is F <sub>M<sub>SY</sub></sub> reduced by Tier 1 (5%) uncertainty

TABLE A-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes.<sup>a/</sup> (Page 6 of 7)

COHO						
Stocks In The Fishery	Conservation Objective		S <sub>MSY</sub>	MSST	MFMT (F <sub>MSY</sub> )	ACL
Grays Harbor	35,400 natural adult spawners (MSP based on WDF [1979])	Annual natural spawning escapement targets may vary from FMP conservation objectives if agreed to by WDFW and treaty tribes under the provisions of Hoh v. Baldrige, U.S. v. Washington, or subsequent U.S. District Court orders	24,426 S <sub>MSP</sub> (FMP) *F <sub>SMY</sub> (SAC 2010b)	18,320 (Johnstone et al. 2011)	MFMT=65% (Johnstone et al. 2011) F <sub>MSY</sub> =69% (SAC 2011b)	International exception applies, ACLs are not applicable.
Queets	MSY range of 5,800 to 14,500 natural adult spawners (Lestelle et al 1984)		5,800 (Johnston et al. 2011)	4,350 (Johnstone et al. 2011)	MFMT=65% (Johnstone et al. 2011) F <sub>MSY</sub> =68% (SAC 2011b)	
Hoh	MSY range of 2,000 to 5,000 natural adult spawners (Lestelle et al. 1984)		2,520 (SAC 2010b)	1,890 S <sub>MSY</sub> *0.75	MFMT=65% (Johnstone et al. 2011) F <sub>MSY</sub> =69% (SAC 2011b)	
Quillayute - Fall	MSY range of 6,300 to 15,800 natural adult spawners (Lestelle et al. 1984)		6,300 (Johnston et al. 2011)	4,725 (Johnstone et al. 2011)	MFMT=59%; F <sub>MSY</sub> =59% (SAC 2011b)	
Strait of Juan de Fuca	Total allowable MSY exploitation rate of: 0.60 for ocean age-3 abundance > 27,445; 0.40 for ocean age-3 abundance >11,679 and ≤27,445; 0.20 for ocean age-3 abundance ≤11,679		11,000 (Bowhay et al. 2009)	7,000 (Bowhay et al. 2009)	60% (Bowhay et al. 2009)	
Hood Canal	Total allowable MSY exploitation rate of: 0.65 for ocean age-3 abundance > 41,000; 0.45 for ocean age-3 abundance >19,545 and ≤41,000; 0.20 for ocean age-3 abundance ≤19,545		14,350 (Bowhay et al. 2009)	10,750 (Bowhay et al. 2009)	65% (Bowhay et al. 2009)	
Skagit	Total allowable MSY exploitation rate of: 0.60 for ocean age-3 abundance > 62,500; 0.35 for ocean age-3 abundance >22,857 and ≤62,500; 0.20 for ocean age-3 abundance ≤22,857		25,000 (Bowhay et al. 2009)	14,857 (Bowhay et al. 2009)	60% (Bowhay et al. 2009)	
Stillaguamish	Total allowable MSY exploitation rate of: 0.50 for ocean age-3 abundance > 20,000; 0.35 for ocean age-3 abundance >9,385 and ≤20,000; 0.20 for ocean age-3 abundance ≤9,385		10,000 (Bowhay et al. 2009)	6,100 (Bowhay et al. 2009)	50% (Bowhay et al. 2009)	
Snohomish	Total allowable MSY exploitation rate of: 0.60 for ocean age-3 abundance > 125,000; 0.40 for ocean age-3 abundance >51,667 and ≤125,000; 0.20 for ocean age-3 abundance ≤51,667		50,000 (Bowhay et al. 2009)	31,000 (Bowhay et al. 2009)	60% (Bowhay et al. 2009)	

TABLE A-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes.<sup>a/</sup> (Page 7 of 7)

PINK (odd-numbered years)					
Stocks In The Fishery	Conservation Objective				
		S <sub>MSY</sub>	MSST	MFMT (F <sub>MSY</sub> )	ACL
Puget Sound	900,000 natural spawners or consistent with provisions of the Pacific Salmon Treaty (Fraser River Panel).	900,000	450,000	Undefined	International exception applies, ACLs are not applicable.

a/ Some hatchery goals and ESA consultation standards have been updated relative to the version of this table in the FMP.

TABLE A-2. Allowable fishery impact rate criteria for OCN coho stock components under the Salmon Fishery Management Plan Amendment 13.

		MARINE SURVIVAL INDEX (based on return of jacks per hatchery smolt)			
		Low (<0.0009)	Medium (0.0009 to 0.0034)	High (>0.0034)	
PARENT SPAWNER STATUS		Allowable Total Fishery Impact Rate			
<b>High:</b>	Parent spawners achieved Level #2 rebuilding criteria; grandparent spawners achieved Level #1	≤15%	≤30% <sup>a/</sup>	≤35% <sup>a/</sup>	
<b>Medium:</b>	Parent spawners achieved Level #1 or greater rebuilding criteria	≤15%	≤20% <sup>a/</sup>	≤25% <sup>a/</sup>	
<b>Low:</b>	Parent spawners less than Level #1 rebuilding criteria	≤15%	≤15%	≤15%	
		≤10-13% <sup>b/</sup>			
OCN Coho Spawners by Stock Component					
Rebuilding Criteria	Northern	North-Central	South-Central	Southern	Total
Full Seeding at Low Marine Survival:	21,700	55,000	50,000	5,400	132,100
Level #2 (75% of full seeding):	16,400	41,300	37,500	4,100	99,300
Level #1 (50% of full seeding):	10,900	27,500	25,000	2,700	66,100
38% of Level #1 (19% of full seeding):	4,100	10,500	9,500	1,000	25,100
Stock Component (Boundaries)	Full Seeding of Major Basins at Low Marine Survival (Number of Adult Spawners)				
<b>Northern:</b> (Necanicum River to Neskowin Creek)	Nehalem	Tillamook	Nestucca	Ocean Tribs.	
	17,500	2,000	1,800	400	
<b>North-Central:</b> (Salmon River to Siuslaw River)	Siletz	Yaquina	Alsea	Siuslaw	Ocean Tribs.
	4,300	7,100	15,100	22,800	5,700
<b>South-Central:</b> (Siltcoos River to Sixes River)	Umpqua	Coos	Coquille	Coastal Lakes	
	29,400	7,200	5,400	8,000	
<b>Southern:</b> (Elk River to Winchuck River)	Rogue				
	5,400				

a/ When a stock component achieves a medium or high parent spawner status under a medium or high marine survival index, but a major basin within the stock component is less than 10% of full seeding, (1) the parent spawner status will be downgraded one level to establish the allowable fishery impact rate for that component, and (2) no coho-directed harvest impacts will be allowed within that particular basin.

b/ This exploitation rate criteria applies when (1) parent spawners are less than 38% of the Level #1 rebuilding criteria, or (2) marine survival conditions are projected to be at an extreme low as in 1994-1996 (<0.0006 jack per hatchery smolt). If parent spawners decline to lower levels than observed through 1998, rates of less than 10% would be considered, recognizing that there is a limit to further bycatch reduction opportunities.



TABLE A-3. Fishery impact rate criteria for OCN coho stock components based on the harvest matrix resulting from the OCN work group 2000 review of Amendment 13.

Parent Spawner Status <sup>a/</sup>	Marine Survival Index (based on return of jacks per hatchery smolt)						
	Extremely Low (<0.0008 )	Low (0.0008 to 0.0014 )	Medium (>0.0014 to 0.0040)	High (>0.0040 )			
<b>High</b> Parent Spawners > 75% of full seeding	<b>E</b> ≤ 8%	<b>J</b> ≤ 15%	<b>O</b> ≤ 30%	<b>T</b> ≤ 45%			
<b>Medium</b> Parent Spawners > 50% & ≤ 75% of full seeding	<b>D</b> ≤ 8%	<b>I</b> ≤ 15%	<b>N</b> ≤ 20%	<b>S</b> ≤ 38%			
<b>Low</b> Parent Spawners > 19% & ≤ 50% of full seeding	<b>C</b> ≤ 8%	<b>H</b> ≤ 15%	<b>M</b> ≤ 15%	<b>R</b> ≤ 25%			
<b>Very Low</b> Parent Spawners > 4 fish per mile & ≤ 19% of full seeding	<b>B</b> ≤ 8%	<b>G</b> ≤ 11%	<b>L</b> ≤ 11%	<b>Q</b> ≤ 11%			
<b>Critical</b> <sup>b/</sup> Parental Spawners ≤ 4 fish per mile	<b>A</b> 0 - 8%	<b>F</b> 0 - 8%	<b>K</b> 0 - 8%	<b>P</b> 0 - 8%			
Sub-aggregate and Basin Specific Spawner Criteria Data							
Sub-aggregate	Miles of Available Spawning Habitat	100% of Full Seeding	"Critical"		Very Low, Low, Medium & High		
			4 Fish per Mile	12% of Full Seeding	19% of Full Seeding	50% of Full Seeding	75% of full Seeding
Northern	899	21,700	3,596	NA	4,123	10,850	16,275
North - Central	1,163	55,000	4,652	NA	10,450	27,500	41,250
South - Central	1,685	50,000	6,740	NA	9,500	25,000	37,500
Southern	450	5,400	NA	648	1,026	2,700	4,050
Coastwide Total	4,197	132,100	15,636		25,099	66,050	99,075

a/ Parental spawner abundance status for the OCN aggregate assumes the status of the weakest sub-aggregate.

b/ "Critical" parental spawner status is defined as 4 fish per mile for the Northern, North-Central, and South-Central subaggregates. Because the ratio of high quality spawning habitat to total spawning habitat in the Rogue River Basin differs significantly from the rest of the basins on the coast, the spawner density of 4 fish per mile does not represent "Critical" status for that basin. Instead, "Critical" status for the Rogue Basin (Southern Sub-aggregate) is estimated as 12% of full seeding of high quality

TABLE A-4. Fishery impact rate criteria for OCN coho stock components based on the harvest matrix resulting from the OCN work group 2000 review of Amendment 13 including modifications to the marine survival index adopted during the 2012 and 2013 methodology reviews.

Parent Spawner Status <sup>a/</sup>	Marine Survival Index <i>(Wild adult coho salmon survival as predicted by the two-variable GAM ensemble forecast)</i>						
	Extremely Low <2%	Low 2%-4.5%	Medium >4.5%-8%	High >8%			
<b>High</b> Parent Spawners > 75% of full seeding		J ≤ 15%	O ≤ 30%	T ≤ 45%			
<b>Medium</b> Parent Spawners > 50% & ≤ 75% of full seeding		I ≤ 15%	N ≤ 20%	S ≤ 38%			
<b>Low</b> Parent Spawners > 19% & ≤ 50% of full seeding		H ≤ 15%	M ≤ 15%	R ≤ 25%			
<b>Very Low</b> Parent Spawners > 4 fish per mile & ≤ 19% of full seeding		G ≤ 11%					
<b>Sub-aggregate and Basin Specific Spawner Criteria Data</b>							
Sub-aggregate	Miles of Available Spawning Habitat	100% of Full Seeding	"Critical"		Very Low, Low, Medium & High		
			4 Fish per Mile	12% of Full Seeding	19% of Full Seeding	50% of Full Seeding	75% of Full Seeding
Northern	899	21,700	3,596	NA	4,123	10,850	16,275
North-Central	1,163	55,000	4,652	NA	10,450	27,500	41,250
South-Central	1,685	50,000	6,740	NA	9,500	25,000	37,500
Southern <i>(Removed per adoption of Amendment 16)</i>							

a/ Parental spawner abundance status for the OCN aggregate assumes the status of the weakest sub-aggregate.

TABLE A-5. Council adopted management objectives for Puget Sound natural coho management units, expressed as exploitation rate ceilings for critical, low and normal abundance based status categories, with runsize breakpoints (abundances expressed as ocean age-3).

Status	Management Unit				
	Strait of Juan de Fuca	Hood Canal	Skagit	Stillaguamish	Snohomish
Critical/Low Runsize Breakpoint	11,679	19,545	22,857	9,385	51,667
Critical Exploitation Rate	0.20	0.20	0.20	0.20	0.20
Low/normal runsize breakpoint	27,445	41,000	62,500	20,000	125,000
Low Exploitation Rate	0.40	0.45	0.35	0.35	0.40
Normal Exploitation Rate	0.60	0.65	0.60	0.50	0.60

TABLE A-6. Council recommended management objectives for Lower Columbia River natural tule Chinook, expressed as exploitation rate ceilings for abundance based status categories, with runsize forecast bins expressed as adult river mouth return forecasts of Lower Columbia River hatchery tule Chinook.

Runsize Forecast Bins	<30,000	30,000 to 40,000	40,000 to 85,000	>85,000
Maximum Exploitation Rate	0.30	0.35	0.38	0.41

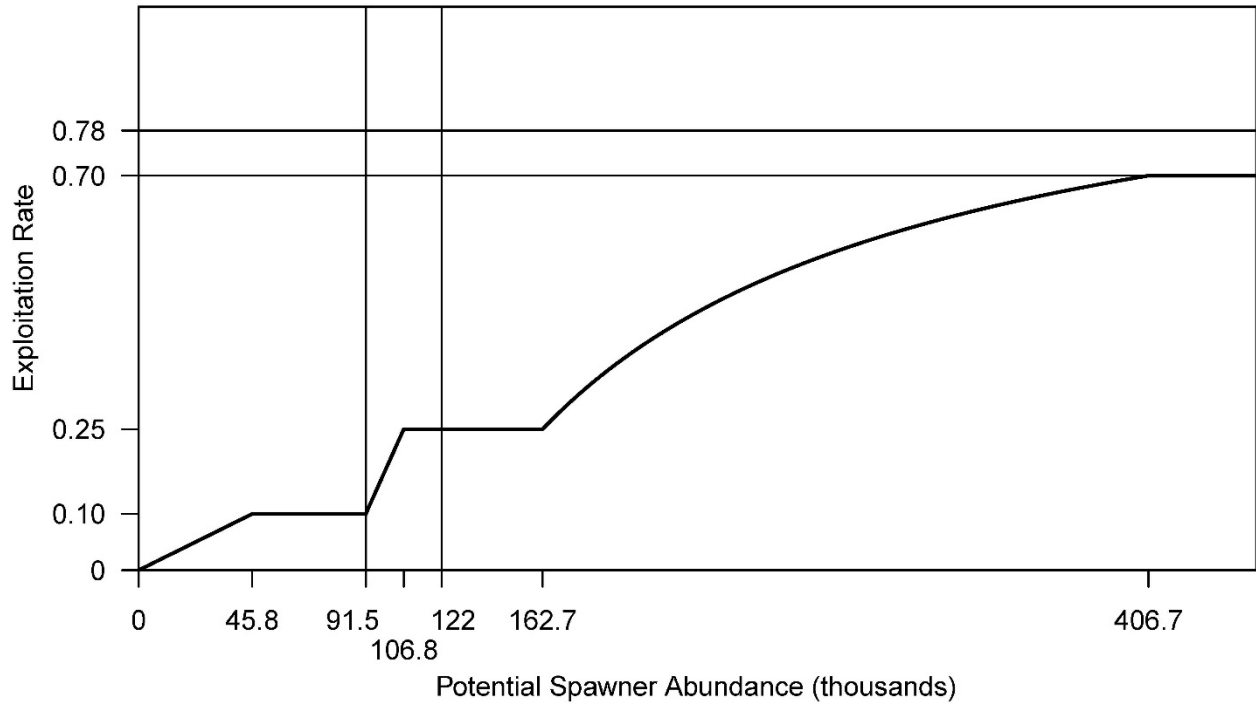


FIGURE A-1. Sacramento River fall Chinook control rule. Potential spawner abundance is the predicted hatchery and natural area adult spawners in the absence of fisheries, which is equivalent to the Sacramento Index. See the salmon FMP, Section 3.3.6, for control rule details.

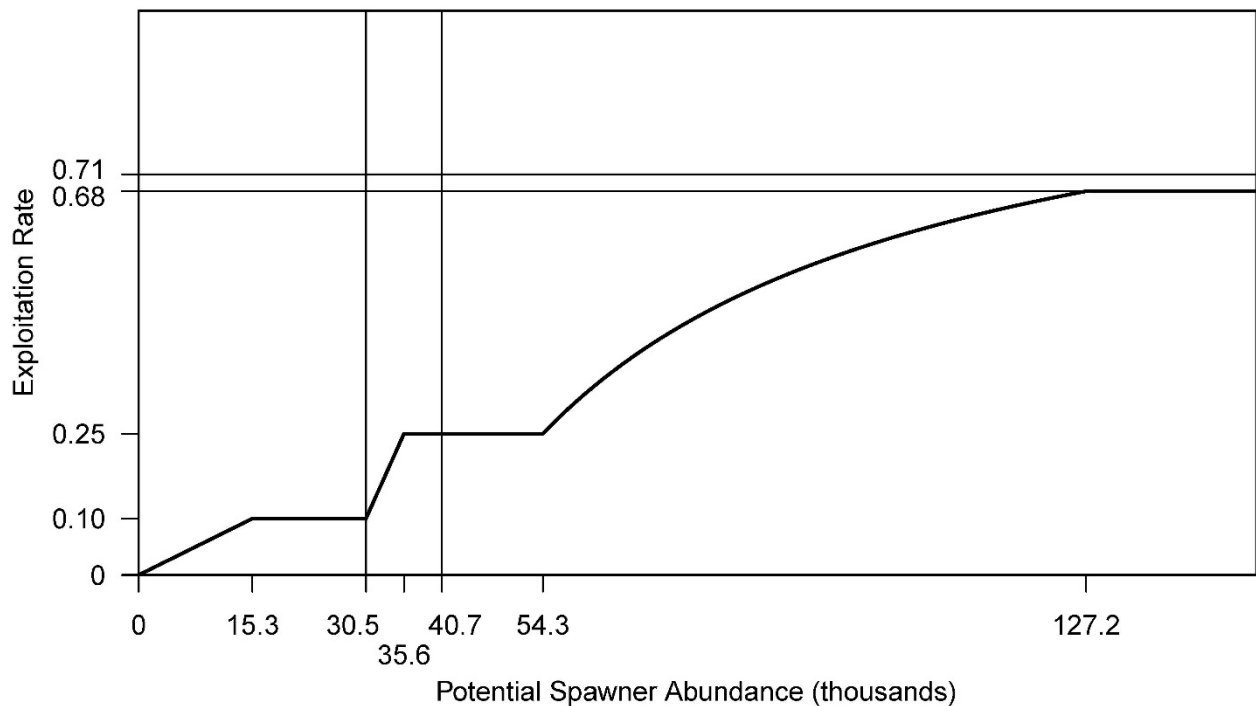


FIGURE A-2. Klamath River fall Chinook control rule. Potential spawner abundance is the predicted natural area adult spawners in the absence of fisheries. See the salmon FMP, Section 3.3.6, for control rule details.

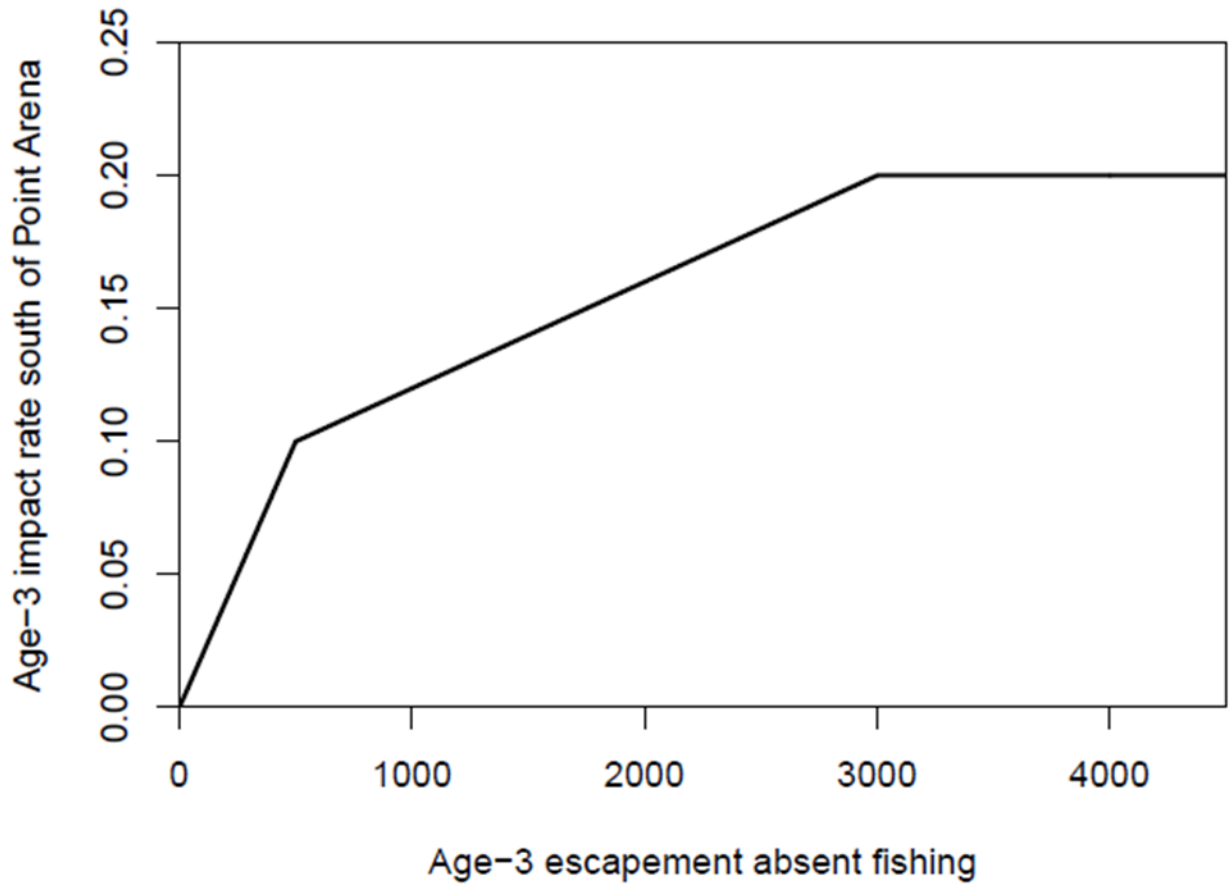


FIGURE A-3. Sacramento River winter Chinook impact rate control rule. The maximum forecast age-3 impact rate for the area south of Point Arena, California, is determined by the forecasted age-3 escapement absent fishing.

Page Intentionally Left Blank

**APPENDIX B  
SALMON HARVEST ALLOCATION SCHEDULES**

**TABLE OF CONTENTS**

	<u>Page</u>
HARVEST ALLOCATION - SECTION 5.3 OF THE PACIFIC COAST SALMON FISHERY MANAGEMENT PLAN.....	115
5.3 ALLOCATION.....	115
5.3.1 Commercial (Non-Tribal) and Recreational Fisheries North of Cape Falcon .....	115
5.3.1.1 Goal, Objectives, and Priorities.....	115
5.3.1.2 Allocation Schedule Between Gear Types .....	116
5.3.1.3 Recreational Subarea Allocations .....	117
5.3.2 Commercial and Recreational Fisheries South of Cape Falcon.....	118
5.3.3 Tribal Indian Fisheries .....	121
5.3.3.1 California.....	121
5.3.3.2 Columbia River .....	121
5.3.3.3 U.S. v. Washington Area.....	121
MEASURES TO MANAGE THE HARVEST - SECTION 6.5 OF THE PACIFIC COAST SALMON FISHERY MANAGEMENT PLAN .....	122
6.5 SEASONS AND QUOTAS.....	122
6.5.1 Preferred Course of Action .....	122
6.5.2 Procedures for Calculating Seasons.....	122
6.5.3 Species-Specific and Other Selective Fisheries .....	122
6.5.3.1 Guidelines.....	122
6.5.3.2 Selective Fisheries Which May Change Allocation Percentages North of Cape Falcon .....	123
6.5.4 Procedures for Calculating Quotas .....	124
6.5.5 Procedures for Regulating Ocean Harvests of Pink and Sockeye .....	124

Page Intentionally Left Blank



## 5.3 ALLOCATION

*“A Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.”*

*Magnuson-Stevens Act, National Standard 4*

Harvest allocation is required when the number of fish is not adequate to satisfy the perceived needs of the various fishing industry groups and communities, to divide the catch between non-Indian ocean and inside fisheries and among ocean fisheries, and to provide federally recognized treaty Indian fishing opportunity. In allocating the resource between ocean and inside fisheries, the Council considers both in-river harvest and spawner escapement needs. The magnitude of in-river harvest is determined by the states in a variety of ways, depending upon the management area. Some levels of in-river harvests are designed to accommodate federally recognized in-river Indian fishing rights, while others are established to allow for non-Indian harvests of historical magnitudes. Several fora exist to assist this process on an annual basis. The North of Cape Falcon Forum, a state and tribal sponsored forum, convenes the pertinent parties during the Council’s preseason process to determine allocation and conservation recommendations for fisheries north of Cape Falcon. The individual states also convene fishery industry meetings to coordinate their input to the Council.

### 5.3.1 Commercial (Non-Tribal) and Recreational Fisheries North of Cape Falcon

#### 5.3.1.1 Goal, Objectives, and Priorities

Harvest allocations will be made from a total allowable ocean harvest, which is maximized to the largest extent possible but still consistent with PST and treaty-Indian obligations, state fishery needs, and spawning escapement requirements, including consultation standards for stocks listed under the ESA. The Council shall make every effort to establish seasons and gear requirements that provide troll and recreational fleets a reasonable opportunity to catch the available harvest. These may include single-species directed fisheries with landing restrictions for other species.

The goal of allocating ocean harvest north of Cape Falcon is to achieve, to the greatest degree possible, the objectives for the commercial and recreational fisheries as follows:

- Provide recreational opportunity by maximizing the duration of the fishing season while minimizing daily and area closures and restrictions on gear and daily limits.
- Maximize the value of the commercial harvest while providing fisheries of reasonable duration.

The priorities listed below will be used to help guide establishment of the final harvest allocation while meeting the overall commercial and recreational fishery objectives.

At total allowable harvest levels up to 300,000 coho and 100,000 Chinook:

- Provide coho to the recreational fishery for a late June through early September all-species season. Provide Chinook to allow (1) access to coho and, if possible, (2) a minimal Chinook-only fishery prior to the all-species season. Adjust days per week and/or institute area restrictions to stabilize season duration.

- Provide Chinook to the troll fishery for a May and early June Chinook season and provide coho to (1) meet coho hooking mortality in June where needed and (2) access a pink salmon fishery in odd years. Attempt to ensure that part of the Chinook season will occur after June 1.

At total allowable harvest levels above 300,000 coho and above 100,000 Chinook:

- Relax any restrictions in the recreational all-species fishery and/or extend the all-species season beyond Labor Day as coho quota allows. Provide Chinook to the recreational fishery for a Memorial Day through late June Chinook-only fishery. Adjust days per week to ensure continuity with the all-species season.
- Provide coho for an all-salmon troll season in late summer and/or access to a pink fishery. Leave adequate Chinook from the May through June season to allow access to coho.

### 5.3.1.2 Allocation Schedule Between Gear Types

Initial commercial and recreational allocation will be determined by the schedule of percentages of total allowable harvest as follows:

TABLE 5-1. Initial commercial/recreational harvest allocation schedule north of Cape Falcon.

Harvest (thousands of fish)	Coho		Chinook		
	Percentage <sup>a/</sup>		Harvest (thousands of fish)	Percentage <sup>a/</sup>	
	Troll	Recreational		Troll	Recreational
0-300	25	75	0-100	50	50
>300	60	40	>100-150	60	40
			>150	70	30

a/ The allocation must be calculated in additive steps when the harvest level exceeds the initial tier.

This allocation schedule should, on average, allow for meeting the specific fishery allocation priorities described above. The initial allocation may be modified annually by preseason and inseason trades to better achieve (1) the commercial and recreational fishery objectives and (2) the specific fishery allocation priorities. The final preseason allocation adopted by the Council will be expressed in terms of quotas, which are neither guaranteed catches nor inflexible ceilings. Only the total ocean harvest quota is a maximum allowable catch.

To provide flexibility to meet the dynamic nature of the fisheries and to assure achievement of the allocation objectives and fishery priorities, deviations from the allocation schedule will be allowed as provided below and as described in Section 6.5.3.2 for certain selective fisheries.

1. Preseason species trades (Chinook and coho) that vary from the allocation schedule may be made by the Council based upon the recommendation of the pertinent recreational and commercial SAS representatives north of Cape Falcon. The Council will compare the socioeconomic impacts of any such recommendation to those of the standard allocation schedule before adopting the allocation that best meets FMP management objectives.
2. Inseason transfers, including species trades of Chinook and coho, may be permitted in either direction between recreational and commercial fishery allocations to allow for uncatchable fish in one fishery to be reallocated to the other. Fish will be deemed "uncatchable" by a respective commercial or recreational fishery only after considering all possible annual management actions to allow for their

harvest which meet framework harvest management objectives, including single species or exclusive registration fisheries. Implementation of inseason transfers will require (1) consultation with the pertinent recreational and commercial SAS members and the STT, and (2) a clear establishment of available fish and impacts from the transfer.

3. An exchange ratio of four coho to one Chinook shall be considered a desirable guideline for preseason trades. Deviations from this guideline should be clearly justified. Inseason trades and transfers may vary to meet overall fishery objectives. (The exchange ratio of four coho to one Chinook approximately equalizes the species trade in terms of average ex-vessel values of the two salmon species in the commercial fishery. It also represents an average species catch ratio in the recreational fishery.)
4. Any increase or decrease in the recreational or commercial total allowable catch (TAC), resulting from an inseason restructuring of a fishery or other inseason management action, does not require reallocation of the overall north of Cape Falcon non-Indian TAC.
5. The commercial TACs of Chinook and coho derived during the preseason allocation process may be varied by major subareas (i.e., north of Leadbetter Point and south of Leadbetter Point) if there is a need to do so to decrease impacts on weak stocks. Deviations in each major subarea will generally not exceed 50 percent of the TAC of each species that would have been established without a geographic deviation in the distribution of the TAC. Deviation of more than 50 percent will be based on a conservation need to protect weak stocks and will provide larger overall harvest for the entire fishery north of Cape Falcon than would have been possible without the deviation. In addition, the actual harvest of coho may deviate from the initial allocation as provided in Section 6.5.3.2 for certain selective fisheries.
6. The recreational TACs of Chinook and coho derived during the preseason allocation process will be distributed among four major recreational port areas as described for coho and Chinook distribution in Section 5.3.1.3. The Council may deviate from subarea quotas (1) to meet recreational season objectives based on agreement of representatives of the affected ports and/or (2) in accordance with Section 6.5.3.2 with regard to certain selective fisheries. Additionally, based on the recommendations of the SAS members representing the ocean sport fishery north of Cape Falcon, the Council will include criteria in its preseason salmon management recommendations to guide any inseason transfer of coho among the recreational subareas to meet recreational season duration objectives. Inseason redistributions of quotas within the recreational fishery or the distribution of allowable coho catch transfers from the commercial fishery may deviate from the preseason distribution.

### **5.3.1.3      *Recreational Subarea Allocations***

#### **Coho**

The north of Cape Falcon preseason recreational TAC of coho will be distributed to provide 50 percent to the area north of Leadbetter Point and 50 percent to the area south of Leadbetter Point. The distribution of the allocation north of Leadbetter point will vary, depending on the existence and magnitude of an inside fishery in Area 4B, which is served by Neah Bay.

In years with no Area 4B fishery, the distribution of coho north of Leadbetter Point (50 percent of the total recreational TAC) will be divided to provide 74 percent to the area between Leadbetter Point and the Queets River (Westport), 5.2 percent to the area between Queets River and Cape Flattery (La Push), and 20.8 percent to the area north of the Queets River (Neah Bay). In years when there is an Area 4B (Neah Bay) fishery under state management, the allocation percentages north of Leadbetter Point will be modified to maintain more equitable fishing opportunity among the ports by decreasing the ocean harvest share for Neah Bay. This will be accomplished by adding 25 percent of the numerical value of the Area 4B fishery

to the recreational TAC north of Leadbetter Point prior to calculating the shares for Westport and La Push. The increase to Westport and La Push will be subtracted from the Neah Bay ocean share to maintain the same total harvest allocation north of Leadbetter Point. Table 5-2 displays the resulting percentage allocation of the total recreational coho catch north of Cape Falcon among the four recreational port areas (each port area allocation will be rounded to the nearest hundred fish, with the largest quotas rounded downward if necessary to sum to the TAC).

TABLE 5-2. Percentage allocation of total allowable coho harvest among the four recreational port areas north of Cape Falcon.<sup>a/</sup>

Port Area	Without Area 4B Add-on	With Area 4B Add-on	
Columbia River	50.0%	50.0%	
Westport	37.0%	37.0%	plus 17.3% of the Area 4B add-on
La Push	2.6%	2.6%	plus 1.2% of the Area 4B add-on
Neah Bay	10.4%	10.4%	minus 18.5% of the Area 4B add-on

a/ The Council may deviate from these percentages as described under #6 in Section 5.3.1.2.

TABLE 5-3. Example distributions of the recreational coho TAC north of Leadbetter Point.

Sport TAC North of Cape Falcon	Without Area 4B Add-On				With Area 4B Add-On <sup>a/</sup>					
	Columbia River	Westport	La Push	Neah Bay	Columbia River	Westport	La Push	Ocean	Neah Bay Add-on	Total
50,000	25,000	18,500	1,300	5,200	25,000	19,900	1,400	3,700	8,000	11,700
150,000	75,000	55,500	3,900	15,600	75,000	57,600	4,000	13,600	12,000	25,600
300,000	150,000	111,000	7,800	31,200	150,000	114,500	8,000	27,500	20,000	47,500

a/ The add-on levels are merely examples. The actual numbers in any year would depend on the particular mix of stock abundances and season determinations.

### Chinook

Subarea distributions of Chinook will be managed as guidelines and shall be calculated by the STT with the primary objective of achieving all-species fisheries without imposing Chinook restrictions (i.e., area closures or bag limit reductions). Chinook in excess of all-species fisheries needs may be utilized by directed Chinook fisheries north of Cape Falcon or by negotiating a Chinook/coho trade with another fishery sector.

Inseason management actions may be taken by the NMFS NW Regional Administrator to assure that the primary objective of the Chinook harvest guidelines for each of the four recreational subareas north of Cape Falcon are met. Such actions might include: closure from 0 to 3, or 0 to 6, or 3 to 200, or 5 to 200 nautical miles from shore; closure from a point extending due west from Tatoosh Island for 5 miles, then south to a point due west of Umatilla Reef Buoy, then due east to shore; closure from North Head at the Columbia River mouth north to Leadbetter Point; change species that may be landed; or other actions as prescribed in the annual regulations.

### 5.3.2 Commercial and Recreational Fisheries South of Cape Falcon

The allocation of allowable ocean harvest of coho salmon south of Cape Falcon has been developed to provide a more stable recreational season and increased economic benefits of the ocean salmon fisheries at varying stock abundance levels. When coupled with various recreational harvest reduction measures or the timely transfer of unused recreational allocation to the commercial fishery, the allocation schedule is designed to help secure recreational seasons extending at least from Memorial Day through Labor Day when possible, assist in maintaining commercial markets even at relatively low stock sizes, and fully utilize

available harvest. Total ocean catch of coho south of Cape Falcon will be treated as a quota to be allocated between troll and recreational fisheries as provided in Table 5-4.

(Note: The allocation schedule provides guidance only when coho abundance permits a directed coho harvest, not when the allowable impacts are insufficient to allow coho retention south of Cape Falcon. At such low levels, allocation of the allowable impacts will be accomplished during the Council's preseason process.)

TABLE 5-4. Allocation of allowable ocean harvest of coho salmon (thousands of fish) south of Cape Falcon.<sup>a/</sup>

Total Allowable Ocean Harvest	Recreational Allocation		Commercial Allocation	
	Number	Percentage	Number	Percentage
#100	#100 <sup>b/c/</sup>	100 <sup>b/</sup>	b/	b/
200	167 <sup>b/c/</sup>	84 <sup>b/</sup>	33 <sup>b/</sup>	17 <sup>b/</sup>
300	200	67	100	33
350	217	62	133	38
400	224	56	176	44
500	238	48	262	52
600	252	42	348	58
700	266	38	434	62
800	280	35	520	65
900	290	32	610	68
1,000	300	30	700	70
1,100	310	28	790	72
1,200	320	27	880	73
1,300	330	25	970	75
1,400	340	24	1,060	76
1,500	350	23	1,150	77
1,600	360	23	1,240	78
1,700	370	22	1,330	78
1,800	380	21	1,420	79
1,900	390	21	1,510	79
2,000	400	20	1,600	80
2,500	450	18	2,050	82
3,000	500	17	2,500	83

<sup>a/</sup> The allocation schedule is based on the following formula: first 150,000 coho to the recreational base (this amount may be reduced as provided in footnote b); over 150,000 to 350,000 fish, share at 2:1, 0.667 to troll and 0.333 to recreational; over 350,000 to 800,000 the recreational share is 217,000 plus 14% of the available fish over 350,000; above 800,000 the recreational share is 280,000 plus 10% of the available fish over 800,000.

Note: The allocation schedule provides guidance only when coho abundance permits a directed coho harvest, not when the allowable impacts are insufficient to allow general coho retention south of Cape Falcon. At such low levels, allocation of the allowable impacts will be determined in the Council's preseason process. Deviations from the allocation may also be allowed to meet consultation standards for ESA-listed stocks (e.g., the 1998 biological opinion for California coastal coho requires no retention of coho in fisheries off California).

<sup>b/</sup> If the commercial allocation is insufficient to meet the projected hook-and-release mortality associated with the commercial all-salmon-except-coho season, the recreational allocation will be reduced by the number needed to eliminate the deficit.

<sup>c/</sup> When the recreational allocation is 167,000 coho or less, special allocation provisions apply to the recreational harvest distribution by geographic area (unless superseded by requirements to meet a consultation standard for ESA-listed stocks); see text of FMP as modified by Amendment 11 allocation provisions.

The allocation schedule is designed to give sufficient coho to the recreational fishery to increase the probability of attaining no less than a Memorial Day to Labor Day season as stock sizes increase. This increased allocation means that, in many years, actual catch in the recreational fishery may fall short of its allowance. In such situations, managers will make an inseason reallocation of unneeded recreational coho to the south of Cape Falcon troll fishery. The reallocation should be structured and timed to allow the commercial fishery sufficient opportunity to harvest any available reallocation prior to September 1, while still assuring completion of the scheduled recreational season (usually near mid-September) and, in any event, the continuation of a recreational fishery through Labor Day. This reallocation process will occur no later than August 15 and will involve projecting the recreational fishery needs for the remainder of the summer season. The remaining projected recreational catch needed to extend the season to its scheduled closing date will be a harvest guideline rather than a quota. If the guideline is met prior to Labor Day, the season may be allowed to continue if further fishing is not expected to result in any considerable danger of impacting the allocation of another fishery or of failing to meet an escapement goal.

The allocation schedule is also designed to assure there are sufficient coho allocated to the troll fishery at low stock levels to ensure a full Chinook troll fishery. This hooking mortality allowance will have first priority within the troll allocation. If the troll allocation is insufficient for this purpose, the remaining number of coho needed for the estimated incidental coho mortality will be deducted from the recreational share. At higher stock sizes, directed coho harvest will be allocated to the troll fishery after hooking mortality needs for Chinook troll fishing have been satisfied.

The allowable harvest south of Cape Falcon may be further partitioned into subareas to meet management objectives of the FMP. Allowable harvests for subareas south of Cape Falcon will be determined by an annual blend of management considerations including:

1. Abundance of contributing stocks
2. Allocation considerations of concern to the Council
3. Relative abundance in the fishery between Chinook and coho
4. Escapement goals
5. Maximizing harvest potential

Troll coho quotas may be developed for subareas south of Cape Falcon consistent with the above criteria. California recreational catches of coho, including projections of the total catch to the end of the season, would be included in the recreational allocation south of Cape Falcon, but the area south of the Oregon-California border would not close when the allocation is met; except as provided below when the recreational allocation is at 167,000 or fewer fish.

When the south of Cape Falcon recreational allocation is equal to or less than 167,000 coho:

1. The recreational fisheries will be divided into two major subareas, as listed in #2 below, with independent quotas (i.e., if one quota is not achieved or is exceeded, the underage or overage will not be added to or deducted from the other quota; except as provided under #3 below).
2. The two major recreational subareas will be managed within the constraints of the following impact quotas, expressed as a percentage of the total recreational allocation (percentages based on avoiding large deviations from the historical harvest shares):
  - a. Central Oregon (Cape Falcon to Humbug Mountain) - 70 percent
  - b. South of Humbug Mountain - 30 percent



In addition,

- (1) Horse Mountain to Point Arena will be managed for an impact guideline of 3 percent of the south of Cape Falcon recreational allocation, and
  - (2) There will be no coho harvest constraints south of Point Arena. However, the projected harvest in this area (which averaged 1,800 coho from 1986-1990) will be included in the south of Humbug Mountain impact quota.
3. Coho quota transfers can occur on a one-for-one basis between subareas if Chinook constraints preclude access to coho.

### **5.3.3 Tribal Indian Fisheries**

#### **5.3.3.1 California**

On October 4, 1993 the Solicitor, Department of Interior, issued a legal opinion in which he concluded that the Yurok and Hoopa Valley Indian tribes of the Klamath River Basin have a federally protected right to the fishery resource of their reservations sufficient to support a moderate standard of living or 50 percent of the total available harvest of Klamath-Trinity basin salmon, whichever is less. The Secretary of Commerce recognized the tribes' federally reserved fishing right as applicable law for the purposes of the MSA (58 FR 68063, December 23, 1993). The Ninth Circuit Court of Appeals upheld the conclusion that the Hoopa Valley and Yurok tribes have a federally reserved right to harvest fish in Parravano v. Babbitt and Brown, 70 F.3d 539 (1995) (Cert. denied in Parravano v. Babbitt and Brown 110, S.Ct 2546 [1996]). The Council must recognize the tribal allocation in setting its projected escapement level for the Klamath River.

#### **5.3.3.2 Columbia River**

Pursuant to a September 1, 1983 Order of the U.S. District Court, the allocation of harvest in the Columbia River was established under the "Columbia River Fish Management Plan" which was implemented in 1988 by the parties of U.S. v. Oregon. This plan replaced the original 1977 plan (pages 16-20 of the 1978 FMP). Since the Columbia River Fishery Management Plan expired on December 31, 1998, fall Chinook in Columbia River fisheries were managed through 2007 under the guidance of annual management agreements among the U.S. v. Oregon parties. Since 2008, two 10-year management agreements (2008-2017 and 2018-2027) were negotiated through the U.S. v. Oregon process. The management agreement provides a framework within which the relevant parties may exercise their sovereign powers in a coordinated and systematic manner in order to protect, rebuild, and enhance upper Columbia River fish runs while providing harvest for both treaty Indian and non-Indian fisheries. The parties to the agreement are the United States, the states of Oregon, Washington, and Idaho, and four Columbia River treaty Indian tribes-Warm Springs, Yakama, Nez Perce, and Umatilla.

#### **5.3.3.3 U.S. v. Washington Area**

Treaty Indian tribes have a legal entitlement to the opportunity to take up to 50 percent of the harvestable surplus of stocks which pass through their usual and accustomed fishing areas. The treaty Indian troll harvest which would occur if the tribes chose to take their total 50 percent share of the weakest stock in the ocean, is computed with the current version of the Fishery Regulation Assessment Model (FRAM), assuming this level of harvest did not create conservation or allocation problems on other stocks. A quota may be established in accordance with the objectives of the relevant treaty tribes concerning allocation of the treaty Indian share to ocean and inside fisheries. The total quota does not represent a guaranteed ocean harvest, but a maximum allowable catch.

The requirement for the opportunity to take up to 50 percent of the harvestable surplus determines the treaty shares available to the inside/outside Indian and all-citizen fisheries. Ocean coho harvest ceilings off the

Washington coast for treaty Indians and all-citizen fisheries are independent within the constraints that (1) where feasible, conservation needs of all stocks must be met; (2) neither group precludes the other from the opportunity to harvest its share, and; (3) allocation schemes may be established to specify outside/inside sharing for various stocks.

## **6.5 SEASONS AND QUOTAS**

For each management area or subarea, the Council has the option of managing the commercial and recreational fisheries for either coho or Chinook using the following methods: (1) fixed quotas and seasons; (2) adjustable quotas and seasons; and (3) seasons only. The Council may also use harvest guidelines within quotas or seasons to trigger inseason management actions established in the preseason regulatory process.

Quotas provide very precise management targets and work best when accurate estimates of stock abundance and distribution are available, or when needed to ensure protection of depressed stocks from potential overfishing. The Council does not view quotas as guaranteed harvests, but rather the maximum allowable harvest, which assures meeting the conservation objective of the species or stock of concern. While time and area restrictions are not as precise as quotas, they allow flexibility for effort and harvest to vary in response to abundance and distribution.

### **6.5.1 Preferred Course of Action**

Because of the need to use both seasons and quotas, depending on the circumstances, the Council will make the decision regarding seasons and quotas annually during the preseason regulatory process, subject to the limits specified below. Fishing seasons and quotas also may be modified during the season as provided under Section 10.2.

### **6.5.2 Procedures for Calculating Seasons**

Seasons will be calculated using the total allowable ocean harvest determined by procedures described in Chapter 5, and further allocated to the commercial and recreational fishery in accordance with the allocation plan presented in Section 5.3, and after consideration of the estimated amount of effort required to catch the available fish, based on past seasons.

Recreational seasons will be established with the goal of encompassing Memorial Day and/or Labor Day weekends in the season, if feasible. Opening dates will be adjusted to provide reasonable assurance that the recreational fishery is continuous, minimizing the possibility of an in-season closure.

Criteria used to establish commercial seasons, in addition to the estimated allowable ocean harvests, the allocation plan, and the expected effort during the season, will be: (1) bycatch mortality; (2) size, poundage, and value of fish caught; (3) effort shifts between fishing areas; (4) harvest of pink salmon in odd-numbered years; and (5) protection for weak stocks when they frequent the fishing areas at various times of the year.

### **6.5.3 Species-Specific and Other Selective Fisheries**

#### **6.5.3.1 Guidelines**

In addition to the all-species and single or limited species seasons established for the commercial and recreational fisheries, other species-limited fisheries, such as "ratio" fisheries and fisheries selective for marked or hatchery fish, may be adopted by the Council during the preseason regulatory process. In adopting such fisheries, the Council will consider the following guidelines:

1. Harvestable fish of the target species are available.
2. Harvest impacts on incidental species will not exceed allowable levels determined in the management plan.



3. Proven, documented, selective gear exists (if not, only an experimental fishery should be considered).
4. Significant wastage of incidental species will not occur or a written economic analysis demonstrates the landed value of the target species exceeds the potential landed value of the wasted species.
5. The selective fishery will occur in an acceptable time and area where wastage can be minimized and target stocks are maximally available.
6. Implementation of selective fisheries for marked or hatchery fish must be in accordance with U.S. v. Washington stipulation and order concerning co-management and mass marking (Case No. 9213, Subproceeding No. 96-3) and any subsequent stipulations or orders of the U.S. District Court, and consistent with international objectives under the PST (e.g., to ensure the integrity of the coded-wire tag program).

#### **6.5.3.2 Selective Fisheries Which May Change Allocation Percentages North of Cape Falcon**

As a tool to increase management flexibility to respond to changing harvest opportunities, the Council may implement deviations from the specified port area allocations and/or gear allocations to increase harvest opportunity through mark-selective fisheries. The benefits of any mark-selective fishery will vary from year to year and fishery to fishery depending on stock abundance, the mix of marked and unmarked fish, projected hook-and-release mortality rates, and public acceptance. These factors should be considered on an annual and case-by-case basis when utilizing mark-selective fisheries. The deviations for mark-selective fisheries are subordinate to the allocation priorities in Section 5.3.1.1 and may be allowed under the following management constraints:

1. Mark-Selective fisheries will first be considered during the months of May and/or June for Chinook and July through September for coho. However, the Council may consider mark-selective fisheries at other times, depending on year to year circumstances identified in the preceding paragraph.
2. The total impacts within each port area or gear group on the critical natural stocks of management concern are not greater than those under the original allocation without the mark-selective fisheries.
3. Other allocation objectives (i.e., treaty Indian, or ocean and inside allocations) are satisfied during negotiations in the North of Cape Falcon Forum.
4. The mark-selective fishery is assessed against the guidelines in Section 6.5.3.1.
5. Mark-selective fishery proposals need to be made in a timely manner in order to allow sufficient time for analysis and public comment on the proposal before the Council finalizes its fishery recommendations.

If the Council chooses to deviate from specified port and/or gear allocations, the process for establishing a mark-selective fishery would be as follows:

1. Allocate the TAC among the gear groups and port areas according to the basic FMP allocation process described in Section 5.3.1 without the mark-selective fishery.
2. Each gear group or port area may utilize the critical natural stock impacts allocated to its portion of the TAC to access additional harvestable, marked fish, over and above the harvest share established in step one, within the limits of the management constraints listed in the preceding paragraph.

#### **6.5.4 Procedures for Calculating Quotas**

Quotas will be based on the total allowable ocean harvest and the allocation plan as determined by the procedures of Chapter 5.

To the extent adjustable quotas are used, they may be subject to some or all of the following inseason adjustments:

1. For coho, private hatchery contribution to the ocean fisheries in the OPI area.
2. Unanticipated loss of shakers (bycatch mortality of undersized fish or unauthorized fish of another species that have to be returned to the water) during the season. (Adjustment for coho hooking mortality during any all-salmon-except-coho season will be made when the quotas are established.)
3. Any catch that take place in fisheries within territorial waters that are inconsistent with federal regulations in the EEZ.
4. If the ability to update inseason stock abundance is developed in the future, adjustments to total allowable harvest could be made, where appropriate.
5. The ability to redistribute quotas between subareas depending on the performance toward achieving the overall quota in the area.

Changes in the quotas as a result of the inseason adjustment process will be avoided unless the changes are of such magnitude that they can be validated by the STT and Council, given the precision of the original estimates.

The basis for determining the private hatchery contribution in (1) above will be either coded-wire tag analysis or analysis of scale patterns, whichever is determined by the STT to be more accurate, or another more accurate method that may be developed in the future, as determined by the STT and Council.

In reference to (4) and (5) above, if reliable techniques become available for making inseason estimates of stock abundance, and provision is made in any season for its use, a determination of techniques to be applied will be made by the Council through the Salmon Methodology Review process and discussed during the preseason regulatory process.

#### **6.5.5 Procedures for Regulating Ocean Harvests of Pink and Sockeye**

Sockeye salmon are only very rarely caught in Council-managed ocean salmon fisheries and no specific procedures have been established to regulate their harvest. Procedures for pink salmon are as follows:

1. All-species seasons will be planned such that harvest of pink salmon can be maximized without exceeding allowable harvests of Chinook and/or coho and within conservation and allocation constraints of the pink stocks.
2. Species specific or ratio fisheries for pink salmon will be considered under the guidelines for species specific fisheries presented in Section 6.5.3, and allocation constraints of the pink stocks.

**APPENDIX C  
OREGON PRODUCTION INDEX DATA**

**LIST OF TABLES**

	<u>Page</u>
TABLE C-1. Millions of coho smolts released annually into the OPI area by geographic area and rearing agency .....	127
TABLE C-2. Data set used in predicting Oregon production index hatchery (OPIH) adult coho. ....	128
TABLE C-3. Estimated coho salmon natural spawner abundance in Oregon coastal basins for each OCN coho management section.....	129
TABLE C-4. Data set used in predicting Oregon coastal natural river (OCNR) coho ocean recruits with random survey sampling and Mixed Stock Model (MSM) accounting.....	130

Page Intentionally Left Blank

EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

2020 Preseason Report I

129

TABLE C-1. Millions of coho smolts <sup>a/</sup> released annually into the OPI area by geographic area and rearing agency.

Year or Average	Columbia River					Oregon Coast					
	Oregon	Washington			Federal	Total	ODFW <sup>b/</sup>	Private		California	Total OPI
		Early	Late	Combined				Yearlings	Total		
1960-1965	5.6	-	-	6.1	4.5	16.2	2.0	-	2.0	0.4	18.6
1966-1970	6.0	10.2	4.9	15.1	6.5	27.6	2.9	0.0	2.9	1.3	31.8
1971-1975	6.8	10.7	6.8	17.5	4.5	28.8	3.9	0.0	3.9	1.2	33.9
1976-1980	8.0	7.3	10.1	17.4	4.7	30.1	3.8	1.4	5.2	0.7	36.0
1981-1985	7.1	4.3	14.4	18.7	3.2	29.0	3.9	3.3	7.2	0.7	36.9
1986-1990	7.3	3.1	15.6	18.7	4.1	30.1	5.2	1.9	7.1	1.4	38.6
1991-1995	9.8	3.6	13.9	17.5	3.5	30.8	4.9	-	4.9	0.9	36.6
1996-2000	7.2	4.5	10.9	15.4	4.3	26.9	2.0	-	2.0	0.6	29.4
2001	7.6	4.2	9.7	13.9	3.7	25.2	0.9	-	0.9	0.6	26.7
2002	7.5	3.3	8.6	11.9	4.3	23.7	1.0	-	1.0	0.6	25.3
2003	8.2	3.3	8.7	12.0	3.1	23.3	0.8	-	0.8	0.5	24.6
2004	6.7	3.0	8.8	11.8	3.6	22.1	0.8	-	0.8	0.6	23.5
2005	6.1	2.5	9.1	11.6	2.8	20.6	0.8	-	0.8	0.6	22.0
2006	6.1	2.8	9.0	11.7	2.6	20.4	0.8	-	0.8	0.6	21.8
2007	6.2	3.1	9.0	12.1	3.1	21.4	0.7	-	0.7	0.6	22.6
2008	6.9	2.8	9.2	12.0	2.9	21.9	0.4	-	0.4	0.5	22.8
2009	6.9	2.5	8.3	10.8	3.2	20.9	0.4	-	0.4	0.6	21.8
2010	5.9	2.0	7.5	9.5	3.1	18.6	0.3	-	0.3	0.5	19.4
2011	5.8	1.8	8.4	10.2	3.0	19.0	0.4	-	0.4	0.5	19.8
2012	5.9	2.2	7.4	9.7	2.7	18.2	0.4	-	0.4	0.6	19.3
2013	6.0	2.0	7.8	9.8	2.9	18.6	0.4	-	0.4	0.6	19.5
2014	6.5	1.5	7.4	8.9	3.0	18.4	0.4	-	0.4	0.6	19.4
2015	5.7	2.1	7.4	9.5	3.0	18.2	0.3	-	0.3	0.4	18.9
2016	5.7	2.2	6.9	9.1	3.0	17.7	0.3	-	0.3	0.3	18.3
2017	5.5	1.7	7.6	9.2	1.9	16.7	0.3	-	0.3	0.3	17.2
2018	6.1	2.1	7.3	9.4	3.6	19.2	0.3	-	0.3	0.3	19.8
2019 <sup>c/</sup>	5.3	1.3	7.9	9.2	2.4	17.0	0.3	-	0.3	0.2	17.5

a/ Defined here as 30 fish per pound or larger and released in February or later.

b/ Beginning in 1989, does not include minor releases from STEP projects.

c/ Preliminary.

Appendix C

TABLE C-2. Data set used in predicting Oregon production index hatchery (OPIH) adult coho. Adults and jacks shown in thousands of fish and smolts in millions of fish.

Year (t) or Average	Adults (t)		Jacks (t-1)			Columbia River Smolts (t-1)			
	OPIH <sup>a/</sup>	MSM <sup>b/</sup>	Total OPI <sup>c/</sup>	Columbia River <sup>d/</sup>	OR Coast/ CA <sup>e/</sup>	Total OPI <sup>f/</sup>	Normal Timed <sup>g/</sup>	Delayed <sup>h/</sup>	Delayed Smolt Adjustment <sup>i/</sup>
1970-1975	2,432.6	-	119.0	113.3	5.7	32.7	26.4	1.3	4.7
1976-1980	1,879.5	-	91.7	81.5	10.2	34.9	27.4	2.8	6.4
1981-1985 <sup>j/</sup>	867.9	-	47.2	40.6	6.6	33.5	22.6	6.3	8.3
1986-1990	1,486.2	1,459.0	60.6	50.6	10.0	35.9	21.0	8.9	15.5
1991-1995	605.9	581.2	27.7	22.6	5.0	38.1	26.3	5.5	4.5
1996-2000	320.2	329.2	22.4	18.3	4.0	28.9	22.3	3.4	2.5
2001	1,417.1	1,478.7	87.4	71.7	15.7	32.2	28.7	2.0	4.7
2002	649.8	689.5	25.2	18.9	6.3	26.8	23.9	1.4	1.0
2003	936.6	1,009.9	49.9	41.7	8.2	25.3	23.4	0.3	0.5
2004	622.1	693.6	35.4	29.4	6.0	24.5	21.2	2.0	2.5
2005	443.2	454.0	25.0	21.2	3.8	23.4	21.2	0.8	0.8
2006	440.6	523.4	25.9	20.9	5.0	22.0	20.2	0.4	0.4
2007	476.6	545.3	36.3	34.2	2.2	21.8	20.3	0.1	0.2
2008	565.3	576.9	16.0	14.9	1.2	22.7	20.8	0.6	0.4
2009	1,066.2	1,051.0	60.4	58.4	2.0	22.8	20.8	1.1	2.9
2010	551.3	546.5	25.1	23.8	1.4	21.9	20.7	0.2	0.2
2011	442.3	454.2	23.3	22.2	1.1	19.3	18.2	0.3	0.4
2012	182.3	183.1	17.9	13.9	4.0	19.9	18.1	0.9	0.7
2013	316.9	335.1	26.3	24.1	2.2	19.2	17.1	1.1	1.5
2014	1,263.6	1,316.5	51.4	49.4	2.0	19.6	18.0	0.6	1.6
2015	251.7	254.7	39.6	37.0	2.6	19.4	16.9	1.5	3.0
2016	233.8	242.3	19.7	18.6	1.0	18.9	16.9	1.3	1.3
2017	284.8	284.8	22.9	22.4	0.4	18.4	16.5	1.3	1.6
2018	149.4	179.1	19.2	18.5	0.7	17.2	16.0	0.7	0.8
2019	300.5	334.6	47.4	46.7	0.8	19.7	18.6	0.5	1.3
2020 <sup>k/</sup>	-	185.7	15.2	14.9	0.3	17.5	16.8	0.2	0.2

a/ Adult OPIH = Harvest impacts plus escapement for public hatchery stocks originating in the Columbia River, Oregon coastal rivers, and the Klamath River, California.

b/ Adult MSM = Harvest impacts plus escapement for public hatchery stocks originating in the Columbia River, Oregon coastal rivers, and the Klamath River. Estimates derived from the MSM and used for prediction beginning in 2008.

c/ Jack OPI = Total Jack CR and Jack OC.

d/ Jack CR = Columbia River jack returns corrected for small adults.

e/ Jack OC = Oregon coastal and California hatchery jack returns corrected for small adults.

f/ Total OPI = Columbia River (Sm D + Sm CR), Oregon coastal and Klamath Basin.

g/ Sm CR = Columbia River smolt releases from the previous year expected to return as adults in the year listed.

h/ Sm D = Columbia River delayed smolt releases from the previous year expected to return as adults in the year listed.

i/ Correction term for delayed smolts released from Col. R. hatcheries (Col. R. Jacks\*(Delayed Smolts/Col. R. Smolts)).

j/ Subsequent to 1983 data not used in predictions due to El Niño impacts.

k/ For MSM: Preseason predicted adults.

EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE C-3. Estimated coho salmon natural spawner abundance in Oregon coastal basins for each OCN coho management component.

Component and Basin <sup>a/</sup>	2001-2005 Ave.	2006-2010 Ave.	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>NORTHERN</b>											
Necanicum	2,534	2,102	2,120	902	798	5,727	847	936	529	393	690
Nehalem	20,159	19,364	15,322	2,963	4,539	30,577	3,079	7,549	5,486	4,190	12,383
Tillamook	6,563	9,408	19,250	1,686	4,402	20,090	1,345	7,102	2,927	2,035	3,961
Nestucca	7,287	2,063	7,857	1,751	946	6,369	1,029	2,412	4,495	1,072	4,391
Ind. Tribs.	573	1,132	1,341	218	271	4,607	440	699	206	262	616
<b>TOTAL</b>	<b>37,116</b>	<b>34,068</b>	<b>45,890</b>	<b>7,520</b>	<b>10,956</b>	<b>67,370</b>	<b>6,740</b>	<b>18,698</b>	<b>13,643</b>	<b>7,952</b>	<b>22,041</b>
<b>NORTH CENTRAL</b>											
Salmon	506	672	3,636	297	1,165	3,680	332	1,054	450	103	536
Siletz	6,902	11,678	33,094	4,495	7,660	19,496	2,216	3,015	5,202	4,064	4,468
Yaquina	10,571	7,618	19,074	6,268	3,553	25,582	2,400	3,730	2,491	4,672	3,438
Beaver Ck.	3,487	1,885	2,389	1,878	2,015	6,564	332	1,709	1,553	494	720
Alesea	8,344	8,353	28,337	8,470	9,283	25,855	6,185	7,375	4,377	5,112	6,025
Siuslaw	24,138	16,700	28,082	11,946	14,118	38,896	10,352	9,141	7,129	6,635	6,297
Ind. Tribs.	3,279	2,017	4,487	492	1,929	1,890	856	464	1,646	958	293
<b>TOTAL</b>	<b>57,227</b>	<b>48,922</b>	<b>119,099</b>	<b>33,846</b>	<b>39,723</b>	<b>121,963</b>	<b>22,673</b>	<b>26,488</b>	<b>22,848</b>	<b>22,038</b>	<b>21,777</b>
<b>SOUTH CENTRAL</b>											
Umpqua	37,165	39,149	94,655	20,948	27,016	66,272	14,860	7,494	15,492	23,574	15,785
Coos	26,572	16,423	10,999	9,414	6,884	38,880	3,030	4,624	2,689	7,292	13,556
Coquille	15,571	19,437	55,667	5,911	23,637	41,660	3,357	9,494	4,641	5,688	10,358
Floras Ck.	3,568	3,352	9,217	2,502	1,936	1,022	1,585	942	693	628	830
Sixes R.	157	140	334	34	567	410	168	120	69	174	155
Coastal Lakes	18,205	22,557	20,281	18,922	13,659	22,010	4,729	8,044	1,302	6,704	7,446
Ind. Tribs.	-	224	101	48	33	106	0	0	0	10	0
<b>TOTAL</b>	<b>101,238</b>	<b>101,282</b>	<b>191,254</b>	<b>57,779</b>	<b>73,732</b>	<b>170,360</b>	<b>27,729</b>	<b>30,718</b>	<b>24,886</b>	<b>44,070</b>	<b>48,130</b>
<b>SOUTH</b>											
Rogue <sup>b/</sup>	12,349	3,140	4,545	5,474	11,210	2,409	4,072	6,302	4,526	8,266	2,156
<b>COASTWIDE</b>	<b>207,930</b>	<b>187,323</b>	<b>360,788</b>	<b>104,619</b>	<b>135,621</b>	<b>362,102</b>	<b>61,214</b>	<b>82,206</b>	<b>65,903</b>	<b>82,326</b>	<b>94,104</b>

a/ The sum of the individual basins may not equal the aggregate totals due to the use of independent estimates at

b/ Mark recapture estimate based on seining at Huntley Park in the lower Rogue River.

EA part 1 (Preseason Report I) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE C-4. Data set used in predicting Oregon coastal natural river (OCNR) coho ocean recruits with random survey sampling and Mixed Stock Model (MSM) accounting. All environmental data in year of ocean entry (t-1) except SST-J, which is January of adult return year (t). Spawners is parent brood (t-3). Recruits shown in thousands of fish.

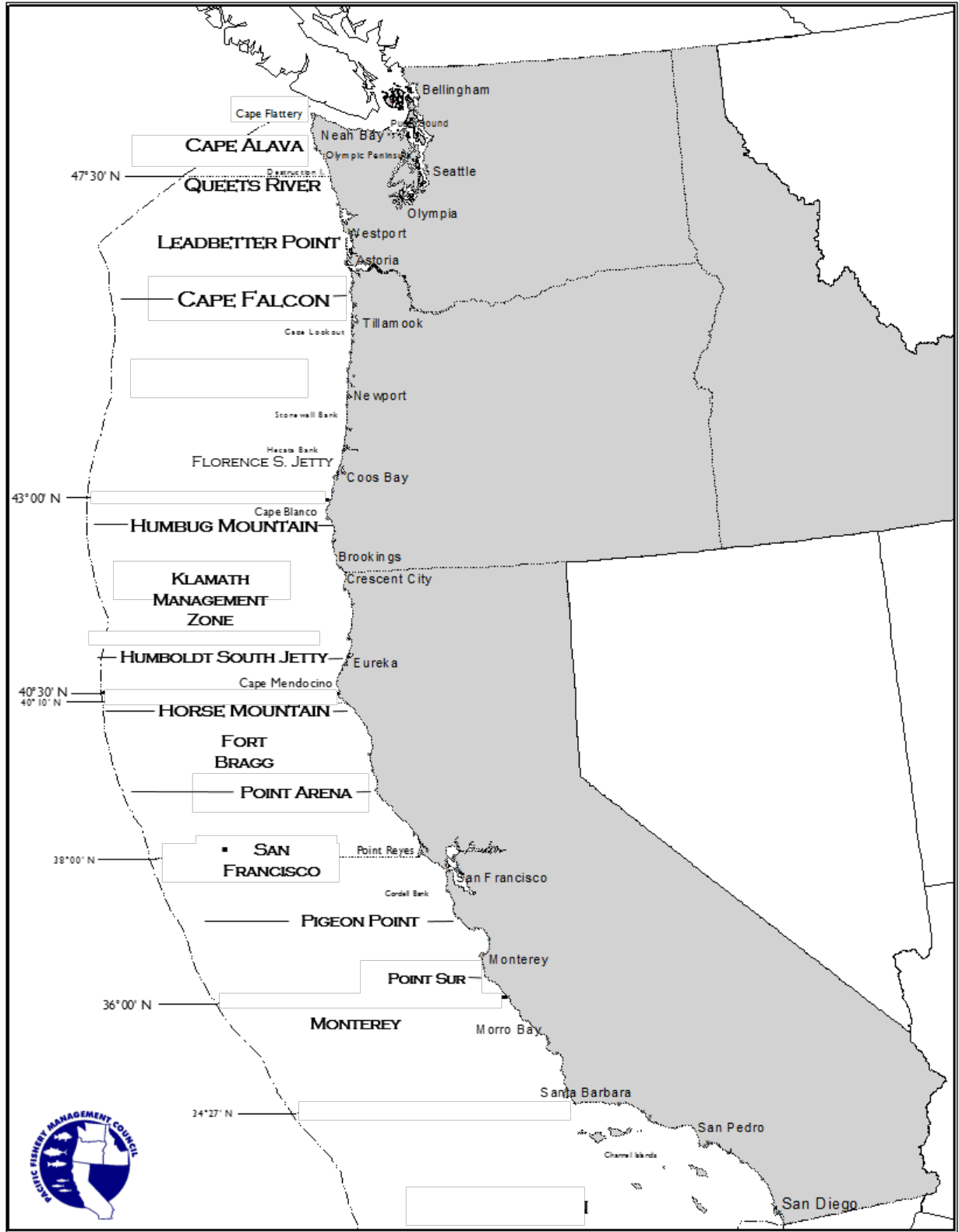
Year (t)	Recruits		Environmental Index-Month(s) <sup>a/</sup>							
	Adults	Spawners	PDO-MJJ	UWI-JAS	UWI-SON	SSH-AMJ	SST-AMJ	SST-J	MEI-ON	SPR.TRN
1970-1975	237.5	112.3	-0.7	35.5	-19.7	-84.8	11.6	9.0	-0.7	98.3
1976-1980	204.3	30.7	-0.3	26.4	-29.2	-113.6	11.1	9.9	-0.1	86.0
1981-1985	148.9	26.8	-0.1	28.4	-30.0	-96.8	11.4	10.4	0.3	85.0
1986-1990	153.8	28.9	0.1	29.6	-39.2	-91.0	11.6	10.4	0.2	82.0
1991-1995	150.7	27.0	0.3	29.3	-40.8	-77.9	11.6	10.4	0.4	89.0
1996-2000	131.8	25.2	0.5	31.2	-49.0	-61.7	11.7	10.8	0.4	94.8
2000	156.6	21.5	0.4	35.8	-26.8	-56.2	11.4	10.2	-0.7	72.0
2001	246.1	34.7	-0.4	47.1	-38.2	-126.2	10.7	10.1	-0.3	61.0
2002	227.3	61.0	-0.6	50.5	-25.9	-148.6	10.1	11.0	0.8	80.0
2003	164.0	143.1	-0.2	55.5	-26.4	-63.5	11.1	10.3	0.3	112.0
2004	146.3	236.4	0.0	27.0	4.3	-62.6	11.9	10.2	0.4	110.0
2005	113.3	213.3	0.5	51.8	-9.0	-25.7	12.5	11.5	-0.7	145.0
2006	64.9	154.1	0.8	53.6	-14.1	-36.4	11.2	9.8	0.8	112.0
2007	157.0	139.9	0.6	27.5	-9.9	-123.7	10.6	8.9	-1.1	74.0
2008	262.9	104.7	0.2	32.7	-10.7	-113.3	9.6	9.4	-1.1	89.0
2009	255.6	57.3	-0.3	24.3	-47.1	-96.0	10.5	10.8	0.8	82.0
2010	352.4	156.1	-0.5	34.2	-32.9	-48.5	11.7	10.1	-2.1	100.0
2011	98.1	245.4	-0.8	29.3	-26.3	-46.3	10.7	9.2	-1.3	100.0
2012	130.2	244.7	-0.7	53.6	-29.9	-34.5	11.0	9.9	-0.1	121.0
2013	377.4	336.0	-0.8	35.3	-7.8	-106.6	10.7	9.1	-0.2	100.0
2014	64.6	80.2	-0.4	41.3	-40.1	-30.1	11.2	12.3	0.2	101.0
2015	74.3	110.8	0.2	40.4	-7.9	-65.4	10.3	11.0	2.0	92.0
2017	67.4	337.7	1.0	48.0	-68.2	-127.4	11.6	9.9	-0.6	85.0
2018	73.6	52.4	1.3	46.1	-36.2	-63.9	11.2	11.0	-0.6	116.0
2019	70.1	67.9	1.0	41.1	-12.4	-116.2	10.8	11.1	0.3	107.0
2020 <sup>b/</sup>	77.1	60.1	0.9	20.1	4.1	-101.6	10.5	10.5	0.4	103.0

a/ Environmental Index descriptions:

- PDO - Pacific Decadal Oscillation (4-year moving average)
- UWI - Upwelling wind index (mean upwelling winds index in months of ocean migration year at 42° N 125° W)
- SSH - Sea surface height (South Beach, OR at 44° 37.5' N, 124 ° 02.6' W)
- SST - Sea surface temperature (mean sea surface temperature in January of return year at Charleston, OR)
- MEI - Multi-variate ENSO index
- SPR.TRN - Spring transition date (Julian)

b/ Adult recruits is a forecasted number.





This map is for reference only and is not intended for use in navigation or fishery regulation.

**FINAL  
ENVIRONMENTAL ASSESSMENT PART 2  
FOR 2020  
OCEAN SALMON FISHERY  
REGULATIONS**  
REGULATION IDENTIFIER NUMBER 0648- BJ48  
**BASED ON**  
**PRESEASON REPORT II**

**PROPOSED ALTERNATIVES**



Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, OR 97220-1384  
(503) 820-2280  
[www.pcouncil.org](http://www.pcouncil.org)

MARCH 2020

## PUBLIC HEARINGS ON SALMON ALTERNATIVES

### Hearings held remotely via webinar

#### Washington

(Previously scheduled to occur in Westport)

Monday, March 23, 2020, 7:00 p.m.

Web link: <https://meetings.ringcentral.com/join>

Meeting ID: 149 172 9819

#### Oregon

(previously scheduled to occur in Coos Bay)

Monday, March 23, 2020, 7:00 p.m.

<https://meetings.ringcentral.com/join>

Meeting ID: 148 970 9612

#### California

(previously scheduled to occur in Eureka)

Tuesday, March 24, 2020, 7:00 p.m.

<https://meetings.ringcentral.com/join>

Meeting ID: 148 004 4364

Public comment on the Alternatives will also be accepted during the April Council meeting on Sunday, April 5, during the public comment period for Agenda Item E.1 via webinar.

Public comments may also be submitted to the PFMC Public Comment Electronic Portal (E-Portal). The supplemental public comment deadline is 5:00 p.m. Pacific Time, Friday, March 27, 2020.

This document may be cited in the following manner:

Pacific Fishery Management Council. 2020. *Preseason Report II: Proposed Alternatives and Environmental Assessment - Part 2 for 2020 Ocean Salmon Fishery Regulations*. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220-1384.



A report of the Pacific Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award Number FNA20NMF4410011.

## TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES.....	ii
LIST OF FIGURES .....	iii
LIST OF ACRONYMS AND ABBREVIATIONS.....	iv
<b>1.0 INTRODUCTION</b> .....	<b>1</b>
1.1 Purpose and Need.....	1
2.0 SELECTION OF FINAL MANAGEMENT MEASURES .....	2
3.0 SALMON TECHNICAL TEAM CONCERNS.....	3
4.0 SALMON FISHERY MANAGEMENT PLAN REQUIREMENTS .....	3
5.0 SPECIES LISTED UNDER THE ENDANGERED SPECIES ACT.....	5
6.0 OBLIGATIONS UNDER THE PACIFIC SALMON TREATY .....	6
6.1 Chinook Salmon Management .....	6
6.2 Coho Salmon Management .....	7
7.0 DESCRIPTION OF THE ALTERNATIVES .....	10
7.1 Commercial .....	10
7.2 Recreational.....	11
7.3 Treaty Indian .....	12
8.0 AFFECTED ENVIRONMENT AND ANALYSIS OF IMPACTS.....	12
8.1 Salmon Stocks in the Fishery .....	13
8.1.1 Chinook Salmon.....	13
8.1.1.1 North of Cape Falcon.....	13
8.1.1.2 South of Cape Falcon.....	14
8.1.2 Coho Salmon.....	16
8.1.3 Pink Salmon .....	18
8.1.4 Summary of Environmental Impacts on Target Stocks.....	18
8.1.4.1 Targeted Salmon Stocks.....	18
8.1.4.2 ESA Listed Salmon Stocks .....	19
8.2 Socioeconomics.....	19
8.2.1 Alternative I .....	21
8.2.2 Alternative II.....	22
8.2.3 Alternative III.....	23
8.2.4 Summary of Impacts on the Socioeconomic Environment.....	24
8.3 Non-target Fish Species.....	25
8.4 Marine Mammals.....	26
8.5 ESA Listed Species (other than salmon) .....	26
8.6 Seabirds .....	27
8.7 Biodiversity and Ecosystem Function .....	27
8.8 Ocean and Coastal Habitats.....	27
8.9 Public Health and Safety .....	27
8.10 Cumulative Impacts .....	27
8.10.1 Consideration of the Affected Resource .....	28
8.10.2 Geographic Boundaries .....	28
8.10.3 Temporal Boundaries .....	28
8.10.4 Past, Present, and Reasonably Foreseeable Future Actions .....	28
8.10.5 Magnitude and Significance of Proposed Action.....	30
8.10.5.1 Fishery and Fish Resources.....	30
8.10.5.2 Protected Resources .....	30

8.10.5.3 Biodiversity/Ecosystem Function and Habitats ..... 31  
 8.10.5.4 Socioeconomic Environment ..... 31  
 9.0 CONCLUSION ..... 31  
 10.0 LIST OF AGENCIES AND PERSONS CONSULTED ..... 32  
 11.0 REFERENCES ..... 33  
 APPENDIX A: PROJECTED IMPACTS FOR AGE-3 SACRAMENTO RIVER WINTER CHINOOK,  
 ADULT KLAMATH RIVER FALL CHINOOK, AND ADULT SACRAMENTO RIVER FALL  
 CHINOOK.82  
 APPENDIX B: NEPA AND ESA ANALYSES INCORPORATED BY REFERENCE..... 85

**LIST OF TABLES**

	<u>Page</u>
TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries - Council adopted .....	34
TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries - Council adopted .....	48
TABLE 3a. 2020 Treaty Indian troll management Alternatives for ocean salmon fisheries - Council adopted.....	58
TABLE 3b. 2020 Treaty Indian troll management Alternatives for ocean salmon fisheries - Council adopted.....	59
TABLE 4a. 2020 Chinook and coho harvest quotas and guidelines (*) for ocean salmon fishery management Alternatives - Council adopted (QTA).....	61
TABLE 4b. 2020 Chinook and coho harvest quotas and guidelines (*) for ocean salmon fishery management Alternatives - Council adopted (MT).....	62
TABLE 5a. 2020 Projected key stock escapements (thousands of fish) or management criteria for ocean fishery Alternatives - Council adopted (QTA) .....	63
TABLE 5b. 2020 Projected key stock escapements (thousands of fish) or management criteria for ocean fishery Alternatives - Council adopted (MT).....	65
TABLE 6a. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management Alternatives - Council adopted (QTA).....	67
TABLE 6b. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management Alternatives - Council adopted (MT).....	69
TABLE 7a. Expected coastwide lower Columbia Natural (LCN), Oregon coastal natural (OCN), and Rogue/Klamath (RK) coho, and Lower Columbia River (LCR) natural tule Chinook exploitation rates by fishery for 2020 ocean fisheries management Alternatives - Council adopted (QTA). .....	71
TABLE 7b. Expected coastwide lower Columbia Natural (LCN), Oregon coastal natural (OCN), and Rogue/Klamath (RK) coho, and Lower Columbia River (LCR) natural tule Chinook exploitation rates by fishery for 2020 ocean fisheries management Alternatives - Council adopted (MT)..	72
TABLE 8. Projected coho mark rates for 2020 fisheries under base period fishing patterns (percent marked).....	73
TABLE 9a. Preliminary projected exvessel value under Council-adopted 2020 non-Indian commercial troll regulatory Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (QTA).....	74
TABLE 9b. Preliminary projected exvessel value under Council-adopted 2020 non-Indian commercial troll regulatory Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (MT).....	75
TABLE 10a. Preliminary projected angler trips and coastal community income impacts generated under Council-adopted 2020 recreational ocean salmon fishery regulatory Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (QTA). .....	76

TABLE 10b. Preliminary projected angler trips and coastal community income impacts generated under Council-adopted 2020 recreational ocean salmon fishery regulatory Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (MT)..... 77

### LIST OF FIGURES

	<u>Page</u>
FIGURE 1a. Projected community income impacts associated with landings projected under the Council adopted 2020 commercial fishery Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (QTA).....	78
FIGURE 1b. Projected community income impacts associated with landings projected under the Council adopted 2020 commercial fishery Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (MT).....	79
FIGURE 2a. Projected community income impacts associated with angler effort projected under the Council adopted 2020 recreational fishery Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (QTA).....	80
FIGURE 2b. Projected community income impacts associated with angler effort projected under the Council adopted 2020 recreational fishery Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (MT).....	81
FIGURE 3. Map of Pacific West Coast with major salmon ports and management boundaries. This map is for reference only and is not intended for use in navigation or fishery regulation. ....	88

## LIST OF ACRONYMS AND ABBREVIATIONS

AABM	Aggregate Abundance Based Management
ABC	acceptable biological catch
ACL	annual catch limit
AEQ	adult equivalent
BO	biological opinion
CDFW	California Department of Fish and Wildlife
CFGC	California Fish and Game Commission
CO	central Oregon (South end of Heceta Bank to Humbug Mt.)
Council	Pacific Fishery Management Council
CPUE	catch per unit effort
CYER	Calendar year exploitation rate
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ENSO	El Niño/Southern Oscillation
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FB	Fort Bragg (Horse Mt. to Point Arena)
FRAM	Fishery Regulation Assessment Model
FMA	fishery management area
FMP	fishery management plan
FONSI	finding of no significant impact
GSI	genetic stock identification
IPHC	International Pacific Halibut Commission
ISBM	Individual Stock Based Management
KC	California KMZ (OR/CA border to Horse Mountain)
KO	Oregon KMZ (Humbug Mountain to the OR/CA border)
KMZ	Klamath Management Zone
KRFC	Klamath River fall Chinook
LCN	Lower Columbia Natural (wild Columbia River coho below Bonneville Dam)
LCR	Lower Columbia River (wild Col. River tule fall Chinook below Bonneville Dam)
LRH	Lower River Hatchery (hatchery Col. River tule fall Chinook below Bonneville Dam)
LRW	Lower River Wild (Columbia River bright fall wild Chinook below Bonneville Dam).
MT	Makah Tribe
MO	Monterey (Pigeon Point to the U.S./Mexico border)
NEPA	National Environmental Policy Act
MSA	Magnuson-Stevens Act
MSY	maximum sustainable yield
NMFS	National Marine Fisheries Service
NO	northern Oregon (Cape Falcon to Florence South Jetty)
NAO	National Oceanic and Atmospheric Administration Administrative Order
NOAA	National Oceanic and Atmospheric Administration
ODFW	Oregon Department of Fish and Wildlife
OCN	Oregon coastal natural (coho)
OFL	overfishing limit
OLE	Office of Law Enforcement (NOAA)

## LIST OF ACRONYMS AND ABBREVIATIONS (continued)

OPI	Oregon Production Index
OSP	Oregon State Police
OY	optimum yield
PDO	Pacific (inter) Decadal Oscillation
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
QTA	Quinalt Treaty Area
RER	rebuilding exploitation rate
RMP	Resource Management Plan
RK	Rogue/Klamath (hatchery coho)
S <sub>ABC</sub>	spawning escapement associated with ABC
S <sub>ACL</sub>	spawning escapement associated with ACL (= S <sub>ABC</sub> )
SCH	Spring Creek Hatchery (Col. R. tule fall Chinook returning to Spring Creek Hatchery [above Bonneville Dam])
SEAK	Southeast Alaska
S <sub>MSY</sub>	MSY spawning escapement
SET	spawning escapement target
SF	San Francisco (Point Arena to Pigeon Point)
SONCC	Southern Oregon/Northern California Coast (coho ESU)
SRFC	Sacramento River fall Chinook
SRFI	Snake River fall (Chinook) Index
SRW	Snake River wild (fall Chinook)
SRWC	Sacramento River winter Chinook
STT	Salmon Technical Team
SWO	State Waters Only (fisheries off Oregon south of Cape Falcon)
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
WCVI	West Coast Vancouver Island
WDFW	Washington Department of Fish and Wildlife



## 1.0 INTRODUCTION

This is the third report in an annual series of four reports prepared by the Salmon Technical Team (STT) of the Pacific Fishery Management Council (Council) to document and help guide ocean salmon fishery management off the coasts of Washington, Oregon, and California (PFMC 2020a, PFMC 2020b). This report describes the Council's proposed ocean salmon management alternatives for 2020 and characterizes the expected impacts on ocean salmon fisheries and the stocks that support them. The Council solicits public comments on the proposed management Alternatives in preparation for adopting final management recommendations at its April meeting. Oral and written comments may be presented at public hearings at the times and locations displayed on the inside front cover of this report. April Council web-only meeting (previously scheduled for the Hilton Vancouver Hotel in Vancouver, Washington). Written public comments may also be submitted to the PFMC Public Comment Electronic Portal ([E-Portal](#)). The supplemental public comment deadline is 5:00 p.m. Pacific Time, Friday, March 27, 2020.

This report also constitutes the second part of an Environmental Assessment (EA) to comply with National Environmental Policy Act (NEPA) requirements for the 2020 ocean salmon regulations. An EA is used to determine whether an action being considered by a Federal agency has significant environmental impacts. This part of the EA includes a statement of the purpose and need, a description of the affected environment, a description of 2020 ocean salmon regulation alternatives being considered, and an analysis of the effects of those Alternatives on the affected environment. The first part of the EA (Preseason Report I; PFMC 2020b) included a description of the No-Action alternative and an analysis of the effects of the No-Action alternative on salmon stocks managed under the Pacific Coast Salmon Fishery Management Plan (FMP), which is one component of the affected environment. Along with the description and analysis of the Proposed Action in Preseason Report III (developed after the Council makes a final recommendation in April 2020), these three parts of the EA will provide the necessary components to determine if a finding of no significant impact (FONSI) or Environmental Impact Statement (EIS) is warranted.

### 1.1 *Purpose and Need*

The purpose of this action, implementation of the 2020 ocean salmon fishery management measures, is to allow fisheries to harvest surplus production of healthy natural and hatchery salmon stocks within the constraints specified under the Salmon FMP, the Pacific Salmon Treaty (PST), and consultation standards established for salmon stocks listed under the Endangered Species Act (ESA). In achieving this purpose, management measures must take into account the allocation of harvest among different user groups and port areas. Without this action, 2019 management measures would be in effect, which do not consider changes in abundance of stocks in the mixed stock ocean salmon fisheries. Therefore, this action is needed to ensure constraining stocks are not overharvested and that harvest of abundant stocks can be optimized to achieve the most overall benefit to the nation.

The Salmon FMP establishes nine more general harvest-related objectives:

1. Establish ocean exploitation rates for commercial and recreational salmon fisheries that are consistent with requirements for stock conservation objectives and annual catch limits, specified ESA consultation or recovery standards, or Council adopted rebuilding plans.
2. Fulfill obligations to provide for Indian harvest opportunity as provided in treaties with the United States, as mandated by applicable decisions of the Federal courts, and as specified in the October 4, 1993, opinion of the Solicitor, Department of Interior, with regard to Federally-recognized Indian fishing rights of Klamath River tribes.

3. Maintain ocean salmon fishing seasons that support established recreational and commercial fisheries, while meeting salmon harvest allocation objectives among ocean and inside recreational and commercial fisheries that are fair and equitable, and in which fishing interests shall equitably share the obligations of fulfilling any treaty or other legal requirements for harvest opportunities.
4. Minimize fishery mortalities for those fish not landed from all ocean salmon fisheries as consistent with achieving optimum yield (OY) and bycatch management specifications.
5. Manage and regulate fisheries, so the OY encompasses the quantity and value of food produced, the recreational value, and the social and economic values of the fisheries.
6. Develop fair and creative approaches to managing fishing effort and evaluate and apply effort management systems as appropriate to achieve these management objectives.
7. Support the enhancement of salmon stock abundance in conjunction with fishing effort management programs to facilitate economically viable and socially acceptable commercial, recreational, and tribal seasons.
8. Achieve long-term coordination with the member states of the Council, Indian tribes with Federally recognized fishing rights, Canada, the North Pacific Fishery Management Council, Alaska, and other management entities which are responsible for salmon habitat or production. Manage fisheries consistent with the Pacific Salmon Treaty and other international treaty obligations.
9. In recommending seasons, to the extent practicable, promote the safety of human life at sea.

These objectives, along with the consultation standards established under the ESA, provide "sideboards" for setting management measures necessary to implement the Salmon FMP, which conforms to the terms and requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the National Standards Guidelines.

## **2.0 SELECTION OF FINAL MANAGEMENT MEASURES**

The Council's final ocean salmon season recommendations will be based on the range of Alternatives presented in this report and guidance received from deliberations at management fora such as the north of Cape Falcon planning process (sponsored by the States of Washington and Oregon and the treaty Indian tribes in that area), Pacific Salmon Commission (PSC), and from public hearings sponsored by the Council and the States of Washington, Oregon, and California. Final recommendations concerning season dates, catch quotas, and exploitation rates may vary from the range of Alternatives presented in this report depending upon determination of allocations, allowable harvest levels, public comment, or the final impact analyses completed by the STT. Elements of the Alternatives may be recombined to alter season patterns and quotas, or measures such as bag limits, days of fishing per week, special landing restrictions, and other specific regulatory details may also change. In addition, inseason modification of management measures may be used to ensure achievement of the Council's management objectives.

Specific details pertaining to season structure and special management measures for the treaty Indian troll fishery north of Cape Falcon are established in tribal regulations. Chinook and coho quota levels for the treaty Indian troll fishery may be adjusted if substantial changes in incidental fishing mortality result from tribal regulations, preseason or inseason.

The impact analyses presented in this document reflect uncertainties and limitations of information available at the time of the March 2020 Council meeting. At this point in the planning cycle, the STT's impact assessments reflect five key assumptions relative to stocks impacted by Canadian and Alaskan fisheries:

- 1) abundance levels for Canadian Chinook and coho stocks identical to 2019 forecasts;
- 2) for Canadian Chinook fisheries managed under the aggregate abundance-based management (AABM) provisions of the 2019 PST Agreement, including Northern British Columbia and West Coast Vancouver Island (WCVI) troll and sport fisheries, 2020 fisheries were modeled using fishing effort scalars from the final 2019 preseason model run;
- 3) for Canadian Chinook fisheries managed under individual stock-based management (ISBM) regimes, the 2020 fishery inputs were modeled using recent two-year average catches to reflect anticipated fishing levels consistent with the recently adopted 2019 PST Agreement;
- 4) for Canadian coho fisheries, all fisheries were modeled using single-year 2018 postseason fishing effort scalars from the Fishery Regulation Assessment Model (FRAM), with the exception of Fraser sport fisheries, which used 2017 postseason scalars, and Fraser net and terminal fisheries, which used 2016 postseason scalars; and
- 5) for Southern U.S. inside fisheries for Chinook and inside and coastal terminal fisheries for coho, the 2019 final preseason modeled fisheries were used.

In mid-March, U.S. and Canadian fishery managers exchange information regarding preseason expectations for fisheries and the status of Chinook and coho stocks. In addition, the PSC's Chinook Model will be calibrated by the PSC Chinook Technical Committee to determine the allowable catch ceilings for Canadian AABM fisheries under the 2019 PST Agreement. Abundances and fishery expectations will be adjusted in the Council's fishery planning models prior to the April Council meeting, and inside fisheries will be shaped by state and tribal co-managers both prior to and during the April Council meeting.

Any Alternative considered for adoption that deviates from Salmon FMP objectives or other applicable laws will require implementation by emergency rule. If an emergency rule appears to be necessary, the Council must clearly identify and justify the need for such an action consistent with emergency criteria established by the Council and the National Marine Fisheries Service (NMFS).

### **3.0 SALMON TECHNICAL TEAM CONCERNS**

The Salmon Technical Team has no concerns to report in this document for 2020.

### **4.0 SALMON FISHERY MANAGEMENT PLAN REQUIREMENTS**

The Council's Salmon FMP includes objectives for setting annual management measures to regulate ocean salmon fisheries between the U.S./Canada border and the U.S./Mexico border. The objectives include biological, administrative, and allocation requirements. In recommending final management measures, the Council attempts to meet all objectives in a fair and balanced manner, while maintaining established priorities.

Biological objectives for stocks originating in the Council area and impacted by Council area ocean fisheries are listed in Table 3-1 of the Salmon FMP. The objectives generally consist of meeting spawning escapement numbers associated with maximum sustainable yield ( $S_{MSY}$ ), overfishing limits (OFL), acceptable biological catch (ABC), and annual catch limits (ACL), or exploitation rate limits designed to

support recovery of depressed stocks or to rebuild overfished stocks, while encompassing a long term average harvest approximating MSY.

Administrative objectives are requirements for meeting other applicable law outside of the Salmon FMP. These requirements include ESA consultation standards, international treaties, and tribal trust responsibilities. The Salmon FMP defers to NMFS consultation standards for salmon stocks listed under the ESA in regard to biological conservation objectives. Section 5.0 of this document provides greater detail on ESA listed stocks, while impacts of the Council adopted salmon management measures on ESA listed stocks are included in Table 5a and 5b.

The Salmon FMP requires compliance with relevant terms of the PST. Section 6.0 of this document provides greater detail on PST provisions and stocks, while impacts of the Council adopted salmon management measures on those stocks are included in Table 5a and 5b.

Treaty trust responsibilities of the Salmon FMP require the Council to abide by Court orders in the *U.S. v. Washington* (Puget Sound), *Hoh v. Baldrige* (Washington coast), and *U.S. v. Oregon* (Columbia River) cases, and the Solicitor General opinion (Klamath River) governing allocation and management of shared salmon resources. Much of the North of Falcon forum is dedicated to annual negotiations establishing allocation among the tribes, non-Indian fishing sectors, and ocean and inside interests. The results of these negotiations allow the Council to complete final management measure recommendations while meeting its biological, administrative, and allocation objectives.

The Columbia River treaty tribes establish periodic management agreements with the state co-managers and Federal agencies. These agreements are approved pursuant to provisions of *U.S. v. Oregon* procedures. Recent agreements have included an entitlement for the treaty tribes of 50 percent of the coho return destined for areas upstream from Bonneville Dam. Council area fisheries are shaped in order to meet this requirement in some years.

The Yurok and Hoopa Valley Tribes are entitled to 50 percent of the total Klamath River fall Chinook (KRFC) harvest, which is calculated as a harvest of KRFC equal to that taken in all non-Indian fisheries. The Council must account for all harvest impacts when assessing the achievement of KRFC conservation objectives.

In addition to the allocation objectives associated with sharing between treaty Indian and non-Indian sectors, the Salmon FMP includes formulas for sharing Chinook and coho quotas. North of Cape Falcon there are sharing formulas between commercial and recreational sectors, and also among recreational port subareas. South of Cape Falcon there are sharing formulas for coho between commercial and recreational sectors. Alternatives for the 2020 salmon management measures adopted by the Council meet the allocation requirements for Chinook fisheries north of Cape Falcon in the Salmon FMP.

## 5.0 SPECIES LISTED UNDER THE ENDANGERED SPECIES ACT

Since 1989, NMFS has listed the following 17 Evolutionarily Significant Units (ESUs) of salmon under the ESA:

Species	ESU	Status	Federal Register Notice			
			Most Recent		Original Listing	
<b>Chinook</b>						
Chinook Salmon ( <i>O. tshawytscha</i> )	Sacramento River Winter	Endangered	83 FR 18233	4/26/2018	54 FR 32085	8/1/1989
	Snake River Fall	Threatened	76 FR 50448	8/15/2011	57 FR 14653	4/22/1992
	Snake River Spring/Summer	Threatened	76 FR 50448	8/15/2011	57 FR 14653	4/22/1992
	Puget Sound	Threatened	76 FR 50448	8/15/2011	64 FR 14308	3/24/1999
	Lower Columbia River	Threatened	76 FR 50448	8/15/2011	64 FR 14308	3/24/1999
	Upper Willamette River	Threatened	76 FR 50448	8/15/2011	64 FR 14308	3/24/1999
	Upper Columbia River Spring	Endangered	76 FR 50448	8/15/2011	64 FR 14308	3/24/1999
	Central Valley Spring	Threatened	76 FR 50447	8/15/2011	64 FR 50394	9/16/1999
	California Coastal	Threatened	76 FR 50447	8/15/2011	64 FR 50394	9/16/1999
<b>Chum</b>						
Chum Salmon ( <i>O. keta</i> )	Hood Canal Summer-Run	Threatened	76 FR 50448	8/15/2011	64 FR 14508	3/25/1999
	Columbia River	Threatened	76 FR 50448	8/15/2011	64 FR 14508	3/25/1999
<b>Coho</b>						
Coho Salmon ( <i>O. kisutch</i> )	Central California Coastal	Endangered	76 FR 50447	8/15/2011	61 FR 56138	10/31/1996
	S. Oregon/ N. California Coastal	Threatened	76 FR 50447	8/15/2011	62 FR 24588	5/6/1997
	Oregon Coastal	Threatened	76 FR 50448	8/15/2011	63 FR 42587	8/10/1998
	Lower Columbia River	Threatened	76 FR 50448	8/15/2011	70 FR 37160	6/28/2005
<b>Sockeye</b>						
Sockeye Salmon ( <i>O. nerka</i> )	Snake River	Endangered	76 FR 50448	8/15/2011	56 FR 58619	11/20/1991
	Ozette Lake	Threatened	76 FR 50448	8/15/2011	64 FR 14528	3/25/1999

As the listings have occurred, NMFS has initiated formal consultations and issued biological opinions (BOs) that consider the impacts resulting from implementation of the Salmon FMP, or from annual management measures, to listed salmonid species. NMFS has also reinitiated consultation on certain ESUs when new information has become available on the status of the stocks or on the impacts of the Salmon FMP on the stocks. The consultation standards referred to in this document include: (1) reasonable and prudent alternatives, (2) conservation objectives for which NMFS conducted Section 7 consultations and arrived at a no-jeopardy conclusion, and (3) NMFS requirements under Section 4(d) determinations.

A list of current BOs in effect, the species they apply to, and their duration follows:

Date	Evolutionarily Significant Unit covered and effective period
3/8/1996	Snake River spring/summer and fall Chinook and sockeye (until reinitiated)
4/28/1999	Oregon Coastal natural coho, Southern Oregon/ Northern California coastal coho, Central California coastal coho (until reinitiated)
4/28/2000	Central Valley spring Chinook (until reinitiated)
4/27/2001	Hood Canal summer chum 4(d) limit (until reinitiated)
4/30/2001	Upper Willamette Chinook, Upper Columbia spring Chinook, Lake Ozette sockeye, Columbia River chum, and 10 steelhead ESUs (until reinitiated)
4/30/2004	Puget Sound Chinook (until reinitiated)
6/13/2005	California coastal Chinook (until reinitiated)
4/26/2012	Lower Columbia River Chinook (until reinitiated)
4/9/2015	Lower Columbia River natural coho (until reinitiated)
4/26/2018	Sacramento River winter Chinook (until reinitiated)

Amendment 12 to the Salmon FMP added the generic category “species listed under the ESA” to the list of stocks in the salmon management unit and modified respective escapement goals to include “manage consistent with NMFS jeopardy standards or recovery plans to meet immediate conservation needs and long-term recovery of the species.” Amendment 14 specified those listed ESUs and clarified which stocks in the FMP management unit were representative of the ESUs.

In a letter received by the Council on February 28, 2020, NMFS provided guidance on protective measures for species listed under the ESA during the 2020 fishing season. The letter summarized the requirements of NMFS’ BOs on the effects of potential actions under the salmon FMP on listed salmon and provided the anticipated consultation standards of the BOs in preparation for the 2020 management season, as well as further guidance and recommendations for the 2020 management season.

The ESA consultation standards, exploitation rates, and other criteria in place for the 2020 management season are presented in Table 5a and 5b. Some listed stocks are either rarely caught in Council fisheries (e.g., spring Chinook from the upper Columbia River) or already receive sufficient protection from other salmon FMP and ESA standards (e.g., Central Valley spring Chinook). NMFS has determined that management actions designed to limit catch from these ESUs, beyond what will be provided by harvest constraints for other stocks, are not necessary.

Of the listed Chinook and coho, Council-managed fisheries have substantive impacts on Sacramento River winter Chinook (SRWC), Central Valley spring Chinook, California coastal Chinook (CCC), Snake River wild (SRW) fall Chinook, lower Columbia River (LCR) fall Chinook, and all of the coho stocks.

Additional listed salmonid ESUs found within the Council area, but not substantively impacted by Council managed fisheries, include:

<b><u>Chinook</u></b>	<b><u>Steelhead</u></b>
Snake River spring/summer (threatened)	Southern California (endangered)
Upper Willamette (threatened)	South-central California coast (threatened)
Puget Sound (threatened)	Upper Columbia River (endangered)
Upper Columbia River spring (endangered)	Middle Columbia River (threatened)
	Snake River Basin (threatened)
<b><u>Sockeye</u></b>	Puget Sound (threatened)
Snake River (endangered)	Central Valley, California (threatened)
Ozette Lake Sockeye (threatened)	Central California coast (threatened)
	Upper Willamette River (threatened)
<b><u>Chum</u></b>	Lower Columbia River (threatened)
Columbia River (threatened)	Northern California (threatened)
Hood Canal summer (threatened)	

## 6.0 OBLIGATIONS UNDER THE PACIFIC SALMON TREATY

In 1985 the PST was signed, setting long-term goals for the benefit of the shared salmon resources of the United States and Canada. The PSC is the body formed by the governments of Canada and the United States to implement the PST.

### 6.1 Chinook Salmon Management

A new ten-year agreement under the PST was adopted by both the U.S. and Canada and implemented beginning with the 2019 fishing year. The new agreement includes reductions to catch ceilings for



Southeast Alaska (SEAK) and WCVI AABM fisheries relative to the prior 2009 agreement. For SEAK, the reductions range from 1.5 percent in years of high abundance to 7.5 percent in years of low abundance. For WCVI, the reductions range from 2.4 percent in years of high abundance to 12.5 percent in years of low abundance. Additionally, beginning with the 2019 agreement, while catch ceilings will continue to be determined using the AI from the PSC Chinook Model for Northern British Columbia and WCVI AABM fisheries, the allowable catches for SEAK fisheries will be set using a catch-per-unit-effort (CPUE) estimate from the early winter power troll fishery (see Tables 1 and 2 in Chapter 3 of the 2019 Agreement for specifics).

Fisheries not subject to AABM regimes, including Council-area fisheries, are subject to a new set of ISBM obligations under the 2019 agreement. These provisions require the calendar year exploitation rate (CYER) by all U.S. fisheries south of the U.S./Canada border on specific indicator stocks to be below some level of the average 2009 – 2015 CYER if they do not achieve their management objectives (see Attachment I in Chapter 3 of the 2019 Agreement for specifics). Similar to previous ISBM obligations, these limits are taken into account during preseason planning processes, however, relative to meeting the provisions of the PST, the CYER limits are evaluated on a postseason basis only. Canadian fisheries that are not included in AABM complexes are managed under ISBM constraints, which, similar to U.S. ISBM fisheries, require the CYER by Canadian ISBM fisheries on specific indicator stocks to be below some level of the average 2009 – 2015 CYER if they do not achieve their management objectives. Expectations for Canadian and Alaskan fisheries harvest and stock abundance forecasts are incorporated into the Chinook FRAM to estimate total exploitation rate impacts from all marine fisheries (Tables 5a and 5b).

Key considerations for Canadian domestic fishery management for Chinook in 2020 include: (1) meeting domestic conservation obligations for WCVI, Lower Strait of Georgia, Fraser River Spring 4.2 and 5.2, Fraser Summer 5.2, Fraser Summer 4.1 and Fraser Fall 4.1 (Harrison River) stocks; (2) meeting First Nations Food, Social and Ceremonial and treaty obligations for Chinook harvests in native fisheries; and (3) monitoring of incidental impacts during commercial and native fisheries directed at sockeye, and chum salmon. It is anticipated that the details of the fishery regulatory package off WCVI and in the Juan de Fuca-Strait of Georgia areas will be driven by levels of allowable impact on WCVI, Lower Strait of Georgia and Fraser River Chinook stocks, in addition to Interior Fraser (Thompson River) coho, and potentially Thompson and/or Chilcotin River Steelhead (depending on a listing decision under Canada's Species at Risk Act). Increasing the availability of Chinook salmon in key foraging areas of Southern Resident Killer Whales in the southern BC region is an additional consideration which will be supported through conservation actions implemented for Fraser River and other Chinook salmon.

## 6.2 *Coho Salmon Management*

In 2002, the PSC adopted a management plan for coho salmon originating in Washington and Southern British Columbia river systems. The plan is directed at the conservation of key management units, four from Southern British Columbia (Interior Fraser, Lower Fraser, Strait of Georgia Mainland, and Strait of Georgia Vancouver Island) and nine from Washington (Skagit, Stillaguamish, Snohomish, Hood Canal, Strait of Juan de Fuca, Quillayute, Hoh, Queets, and Grays Harbor). Exploitation rate limits for intercepting fisheries are established for individual management units through formulas specified in the 2019 PST Southern Coho Management Plan, and are based on total allowable fishery exploitation rates.

The categorical status of U.S. coho management units is reported to comply with obligations pursuant to the 2019 PST Southern Coho Management Plan. Categorical status is employed by the PSC under the 2019 PST Southern Coho Management Plan to indicate general ranges of allowable total exploitation rates for U.S. and Canadian coho management units. Three categories are employed: low (total exploitation rate

## EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

less than 20 percent), moderate (total exploitation rate 20 percent to 40 percent), and abundant (total exploitation rate greater than 40 percent). For the Puget Sound management units, the 2019 PST Southern Coho Management Plan uses the thresholds and stepped harvest rate goals from the Comprehensive Coho Agreement, developed by Washington and the Puget Sound tribes, and adopted by the Council as FMP conservation objectives in November 2009. Actual exploitation rate constraints for Canadian fisheries on U.S. coho management units are determined by formulas that specify sharing of allowable exploitation rates and a “composite rule.” The composite rule adjusts constraints for Canadian fishery exploitation rates based on the number of U.S. management units which fall in a given category. For example, if only one Washington coastal or Puget Sound coho management unit is in low status, Canadian fisheries are constrained to a total exploitation rate on that unit of 12 percent; if two or more Washington coastal management units are in low status, the constraint becomes 10 percent. The most restrictive exploitation rate limit for Canadian fishery impacts on U.S. coho management units is 10 percent.

For several Washington coastal coho management units, management objectives are expressed as a range of spawning escapements expected to produce MSY. Allowable exploitation rates are calculated from the forecast abundance and the lower end of the escapement range and used to classify the categorical status of the management units. This rate is the maximum allowed under the PST when the management unit is in the moderate or abundant status, but exploitation rates up to 20 percent are allowed if the management unit is in the low abundance status.

For 2020, Puget Sound and Washington coast coho constraints are as follows:



EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

<b>FMP</b>			
FMP Stock	Total Exploitation Rate Constraint <sup>a/</sup>	Categorical Status <sup>a/</sup>	
Skagit	35%	Low	
Stillaguamish	35%	Low	
Snohomish	20%	Critical	
Hood Canal	45%	Low	
Strait of Juan de Fuca	20%	Critical	
Quillayute Fall	59%		
Hoh	65%		
Queets	65%		
Grays Harbor	65%		

**PST Southern Coho Management Plan**

U.S. Management Unit	Total Exploitation Rate Constraint <sup>b/</sup>	Categorical Status <sup>c/</sup>	
Skagit	35%	Moderate	
Stillaguamish	35%	Moderate	
Snohomish	20%	Low	
Hood Canal	45%	Moderate	
Strait of Juan de Fuca	20%	Low	
Quillayute Fall <sup>c/</sup>	31%	Moderate	
Hoh <sup>c/</sup>	52%	Abundant	
Queets <sup>c/</sup>	26%	Moderate	
Grays Harbor	29%	Moderate	

a/ Preliminary. For Puget Sound stocks, the exploitation rate constraints and categorical status (Normal, Low, Critical) reflect application of Comprehensive Coho Agreement rules, as adopted in the FMP. For Washington Coast stocks, exploitation rate constraints represent MFMT. Note that under *U.S. v. Washington* and *Hoh v. Baldrige* case law, the management objectives can differ from FMP objectives provided there is an annual agreement among the state and tribal comanagers; therefore, the exploitation rates used to report categorical status do not necessarily represent maximum allowable rates for these stocks.

b/ Preliminary. For Puget Sound and Washington Coast management units, the exploitation rate constraints reflect application of the 2019 PST Southern Coho Management Plan.

c/ Categories (Abundant, Moderate, Low) correspond to the general exploitation rate ranges depicted in paragraph 8(b)(iii) of the 2019 PST Southern Coho Management Plan. For Washington Coast stocks, categorical status is determined by the exploitation rate associated with meeting the escapement goal (or the lower end of the escapement goal range). This also becomes the maximum allowable rate unless the stock is in the "Low" status. In that case, an ER of up to 20% is allowed.

Key considerations for Canadian fishery management for coho in 2020 are expected to include: (1) meeting domestic conservation obligations for Interior Fraser (including Thompson River) coho; (2) coho harvests by First Nations fisheries; (3) incidental impacts during commercial and First Nations fisheries directed at pink, Chinook, sockeye, and chum salmon; and (4) the desire to provide increased opportunity for sport fisheries through mark-selective retention regulations. The Canadian fishery regimes affecting coho are expected to be driven by Canadian domestic allowable impacts on the Thompson River component of the Interior Fraser management unit.

In years prior to 2014, Canadian fisheries were managed so as not to exceed a three percent maximum exploitation rate. In May 2014, Canada decided to permit up to a 16% exploitation rate on upper Fraser coho in Canadian fisheries to allow for impacts in fisheries directed at a record Fraser sockeye forecast. Since 2015, upper Fraser coho in Canadian fisheries have been managed per low status limitations. The projected status of Canadian coho management units in 2020 indicates continuing concerns for the condition of Interior Fraser coho. The Interior Fraser coho management unit is anticipated to remain in low

abundance status, resulting in a requirement to constrain the total mortality fishery exploitation rate for 2020 Southern U.S. fisheries to a maximum of 10.0 percent.

## 7.0 DESCRIPTION OF THE ALTERNATIVES

Detailed information on the proposed ocean salmon regulation Alternatives are presented in Tables 1 (non-Indian commercial), 2 (recreational), and 3 (treaty Indian). Notable changes from recent seasons are highlighted below.

### 7.1 Commercial

Alternatives for the area north of Cape Falcon reflect a similar total abundance of Chinook and decreased Columbia River hatchery and natural coho compared to 2019 forecasts. In 2020, allowable catch of Chinook will likely be similar to 2019 due to similar expected impacts in northern fisheries, and an identical total exploitation rate limit on LCR natural tule fall Chinook compared to 2019. Coho catch quotas will be less than 2019 due to a decreased harvestable surplus of Columbia River hatchery coho.

Alternative I north of Cape Falcon assigns 67 percent of the troll Chinook quota to the May-June Chinook directed fishery, Alternative II assigns 50 percent to the May-June Chinook directed fishery. In Alternative I, the May-June fishery opens May 6 seven days per week. Alternative II opens initially for the period of May 6 through May 12, then re-opens on May 15 five days per week (Friday - Tuesday). In Alternatives I and II, sub-quotas in the area north of the Queets River and in the area south of Leadbetter Point are in place during the May-June time period. The summer all-salmon fishery in Alternative I opens seven days per week; Alternative II opens five days per week (Friday - Tuesday). Alternative I includes a weekly landing and possession limit for Chinook in all areas, and both Alternatives I and II include a weekly coho landing and possession limit in all areas. In both Alternatives I and II, the fishery is scheduled to open in 2021 on May 1. In Alternative III the fishery is closed.

Commercial fisheries south of Cape Falcon will be constrained primarily by KRFC and SRWC. Sacramento River fall Chinook (SRFC) and KRFC were declared overfished in 2018 and remain overfished in 2020. The Council provided guidance to structure fisheries to achieve a KRFC natural area spawner escapement of 40,700 adults under Alternative III. This natural area adult spawner goal is higher than that required by both the FMP and the KRFC rebuilding plan. Alternatives I and II were structured to achieve the FMP guidance for KRFC under a *de minimis* fishing regime: a maximum allowable harvest rate of 25.0 percent or 36,206 natural area spawners.

For the area between Cape Falcon and Humbug Mountain, Alternative I would open on April 15 and run through the end of the month. The fishery re-opens on May 6 and is open for approximately three weeks in each of May through August. The entire months of September and October are open. The fishery under Alternative II is similar to Alternative I with small differences in days open in May and August. Under Alternative III, the fishery would open on May 6 and be open for approximately three weeks in each of May, June, and July. In August, the area between Cape Falcon and Humbug Mountain will be open from August 1-6. The fishery would remain open only in the area between Cape Falcon and the south end of Heceta Bank from August 7-18. The entire month of September would be open between Cape Falcon and Humbug Mountain.

In the Oregon portion of the Klamath Management Zone (KMZ) under Alternative I, the season would be open for April 15-30. May, June, and July would be managed under monthly quotas of 500, 700, and 300 Chinook, respectively, with weekly landing and possession limits of 40 Chinook. Under Alternative II, the season would be open from April 15 through May 26, followed by a June quota of 500 Chinook with a

weekly landing and possession limit of 40 Chinook. Under Alternative III, the fishery would be limited to May 6-31.

For the California portion of the KMZ, the fishery would be closed under Alternatives I and III. Alternative II allows for monthly Chinook quotas of 1,500 in June, 1,250 in July, and 1,000 in August. The fishery would be open five days per week with daily landing and possession limits and a minimum size limit of 28 inches.

In the Fort Bragg area under Alternative I the fishery would be open for most of August with a 28-inch minimum size limit and all of September under a 27-inch minimum size limit. Alternatives II and III are limited to the month of September with a 27-inch minimum size limit.

In the San Francisco area under Alternative I, the fishery would be open for portions of May, June, and July, nearly all of August, and the month of September. Alternative II has a similar structure as Alternative I but with additional days open in May, June, and July. Under Alternative III, the fishery would be open for portions of May, June, and August and all of September. The minimum size limit is 27 inches for each of the Alternatives through August, and 26 inches thereafter. The Fall Area Target Zone fishery between Point Reyes and Point San Pedro would also be open Monday through Friday in early October with a 26-inch minimum size limit under each of the Alternatives.

In the Monterey area under each of the Alternatives the fishery would be open for portions of each month between May and August with a 27-inch minimum size limit. Differences in the number of days open for each month can be found in Table 1.

## 7.2 *Recreational*

North of Cape Falcon: In Alternative I, all areas open June 14 for all salmon species except coho, seven days per week, with a daily limit of one salmon. Beginning June 29, all areas will open for all salmon species with a daily limit of two salmon, no more than one of which may be a Chinook. All areas will open seven days per week, except the area between Queets River and Leadbetter Point will open five days per week, Sunday – Thursday. The closing date in all areas is September 30.

In Alternative II, the areas north of the Queets River would open for all salmon species seven days per week on June 27. The areas south of the Queets River open for all salmon species five days per week (Sunday – Thursday) on June 28. The closing date in all areas is September 13.

In Alternative III, all areas are closed.

In all Alternatives north of Cape Falcon, all retained coho must be marked with a healed adipose fin clip. In the Westport subarea, the Grays Harbor Control Zone is closed beginning August 10 in all Alternatives.

South of Cape Falcon, for the North and Central Oregon coast, Chinook fisheries open March 15 and run through October 31 under each of the Alternatives. Each Alternative also includes a mark-selective coho quota fishery in the summer, with different quota sizes and closing dates. Alternatives I and II also include a non-mark-selective coho fishery from Cape Falcon to Humbug Mountain in late-summer/early fall, with open days and quotas sizes varying between the Alternatives.

In the Oregon KMZ, Alternatives I and II would open for Chinook fishing on May 16 and run into July with differing closing dates. Alternative III would allow for Chinook fishing from June 20 through July 5.

In the California KMZ, Alternatives I and II would open in early to mid-June and remain open until the end of July. Under Alternative III the fishery would be open from July 1-19. The minimum size limit is 20 inches under each of the Alternatives.

In the Fort Bragg area, the fishery would open on April 11 under each of the Alternatives and remain open until October 30 (Alternative III), October 31 (Alternative II), or November 1 (Alternative I). The minimum size limit is 20 inches under each of the Alternatives.

In the San Francisco area, the fishery would open on April 11 for each of the Alternatives. Under Alternative I, the fishery would run until November 1, with a 24-inch minimum size limit through April and a 20-inch minimum size limit for the remainder of the season. Alternative II is identical to Alternative I, except the season closes on October 31. For Alternative III, the fishery would have a two-week closure in early May and a season ending date of October 30. The minimum size limit would be 24 inches through June and 20 inches thereafter under Alternative III.

For the Monterey area, from Pigeon Point to the U.S./Mexico border, the fishery would open on April 4 and run continuously until October 4 (Alternative I), September 27 (Alternative II), or September 7 (Alternative III). The minimum size limit is 24 inches under each of the Alternatives.

### 7.3 *Treaty Indian*

Two sets of tribal troll Alternatives were proposed and will be evaluated during the North of Falcon process.

The Quinault Treaty Area (QTA) Tribes, which include the Quinault Indian Nation, Hoh Tribe and the Quileute Tribe, proposed Alternatives with a Chinook directed fishery in the May-June time period and an all-species fishery targeting coho and Chinook from July to August 31. Under the QTA proposal the Chinook Alternative would be split 60/40 between each fishing season.

The Makah Tribe (MT) proposed Alternatives with a Chinook directed fishery in the May-June time period and an all-species fishery targeting coho and Chinook from July to September 15. Under the MT proposal the Chinook Alternative would be split 50/50 between each fishing season.

For both proposals, any balance of fish remaining from the Chinook directed fishery may be transferred to the all-species fishery on an impact neutral basis.

## 8.0 **AFFECTED ENVIRONMENT AND ANALYSIS OF IMPACTS**

Based on National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NAO) 216-6 Section 6.02, the affected environment may consist of the following components:

- Target (FMP) species
- Social or economic environments
- Non-target species
- Essential Fish Habitat
- Public health or safety
- ESA listed (non-salmon) species or critical habitat
- Marine mammals
- Biodiversity or ecosystem function

## 8.1 Salmon Stocks in the Fishery

Target stocks include Chinook, coho, and pink salmon stocks identified in Appendix A, Table A-1 of Preseason Report I (Part 1 of this EA; PFMC 2020b), which includes several ESA listed Chinook and coho stocks. These ESA listed stocks are not targeted in Council area salmon fisheries, but will be included in the analysis of effects on target species because they are impacted coincidentally with targeted salmon stocks and frequently constrain access to targeted stocks. Environmental impacts to other ESA listed species (e.g., marine mammals) from the Alternatives will be analyzed in a later section of this EA.

A description of the historical baseline for this component of the affected environment is presented in the Review of 2019 Ocean Salmon Fisheries (PFMC 2020a). A more general description of salmon life history and population characteristics is presented in PFMC 2006. The current status (2020 ocean abundance forecasts) of the environmental components expected to be affected by the 2020 ocean salmon fisheries regulation Alternatives (FMP salmon stocks) are described in PFMC 2020b. The criteria used to evaluate whether there are significant effects from the Alternatives on target stocks are achievement of conservation objectives, ACLs, and rebuilding criteria. For ESA listed stocks impacted by the fishery, ESA consultation standards are applied to determine whether there are significant effects. The Salmon FMP conservation objectives are based on the best available science and are intended to prevent overfishing while achieving optimum yield from West Coast salmon fisheries as required by the MSA. The ESA consultation standards are likewise based on the best available science and are intended to ensure that fishery impacts do not appreciably reduce the likelihood of survival and recovery of listed species in the wild. FMP conservation objectives also include criteria for rebuilding overfished stocks. Therefore conservation objectives and consultation standards are appropriate indicators for determining the significance of fishery management actions referred to in NAO 216-6, Section 6.02.

### 8.1.1 Chinook Salmon

Fishery quotas under the Alternatives are presented in Tables 4a and 4b. Stock-specific management criteria and their forecast values under the Alternatives are provided in Tables 5a and 5b. Projected fishery landings, bycatch, and bycatch mortality under the Alternatives are summarized in Tables 6a and 6b. Tables 7a and 7b provide a breakdown of impacts by fishery and area for LCR natural tule Chinook. Appendix A presents tables of adult SRFC impacts, KRFC impacts, and the SRWC age-3 impact rate, stratified by fishery/month/management area, under the three Alternatives.

#### 8.1.1.1 North of Cape Falcon

Abundance projections important to Chinook harvest management north of Cape Falcon in 2020 are:

- *Columbia River hatchery tules*. Combined production of Lower River Hatchery (LRH) and Spring Creek Hatchery (SCH) stocks returning to the Columbia River is forecasted to be 97,200, which is slightly lower than the 2019 preseason expectation of 100,500. The 2020 LRH forecast is 51,000, which is below the forecast of 54,500 in 2019. The 2020 SCH forecast is 46,200, which is similar to the 2019 forecast of 46,000.

The primary Chinook salmon management objective shaping the Alternatives north of Cape Falcon is:

- NMFS consultation standards and annual guidance for ESA listed stocks as provided in Section 5.0 above. Relevant stocks for the area north of Cape Falcon include LCR natural tule Chinook, Columbia Lower River Wild (LRW) fall Chinook, and SRW fall Chinook.

Descriptions pertaining to the achievement of key objectives for Chinook salmon management north of Cape Falcon are found below.

- *LCR natural tule fall Chinook.* The Alternatives have exploitation rates on LCR natural tule fall Chinook that range from 28.3 percent to 36.5 percent when assuming the same preseason river fishery harvest rates as last year, all below the 38.0 percent NMFS consultation standard maximum for 2020. Additional shaping of PSC and inriver fisheries prior to the April Council meeting may result in minor changes to the anticipated ERs presented in the Alternatives. LCR tules are a constraining Chinook stock for fisheries north of Cape Falcon in 2020.
- *LRW fall Chinook.* Alternatives have ocean escapement values ranging from 19,500 to 20,600, which exceeds the ESA consultation standard of 6,900 minimum ocean escapement. LRW Chinook will not constrain ocean fisheries north of Cape Falcon in 2020.
- *SRW fall Chinook.* Alternatives have ocean exploitation rates ranging from 27.3 percent to 54.1 percent of the base period exploitation rate, which is less than the ESA consultation standard of no more than 70 percent of the 1988-1993 base period exploitation rate for all ocean fisheries. SRW Chinook will not constrain ocean fisheries north of Cape Falcon in 2020.

All Alternatives for Chinook fisheries north of Cape Falcon satisfy NMFS ESA consultation standards and guidance, FMP conservation objectives, and all other objectives for relevant Chinook stocks (Tables 5a and 5b).

#### 8.1.1.2 South of Cape Falcon

Status of Chinook stocks important to 2020 Chinook harvest management south of Cape Falcon are:

- *SRFC.* The Sacramento Index forecast is 473,183, which is higher than last year's preseason forecast of 379,632.
- *KRFC.* The ocean abundance forecast for this stock is 149,618 age-3, 36,241 age-4, and 739 age-5 fish. Last year's preseason forecast was 167,504 age-3, 106,119 age-4, and 599 age-5 fish.
- *SRWC.* The forecast of age-3 escapement absent fishing is 3,077, which is higher than last year's preseason forecast of 1,924.

Key Chinook salmon management objectives shaping the Alternatives south of Cape Falcon are:

- A KRFC natural area spawner escapement of at least 36,206 adults, which is produced, in expectation, by a maximum exploitation rate of 25.0 percent (FMP control rule). At their March 2020 meeting, the Council provided guidance to target a natural area escapement of 40,700 adults for one Alternative.
- A SRFC hatchery and natural area spawner escapement of at least 141,955 adults, which is produced, in expectation, by a maximum exploitation rate of 70.0 percent (FMP control rule).
- NMFS consultation standards and annual guidance for ESA listed stocks as provided in Section 5.0 above. Relevant stocks for the area south of Cape Falcon include SRWC, California coastal Chinook, SRW fall Chinook, and LCR natural tule Chinook.



For 2020, the KRFC harvest control rule specifies a *de minimis* maximum allowable exploitation rate of 25.0 percent. The FMP requires consideration of several factors when recommending *de minimis* exploitation rates. From the FMP:

“When recommending an allowable *de minimis* exploitation rate in a given year, the Council shall also consider the following circumstances:

- The potential for critically low natural spawner abundance, including considerations for substocks that may fall below crucial genetic thresholds;
- Spawner abundance levels in recent years;
- The status of co-mingled stocks;
- Indicators of marine and freshwater environmental conditions;
- Minimal needs for tribal fisheries;
- Whether the stock is currently in an approaching overfished condition;
- Whether the stock is currently overfished;
- Other considerations as appropriate.”

The Salmon Technical Team assessed each of these circumstances, with the exception of minimal needs for Tribal fisheries.

The potential for critically low natural spawner abundance and substocks that may fall below crucial genetic thresholds is expected to be relatively low (18%) given the natural-area spawner projection of 36,206 produced by the 25.0 percent *de minimis* exploitation rate. The projected risk is lower under scenarios with lower exploitation rates.

The forecast of natural area spawners in the absence of additional fishing is 48,237, which is above  $S_{MSY}$  (40,700). If fishing seasons are structured such that the maximum allowable exploitation rate of 25.0 percent is met, the natural area adult spawner expectation is 36,206, which is greater than the Minimum Stock Size Threshold (MSST) of 30,525 natural area spawners but below  $S_{MSY}$ . The natural area spawner abundance has been lower than 36,206 in four of the last five years.

With regard to co-mingled stocks, SRFC have a relatively large abundance forecast and are unlikely to be a constraining stock this year. The 2020 abundance forecast for this stock is the second largest over the past five years.

Indicators of marine and freshwater conditions provided in the California Current Integrated Ecosystem Assessment (CCIEA) California Current Ecosystem Status Report for 2020 suggest a mixed assessment of marine conditions. Several ecological indicators implied average to above-average productivity in 2019. However, there were also indicators of poor conditions such as low krill densities in California and Oregon, and low abundance of juvenile rockfish. In their summary, the CCIEA concludes that “Indicators are consistent with average to below-average salmon returns in 2020”. Regarding freshwater conditions, the CCIEA report identifies above average snow-water equivalent values in northern California as of February 1, 2020. However, annual measurements taken on April 1 are considered the best indicator of snow-water equivalent.

The KRFC stock currently meets the criteria for being at risk of approaching an overfished condition. However, KRFC is currently overfished.

Descriptions pertaining to the achievement of key objectives for Chinook salmon management south of Cape Falcon are found below.

- *SRFC*. The control rule-defined minimum of 141,955 hatchery and natural area adult spawners is met by each of the Alternatives.
- *KRFC*. The control rule-defined minimum of 36,206 natural area adult spawners is met by each of the Alternatives. Alternative III meets Council guidance specifying a minimum of 40,700 natural area adult spawners.
- *SRWC*. The ESA consultation standard that (1) limits the forecast age-3 impact rate in 2020 fisheries south of Point Arena to a maximum of 20.0 percent and (2) specifies time/area closures and minimum size limit constraints south of Point Arena, is met by each of the Alternatives.
- *California coastal Chinook*. The ESA consultation standard that limits the forecast KRFC age-4 ocean harvest rate to a maximum of 16.0 percent is met by each of the Alternatives.
- *SRW fall Chinook*. SRW Chinook will not constrain ocean fisheries south of Cape Falcon in 2020.

Each of the Alternatives for Chinook fisheries south of Cape Falcon satisfies NMFS ESA consultation standards and guidance, FMP conservation objectives, and all other objectives for relevant Chinook stocks (Tables 5a and 5b).

### 8.1.2 Coho Salmon

Fishery quotas under the Alternatives are presented in Tables 4a and 4b. Stock-specific management criteria and their forecast values under the Alternatives are provided in Tables 5a and 5b. Projected fishery landings, bycatch, and bycatch mortality under the Alternatives are summarized in Tables 6a and 6b. Tables 7a and 7b provide a breakdown of impacts by fishery and area for LCN, OCN, and RK coho. Table 8 provides expected coho mark rates for west coast fisheries by month.

Abundance projections important to coho harvest management in Council area fisheries are:

- *Oregon Production Index (OPI) Hatchery coho*. The 2020 forecast for hatchery coho from the Columbia River and the coast south of Cape Falcon of 185,700 is substantially lower than the 2019 forecast of 933,500. The Columbia River early coho forecast is 130,700 compared to the 2019 forecast of 545,000 and the Columbia River late coho forecast is 50,300, compared to the 2019 forecast of 360,600.
- *Oregon Coast natural (OCN) coho*. The 2020 OCN forecast is 83,000 compared to the 2019 forecast of 76,100.
- *Lower Columbia Natural (LCN) coho*. The 2020 LCN forecast is 24,600 compared to the 2019 forecast of 36,900.
- *Puget Sound coho*. Among Puget Sound natural stocks, Snohomish and Strait of Juan de Fuca coho are in the critical category in 2020. Skagit, Stillaguamish, and Hood Canal coho are in the low category.



## EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

- *Interior Fraser (Thompson River) coho.* This Canadian stock continues to be depressed, and will continue to constrain ocean coho fisheries north of Cape Falcon in 2020.
- *Washington coastal coho.* Forecasts for most Washington coastal coho stocks are lower than in 2019. Quillayute fall, Queets, and Grays Harbor coho are in the moderate category while Hoh is classified as abundant under the PST Southern Coho Management Plan.

Key coho salmon management objectives shaping the Alternatives are:

- NMFS consultation standards and annual guidance for ESA listed stocks as provided in Section 5.0 above. Relevant stocks include Central California Coast coho (south of the Oregon/California border), Southern Oregon/Northern California Coastal (SONCC) coho, OCN coho, and LCN coho. The maximum allowable exploitation rates for 2020 are: (1) a combined marine/freshwater exploitation rate not to exceed 15.0 percent for OCN coho, (2) a combined exploitation rate in marine-area and mainstem Columbia River fisheries not to exceed 18.0 percent for LCN coho, and (3) a marine exploitation rate not to exceed 13.0 percent for Rogue/Klamath (RK) hatchery coho, used as a surrogate for the SONCC coho ESU. Furthermore, coho retention is prohibited in all California ocean fisheries.
- Salmon FMP conservation objectives and obligations under the PST Southern Coho Management Plan for stocks originating along the Washington coast, Puget Sound, and British Columbia as provided in Section 6.2 above. The forecasts for several Puget Sound and Interior Fraser coho stocks in 2020 are low; however, the majority of the exploitation on these stocks occurs in Puget Sound and will be addressed in development of fishing seasons for inside waters during the North of Falcon co-management process by the state and tribes of Washington prior to the April Council meeting. Because of their abundance status, Interior Fraser coho are subject to an exploitation rate ceiling of 10.0 percent in southern U.S. fisheries under the PST Southern Coho Management Plan.

Descriptions pertaining to the achievement of key objectives for coho salmon management are found below.

- *LCN coho.* All Alternatives satisfy the maximum 18.0 percent exploitation rate when 2020 projected marine impacts are combined with preliminary 2020 preseason modeled impacts for mainstem Columbia River fisheries. Total exploitation rates projected for the 2020 Alternatives range from 16.7 percent to 9.7 percent.
- *Queets wild coho.* The FMP MSY adult spawner objective for Queets wild coho is 5,800; projected ocean escapement values for the 2020 Alternatives range from 6,500 to 7,100.
- *Interior Fraser coho.* The Southern U.S. exploitation rate is less than the 10.0 percent limit required by the PST Southern Coho Management Plan in all Alternatives when 2020 projected marine impacts are combined with the 2019 preseason modeled impacts for Puget Sound fisheries. Shaping of the State and Tribal inside fisheries will occur during the North of Falcon process, and ocean fisheries may require further shaping before final management measures are adopted in order to comply with the PST limit.
- *Puget Sound coho.* Total exploitation rates for all Puget Sound stocks except Skagit and Snohomish coho are less than the maximum required by the FMP matrix in all Alternatives when 2020 projected marine impacts are combined with the 2019 preseason modeled impacts for Puget Sound

fisheries. In Alternative I under the MT treaty troll quotas, the Skagit coho total exploitation rate of 35.5 percent exceeds the 35 percent limit required by the FMP matrix. The Snohomish total exploitation rate ranges from 22.9 percent to 25.1 percent, exceeding the 20 percent limit required by the FMP in all Alternatives. Exploitation rates on Snohomish coho in Council Area fisheries range from 3.0 percent to 0.4 percent across each of the Alternatives. Snohomish coho, recently designated as overfished, currently meets the criteria for ‘not overfished/rebuilding’ status. As part of the rebuilding plan, a buffered  $S_{MSY}$  is in place, however, for 2020 the abundance forecast is below the critical/low breakpoint, limiting the allowable total exploitation rate to 20 percent. Shaping of the State and Tribal inside fisheries will occur during the North of Falcon process, and ocean fisheries may require further shaping before final management measures are adopted in order to comply with the FMP limits.

All of the Alternatives for coho fisheries satisfy NMFS ESA consultation standards and guidance, FMP conservation objectives, and all other objectives for relevant coho stocks other than those listed above (Tables 5a and 5b).

### **8.1.3 Pink Salmon**

Pink salmon runs occur in odd-numbered years in waters under Council jurisdiction and will not be an important management consideration in 2020.

### **8.1.4 Summary of Environmental Impacts on Target Stocks**

Stock forecasts for some Canadian Chinook and coho stocks, Oregon Coast Chinook stocks, and the actual PST limits on Canadian AABM Chinook fisheries are not known at this time, and preliminary values have been used in the analyses presented in this report. These forecasts and limits are expected to be available prior to the April Council meeting. Negotiations in the North of Falcon process will not be completed until the April Council meeting. These negotiations affect allocation of stock impacts primarily among inside fisheries (State, Tribal, recreational, various commercial sectors, etc.) but also between inside and ocean fisheries.

Environmental impacts on salmon stocks are assessed based on compliance with conservation objectives, ACLs, rebuilding plans, and ESA consultation standards. As noted in the description of the Alternatives (Tables 1, 2, and 3), if analyses using the updated values and the results of these negotiations do not result in compliance with FMP conservation objectives or ESA consultation standards, some Alternatives will not be viable and impacts in Council-area fisheries will need to be modified to comply with all applicable objectives and standards. If updated values and negotiations result in compliance with applicable objectives and standards, Council area fishery impacts would not increase; therefore, the analysis of effects would include the upper bound of a reasonable range of effects under the Alternatives considered for 2020 Council area ocean salmon fisheries.

#### **8.1.4.1 Targeted Salmon Stocks**

Based on current assumptions regarding Canadian, Alaskan, and inside fishery impacts, all target salmon stocks (non-ESA listed) meet their FMP conservation objectives under Alternatives I, II, and III with the exception of Snohomish coho in all Alternatives and Skagit coho in Alternative I under the MT treaty troll quotas (Tables 5a and 5b). Impacts on these stocks in Council area fisheries range from 4.1 percent to 0.6 percent for Skagit coho and from 3.0 percent to 0.4 percent for Snohomish coho, and there appears to be sufficient flexibility within Council and inside area fisheries as a whole to comply with requirements of the FMP.

#### 8.1.4.2 ESA Listed Salmon Stocks

Based on current assumptions regarding Canadian and inside fishery impacts, all ESA listed salmon stocks meet their ESA consultation standards under Alternatives II and III (Tables 5a and 5b).

Council-area fisheries have a minor impact on ESA-listed Puget Sound Chinook and on most Chinook stocks subject to the 2019 PST Agreement. At this point there appears to be sufficient flexibility within Council and inside area fisheries as a whole to achieve protection for the Puget Sound Chinook ESU.

### 8.2 Socioeconomics

In general, Council-area ocean salmon fisheries are managed to meet conservation objectives for stocks that are expected to achieve optimum yields while minimizing impacts on depressed stocks. While analysis of biological impacts is organized around salmon stocks that spawn in particular rivers, socioeconomic impacts under the regulatory alternatives are analyzed by ocean fishery management areas as described in the Salmon FMP. Although most stocks range across several areas, the abundance of individual stocks varies by time and area, thus the use of management areas facilitates more optimal management of each stock than would be possible with coastwide regulations. From north to south, the fishery management areas are: (1) from the U.S./Canada border to Cape Falcon (45°46' N. lat.), which is on the Oregon coast south of the Columbia River mouth; (2) between Cape Falcon and Humbug Mountain (42°40' N. lat.) on Oregon's southern coast; (3) the Oregon KMZ, which covers ocean waters from Humbug Mountain in southern Oregon to the Oregon/California border (42° N. lat.); (4) the California KMZ, which includes the area from the Oregon/California border to Horse Mountain (40°05' N. lat.) in northern California; (5) from Horse Mountain to Point Arena (38°57' N. lat.) in Mendocino County; (6) from Point Arena to Pigeon Point (37°11' N. lat.) north of Santa Cruz; and (7) from Pigeon Point to the U.S./Mexico border. There are also numerous subdivisions within these areas that are used to further balance stock conservation and harvest allocation needs. The following analysis of impacts on users of the resource and fishing communities is organized around the seven broad management areas. Figure 3 provides a map of the boundaries of these areas, also showing the main salmon ports.

Tribal ocean fisheries (including Washington State statistical area 4B) occur only in the area north of Cape Falcon. The Lower Elwha Klallam, Jamestown S'Klallam, Port Gamble S'Kallam, Makah, Quileute, Hoh, and Quinault Tribes all have fishery areas in the northern part of the area north of Cape Falcon (Tables 3a and 3b). Other federally-recognized tribes participate in in-river fisheries.

The Review of 2019 Ocean Salmon Fisheries (PFMC 2020a) provides an historical description of the salmon fishery affected environment. In addition to stock status assessments, the document reports socioeconomic impacts of historical fisheries and analyzes the current socioeconomic status of West Coast salmon fisheries. For the purpose of characterizing the socioeconomic impact of non-tribal Council-area ocean salmon fisheries, commercial exvessel value, recreational fishing trips, and community level personal income impacts resulting from both commercial and recreational fishing activities are used.

The short-term economic effects of the regulatory Alternatives for non-Indian fisheries are shown in Tables 9a, 9b, 10a and 10b. Tables 9a and 9b show projected commercial troll impacts expressed in terms of estimated potential exvessel value by catch area. Tables 10a and 10b show projected recreational fisheries impacts in terms of the number of projected angler-trips and community personal income impacts associated with those activities by port area. Note that exvessel values shown under the Alternatives for the commercial troll fishery in Tables 9a and 9b and income impact values shown for the recreational fishery in Tables 10a and 10b are not directly comparable. More directly comparable measures of short-term economic impacts from commercial and recreational salmon fisheries appear in Figures 1a, 1b, 2a,

and 2b, which show estimated community income impacts under the respective sets of commercial troll and recreational fishery Alternatives, compared to historical impacts in real (inflation-adjusted) dollars. Both commercial and recreational estimates provided in these figures are based on landing ports. In general, income impacts are estimates of the amount of income generated by the economic linkages associated with a particular activity (see Chapter IV of the Review of 2019 Ocean Salmon Fisheries for additional description of income impact estimates). Income impacts are a measure of relative economic activity. Differences in income impacts between an Alternative and the value for the 2019 fishery indicate the expected impact of the Alternative compared with not taking action, (i.e., if 2019 regulations were to remain in place). While reductions in income impacts associated with an activity may not necessarily reflect net losses, they are likely to indicate losses to businesses and individuals in a community that depends on that activity for their livelihood.

Total economic effects for non-Indian fisheries under the Alternatives may vary more or less than is indicated by the short-term impacts on ocean fisheries reported below. Salmon that are not harvested in the ocean do not necessarily result in an economic loss, as they may become available for additional inside harvest in non-Indian commercial, tribal, and recreational fisheries or may provide additional spawning escapement. Thus, Alternatives that restrict ocean harvests may increase opportunities for inside harvesters (e.g., higher commercial revenue or more angler trips) or contribute to higher inside CPUE (i.e., lower costs for commercial harvesters and/or higher success rates for recreational fishers). Additionally, harvest forgone by both ocean fisheries and inside fisheries may impact future production, although the magnitude of that effect is uncertain depending on the resulting escapement level compared to MSY escapement and the nature of the spawner-recruit relationship, both of which are influenced by habitat conditions in the ocean and in the spawning grounds.

Exvessel revenues in Tables 9a and 9b are based on estimated harvest by catch area while commercial income impacts in Figures 1a and 1b are based on projected deliveries by landing area. Historically, there has been a divergence between these two measures. The difference is due to salmon caught in certain catch areas being delivered to ports in neighboring catch areas. In an attempt to account for this effect and assign income impacts to the “correct” landing area, adjustments are made based on historical patterns. The patterns are typically inferred from the most recent year’s catch and landings data. For example, 2019 data shows there were deliveries of salmon: (1) caught north of Cape Falcon to landing ports between Cape Falcon and Humbug Mountain, (2) caught between Cape Falcon and Humbug Mountain to landing ports in the Oregon KMZ region, (3) caught between Point Arena and Pigeon Point to landing ports in the Fort Bragg region, and (4) caught south of Pigeon Point to landing ports in the San Francisco region, among others.

The expected harvest levels used to model commercial fishery impacts are taken from Tables 6a and 6b. Estimated harvests do not include relatively small amounts occurring in SWO fisheries off central and southern Oregon as these fisheries are not expected to be prosecuted in 2020. These total harvest estimates combined with the prior year’s average Chinook weights per fish and exvessel prices per pound were assumed to be the best indicators of expected revenues in the coming season. Coastwide average Chinook weight per fish in 2019 was approximately 15 percent below the prior year and the recent five-year average; while coastwide average Chinook exvessel prices in 2019 were 21 percent lower than the prior year and the lowest in inflation-adjusted terms since 2014. If this year’s actual average weight per fish or exvessel prices diverge significantly from what was observed last year, then salmon exvessel revenues and resulting commercial fisheries income impacts projected in this document may prove to be correspondingly biased.

Fishing effort estimates for the recreational fishery south of Cape Falcon are based on measures developed by the STT for modeling biological impacts. STT estimates for south of Cape Falcon use multi-year

averages to predict effort for the coming year. Consequently, if the multi-year average for a particular time period and area happens to be higher than last year's effort level, then the model may forecast an increase in effort for the coming year even though management measures may actually be relatively more constraining, or *vice-versa*. Estimated recreational effort does not include the relatively small amounts that often occur in state waters only (SWO) fisheries off central and southern Oregon as these fisheries are not expected to be prosecuted in 2020. Recreational fishery effort north of Cape Falcon was estimated using historical CPUE estimates ("success rates") applied to salmon quotas and expected harvest levels under the Alternatives. Projections of recreational catch north of Cape Falcon were made by multiplying the proposed quotas for the two species under each Alternative by the historic ratios of actual catch to the actual quotas. Effort and economic impacts were then estimated by summing recent year weighted average coho and Chinook angler success rates multiplied by the projected coho and Chinook catch under each Alternative. Unless otherwise noted, the economic effects of the commercial and recreational fisheries Alternatives summarized below are compared in terms of estimated community income impacts.

### 8.2.1 Alternative I

Under Alternative I, overall coastwide community personal income impacts from commercial salmon fisheries are projected to be 31 percent below last year's (2019) level and one percent below the recent (2015-2019) inflation-adjusted average. Coastwide income impacts from recreational fishing are projected to be 10 percent below last year's level but eight percent above the 2015-2019 inflation-adjusted average.

Commercial fishery income impacts north of Cape Falcon are projected to be 25 percent above last year but 16 percent below the 2015-2019 inflation-adjusted average.

South of Cape Falcon, overall commercial fishery income impacts are projected to fall below last year's level by 36 percent but exceed the 2015-2019 inflation-adjusted average by three percent.

A mix of effects is projected for areas south of Cape Falcon, with areas between Cape Falcon and Humbug Mountain, between Humbug Mountain and the Oregon/California border, and between Horse Mountain and Point Arena projected to see increases of 69 percent, 20 percent and 86 percent, respectively, compared with last year's levels. However, areas between Point Arena and Pigeon Point and south of Pigeon Point would see projected decreases of 48 percent and 60 percent, respectively, compared with last year; and areas between the Oregon/California border and Horse Mountain would be closed, i.e., a decrease of 100 percent. The areas south of Cape Falcon would see projected changes in commercial fishery income impacts compared to the 2015-2019 inflation-adjusted average ranging from an increase of 12 percent (Point Arena to Pigeon Point) to a decrease of 100 percent (Oregon/California border to Horse Mountain).

Projected income impacts from recreational fisheries north of Cape Falcon are 59 percent below last year and 56 percent below the 2015-2019 inflation-adjusted average.

Overall recreational fishery income impacts south of Cape Falcon are projected to be 11 percent above last year's and 38 percent above the 2015-2019 inflation-adjusted average. Recreational income impacts are projected to be above last year's levels in four of the six areas south of Cape Falcon, i.e., except between Cape Falcon and Humbug Mountain and between Point Arena and Pigeon Point. Recreational fishery income impacts are projected to be above the 2015-2019 inflation-adjusted average in all areas south of Cape Falcon, with increases ranging from four percent for areas between Point Arena and Pigeon Point to 222 percent for areas south of Pigeon Point.



## EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

Under Alternative I overall coastwide income impacts for combined non-Indian commercial and recreational salmon fisheries are projected to be 20 percent below last year's level but four percent above the 2015-2019 inflation-adjusted average. Combined income impacts north of Cape Falcon are projected to be 41 percent below last year's level and 44 percent below the 2015-2019 inflation-adjusted average. In aggregate, combined income impacts south of Cape Falcon are projected to be 15 percent below last year's level but 21 percent above the 2015-2019 inflation-adjusted average.

Tribal ocean fisheries north of Cape Falcon would be allocated 30,000 Chinook and 12,500 coho for ocean area harvest under the QTA alternative, versus 45,000 chinook and 30,000 coho under the MT alternative. These compare with the 2019 actual allocation of 35,000 Chinook and 55,000 coho.

### 8.2.2 Alternative II

Under Alternative II, overall coastwide community personal income impacts from commercial salmon fisheries are projected to be 32 percent below last year's (2019) level and two percent below the recent (2015-2019) inflation-adjusted average. Coastwide income impacts from recreational fishing are projected to be 13 percent below last year's level but three percent above the 2015-2019 inflation-adjusted average.

Commercial fishery income impacts north of Cape Falcon are projected to be six percent below last year and 37 percent below the 2015-2019 inflation-adjusted average.

South of Cape Falcon, overall commercial fishery income impacts are projected to fall below last year's level by 34 percent but exceed the 2015-2019 inflation-adjusted average by six percent.

Mostly negative commercial fisheries income impacts compared with last year's levels are projected for areas south of Cape Falcon, i.e., except for the areas between Cape Falcon and Humbug Mountain and between Humbug Mountain and the Oregon/California border, where increases of 71 percent and six percent, respectively, are projected. The other four areas south of Cape Falcon would see projected decreases in commercial fisheries income impacts compared with last year ranging from 89 percent (Horse Mountain to Point Arena) to 36 percent (Oregon/California border to Horse Mountain). Three of the six areas south of Cape Falcon would see projected decreases in commercial fishery income impacts compared to the 2015-2019 inflation-adjusted average, ranging from a 30 percent decrease (Humbug Mountain to Oregon/California border) to 95 percent (Horse Mountain to Point Arena). The other three areas south of Cape Falcon would see projected increases in commercial fishery income impacts compared to the 2015-2019 inflation-adjusted average ranging from three percent (Cape Falcon to Humbug Mountain) to 28 percent (Point Arena to Pigeon Point).

Projected income impacts from recreational fisheries north of Cape Falcon are 69 percent below last year and 67 percent below the 2015-2019 inflation-adjusted average.

Overall recreational fishery income impacts south of Cape Falcon are projected to be 10 percent above last year and 37 percent above the 2015-2019 inflation-adjusted average. Recreational income impacts are projected to be above last year's level in three of the six areas south of Cape Falcon, with increases of 35 percent for areas between Humbug Mountain to Oregon/California border, 137 percent for areas from Horse Mountain to Point Arena, and 72 percent for areas south of Pigeon Point. In the other three areas south of Cape Falcon, projected declines from the 2015-2019 inflation-adjusted average range from three percent (Oregon/California border to Horse Mountain) to 27 percent (Cape Falcon to Humbug Mountain). Recreational income impacts are projected to be above the 2015-2019 inflation-adjusted average in all six

areas south of Cape Falcon, with increases ranging from four percent for areas between Point Arena and Pigeon Point to 220 percent for areas south of Pigeon Point.

Under Alternative II overall coastwide income impacts for combined non-Indian commercial and recreational salmon fisheries are projected to be 22 percent below last year's level but one percent above the 2015-2019 inflation-adjusted average. Combined income impacts north of Cape Falcon are projected to be 56 percent below last year's level and 58 percent below the 2015-2019 inflation-adjusted average. In aggregate, combined income impacts south of Cape Falcon are projected to be 14 percent below last year's level but 22 percent above the 2015-2019 inflation-adjusted average.

Tribal ocean fisheries north of Cape Falcon would be allocated 25,000 Chinook and 10,000 coho for ocean area harvest under the QTA alternative, versus 35,000 chinook and 22,500 coho under the MT alternative. These compare with the 2019 actual allocation of 35,000 Chinook and 55,000 coho.

### **8.2.3 Alternative III**

Under Alternative III, overall coastwide community personal income impacts from commercial salmon fisheries are projected to be 49 percent below last year's (2019) level and 27 percent below the recent (2015-2019) inflation-adjusted average. Coastwide income impacts from recreational fishing are projected to be 25 percent below last year's level and 11 percent below the 2015-2019 inflation-adjusted average.

South of Cape Falcon, overall commercial fishery income impacts are projected to fall below last year's level by 45 percent and below the 2015-2019 inflation-adjusted average by 11 percent.

The commercial fishery north of Cape Falcon would be closed thus the associated commercial fishery income impacts north of Cape Falcon are projected to be 100 percent below last year and the 2015-2019 inflation-adjusted average.

Compared with last year's levels, negative commercial fisheries income impact effects are projected for the areas south of Cape Falcon, except for the area between Cape Falcon and Humbug Mountain, where an increase of 30 percent is projected. The other five areas south of Cape Falcon would see projected decreases in commercial fisheries income impacts compared with last year ranging from 26 percent (Humbug Mountain to Oregon/California border) to 100 percent (Oregon/California border to Horse Mountain). One area south of Cape Falcon, the area south of Pigeon Point, would see a projected increase in commercial fishery income impacts of 76 percent compared to the 2015-2019 inflation-adjusted average. The other five areas south of Cape Falcon would see projected decreases in commercial fishery income impacts compared to the 2015-2019 inflation-adjusted average ranging from three percent (Point Arena to Pigeon Point) to 100 percent (Oregon/California border to Horse Mountain).

The recreational fishery north of Cape Falcon would also be closed; thus the associated income impacts from recreational fisheries north of Cape Falcon are projected to be 100 percent below last year the 2015-2019 inflation-adjusted average.

Overall recreational fishery income impacts south of Cape Falcon are projected to be five percent above last year and 31 percent above the 2015-2019 inflation-adjusted average. Recreational income impacts are projected be above last year's level in two areas south of Cape Falcon, with increases of 137 percent for areas from Horse Mountain to Point Arena, and 71 percent for areas south of Pigeon Point. Projected declines from last year's level in the other four areas south of Cape Falcon range from 10 percent (Point Arena to Pigeon Point) to 61 percent (Oregon/California border to Horse Mountain). Recreational income impacts are projected be above the 2015-2019 inflation-adjusted average in three of six areas south of Cape

Falcon, with increases ranging from 30 percent for Cape Falcon to Humbug Mountain to 218 percent for areas south of Pigeon Point; and decreases ranging from two percent for Point Arena to Pigeon Point to 62 percent for areas between Humbug Mountain and the Oregon/California border.

Under Alternative III, overall coastwide income impacts for combined non-Indian commercial and recreational salmon fisheries are projected to be 37 percent below last year's level and 18 percent below the 2015-2019 inflation-adjusted average. Combined income impacts north of Cape Falcon are projected to be 100 percent below last year's level and the 2015-2019 inflation-adjusted average. In aggregate, combined income impacts south of Cape Falcon are projected to be 22 percent below last year's level but 11 percent above the 2015-2019 inflation-adjusted average.

Tribal ocean fisheries north of Cape Falcon would be allocated 20,000 Chinook and zero coho for ocean area harvest under the QTA alternative, versus 25,000 chinook and 15,000 coho under the MT alternative. These compare with the 2019 actual allocation of 35,000 Chinook and 55,000 coho..

#### **8.2.4 Summary of Impacts on the Socioeconomic Environment**

The commercial salmon fishery Alternatives are projected to generate coastwide income impacts ranging from 31 percent below (Alternative I) to 49 percent below (Alternative III) last year's levels. These levels also represent corresponding declines ranging from one percent to 27 percent below the recent (2015-2019) inflation-adjusted averages.

North of Cape Falcon, commercial salmon fisheries income impacts are projected to be above last year under Alternative I but below last year under Alternative II and Alternative III, and below the 2015-2019 inflation-adjusted average under all three alternatives. Compared with last year, areas south of Point Arena and the area from the Oregon/California border to Horse Mountain would see decreases under all three alternatives, while the area between Cape Falcon and Humbug Mountain would see increases under all three Alternatives. The remaining areas would see increase or decreases in commercial salmon fishery income impacts depending on the Alternative. The area north of Cape Falcon would be closed to commercial fishing under Alternative III, and Oregon/California border to Horse Mountain would be closed to commercial fishing under Alternative I and Alternative III.

Relative to the other alternatives, projections for Alternative III show the most negative commercial fisheries income impacts overall and for six of the seven management areas, i.e., for all areas except south of Pigeon Point. Projections for Alternative I show the most negative commercial fisheries income impacts for two of the seven management areas: south of Pigeon Point and Oregon/California border to Horse Mountain (tie with Alternative III). Projections show Alternative II with the most negative commercial fisheries income impacts for one area: Horse Mountain to Point Arena (tie with Alternative III).

Total coastwide income impacts from recreational salmon fisheries are projected to be lower than last year under all three alternatives, with decreases of 10 percent under Alternative I, 13 percent under Alternative II, and 25 percent under Alternative III. Compared with the 2015-2019 inflation-adjusted average, a decrease in coastwide recreational fishery income impacts is projected under Alternative III (11 percent), but relative increases are projected under Alternative I (eight percent) and Alternative II (three percent). Compared with last year, three management areas would see projected decreases in recreational fishery income impacts under all three alternatives: north of Cape Falcon, Cape Falcon to Humbug Mountain, and Point Arena to Pigeon Point. Compared with the 2015-2019 inflation-adjusted average, six of seven areas (i.e., all areas except north of Cape Falcon) are projected to see increases in recreational fishery income impacts under Alternative I and Alternative II. Under Alternative III, three areas would see projected



increases in recreational fishery income impacts relative to the 2015-2019 inflation-adjusted average: Cape Falcon to Humbug Mountain, Horse Mountain to Point Arena, and south of Pigeon Point.

Total coastwide income impacts from combined non-Indian commercial and recreational salmon fisheries are projected to be lower than last year under all three alternatives, i.e., lower by 20 percent under Alternative I, 22 percent under Alternative II, and 37 percent under Alternative III. Combined coastwide income impacts are projected to be lower than the 2015-2019 inflation-adjusted average by 18 percent under Alternative III, but slightly above the 2015-2019 inflation-adjusted average under Alternative I (four percent) and Alternative II (one percent). Three of seven management areas (Cape Falcon to Humbug Mountain, Humbug Mountain to the Oregon/California border, and Horse Mountain to Point Arena) would see projected increases in combined commercial and recreational salmon fishery income impacts compared with last year under both Alternative I and Alternative II, and two of seven management areas are projected to see increases compared to last year under Alternative III (Horse Mountain to Point Arena, and south of Pigeon Point).

Compared with the 2015-2019 inflation-adjusted average, five of seven management areas are projected to see increases in combined commercial and recreational salmon fishery income impacts under Alternative I (Cape Falcon to Humbug Mountain, Humbug Mountain to the Oregon/California border, Horse Mountain to Point Arena, Point Arena to Pigeon Point, and south of Pigeon Point), three areas under Alternative II (Cape Falcon to Humbug Mountain, Point Arena to Pigeon Point, and south of Pigeon Point), and two areas under Alternative III (Cape Falcon to Humbug Mountain, and south of Pigeon Point).

Under the QTA alternatives, ocean tribal fisheries occurring north of Cape Falcon would be allocated a maximum of 30,000 Chinook and 12,500 coho under Alternative I, and a minimum of 20,000 Chinook and zero coho under Alternative III. Under the MT alternatives, ocean tribal fisheries occurring north of Cape Falcon would be allocated a maximum of 45,000 Chinook and 30,000 coho under Alternative I, and a minimum of 25,000 Chinook and 15,000 coho under Alternative III.

### **8.3 Non-target Fish Species**

Prior NEPA analyses have considered the effects of the ocean salmon fisheries on non-target fish species. Since then, ocean salmon fisheries have not changed substantially in terms of season length, areas, depth, bag limits, etc. Nor is there any new information to suggest that the incidental nature of encounters of non-target species in ocean salmon fisheries has changed. Therefore, conclusions from previous environmental analyses indicating that effects on non-target fish species are low and not significant are still applicable, as discussed below. The differences between the Alternatives for the 2020 salmon fishery are not discernible with respect to their effect on non-target fish species.

Impacts to groundfish stocks from salmon troll fisheries continue to be managed as part of the open access groundfish fishery sector, and are at similar levels compared to recent years. Previous environmental analysis concluded that the amount of groundfish taken incidentally in the salmon fishery is very low and is not substantially altered by changes in the salmon fishery. (NMFS 2003; Appendix B). The 2020 ocean salmon regulation Alternatives are not expected to differ substantially from fisheries analyzed previously with respect to groundfish impacts; therefore, effects from the Alternatives to groundfish stocks are not significant.

Impacts to Pacific halibut from salmon troll fisheries continue to be managed under limits established through the International Pacific Halibut Commission (IPHC) process and under the Area 2A (Council area) catch sharing plan. Previous environmental analysis stated that data on the commercial segment of salmon fisheries show the co-occurrence rates for salmon and halibut, coastal pelagic species, highly migratory

species, and non-Council managed fish species are low (NMFS 2003; Appendix B). The 2020 ocean salmon regulation Alternatives include Pacific halibut landing restrictions within the range enacted in the past, and are not expected to differ substantially from earlier analyses with respect to Pacific halibut impacts; therefore, effects from the Alternatives to Pacific halibut are not significant. Likewise, there are no changes to the salmon fishery for 2020 that would change impacts to other non-salmon fish species compared to previous analyses, therefore, effects from the Alternatives to these species are not expected to be significant.

#### 8.4 Marine Mammals

The commercial salmon troll fisheries off the coasts of Washington, Oregon, and California are classified as Category III fisheries, indicating a remote or no likelihood of causing incidental mortality or serious injury to marine mammals (85 FR 21079, April 16, 2020). Recreational salmon fisheries use similar gear and techniques as the commercial fisheries and are assumed to have similar encounter rates and impacts. The non-ESA listed marine mammal species that are known to interact with ocean salmon fisheries are California sea lion and harbor seals. Populations of both these species are at stable and historically high levels. There is no new information to suggest that the nature of interactions between California sea lions or harbor seals in ocean salmon fisheries has changed since the Category III determination. Therefore, the impacts from the 2020 salmon regulation Alternatives to non-ESA listed marine mammals are not expected to be significant, and there is no discernible difference between the effects of the Alternatives on these resources.

#### 8.5 ESA Listed Species (other than salmon)

There is no record of injury or mortality of Guadalupe fur seals in Pacific Coast salmon fisheries (NMFS 2003; Appendix B). No sea turtles have been reported taken by the ocean salmon fisheries off Washington, Oregon, or California, and NMFS has determined that commercial fishing by Pacific Coast salmon fisheries would pose a negligible threat to Pacific turtle species (NMFS 2003; Appendix B). There is no discernible difference between the effects of the alternatives on these resources.

Salmon fisheries have the potential to affect Southern Resident killer whales (SRKW) by removing Chinook salmon, an important prey species for the whales. NMFS issued a biological opinion analyzing the effects of the ocean salmon fisheries on SRKW in 2009 which concluded that these fisheries are not likely to jeopardize SRKW. NMFS reinitiated consultation on the effects of the ocean salmon fisheries on SRKW on April 12, 2019. To inform the new consultation, the Council formed an *ad hoc* workgroup (SRKW workgroup), including salmon and SRKW experts, to reassess the effects of Council salmon fisheries on SRKW and as needed to develop a long-term approach that may include proposed conservation measure(s) or management tool(s) that limits PFMC fishery impacts to prey availability for SRKW relative to implementing the FMP. The SRKW Workgroup risk assessment report, presented at the Council's March 2020 meeting, and incorporated herein by reference, provides the most current information on SRKW and their predator-prey interaction with Pacific salmon (the report can be found online at: <https://www.pcouncil.org/documents/2020/02/e-3-a-srkw-workgroup-report-1-electronic-only.pdf/>).

Other ESA listed salmonid species present in Council area waters include sockeye and chum salmon, and steelhead trout. These species are rarely encountered in ocean salmon fisheries, and the Alternatives for Council area ocean salmon fisheries are in compliance with applicable BOs for listed ESUs of these species as listed in Chapter 5 of this document. Because anticipated impacts are negligible, there are no significant impacts expected on listed sockeye or chum salmon or steelhead trout from the Alternatives analyzed in this EA, and there is no discernible difference between the effects of the Alternatives on these resources.

## **8.6 Seabirds**

The types of vessels used in ocean salmon fisheries and the conduct of the vessels are not conducive to collisions or the introduction of rats or other non-indigenous species to seabird breeding colonies. Other types of accidental bird encounters are a rare event for commercial and recreational ocean salmon fisheries (NMFS 2003; Appendix B). Therefore, there are no significant impacts expected on seabirds from the Alternatives analyzed in this EA, and there is no discernible difference between the effects of the Alternatives on seabirds.

## **8.7 Biodiversity and Ecosystem Function**

The removal of adult salmon by the ocean fisheries is not considered to significantly affect the lower trophic levels or the overall marine ecosystem because salmon are not the only or primary predator in the marine environment (NMFS 2003; Appendix B). Therefore, no significant impacts are expected on biodiversity or ecosystem function from the Alternatives analyzed in this EA, and there is no discernible difference between the effects of the Alternatives on these resources.

## **8.8 Ocean and Coastal Habitats**

Council Area salmon fisheries do not employ bottom contact gear, and there is no evidence of direct gear effects on fish habitat from Council-managed salmon fisheries on essential fish habitat (EFH) for salmon or other managed species (PFMC 2006; Appendix B). Critical habitat for ESA listed salmon does not include Council area ocean water. Because Council area salmon fisheries are conducted at sea and without bottom contact gear, there is no interaction with unique geographic characteristics or other cultural, scientific, or historical resources such as those that might be listed on the National Register of Historical Places.

## **8.9 Public Health and Safety**

Fisheries management can affect safety if, for example, season openings make it more likely that fishermen will have to go out in bad weather because fishing opportunities are limited. The Salmon FMP, however, has provisions to adjust management measures if unsafe weather affected fishery access. The Alternatives for 2020 ocean salmon regulations have season structures similar to those employed in previous salmon seasons and are not expected to result in any significant increase in the risk to human health or safety at sea (PFMC 2006; Appendix B). There are also no discernible differences between the effects of the Alternatives on the risk to human health or safety at sea.

## **8.10 Cumulative Impacts**

A cumulative effects analysis is required by the Council on Environmental Quality (CEQ) (40 CFR part 1508.7). The purpose of a cumulative effects analysis is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective, but rather, the intent is to focus on those effects that are truly meaningful. A formal cumulative impact assessment is not necessarily required as part of an EA under NEPA as long as the significance of cumulative impacts has been considered (U.S. EPA 1999). The following addresses the significance of the expected cumulative impacts as they relate to the Pacific Coast salmon fishery.

### **8.10.1 Consideration of the Affected Resource**

The affected resources that relate to the Pacific Coast salmon fishery are described in the Affected Environment sections of Preseason I and in Section 8.0 of this report. The significance of the cumulative effects will be discussed in relation to these affected resources listed below.

- Fishery and Fish Resources,
- Protected Resources,
- Biodiversity/Ecosystem Function and Habitats,
- Socioeconomics.

### **8.10.2 Geographic Boundaries**

The analysis focuses on actions related to Council-managed ocean salmon commercial and recreational fisheries. Council-managed ocean fisheries occur in the exclusive economic zone (EEZ), from three to 200 miles offshore, off the coasts of the states of Washington, Oregon, and California as well as the ports in these states that receive landings from the ocean salmon fisheries. Since salmon are anadromous and spend part of their lifecycle in fresh water, the geographic scope also includes internal waters (e.g., Puget Sound) and rivers that salmon use to migrate towards their spawning grounds.

### **8.10.3 Temporal Boundaries**

The temporal scope of past and present actions for the affected resources is primarily focused on actions that have occurred after framework FMP implementation (1984). The temporal scope of future actions for all affected resources extends about five years into the future. This period was chosen because the dynamic nature of resource management and lack of information on future projects make it very difficult to predict impacts beyond this timeframe with any certainty.

### **8.10.4 Past, Present, and Reasonably Foreseeable Future Actions**

#### ***Fishery Actions***

The Council sets management measures for ocean salmon fisheries annually based on stock forecasts and in accordance with conservation objectives set in the FMP and guidance provided by NMFS for managing impacts to ESA listed stocks. The Council manages ocean salmon fisheries through an intensive preseason analysis process to shape salmon fisheries impacts on salmon stocks within the parameters of the FMP conservation measures and ESA requirements.

Fisheries outside of the Council's jurisdiction also impact the Council-area salmon fishery. The Council considers fisheries managed by the states and treaty Indian tribes in the North of Falcon management process and Columbia River fisheries managed under U.S. v. Oregon Management Plan, as well as obligations for fisheries off Alaska and Canada under the Pacific Salmon Treaty (PFMC and NMFS 2014). Additionally, the Council and NMFS manage ocean salmon fisheries inseason to keep fisheries impacts within the constraints set preseason. The Council also conducts annual methodology reviews to improve models and other tools for assessing salmon stocks.

#### ***Non-Fishing Related Actions***

Because salmon spend part of their lifecycle in fresh water, they are more vulnerable to a broad range of human activities (since humans spend most of their time on land) that affect the quantity and quality of these freshwater environments. These effects are generally well known and diverse. They include physical barriers to migration (dams), changes in water flow and temperature (often a secondary effect of dams or water diversion projects), and degradation of spawning environments (such as increased silt in the water from adjacent land use). Non-fishing activities in the marine environment can introduce chemical pollutants

and sewage; and result in changes in water temperature, salinity, dissolved oxygen, and suspended sediment which poses a risk to the affected resources. Human-induced non-fishing activities tend to be localized in nearshore areas and marine project areas. When 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 tends to reduce the tolerance of affected species to the impacts of fishing effort. Mitigation through regulations that would reduce fishing effort could 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 the localized non-fishing perturbations.

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

The effects of climate on the biota of the California Current ecosystem have been recognized for some time. The El Niño-Southern Oscillation (ENSO) is widely recognized to be the dominant mode of inter-annual variability in the equatorial Pacific, with impacts throughout the rest of the Pacific basin and the globe. During the negative (El Niño) phase of the ENSO cycle, jet stream winds are typically diverted northward, often resulting in increased exposure of the Pacific Coast of the U.S. to subtropical weather systems. The impacts of these events to the coastal ocean generally include reduced upwelling winds, deepening of the thermocline, intrusion of offshore (subtropical) waters, dramatic declines in primary and secondary production, poor recruitment, reduced growth and survival of many resident species (such as salmon and groundfish), and northward extensions in the range of many tropical species. Concurrently, top predators such as seabirds and pinnipeds often exhibit reproductive failure. In addition to inter-annual variability in ocean conditions, the North Pacific seems to exhibit substantial inter-decadal variability, which is referred to as the Pacific (inter) Decadal Oscillation (PDO).

Anomalously warm sea surface temperatures in the northeast Pacific Ocean developed in 2013 and continued to persist through much of 2015; this phenomenon was termed “the Blob.” During the persistence of the Blob, distribution of marine species was affected (e.g., tropical and subtropical species were documented far north of their usual ranges), marine mammals and seabirds starved, and a coastwide algal



bloom that developed in the summer of 2015 resulted in domoic acid poisoning of animals at various trophic levels, from crustaceans to marine mammals. In 2015-2016, a very strong El Niño event disrupted the Blob, which was declared “dead” by climatologists in December 2015. The extent of the impact of The Blob on salmon and salmon fisheries has not yet been fully determined. It is also uncertain if or when environmental conditions would cause a repeat of this event, although evidence of resurgent blob-like conditions emerged in late 2019. NMFS’ Northwest and Southwest Fisheries Science Centers presented information to the Council indicating that the broods that will contribute to 2020 harvest and escapement encountered generally poor to intermediate ocean conditions in the California Current Ecosystem.

Within the California Current itself, Mendelssohn et al (2003) described long-term warming trends in the upper 50 to 75 meters of the water column. Recent paleoecological studies from marine sediments have indicated that 20th century warming trends in the California Current have exceeded natural variability in ocean temperatures over the last 1,400 years. Statistical analyses of past climate data have improved our understanding of how climate has affected North Pacific ecosystems and associated marine species productivities.

In addition, changes in river flows and flow variability may affect population growth of anadromous fishes. Ward et al. (2015) found that increases in variability in freshwater flows may have a more negative effect than any other climate signal included in their model. Some climate change models predict that in the Pacific Northwest, there will be warmer winters and more variable river flows, which may affect the ability of anadromous fishes to recover in the future (Ward et al. 2015). However, our ability to predict future impacts on a large-scale ecosystem stemming from climate forcing events remains uncertain.

### **8.10.5 Magnitude and Significance of Proposed Action**

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

#### **8.10.5.1 Fishery and Fish Resources**

Past, present, and reasonably foreseeable future actions that affect the salmon fishery and fish resources are considered annually when the Council sets management measures for ocean salmon fisheries based on stock forecasts and in accordance with conservation objectives set in the FMP and guidance provided by NMFS for managing impacts to ESA-listed stocks. The Council also considers fisheries managed by the states and treaty Indian tribes in the North of Falcon management process and Columbia River fisheries managed under *U.S. v. Oregon* Management Plan, as well as obligations under the Pacific Salmon Treaty (PFMC and NMFS 2014). Additionally, the Council and NMFS manage ocean salmon fisheries inseason to keep fisheries impacts within the constraints set preseason. The Council also conducts annual methodology reviews to improve models and other tools for assessing salmon stocks. Therefore, the magnitude and significance of cumulative effects, including the proposed action, on the salmon fishery and fish resources are expected to be low positive and not significant.

#### **8.10.5.2 Protected Resources**

Past, present, and foreseeable future actions that affect ESA-listed salmon are considered annually when the Council sets management measures for ocean salmon fisheries; NMFS provides guidance for managing impacts to ESA-listed stocks based on biological opinions and stock productivity information provided by the states and analyzed by the STT. Fishery management actions have been taken to manage impacts on

ESA-listed salmon, and the states have developed information to better inform fishery management decisions. Therefore, the magnitude and significance of cumulative effects, including the proposed action on ESA-listed salmon are expected to be low positive and not significant.

#### ***8.10.5.3 Biodiversity/Ecosystem Function and Habitats***

Past, present, and foreseeable future actions that affect biodiversity/ecosystem function and habitats are considered to the extent practicable annually. When considering the proposed action's removal of adult salmon by the ocean fisheries in addition to past, present, and reasonably foreseeable future actions, such removal of these salmon is not considered to significantly affect the lower trophic levels or the overall marine ecosystem because salmon are not the only primary predator. In addition, Council-area salmon fisheries are conducted at sea with hook-and-line gear and thus, there is no to negligible interactions expected with EFH for salmon or other managed species.

Salmon escapement to fresh water provides for spawning and for carrying marine derived nutrients to freshwater habitats. The importance of salmon carcasses in the transport of marine derived nutrients to freshwater habitats is described in Appendix A of the FMP and the related EA (see Final Environmental Assessment and Regulatory Impact Review; Pacific Coast Salmon Plan Amendment 18: Incorporating Revisions to Pacific Salmon Essential Fish Habitat, available on the Council's website: [www.pcouncil.org](http://www.pcouncil.org)) and also in the EIS for Puget Sound Chinook Harvest Resource Management Plan (Puget Sound Chinook Harvest Resource Management Plan FEIS. NMFS Northwest Region with Assistance from the Puget Sound Treaty Tribes and Washington Department of Fish and Wildlife. December 2004. 2 volumes, available on the NMFS West Coast Region website: <http://www.westcoast.fisheries.noaa.gov/>); these documents are incorporated herein by reference. Council fisheries are designed to provide escapement of salmon to provide for natural spawning and transport of marine derived nutrients.

#### ***8.10.5.4 Socioeconomic Environment***

Each year the Council evaluates the socioeconomic impact of past salmon fisheries in the stock assessment and fishery evaluation document (e.g., PFMC 2020a) and also evaluates foreseeable future impacts in the annual preseason reports; these documents are also used as the basis for the NEPA analysis for the annual management measures. The magnitude and significance of cumulative effects, including the proposed action on the socioeconomic environment, is expected to be low positive, and not significant.

## **9.0 CONCLUSION**

This analysis has identified no significant environmental impacts that would result from the 2020 ocean salmon regulation Alternatives, from final regulations selected from within the range presented in these Alternatives.

## 10.0 LIST OF AGENCIES AND PERSONS CONSULTED

The following public meetings were held as part of the salmon management process (Council-sponsored meetings in bold):

- November 14-20, 2019: **Pacific Fishery Management Council meeting**, Costa Mesa, California.
- January 21-24, 2020 **Salmon Technical Team (Review preparation)**, Portland, Oregon.
- February 18-21: **Salmon Technical Team (Preseason Report I preparation)**, Portland, Oregon.
- February 21: California Fish and Game Commission meeting, Sacramento, California.
- February 27: California Department of Fish and Wildlife public meeting, Santa Rosa, California.
- February 27: Oregon Ocean Salmon Industry Group meeting, Newport, Oregon.
- February 28: Washington Department of Fish and Wildlife public meeting, Olympia, Washington.
- March 4-10: **Pacific Fishery Management Council meeting**, Rohnert Park, California.
- March 20: Oregon Fish and Wildlife Commission meeting, Salem, Oregon.
- March 16: North of Falcon, Discussion of management objectives and preliminary fishery proposals for sport and commercial fisheries in Puget Sound and coastal Washington, with limited discussion of the Columbia River and ocean fisheries (on-line meeting)
- March 23-24: **Public hearings on management options** (on-line meetings with focused discussions in Washington; Oregon; California).
- March 31 North of Falcon, Puget Sound forum (on-line meeting).
- April 1: North of Falcon, Ocean fisheries and Columbia River fisheries, TBD Ridgefield, Washington or on-line meeting.
- April 4-10: **Pacific Fishery Management Council meeting**, (on-line meeting)
- April 15-16: California Fish and Game Commission meeting, Sacramento, California.
- April 17 Oregon Fish and Wildlife Commission meeting, Reedsport, Oregon.
- April 24: Washington Fish and Wildlife Commission meeting, teleconference.

The following organizations were consulted and/or participated in preparation of supporting documents:

Northwest Indian Fisheries Commission  
Columbia River Intertribal Fish Commission  
West Coast Indian Tribes

National Marine Fisheries Service, West Coast Region, Sustainable Fisheries Division  
National Marine Fisheries Service, Northwest Fisheries Science Center  
National Marine Fisheries Service, Southwest Fisheries Science Center  
U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office  
United States Coast Guard

California Department of Fish and Wildlife  
Oregon Department of Fish and Wildlife  
Washington Department of Fish and Wildlife



## 11.0 REFERENCES

- Mendelssohn, R., F. B. Schwing, and S. J. Bograd. 2003. Spatial structure of subsurface temperature variability in the California Current, 1950-1993. *Journal of Geophysical Research* 108: doi:10.1029/2002JC001568.
- National Marine Fisheries Service (NMFS). 2003. Final Programmatic environmental impact statement for Pacific salmon fisheries management off the coasts of Southeast Alaska, Washington, Oregon, and California, and in the Columbia River basin. National Marine Fisheries Service Northwest Region, Seattle.
- NMFS. 2009. Endangered Species Act Section 7(a)(2) consultation biological opinion: Effects of the Pacific Coast salmon plan on the southern resident killer whale (*Orcinus orca*) distinct population segment. National Marine Fisheries Service Northwest Region, Seattle.
- Pacific Fishery Management Council (PFMC). 2006. Environmental assessment for the proposed 2006 management measures for the ocean salmon fishery managed under the Pacific Coast salmon plan. Pacific Fishery Management Council, Portland, Oregon.
- PFMC and NMFS. 2014. Harvest Specifications and Management Measures for 2015-2016 and Biennial Periods Thereafter; Includes the Reorganization of Groundfish Stock Complexes, Designation of Ecosystem Component Species and Amendment 24 to the Pacific Coast Groundfish Fishery Management Plan to Establish a Process for Determining Default Harvest Specifications. Draft Environmental Impact Statement dated October 2014.
- PFMC. 2020a. Review of 2019 ocean salmon fisheries. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 2020b. Preseason Report I: Stock abundance analysis and environmental assessment part 1 for 2020 ocean salmon fishery management measures. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 2020c. Ad-Hoc Southern Resident Killer Whale Workgroup FINAL DRAFT Risk Assessment. February 2020. 164 p. Available: <https://www.pcouncil.org/documents/2020/02/e-3-a-srkw-workgroup-report-1-electronic-only.pdf/> (website accessed March 17, 2020).
- U.S. Environmental Protection Agency. 1999. Consideration of Cumulative Impacts in EPA Review of NEPA Documents. Office of Federal Activities (2252A). EPA 315-R-99-002/May 1999.
- Ward, E.J., J.H. Anderson, T.J. Beechie, G.R. Pess, and M.J. Ford. 2015. Increasing hydrologic variability threatens depleted anadromous fish populations. *Global Change Biology* DOI: 10.1111/gcb.12847

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 1 of 13)

<b>A. SEASON ALTERNATIVE DESCRIPTIONS</b>		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
North of Cape Falcon	North of Cape Falcon	North of Cape Falcon
Supplemental Management Information	Supplemental Management Information	Supplemental Management Information
Model #: Coho2012, Chinook1020	Model #: Coho2013, Chinook1120	Model #: Coho2014, Chinook1220
<p>1. Overall non-Indian TAC: 60,000 Chinook and 35,000 coho marked with a healed adipose fin clip (marked).</p> <p>2. Non-Indian commercial troll TAC: 30,000 Chinook and 5,600 marked coho.</p> <p>3. Trade: May be considered at the April Council meeting.</p> <p>4. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>	<p>1. Overall non-Indian TAC: 45,000 Chinook and 25,000 coho marked with a healed adipose fin clip (marked).</p> <p>2. Non-Indian commercial troll TAC: 22,875 Chinook and 2,500 marked coho.</p> <p>3. Trade: Commercial troll traded 1,500 marked coho to the recreational fishery for 375 Chinook.</p> <p>4. Same as Alternative 1</p>	Closed
<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>May 6 through the earlier of June 28, or 20,000 Chinook. No more than 7,390 of which may be caught in the area between the U.S./Canada border and the Queets River, and no more than 5,450 of which may be caught in the area between Leadbetter Pt. and Cape Falcon (C.8).</li> </ul> <p>Open seven days per week (C.1).</p> <p>In the area between the U.S./Canada border and the Queets River, the landing and possession limit is 75 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p>In the area between Leadbetter Pt. and Cape Falcon, the landing and possession limit is 75 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p><i>(Continued next page)</i></p>	<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>May 6 through the earlier of June 30, or 11,500 Chinook. No more than 4,250 of which may be caught in the area between the U.S./Canada border and the Queets River, and no more than 3,140 of which may be caught in the area between Leadbetter Pt. and Cape Falcon (C.8).</li> </ul> <p><u>During May 6-12 the following applies:</u></p> <p>In the area between the U.S./Canada border and the Queets River, the landing and possession limit is 100 Chinook per vessel per open period (C.1, C.6).</p> <p>In the area between the Queets River and Leadbetter Pt., the landing and possession limit is 200 Chinook per vessel per open period (C.1, C.6).</p> <p>In the area between Leadbetter Pt. and Cape Falcon, the landing and possession limit is 100 Chinook per vessel per open period (C.1, C.6).</p> <p><i>(Continued next page)</i></p>	<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>Closed</li> </ul> <p><i>(Continued next page)</i></p>

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 2 of 13)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>U.S./Canada Border to Cape Falcon (continued)</b></p> <p>All salmon, except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p> <p>When it is projected that approximately 75% of the overall Chinook guideline has been landed, or approximately 75% of any of the individual Chinook subarea guidelines have been landed, inseason action will be considered to ensure the guideline is not exceeded.</p> <p>In 2021, the season will open May 1 for all salmon except coho consistent with preseason regulations as described for this area and subareas for May 6-June 30, 2020, including subarea salmon guidelines and weekly vessel limits. These regulations would apply from the opening of the fishery on May 1, 2021, until modified following Council review at its March and/or April 2021 meetings. Catch during this opening will be counted towards quotas set for this area and subareas at the April 2021 meeting.</p>	<p><b>U.S./Canada Border to Cape Falcon (continued)</b>  <u>During May 15-June 30 the following applies:</u></p> <p>Open five days per week (Fri.-Tue.) (C.1).</p> <p>In the area between the U.S./Canada border and the Queets River, the landing and possession limit is 50 Chinook per vessel per open period (Fri.-Tue.) (C.1, C.6).</p> <p>In the area between the Queets River and Leadbetter Pt., the landing and possession limit is 200 Chinook per open period (Fri.-Tue.) (C.1, C.6).</p> <p>In the area between Leadbetter Pt. and Cape Falcon, the landing and possession limit is 50 Chinook per vessel per open period (Fri.-Tue.) (C.1, C.6).</p> <p>For all open periods (May 6-June 30): All salmon, except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p> <p>When it is projected that approximately 50% of the overall Chinook guideline has been landed, or approximately 50% of any of the individual Chinook subarea guidelines have been landed, inseason action will be considered to ensure the guideline is not exceeded.</p> <p>In 2021, same as Alternative 1</p>	<p><b>U.S./Canada Border to Cape Falcon (continued)</b></p>

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 3 of 13)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>July 1 through the earlier of September 30, or 10,000 Chinook or 5,600 coho (C.8).</li> </ul> <p>Open seven days per week. All salmon. Chinook minimum size limit of 28 inches total length. Coho minimum size limit of 16 inches total length (B, C.1). All coho must be marked with a healed adipose fin clip (C.8.d). No chum retention north of Cape Alava, Washington in August and September (C.4, C.7). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p> <p>In the area between the U.S./Canada border and the Queets River, the landing and possession limit is 75 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p>In the area between the Queets River and Leadbetter Pt., the landing and possession limit is 75 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p>In the area between Leadbetter Pt. and Cape Falcon, the landing and possession limit is 75 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p>Landing and possession limit of 20 marked coho per vessel per landing week (Thurs.-Wed.) (C.1).</p>	<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>July 3 through the earlier of September 29, or 11,375 Chinook or 2,500 coho (C.8).</li> </ul> <p>Open five days per week (Fri.-Tue.). All salmon. Chinook minimum size limit of 28 inches total length. Coho minimum size limit of 16 inches total length (B, C.1). All coho must be marked with a healed adipose fin clip (C.8.d). No chum retention north of Cape Alava, Washington in August and September (C.4, C.7). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p> <p>Landing and possession limit of 10 marked coho per vessel per open period (Fri.-Tue.) (C.1).</p>	<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>Closed</li> </ul>
<p><b>For all commercial troll fisheries north of Cape Falcon:</b></p> <p>Mandatory closed areas include: Salmon troll Yelloweye Rockfish Conservation Area, Cape Flattery, and Columbia Control Zones, and beginning August 10, the Grays Harbor Control Zone (C.5). Vessels must land and deliver their salmon within 24 hours of any closure of this fishery.</p> <p>Vessels fishing or in possession of salmon <u>north</u> of Leadbetter Point must land and deliver all species of fish in a Washington port and must possess a Washington troll and/or salmon delivery license. Vessels may not land fish east of the Sekiu River or east of the Megler-Astoria bridge. <u>For delivery to Washington ports south of Leadbetter Point</u>, vessels must notify the Washington Department of Fish and Wildlife at 360-249-1215 prior to crossing the Leadbetter Point line with area fished, total Chinook, coho, and halibut catch aboard, and destination with approximate time of delivery. During any single trip, only one side of the Leadbetter Point line may be fished (C.11).</p> <p>Vessels fishing or in possession of salmon while fishing <u>south</u> of Leadbetter Point must land and deliver all species of fish within the area and south of Leadbetter Point, except that Oregon permitted vessels may also land all species of fish in Garibaldi, Oregon. Under state law, vessels must report their catch on a state fish receiving ticket. Oregon State regulations require all fishers landing salmon into Oregon from any fishery between Leadbetter Point, Washington and Cape Falcon, Oregon to notify ODFW within one hour of delivery or prior to transport away from the port of landing by either calling 541-867-0300 ext. 271 or sending notification via e-mail to nfallcon.trollreport@state.or.us. Notification shall include vessel name and number, number of salmon by species, port of landing and location of delivery, and estimated time of delivery. Inseason actions may modify harvest guidelines in later fisheries to achieve or prevent exceeding the overall allowable troll harvest impacts (C.8).</p> <p>Vessels in possession of salmon <u>north of the Queets River</u> may not cross the Queets River line without first notifying WDFW at 360-249-1215 with area fished, total Chinook, coho, and halibut catch aboard and destination. Vessels in possession of salmon south of the Queets River may not cross the Queets River line without first notifying WDFW at 360-249-1215 with area fished, total Chinook, coho, and halibut catch aboard, and destination (C.11).</p>		



EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 4 of 13)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
South of Cape Falcon	South of Cape Falcon	South of Cape Falcon
Supplemental Management Information	Supplemental Management Information	Supplemental Management Information
<ol style="list-style-type: none"> <li>1. Sacramento River fall Chinook spawning escapement of 228,346 hatchery and natural area adults.</li> <li>2. Sacramento Index exploitation rate of 51.7%.</li> <li>3. Klamath River recreational fishery allocation: 1,291 adult Klamath River fall Chinook.</li> <li>4. Klamath tribal allocation: 8,606 adult Klamath River fall Chinook.</li> <li>5. CA/OR share of Klamath River fall Chinook commercial ocean harvest: 60% / 40%.</li> <li>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the California Fish and Game Commission.</li> </ol>	<ol style="list-style-type: none"> <li>1. Sacramento River fall Chinook spawning escapement of 222,636 hatchery and natural area adults.</li> <li>2. Sacramento Index exploitation rate of 52.9%.</li> <li>3. Klamath River recreational fishery allocation: 1,285 adult Klamath River fall Chinook.</li> <li>4. Klamath tribal allocation: 8,568 adult Klamath River fall Chinook.</li> <li>5. CA/OR share of Klamath River fall Chinook commercial ocean harvest: 61% / 39%.</li> <li>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the California Fish and Game Commission</li> </ol>	<ol style="list-style-type: none"> <li>1. Sacramento River fall Chinook spawning escapement of 234,075 hatchery and natural area adults.</li> <li>2. Sacramento Index exploitation rate of 50.5%.</li> <li>3. Klamath River recreational fishery allocation: 801 adult Klamath River fall Chinook.</li> <li>4. Klamath tribal allocation: 5,342 adult Klamath River fall Chinook.</li> <li>5. CA/OR share of Klamath River fall Chinook commercial ocean harvest: 58% / 42%.</li> <li>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the California Fish and Game Commission</li> </ol>
<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• April 15-30;</li> <li>• May 6-31;</li> <li>• June 6-30;</li> <li>• July 6-31;</li> <li>• August 1-24;</li> <li>• September 1-October 31 (C.9.a).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B, C.1). All vessels fishing in the area must land their salmon in the State of Oregon. See gear restrictions and definitions (C.2, C.3).</p> <p>Beginning September 1, no more than 75 Chinook allowed per vessel per landing week (Thurs.-Wed.).</p> <p>In 2021, the season will open March 15 for all salmon except coho. Chinook minimum size limit of 28 inches total length (B, C.1). Gear and other restrictions same as in 2020 (C.2, C.3, C.4). This opening could be modified following Council review at its March 2021 meetings (C.8).</p>	<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• April 15-30;</li> <li>• May 1-26;</li> <li>• June 6-30;</li> <li>• July 6-31;</li> <li>• August 1-25;</li> <li>• September 1-October 31 (C.9.a).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>	<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• May 6-31;</li> <li>• June 6-30;</li> <li>• July 6-31;</li> <li>• August 1-6;</li> <li>• August 7-18 only open from Cape Falcon to the south end of Heceta Bank (43°58'00" N lat.). Closed from the south end of Heceta Bank to Humbug Mt.</li> <li>• September 1-30 (C.9.a).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 5 of 13)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• April 15-30;</li> <li>• May 6 through the earlier of May 31, or a 500 Chinook quota;</li> <li>• June 6 through the earlier of June 30, or a 700 Chinook quota;</li> <li>• July 6 through the earlier of July 31, or a 300 Chinook quota (C.9.a).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). Prior to May 1, all salmon caught in this area must be landed and delivered in the State of Oregon.</p> <p>May 6-July 31 weekly landing and possession limit of 40 Chinook per vessel per landing week (Thurs.-Wed.). Any remaining portion of Chinook quotas may be transferred inseason on an impact neutral basis to the next open quota period (C.8.b).</p> <p>All vessels fishing in this area during May, June, and July, must land and deliver all salmon within this area or into Port Orford within 24 hours of any closure of this fishery and prior to fishing outside of this area.</p> <p>For all quota managed seasons (May, June, and July), Oregon state regulations require fishers to notify ODFW within one hour of landing and prior to transport away from the port of landing by calling 541-867-0300 Ext. 252 or sending notification via e-mail to kmzor.trollreport@state.or.us, with vessel name and number, number of salmon by species, location of delivery, and estimated time of delivery.</p> <p>In 2021, the season will open March 15 for all salmon except coho. Chinook minimum size limit of 28 inches total length (B; C.1). Gear restrictions same as in 2020 (C.2; C.3; C.4). This season would open without quota or weekly landing limits unless modified following Council review at its March 2021 meeting (C.8).</p>	<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• April 15-30;</li> <li>• May 1-26;</li> <li>• June 6 through the earlier of June 30, or a 500 Chinook quota (C.9.a).</li> </ul> <p>Same as Alternative 1</p> <p>June 6-30 weekly landing and possession limit of 40 Chinook per vessel per landing week (Thurs.-Wed.).</p> <p>All vessels fishing in this area during June must land and deliver all salmon within this area or into Port Orford within 24 hours of any closure of this fishery and prior to fishing outside of this area</p> <p>For the June quota managed season, Oregon state regulations require fishers to notify ODFW within one hour of landing and prior to transport away from the port of landing by calling 541-867-0300 Ext. 252 or sending notification via e-mail to kmzor.trollreport@state.or.us, with vessel name and number, number of salmon by species, location of delivery, and estimated time of delivery.</p> <p>In 2021, same as Alternative 1</p>	<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• May 6-31 (C.9.a).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries - <b>Council adopted.</b> (Page 6 of 13)		
<b>A. SEASON ALTERNATIVE DESCRIPTIONS</b>		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>OR/CA Border to Humboldt South Jetty (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• Closed (C.9.b).</li> </ul> <p>In 2021, the season will open May 1 through the earlier of May 31, or a 3,000 Chinook quota. Chinook minimum size limit of 27 inches total length. Compliance requirements, open periods, gear restrictions and definitions, and landing and possession limits the same as 2020 Alternative II. Klamath Control Zone closed (C.5.e). See California State regulations for additional closures adjacent to the Smith and Klamath rivers. This opening could be modified following Council review at its March or April 2021 meetings.</p>	<p><b>OR/CA Border to Humboldt South Jetty (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• June 1 through the earlier of June 30, or a 1,500 Chinook quota;</li> <li>• July 1 through the earlier of July 30, or a 1,250 Chinook quota;</li> <li>• August 1 through the earlier of August 29, or a 1,000 Chinook quota (C.9.b).</li> </ul> <p>Landing and possession limit of 20 Chinook per vessel per day (C.8.f).</p> <p>Open five days per week (Fri.-Tue.). All salmon except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B, C.1).</p> <p>Any remaining portion of Chinook quotas may be transferred inseason on an impact neutral basis to the next open quota period (C.8.b).</p> <p>All fish caught in this area must be landed within the area, within 24 hours of any closure of the fishery, and prior to fishing outside the area (C.10). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). Klamath Control Zone closed (C.5.e). See California State regulations for additional closures adjacent to the Smith and Klamath rivers.</p> <p>In 2021, same as Alternative 1</p>	<p><b>OR/CA Border to Humboldt South Jetty (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• Closed (C.9.b).</li> </ul> <p>In 2021, same as Alternative 1</p>
<p><b>Humboldt South Jetty to Horse Mt.</b></p> <p>Closed.</p>	<p><b>Humboldt South Jetty to Horse Mt.</b></p> <p>Closed.</p>	<p><b>Humboldt South Jetty to Horse Mt.</b></p> <p>Closed.</p>



TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries - <b>Council adopted.</b> (Page 7 of 13)		
<b>A. SEASON ALTERNATIVE DESCRIPTIONS</b>		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• August 1-28;</li> <li>• September 1-30 (C.9.b).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California and north of Point Arena (C.6).</p> <p>Chinook minimum size limit of 28 inches total length through August, then 27 inches total length thereafter (B, C.1).</p> <p>All salmon caught in the area prior to September 1 must be landed and off-loaded no later than 11:59 p.m., August 30 (C.6).</p> <p>In 2021, the season will open April 15 for all salmon except coho. Chinook minimum size limit of 27 inches total length. Gear restrictions same as in 2020. This opening could be modified following Council review at its March or April 2021 meetings.</p>	<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• September 1-30 (C.9.b).</li> </ul> <p>Same as Alternative 1</p> <p>Chinook minimum size limit of 27 inches total length (B, C.1).</p> <p>In 2021, same as Alternative 1</p>	<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• September 1-30 (C.9.b).</li> </ul> <p>Same as Alternative 1</p> <p>Chinook minimum size limit of 27 inches total length (B, C.1).</p> <p>In 2021, same as Alternative 1</p>
<p>When the fishery is closed between the OR/CA border and Humbug Mountain and open to the south, vessels with fish on board caught in the open area off California may seek temporary mooring in Brookings, Oregon prior to landing in California only if such vessels first notify the Chetco River Coast Guard Station via VHF channel 22A between the hours of 0500 and 2200 and provide the vessel name, number of fish on board, and estimated time of arrival (C.6).</p>		

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 8 of 13)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>Pt. Arena to Pigeon Pt. (San Francisco)</b></p> <ul style="list-style-type: none"> <li>• May 7-29;</li> <li>• June 10-30;</li> <li>• July 15-28;</li> <li>• August 1-28;</li> <li>• September 1-30 (C.9.b).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length through August, then 26 inches thereafter (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California.</p> <p>All salmon caught in the area prior to September 1 must be landed and offloaded no later than 11:59 p.m., August 30 (C.6). During September, all salmon must be landed south of Point Arena (C.6).</p> <p>In 2021, the season will open May 1 for all salmon except coho. Chinook minimum size limit of 27 inches total length. Gear restrictions same as in 2020. This opening could be modified following Council review at its March or April 2021 meetings.</p> <p><b>Point Reyes to Point San Pedro (Fall Area Target Zone)</b></p> <ul style="list-style-type: none"> <li>• October 1-2, 5-9, 12-15.</li> </ul> <p>Open five days per week (Mon.-Fri.). All salmon except coho (C.4, C.7). Chinook minimum size limit of 26 inches total length (B, C.1). All salmon caught in this area must be landed between Point Arena and Pigeon Point (C.6). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p>	<p><b>Pt. Arena to Pigeon Pt. (San Francisco)</b></p> <ul style="list-style-type: none"> <li>• May 6-28;</li> <li>• June 4-30;</li> <li>• July 11-22;</li> <li>• August 1-28;</li> <li>• September 1-30 (C.9.b).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>When the CA KMZ fishery is open, all fish caught in the area must be landed south of Horse Mountain until the CA KMZ fishery has been closed for at least 48 hours (C.6).</p> <p>In 2021, same as Alternative 1</p> <p><b>Point Reyes to Point San Pedro (Fall Area Target Zone)</b></p> <ul style="list-style-type: none"> <li>• Same as Alternative 1</li> </ul>	<p><b>Pt. Arena to Pigeon Pt. (San Francisco)</b></p> <ul style="list-style-type: none"> <li>• May 6-31;</li> <li>• June 12-30;</li> <li>• August 1-20;</li> <li>• September 1-30 (C.9.b).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p> <p><b>Point Reyes to Point San Pedro (Fall Area Target Zone)</b></p> <ul style="list-style-type: none"> <li>• Same as Alternative 1</li> </ul>

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries – <b>Council adopted.</b> (Page 9 of 13)		
<b>A. SEASON ALTERNATIVE DESCRIPTIONS</b>		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>• May 1-29;</li> <li>• June 10-30;</li> <li>• July 15-28;</li> <li>• August 1-28 (C.9.b).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California.</p> <p>All salmon caught in the area prior to September 1 must be landed and offloaded no later than 11:59 p.m., August 30 (C.6).</p> <p>In 2021, the season will open May 1 for all salmon except coho. Chinook minimum size limit of 27 inches total length. Gear restrictions same as in 2020. This opening could be modified following Council review at its March or April 2021 meeting.</p>	<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>• May 1-28;</li> <li>• June 1-30;</li> <li>• July 11-22;</li> <li>• August 1-28 (C.9.b).</li> </ul> <p>Same as Alternative 1</p> <p>When the CA KMZ fishery is open, all fish caught in the area must be landed south of Horse Mountain until the CA KMZ fishery has been closed for at least 48 hours (C.6).</p> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>	<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>• May 1-28;</li> <li>• June 1-30;</li> <li>• July 12-31;</li> <li>• August 1-28 (C.9.b).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>
<p>California State regulations require all salmon be made available to a CDFW representative for sampling immediately at port of landing. Any person in possession of a salmon with a missing adipose fin, upon request by an authorized agent or employee of the CDFW, shall immediately relinquish the head of the salmon to the State (California Fish and Game Code §8226).</p>		

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries - Council Adopted. (Page 10 of 13)

**B. MINIMUM SIZE (Inches) (See C.1)**

Area (when open)	Chinook		Coho		Pink
	Total Length	Head-off	Total Length	Head-off	
North of Cape Falcon	28	21.5	16	12	None
Cape Falcon to Humbug Mt.	28	21.5	-	-	None
Humbug Mt. to OR/CA Border	28	21.5	-	-	None
OR/CA Border to Humboldt South Jetty (Alt. II)	28	21.5	-	-	28
Horse Mt. to Pt. Arena through August (Alt. I)	28	21.5			28
Horse Mt. to Pt. Arena (Alt. II, Alt. III), and after August in Alt I.	27	20.5		-	27
Pt. Arena to Pigeon Pt. through August	27	20.5		-	27
Pt. Arena to Pigeon Pt. September-October	26	19.5		-	26
Pigeon Pt. to U.S./Mexico Border	27	20.5	-	-	27

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS**

C.1. Compliance with Minimum Size or Other Special Restrictions: All salmon on board a vessel must meet the minimum size, landing/possession limit, or other special requirements for the area being fished and the area in which they are landed if the area is open or has been closed less than 48 hours for that species of salmon. Salmon may be landed in an area that has been closed for a species of salmon more than 48 hours only if they meet the minimum size, landing/possession limit, or other special requirements for the area in which they were caught. Salmon may not be filleted prior to landing.

Any person who is required to report a salmon landing by applicable state law must include on the state landing receipt for that landing both the number and weight of salmon landed by species. States may require fish landing/receiving tickets be kept on board the vessel for 90 days or more after landing to account for all previous salmon landings.

C.2. Gear Restrictions:

- a. Salmon may be taken only by hook and line using single point, single shank, barbless hooks.
- b. Cape Falcon, Oregon, to the OR/CA border: No more than 4 spreads are allowed per line.
- c. OR/CA border to U.S./Mexico border: No more than 6 lines are allowed per vessel, and barbless circle hooks are required when fishing with bait by any means other than trolling.

C.3. Gear Definitions:

*Trolling defined:* Fishing from a boat or floating device that is making way by means of a source of power, other than drifting by means of the prevailing water current or weather conditions.

*Troll fishing gear defined:* One or more lines that drag hooks behind a moving fishing vessel engaged in trolling. In that portion of the fishery management area off Oregon and Washington, the line or lines must be affixed to the vessel and must not be intentionally disengaged from the vessel at any time during the fishing operation.

*Spread defined:* A single leader connected to an individual lure and/or bait.

*Circle hook defined:* A hook with a generally circular shape and a point which turns inward, pointing directly to the shank at a 90° angle.

C.4. Vessel Operation in Closed Areas with Salmon on Board:

- a. Except as provided under C.4.b below, it is unlawful for a vessel to have troll or recreational gear in the water while in any area closed to fishing for a certain species of salmon, while possessing that species of salmon; however, fishing for species other than salmon is not prohibited if the area is open for such species, and no salmon are in possession.
- b. When Genetic Stock Identification (GSI) samples will be collected in an area closed to commercial salmon fishing, the scientific research permit holder shall notify NOAA OLE, USCG, CDFW, WDFW, ODFW and OSP at least 24 hours prior to sampling and provide the following information: the vessel name, date, location and time collection activities will be done. Any vessel collecting GSI samples in a closed area shall not possess any salmon other than those from which GSI samples are being collected. Salmon caught for collection of GSI samples must be immediately released in good condition after collection of samples.

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 11 of 13)

C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS (Continued)

C.5 Control Zone Definitions:

- a. *Cape Flattery Control Zone* - The area from Cape Flattery (48°23'00" N. lat.) to the northern boundary of the U.S. EEZ; and the area from Cape Flattery south to Cape Alava (48°10'00" N. lat.) and east of 125°05'00" W. long.
- b. *Mandatory Yelloweye Rockfish Conservation Area* – The area in Washington Marine Catch Area 3 from 48°00.00' N. lat.; 125°14.00' W. long. to 48°02.00' N. lat.; 125°14.00' W. long. to 48°02.00' N. lat.; 125°16.50' W. long. to 48°00.00' N. lat.; 125°16.50' W. long. and connecting back to 48°00.00' N. lat.; 125°14.00' W. long.
- c. *Grays Harbor Control Zone* - The area defined by a line drawn from the Westport Lighthouse (46° 53'18" N. lat., 124° 07'01" W. long.) to Buoy #2 (46° 52'42" N. lat., 124°12'42" W. long.) to Buoy #3 (46° 55'00" N. lat., 124°14'48" W. long.) to the Grays Harbor north jetty (46° 55'36" N. lat., 124°10'51" W. long.).
- d. *Columbia Control Zone* - An area at the Columbia River mouth, bounded on the west by a line running northeast/southwest between the red lighted Buoy #4 (46°13'35" N. lat., 124°06'50" W. long.) and the green lighted Buoy #7 (46°15'09" N. lat., 124°06'16" W. long.); on the east, by the Buoy #10 line which bears north/south at 357° true from the south jetty at 46°14'00" N. lat., 124°03'07" W. long. to its intersection with the north jetty; on the north, by a line running northeast/southwest between the green lighted Buoy #7 to the tip of the north jetty (46°15'48" N. lat., 124°05'20" W. long.), and then along the north jetty to the point of intersection with the Buoy #10 line; and, on the south, by a line running northeast/southwest between the red lighted Buoy #4 and tip of the south jetty (46°14'03" N. lat., 124°04'05" W. long.), and then along the south jetty to the point of intersection with the Buoy #10 line.
- e. *Klamath Control Zone* - The ocean area at the Klamath River mouth bounded on the north by 41°38'48" N. lat. (approximately 6 nautical miles north of the Klamath River mouth); on the west by 124°23'00" W. long. (approximately 12 nautical miles off shore); and on the south by 41°26'48" N. lat. (approximately 6 nautical miles south of the Klamath River mouth).
- f. Waypoints for the 40 fathom regulatory line from Cape Falcon to Humbug Mt. (50 CFR 660.71 (k) (12)-(70)..

45

45°46.00' N. lat., 124°04.49' W. long.;	44°51.28' N. lat., 124°10.21' W. long.;	44°08.30' N. lat., 124°16.75' W. long.;	43°10.96' N. lat., 124°32.33' W. long.;
45°44.34' N. lat., 124°05.09' W. long.;	44°49.49' N. lat., 124°10.90' W. long.;	44°01.18' N. lat., 124°15.42' W. long.;	43°05.65' N. lat., 124°31.52' W. long.;
45°40.64' N. lat., 124°04.90' W. long.;	44°44.96' N. lat., 124°14.39' W. long.;	43°51.61' N. lat., 124°14.68' W. long.;	42°59.66' N. lat., 124°32.58' W. long.;
45°33.00' N. lat., 124°04.46' W. long.;	44°43.44' N. lat., 124°14.78' W. long.;	43°42.66' N. lat., 124°15.46' W. long.;	42°54.97' N. lat., 124°36.99' W. long.;
45°32.27' N. lat., 124°04.74' W. long.;	44°42.26' N. lat., 124°13.81' W. long.;	43°40.49' N. lat., 124°15.74' W. long.;	42°53.81' N. lat., 124°38.57' W. long.;
45°29.26' N. lat., 124°04.22' W. long.;	44°41.68' N. lat., 124°15.38' W. long.;	43°38.77' N. lat., 124°15.64' W. long.;	42°50.00' N. lat., 124°39.68' W. long.;
45°20.25' N. lat., 124°04.67' W. long.;	44°34.87' N. lat., 124°15.80' W. long.;	43°34.52' N. lat., 124°16.73' W. long.;	42°49.13' N. lat., 124°39.70' W. long.;
45°19.99' N. lat., 124°04.62' W. long.;	44°33.74' N. lat., 124°14.44' W. long.;	43°28.82' N. lat., 124°19.52' W. long.;	42°46.47' N. lat., 124°38.89' W. long.;
45°17.50' N. lat., 124°04.91' W. long.;	44°27.66' N. lat., 124°16.99' W. long.;	43°23.91' N. lat., 124°24.28' W. long.;	42°45.74' N. lat., 124°38.86' W. long.;
45°11.29' N. lat., 124°05.20' W. long.;	44°19.13' N. lat., 124°19.22' W. long.;	43°20.83' N. lat., 124°26.63' W. long.;	42°44.79' N. lat., 124°37.96' W. long.;
45°05.80' N. lat., 124°05.40' W. long.;	44°15.35' N. lat., 124°17.38' W. long.;	43°17.96' N. lat., 124°28.81' W. long.;	42°45.01' N. lat., 124°36.39' W. long.;
45°05.08' N. lat., 124°05.93' W. long.;	44°14.38' N. lat., 124°17.78' W. long.;	43°16.75' N. lat., 124°28.42' W. long.;	42°44.14' N. lat., 124°35.17' W. long.;
45°03.83' N. lat., 124°06.47' W. long.;	44°12.80' N. lat., 124°17.18' W. long.;	43°13.97' N. lat., 124°31.99' W. long.;	42°42.14' N. lat., 124°32.82' W. long.;
45°01.70' N. lat., 124°06.53' W. long.;	44°09.23' N. lat., 124°15.96' W. long.;	43°13.72' N. lat., 124°33.25' W. long.;	42°40.50' N. lat., 124°31.98' W. long.;
44°58.75' N. lat., 124°07.14' W. long.;	44°08.38' N. lat., 124°16.79' W. long.;	43°12.26' N. lat., 124°34.16' W. long.;	

TABLE 1. 2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 12 of 13)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS (continued)**

C.6. Notification When Unsafe Conditions Prevent Compliance with Regulations: If prevented by unsafe weather conditions or mechanical problems from meeting special management area landing restrictions, vessels must notify the U.S. Coast Guard and receive acknowledgment of such notification prior to leaving the area. This notification shall include the name of the vessel, port where delivery will be made, approximate number of salmon (by species) on board, the estimated time of arrival, and the specific reason the vessel is not able to meet special management area landing restrictions.

In addition to contacting the U.S. Coast Guard, vessels fishing south of the Oregon/California border must notify CDFW within one hour of leaving the management area by calling 800-889-8346 and providing the same information as reported to the U.S. Coast Guard. All salmon must be offloaded within 24 hours of reaching port.

C.7. Incidental Halibut Harvest: During authorized periods, the operator of a vessel that has been issued an incidental halibut harvest license may retain Pacific halibut caught incidentally in Area 2A while trolling for salmon. Halibut retained must be no less than 32 inches in total length, measured from the tip of the lower jaw with the mouth closed to the extreme end of the middle of the tail, and must be landed with the head on. When halibut are caught and landed incidental to commercial salmon fishing by an IPHC license holder, any person who is required to report the salmon landing by applicable state law must include on the state landing receipt for that landing both the number of halibut landed, and the total dressed, head-on weight of halibut landed, in pounds, as well as the number and species of salmon landed.

License applications for incidental harvest must be obtained from the International Pacific Halibut Commission (phone: 206-634-1838). Applicants must apply prior to mid-March 2020 for 2020 permits (*exact date to be set by the IPHC in early 2020*). Incidental harvest is authorized only during April, May, and June of the 2020 troll seasons, and after June 30 in 2020 if quota remains and if announced on the NMFS hotline (phone: 800-662-9825 or 206-526-6667). WDFW, ODFW, and CDFW will monitor landings. If the landings are projected to exceed the IPHC's 44,899 pound preseason allocation or the total Area 2A non-Indian commercial halibut allocation, NMFS will take inseason action to prohibit retention of halibut in the non-Indian salmon troll fishery.

All alternatives are for the time period of May 1, 2020 through the end of the 2020 salmon troll fishery, and April 1-30, 2021 with the exception that the alternatives would be in place until modified through inseason action or superseded by the 2021 management measures.

**Alternative I** – (status quo) license holders may land no more than one Pacific halibut per each two Chinook, except one Pacific halibut may be landed without meeting the ratio requirement, and no more than 35 halibut landed per trip.

**Alternative II** – license holders may land no more than one Pacific halibut per each two Chinook, except one Pacific halibut may be landed without meeting the ratio requirement, and no more than 30 halibut landed per trip.

**Alternative III** - license holders may land no more than one Pacific halibut per each two Chinook, except one Pacific halibut may be landed without meeting the ratio requirement, and no more than 25 halibut landed per trip.

Incidental Pacific halibut catch regulations in the commercial salmon troll fishery adopted for 2020, prior to any 2020 inseason action, will be in effect when incidental Pacific halibut retention opens on April 1, 2021 unless otherwise modified by inseason action at the March 2021 Council meeting.

a. "C-shaped" yelloweye rockfish conservation area is an area to be voluntarily avoided for salmon trolling. NMFS and the Council request salmon trollers voluntarily avoid this area in order to protect yelloweye rockfish. The area is defined in the Pacific Council Halibut Catch Sharing Plan in the North Coast subarea (Washington marine area 3), with the following coordinates in the order listed:

- 48°18' N. lat.; 125°18' W. long.;
- 48°18' N. lat.; 124°59' W. long.;
- 48°11' N. lat.; 124°59' W. long.;
- 48°11' N. lat.; 125°11' W. long.;
- 48°04' N. lat.; 125°11' W. long.;
- 48°04' N. lat.; 124°59' W. long.;
- 48°00' N. lat.; 124°59' W. long.;
- 48°00' N. lat.; 125°18' W. long.;
- and connecting back to 48°18' N. lat.; 125°18' W. long.

TABLE 1.2020 Commercial troll management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 13 of 13)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS (continued)**

- C.8. Inseason Management: In addition to standard inseason actions or modifications already noted under the season description, the following inseason guidance is provided to NMFS:
- a. Chinook remaining from the May through June non-Indian commercial troll harvest guideline north of Cape Falcon may be transferred to the July through September harvest guideline if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - b. Chinook remaining from May, June, and /or July non-Indian commercial troll quotas in the Oregon or California KMZ may be transferred to the Chinook quota for the next open period if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - c. NMFS may transfer salmon between the recreational and commercial fisheries north of Cape Falcon if there is agreement among the areas' representatives on the Salmon Advisory Subpanel (SAS), and if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - d. At the March 2021 meeting, the Council will consider inseason recommendations for special regulations for any experimental fisheries (proposals must meet Council protocol and be received in November 2020).
  - e. If retention of unmarked coho (adipose fin intact) is permitted by inseason action, the allowable coho quota will be adjusted to ensure preseason projected impacts on all stocks is not exceeded.
  - f. Landing limits may be modified inseason to sustain season length and keep harvest within overall quotas.

- C.9. State Waters Fisheries: Consistent with Council management objectives:
- a. The State of Oregon may establish additional late-season fisheries in state waters.
  - b. The State of California may establish limited fisheries in selected state waters.
  - c. Check state regulations for details.

C.10. For the purposes of California Fish and Game Code, Section 8232.5, the definition of the Klamath Management Zone (KMZ) for the ocean salmon season shall be that area from Humbug Mountain, Oregon, to Horse Mountain, California.

C.11. Latitudes for geographical reference of major landmarks along the west coast. Source: 2018 West Coast federal salmon regulations. <https://www.govinfo.gov/content/pkg/FR-2018-05-01/pdf/2018-09164.pdf>

Cape Flattery, WA	48°23'00" N lat.	Humboldt South Jetty, CA.	40°45'53" N lat.
Cape Alava, WA	48°10'00" N lat.	Horse Mountain, CA	40°05'00" N lat.
Queets River, WA	47°31'42" N lat.	Point Arena, CA	38°57'30" N lat.
Leadbetter Point, WA	46°38'10" N lat.	Point Reyes, CA	37°59'44" N lat.
Cape Falcon, OR	45°46'00" N lat.	Point San Pedro, CA	37°35'40" N lat.
Florence South Jetty, OR	44°00'54" N lat.	Pigeon Point, CA	37°11'00" N lat.
South end Hecata Bank line, OR	44°00'54" N lat.	Point Sur, CA	36°18'00" N lat.
Humbug Mountain, OR	43°58'00" N lat.	Point Conception, CA	34°27'00" N lat.
Oregon-California border	42°00'00" N lat.		

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 1 of 9)

A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
North of Cape Falcon	North of Cape Falcon	North of Cape Falcon
Supplemental Management Information	Supplemental Management Information	Supplemental Management Information
<p>1. Overall non-Indian TAC: 60,000 Chinook and 35,000 coho marked with a healed adipose fin clip (marked).</p> <p>2. Recreational TAC: 30,000 Chinook and 29,400 marked coho; all retained coho must be marked.</p> <p>3. Various daily limits and species combinations of one and two salmon will be considered. Including one fish, two fish only, one of which may be a Chinook, and two fish only one of which may be a coho.</p> <p>4. A trade with commercial troll may be considered in April.</p> <p>5. No Area 4B add-on fishery.</p> <p>6. Buoy 10 fishery opens August 1 with an expected landed catch of 13,000 marked coho in August and September.</p> <p>7. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>	<p>1. Overall non-Indian TAC: 45,000 Chinook and 25,000 coho marked with a healed adipose fin clip (marked).</p> <p>2. Recreational TAC: 22,125 Chinook and 22,500 marked coho; all retained coho must be marked.</p> <p>3. Various daily limits and species combinations of one and two salmon will be considered. Including one fish, two fish only, one of which may be a Chinook, and two fish only one of which may be a coho.</p> <p>4. Trade: Commercial troll traded 1,500 marked coho to the recreational fishery for 375 Chinook.</p> <p>5. No Area 4B add-on fishery.</p> <p>6. Buoy 10 fishery opens August 1 with an expected landed catch of 15,000 marked coho in August and September.</p> <p>7. Same as Alternative I</p>	<p><b>Closed</b></p> <p>6. Buoy 10 fishery opens August 1 with an expected landed catch of 17,000 marked coho in August and September.</p>
<p><b>U.S./Canada Border to Cape Alava (Neah Bay)</b></p> <ul style="list-style-type: none"> <li>June 14 through the earlier of September 30, or 3,060 marked coho subarea quota, with a subarea guideline of 6,400 Chinook (C.5).</li> </ul> <p>Open seven days a week. See minimum size limits (B).</p> <p>During June 14-28: All salmon, except coho; one salmon per day (C.1).</p> <p>Beginning June 29: All salmon, except no chum beginning August 1; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (C.1).</p> <p>Beginning August 1, Chinook non-retention east of the Bonilla-Tatoosh line (C.4.a) during Council managed ocean fishery. See gear restrictions and definitions (C.2, C.3).</p> <p>Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>	<p><b>U.S./Canada Border to Cape Alava (Neah Bay)</b></p> <ul style="list-style-type: none"> <li>June 27 through the earlier of September 13, or 2,340 marked coho subarea quota, with a subarea guideline of 4,700 Chinook (C.5).</li> </ul> <p>Open seven days per week. All salmon, except no chum beginning August 1; two salmon per day. All coho must be marked with a healed adipose fin clip (C.1). See minimum size limits (B).</p> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p>	<p><b>U.S./Canada Border to Cape Alava (Neah Bay)</b></p> <ul style="list-style-type: none"> <li>Closed</li> </ul>





TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 2 of 9)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>Cape Alava to Queets River (La Push Subarea)</b></p> <ul style="list-style-type: none"> <li>June 14 through the earlier of September 30, or 760 marked coho subarea quota, with a subarea guideline of 1,400 Chinook (C.5).</li> </ul> <p>Open seven days a week. See salmon minimum size limits (B).</p> <p>During June 14-28: All salmon, except coho; one salmon per day (C.1).</p> <p>Beginning June 29: All salmon, except no chum beginning August 1; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (C.1).</p> <p>Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>	<p><b>Cape Alava to Queets River (La Push Subarea)</b></p> <ul style="list-style-type: none"> <li>June 27 through the earlier of September 13, or 580 marked coho subarea quota, with a subarea guideline of 1,100 Chinook (C.5).</li> </ul> <p>Open seven days per week. All salmon, except no chum beginning August 1; two salmon per day. All coho must be marked with a healed adipose fin clip (C.1) See salmon minimum size limits (B).</p> <p>Same as Alternative 1</p>	<p><b>Cape Alava to Queets River (La Push Subarea)</b></p> <ul style="list-style-type: none"> <li>Closed.</li> </ul>
<p><b>Queets River to Leadbetter Point (Westport Subarea)</b></p> <ul style="list-style-type: none"> <li>June 14 through the earlier of September 30, or 10,880 marked coho subarea quota, with a subarea guideline of 14,200 Chinook (C.5).</li> </ul> <p>During June 14-28: Open seven days per week. All salmon except coho; one salmon per day (C.1). Chinook minimum size limit of 22 inches total length (B).</p> <p>Beginning June 29: Open five days per week (Sun.-Thurs.). All salmon; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (C.1). Coho minimum size limit of 16 inches total length (B).</p> <p>Chinook minimum size limit of 22 inches total length (B).</p> <p>See gear restrictions and definitions (C.2, C.3). Grays Harbor Control Zone closed beginning August 10 (C.4.b). Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>	<p><b>Queets River to Leadbetter Point (Westport Subarea)</b></p> <ul style="list-style-type: none"> <li>June 28 through the earlier of September 13, or 8,330 marked coho subarea quota, with a subarea guideline of 10,500 Chinook (C.5).</li> </ul> <p>Open five days per week (Sun.-Thurs.). All salmon; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (C.1). See salmon minimum size limits (B).</p> <p>Same as Alternative 1</p>	<p><b>Queets River to Leadbetter Point (Westport Subarea)</b></p> <ul style="list-style-type: none"> <li>Closed.</li> </ul>

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries – <b>Council adopted.</b> (Page 3 of 9)		
<b>A. SEASON ALTERNATIVE DESCRIPTIONS</b>		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>Leadbetter Point to Cape Falcon (Columbia River Subarea)</b></p> <ul style="list-style-type: none"> <li>June 14 through the earlier of September 30, or 14,700 marked coho subarea quota, with a subarea guideline of 8,000 Chinook (C.5).</li> </ul> <p>During June 14-28: Open seven days per week. All salmon except coho; one salmon per day (C.1). Chinook minimum size limit of 22 inches total length (B).</p> <p>Beginning June 29, open seven days per week. All salmon; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (C.1). Coho minimum size limit of 16 inches total length (B).</p> <p>Chinook minimum size limit of 22 inches total length (B).</p> <p>Columbia Control Zone closed (C.4.c). Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>	<p><b>Leadbetter Point to Cape Falcon (Columbia River Subarea)</b></p> <ul style="list-style-type: none"> <li>June 28 through the earlier of September 13, or 11,250 marked coho subarea quota, with a subarea guideline of 5,800 Chinook (C.5).</li> </ul> <p>Open five days per week (Sun.-Thurs.). All salmon; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (C.1). See salmon minimum size limits (B).</p> <p>Same as Alternative 1</p>	<p><b>Leadbetter Point to Cape Falcon (Columbia River Subarea)</b></p> <ul style="list-style-type: none"> <li>Closed.</li> </ul>

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 4 of 9)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
South of Cape Falcon	South of Cape Falcon	South of Cape Falcon
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
Supplemental Management Information	Supplemental Management Information	Supplemental Management Information
<ol style="list-style-type: none"> <li>1. Sacramento River fall Chinook spawning escapement of 228,346 hatchery and natural area adults.</li> <li>2. Sacramento Index exploitation rate of 51.7%.</li> <li>3. Klamath River recreational fishery allocation: 1,291 adult Klamath River fall Chinook.</li> <li>4. Klamath tribal allocation: 8,606 adult Klamath River fall Chinook.</li> <li>5. Overall recreational coho TAC: 22,000 coho marked with a healed adipose fin clip (marked), and 3,000 coho in the non-mark-selective coho fishery.</li> <li>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the California Fish and Game Commission (CFGC).</li> </ol>	<ol style="list-style-type: none"> <li>1. Sacramento River fall Chinook spawning escapement of 222,636 hatchery and natural area adults.</li> <li>2. Sacramento Index exploitation rate of 52.9%.</li> <li>3. Klamath River recreational fishery allocation: 1,285 adult Klamath River fall Chinook.</li> <li>4. Klamath tribal allocation: 8,568 adult Klamath River fall Chinook.</li> <li>5. Overall recreational coho TAC: 18,000 coho marked with a healed adipose fin clip (marked), and 4,000 coho in the non-mark-selective coho fishery.</li> <li>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the CFGC.</li> </ol>	<ol style="list-style-type: none"> <li>1. Sacramento River fall Chinook spawning escapement of 234,075 hatchery and natural area adults.</li> <li>2. Sacramento Index exploitation rate of 50.5%.</li> <li>3. Klamath River recreational fishery allocation: 801 adult Klamath River fall Chinook.</li> <li>4. Klamath tribal allocation: 5,342 adult Klamath River fall Chinook.</li> <li>5. Overall recreational coho TAC: 30,000 coho marked with a healed adipose fin clip (marked), and 0 coho in the non-mark-selective coho fishery.</li> <li>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the CFGC.</li> </ol>
<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• March 15-October 31 (C.6), except as provided below during the all-salmon mark-selective fishery and the non-mark-selective coho fishery (C.5).</li> </ul> <p>Open seven days per week. All salmon except coho, two fish per day (C.1). Chinook minimum size limit of 24 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2021, the season will open March 15 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B), and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting (C.5).</p>	<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• March 15-October 31 (C.6), except as provided below during the all-salmon mark-selective fishery and the non-mark-selective coho fishery (C.5).</li> </ul> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>	<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• March 15-October 31 (C.6), except as provided below during the all-salmon mark-selective fishery (C.5).</li> </ul> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>
<p>Fishing in the Stonewall Bank yelloweye rockfish conservation area restricted to trolling only on days the all depth recreational halibut fishery is open (call the halibut fishing hotline 1-800-662-9825 for specific dates) (C.3.b, C.4.d).</p>		

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 5 of 9)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>Cape Falcon to Humbug Mt.</b> All-salmon mark-selective coho fishery:</p> <ul style="list-style-type: none"> <li>• June 27 through the earlier of August 2, or 22,000 marked coho quota (C.6).</li> </ul> <p>Open seven days per week. All salmon, two salmon per day. All retained coho must be marked with a healed adipose fin clip (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p> <p>Any remainder of the mark-selective coho quota may be transferred inseason on an impact neutral basis to the non-selective coho quota from Cape Falcon to Humbug Mountain (C.5).</p> <p>Non-mark-selective coho fishery:</p> <ul style="list-style-type: none"> <li>• September 4-5, and open each Friday and Saturday through the earlier of September 30, or 3,000 non-mark-selective coho quota (C.6). Open days may be modified inseason.</li> </ul> <p>All salmon, two salmon per day (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p>	<p><b>Cape Falcon to Humbug Mt.</b> All-salmon mark-selective coho fishery:</p> <ul style="list-style-type: none"> <li>• June 27 through the earlier of August 2, or 18,000 marked coho quota (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>Non-mark-selective coho fishery:</p> <ul style="list-style-type: none"> <li>• August 28-30, September 11-13, and open each Friday through Sunday through the earlier of September 30, or 4,000 non-mark-selective coho quota (C.6). Open days may be modified inseason</li> </ul> <p>All salmon, two salmon per day, but no more than one coho (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p>	<p><b>Cape Falcon to Humbug Mt.</b> All-salmon mark-selective coho fishery:</p> <ul style="list-style-type: none"> <li>• June 27 through the earlier of August 16, or 30,000 marked coho quota (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>Non-mark-selective coho fishery:</p> <ul style="list-style-type: none"> <li>• No season</li> </ul>
Fishing in the Stonewall Bank yelloweye rockfish conservation area restricted to trolling only on days the all depth recreational halibut fishery is open (call the halibut fishing hotline 1-800-662-9825 for specific dates) (C.3.b, C.4.d).		
<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• May 16-July 31 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p>	<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• May 16-July 9 (C.6).</li> </ul> <p>Same as Alternative 1</p>	<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• June 20-July 5 (C.6).</li> </ul> <p>Same as Alternative 1</p>

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 6 of 9)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>OR/CA Border to Horse Mt. (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• June 6-July 31 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>Klamath Control Zone closed in August (C.4.e). See California State regulations for additional closures adjacent to the Smith, Eel, and Klamath Rivers.</p> <p>In 2021, season opens May 1 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B); and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting.</p>	<p><b>OR/CA Border to Horse Mt. (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• June 11-July 31 (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>	<p><b>OR/CA Border to Horse Mt. (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• July 1-19 (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>
<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• April 11-30;</li> <li>• May 1-November 1 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2021, season opens April 3 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B); and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting.</p>	<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• April 11-30;</li> <li>• May 1-October 31 (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>	<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• April 11-30;</li> <li>• May 1-October 30 (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries – Council adopted. (Page 7 of 9)		
A. SEASON ALTERNATIVE DESCRIPTIONS		
ALTERNATIVE I	ALTERNATIVE II	ALTERNATIVE III
<p><b>Point Arena to Pigeon Point (San Francisco)</b></p> <ul style="list-style-type: none"> <li>April 11-30;</li> <li>May 1-November 1 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length through April, then 20 inches total length thereafter (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2021, season opens April 3 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B); and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting.</p>	<p><b>Point Arena to Pigeon Point (San Francisco)</b></p> <ul style="list-style-type: none"> <li>April 11-30;</li> <li>May 1-October 31 (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>	<p><b>Point Arena to Pigeon Point (San Francisco)</b></p> <ul style="list-style-type: none"> <li>April 11-30;</li> <li>May 16-June 30;</li> <li>July 1-October 30 (C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length through June, then 20 inches total length thereafter (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2021, same as Alternative 1</p>
<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>April 4-October 4(C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). See gear restrictions and definitions (C.2, C.3). Chinook minimum size limit of 24 inches total length (B).</p> <p>In 2021, season opens April 3 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B); and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting.</p>	<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>April 4-September 27 (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>	<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>April 4-September 7 (C.6).</li> </ul> <p>Same as Alternative 1</p> <p>In 2021, same as Alternative 1</p>
<p>California State regulations require all salmon be made available to a CDFW representative for sampling immediately at port of landing. Any person in possession of a salmon with a missing adipose fin, upon request by an authorized agent or employee of the CDFW, shall immediately relinquish the head of the salmon to the State (California Code of Regulations Title 14 Section 1.73).</p>		

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries - Council Adopted. (Page 8 of 9)

**B. MINIMUM SIZE (Inches) (See C.1)**

Area (when open)	Chinook	Coho	Pink
North of Cape Falcon (Alt 1 Westport and Col R)	22	16	None
North of Cape Falcon (Alt 1 Neah Bay and La Push, Alt II all areas)	24	16	None
Cape Falcon to Humbug Mt.	24	16	None
Humbug Mt. to OR/CA Border	24	16	None
OR/CA Border to Horse Mt.	20	-	20
Horse Mt. to Pt. Arena	20	-	20
Pt. Arena to Pigeon Pt. through April 30	24	-	24
Pt. Arena to Pigeon Pt. May 1-October 31 (Alt I, Alt II)	20	-	20
Pt. Arena to Pigeon Pt. May 23-June 30 (Alt III)	24	-	24
Pt. Arena to Pigeon Pt. July 1-October 31 (Alt III)	20	-	20
Pigeon Pt. to U.S./Mexico Border	24	-	24

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS**

- C.1. Compliance with Minimum Size and Other Special Restrictions: All salmon on board a vessel must meet the minimum size or other special requirements for the area being fished and the area in which they are landed if that area is open. Salmon may be landed in an area that is closed only if they meet the minimum size or other special requirements for the area in which they were caught. Salmon may not be filleted prior to landing.
- Ocean Boat Limits*: Off the coast of Washington, Oregon, and California, each fisher aboard a vessel may continue to use angling gear until the combined daily limits of Chinook and coho salmon for all licensed and juvenile anglers aboard have been attained (additional state restrictions may apply).
- C.2. Gear Restrictions: Salmon may be taken only by hook and line using barbless hooks. All persons fishing for salmon, and all persons fishing from a boat with salmon on board must meet the gear restrictions listed below for specific areas or seasons.
- a. *U.S./Canada Border to Pt. Conception, California*: No more than one rod may be used per angler; and no more than two single point, single shank, barbless hooks are required for all fishing gear.
  - b. *Horse Mt., California, to Pt. Conception, California*: Single point, single shank, barbless circle hooks (see gear definitions below) are required when fishing with bait by any means other than trolling, and no more than two such hooks shall be used. When angling with two hooks, the distance between the hooks must not exceed five inches when measured from the top of the eye of the top hook to the inner base of the curve of the lower hook, and both hooks must be permanently tied in place (hard tied). Circle hooks are not required when artificial lures are used without bait.
- C.3. Gear Definitions:
- a. *Recreational fishing gear defined*: Off Oregon and Washington, angling tackle consists of a single line that must be attached to a rod and reel held by hand or closely attended; the rod and reel must be held by hand while playing a hooked fish. No person may use more than one rod and line while fishing off Oregon or Washington. Off California, the line must be attached to a rod and reel held by hand or closely attended; weights directly attached to a line may not exceed four pounds (1.8 kg). While fishing off California north of Pt. Conception, no person fishing for salmon, and no person fishing from a boat with salmon on board, may use more than one rod and line. Fishing includes any activity which can reasonably be expected to result in the catching, taking, or harvesting of fish.
  - b. *Trolling defined*: Angling from a boat or floating device that is making way by means of a source of power, other than drifting by means of the prevailing water current or weather conditions.
  - c. *Circle hook defined*: A hook with a generally circular shape and a point which turns inward, pointing directly to the shank at a 90° angle.



TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 9 of 9)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS (continued)**

**C.4. Control Zone Definitions:**

- a. *The Bonilla-Tatoosh Line*: A line running from the western end of Cape Flattery to Tatoosh Island Lighthouse (48°23'30" N. lat., 124°44'12" W. long.) to the buoy adjacent to Duntze Rock (48°24'37" N. lat., 124°44'37" W. long.), then in a straight line to Bonilla Pt. (48°35'39" N. lat., 124°42'58" W. long.) on Vancouver Island, British Columbia.
- b. *Grays Harbor Control Zone* - The area defined by a line drawn from the Westport Lighthouse (46° 53'18" N. lat., 124° 07'01" W. long.) to Buoy #2 (46° 52'42" N. lat., 124° 12'42" W. long.) to Buoy #3 (46° 55'00" N. lat., 124° 14'48" W. long.) to the Grays Harbor north jetty (46° 55'36" N. lat., 124° 10'51" W. long.).
- c. *Columbia Control Zone*: An area at the Columbia River mouth, bounded on the west by a line running northeast/southwest between the red lighted Buoy #4 (46° 13'35" N. lat., 124° 06'50" W. long.) and the green lighted Buoy #7 (46° 15'09" N. lat., 124° 06'16" W. long.); on the east, by the Buoy #10 line which bears north/south at 357° true from the south jetty at 46° 14'00" N. lat., 124° 03'07" W. long. to its intersection with the north jetty; on the north, by a line running northeast/southwest between the green lighted Buoy #7 to the tip of the north jetty (46° 15'48" N. lat., 124° 05'20" W. long. and then along the north jetty to the point of intersection with the Buoy #10 line; and on the south, by a line running northeast/southwest between the red lighted Buoy #4 and tip of the south jetty (46° 14'03" N. lat., 124° 04'05" W. long.), and then along the south jetty to the point of intersection with the Buoy #10 line.
- d. *Stonewall Bank Yelloweye Rockfish Conservation Area*: The area defined by the following coordinates in the order listed:  
 44°37.46' N. lat.; 124°24.92' W. long.  
 44°37.46' N. lat.; 124°23.63' W. long.  
 44°28.71' N. lat.; 124°21.80' W. long.  
 44°28.71' N. lat.; 124°24.10' W. long.  
 44°31.42' N. lat.; 124°25.47' W. long.  
 and connecting back to 44°37.46' N. lat.; 124°24.92' W. long.
- e. *Klamath Control Zone*: The ocean area at the Klamath River mouth bounded on the north by 41°38'48" N. lat. (approximately 6 nautical miles north of the Klamath River mouth); on the west by 124°23'00" W. long. (approximately 12 nautical miles off shore); and, on the south by 41°26'48" N. lat. (approximately 6 nautical miles south of the Klamath River mouth).

**C.5. Inseason Management:** Regulatory modifications may become necessary inseason to meet preseason management objectives such as quotas, harvest guidelines, and season duration. In addition to standard inseason actions or modifications already noted under the season description, the following inseason guidance is provided to NMFS:

- a. Actions could include modifications to bag limits, or days open to fishing, and extensions or reductions in areas open to fishing.
- b. Coho may be transferred inseason among recreational subareas north of Cape Falcon to help meet the recreational season duration objectives (for each subarea) after conferring with representatives of the affected ports and the Council's SAS recreational representatives north of Cape Falcon, and if the transfer would not result in exceeding preseason impact expectations on any stocks.
- c. Chinook and coho may be transferred between the recreational and commercial fisheries north of Cape Falcon if there is agreement among the representatives of the SAS, and if the transfer would not result in exceeding preseason impact expectations on any stocks.
- d. Fishery managers may consider inseason action modifying regulations restricting retention of unmarked (adipose fin intact) coho. To remain consistent with preseason expectations, any inseason action shall consider, if significant, the difference between observed and preseason forecasted (adipose-clipped) mark rates. Such a consideration may also include a change in bag limit of two salmon, no more than one of which may be a coho.
- e. Marked coho remaining from the Cape Falcon to Humbug Mt. recreational mark-selective coho quota may be transferred inseason to the Cape Falcon to Humbug Mt. non-mark-selective recreational fishery if the transfer would not result in exceeding preseason impact expectations on any stocks.

**C.6. Additional Seasons in State Territorial Waters:** Consistent with Council management objectives, the States of Washington, Oregon, and California may establish limited seasons in state waters. Check state regulations for details.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 3a. 2020 Treaty Indian troll management Alternatives for ocean salmon fisheries - Council adopted. (QTA)<sup>a/</sup> (Page 1 of 3)

<b>A. SEASON ALTERNATIVE DESCRIPTIONS</b>		
QTA ALTERNATIVE I-a	QTA ALTERNATIVE II-a	QTA ALTERNATIVE III-a
<b>Supplemental Management Information</b>	<b>Supplemental Management Information</b>	<b>Supplemental Management Information</b>
<p>1. Overall Treaty-Indian TAC: 30,000 Chinook and 12,500 coho.</p> <p>2. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>	<p>1. Overall Treaty-Indian TAC: 25,000 Chinook and 10,000 coho.</p> <p>2. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>	<p>1. Overall Treaty-Indian TAC: 20,000 Chinook and 0 coho.</p> <p>2. Overall Chinook and/or coho TAC may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>
<ul style="list-style-type: none"> <li>• May 1 through the earlier of June 30 or 18,000 Chinook quota.</li> </ul> <p>All salmon may be retained except coho. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season (C.5). See size limit (B) and other restrictions (C).</p> <ul style="list-style-type: none"> <li>• July 1 through the earlier of August 31, or 12,000 Chinook quota, or 12,500 coho quota.</li> </ul> <p>All Salmon. See size limit (B) and other restrictions (C).</p>	<ul style="list-style-type: none"> <li>• May 1 through the earlier of June 30 or 15,000 Chinook quota.</li> </ul> <p>All salmon may be retained except coho. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season (C.5). See size limit (B) and other restrictions (C).</p> <ul style="list-style-type: none"> <li>• July 1 through the earlier of August 31, or 10,000 Chinook quota or 10,000 coho quota</li> </ul> <p>All salmon. See size limit (B) and other restrictions (C).</p>	<ul style="list-style-type: none"> <li>• May 1 through the earlier of June 30 or 12,000 Chinook quota.</li> </ul> <p>All salmon may be retained except coho. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season (C.5). See size limit (B) and other restrictions (C).</p> <ul style="list-style-type: none"> <li>• July 1 through the earlier of August 31, or 8,000 Chinook quota or 0 coho quota.</li> </ul> <p>All salmon. See size limit (B) and other restrictions (C).</p>

a/ Quinault Tribal Area (QTA) proposed

TABLE 3b. 2020 Treaty Indian troll management Alternatives for ocean salmon fisheries - Council adopted. (MT)<sup>a/</sup> (Page 2 of 3)

A. SEASON ALTERNATIVE DESCRIPTIONS		
MT ALTERNATIVE I-b	MT ALTERNATIVE II-b	MT ALTERNATIVE III-b
Supplemental Management Information	Supplemental Management Information	Supplemental Management Information
<p>1. Overall Treaty-Indian TAC: 45,000 Chinook and 30,000 coho.</p> <p>2. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>	<p>1. Overall Treaty-Indian TAC: 35,000 Chinook and 22,500 coho.</p> <p>2. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>	<p>1. Overall Treaty-Indian TAC: 25,000 Chinook and 15,000 coho.</p> <p>2. Overall Chinook and/or coho TAC may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.</p>
<ul style="list-style-type: none"> <li>May 1 through the earlier of June 30 or 22,500 Chinook quota.</li> </ul> <p>All salmon may be retained except coho. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season (C.5). See size limit (B) and other restrictions (C).</p> <ul style="list-style-type: none"> <li>July 1 through the earlier of September 15, or 22,500 Chinook quota, or 30,000 coho quota.</li> </ul> <p>All Salmon. See size limit (B) and other restrictions (C).</p>	<ul style="list-style-type: none"> <li>May 1 through the earlier of June 30 or 17,500 Chinook quota.</li> </ul> <p>All salmon may be retained except coho. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season (C.5). See size limit (B) and other restrictions (C).</p> <ul style="list-style-type: none"> <li>July 1 through the earlier of September 15, or 17,500 Chinook quota or 22,500 coho quota</li> </ul> <p>All salmon. See size limit (B) and other restrictions (C).</p>	<ul style="list-style-type: none"> <li>May 1 through the earlier of June 30 or 12,500 Chinook quota.</li> </ul> <p>All salmon may be retained except coho. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season (C.5). See size limit (B) and other restrictions (C).</p> <ul style="list-style-type: none"> <li>July 1 through the earlier of September 15, or 12,500 Chinook quota or 15,000 coho quota.</li> </ul> <p>All salmon. See size limit (B) and other restrictions (C).</p>

a/ Makah Tribe proposed.

**B. Minimum Length (total inches). For all Alternatives in Tables 3a and 3b**

Area (when open)	Chinook		Coho		Pink
	Total Length	Head-off	Total Length	Head-off	
North of Cape Falcon	24.0 (61.0 cm)	18.0 (45.7 cm)	16.0 (40.6 cm)	12.0 (30.5 cm)	None

TABLE 3a/3b. 2020 Treaty Indian troll management Alternatives for ocean salmon fisheries - Council adopted. (Page 3 of 3)

C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS

C.1. Tribe and Area Boundaries. All boundaries may be changed to include such other areas as may hereafter be authorized by a Federal court for that tribe's treaty fishery.

S'KLALLAM - Washington State Statistical Area 4B (defined to include those waters of Puget Sound easterly of a line projected from the Bonilla Point light on Vancouver Island to the Tatoosh Island light, thence to the most westerly point on Cape Flattery and westerly of a line projected true north from the fishing boundary marker at the mouth of the Sekiu River [WAC 220-301-030]).

MAKAH - Washington State Statistical Area 4B and that portion of the FMA north of 48°02'15" N. lat. (Norwegian Memorial) and east of 125°44'00" W. long.

QUILEUTE - A polygon commencing at Cape Alava, located at latitude 48°10'00" north, longitude 124°43'56.9" west; then proceeding west approximately forty nautical miles at that latitude to a northwestern point located at latitude 48°10'00" north, longitude 125°44'00" west; then proceeding in a southeasterly direction mirroring the coastline at a distance no farther than forty nautical miles from the mainland Pacific coast shoreline at any line of latitude, to a southwestern point at latitude 47°31'42" north, longitude 125°20'26" west; then proceeding east along that line of latitude to the Pacific coast shoreline at latitude 47°31'42" north, longitude 124°21'9.0" west.

HQH - That portion of the FMA between 47°54'18" N. lat. (Quillayute River) and 47°21'00" N. lat. (Quinault River) and east of 125°44'00" W. long.

QUINAULT - A polygon commencing at the Pacific coast shoreline near Destruction Island, located at latitude 47°40'06" north, longitude 124°23'51.362" west; then proceeding west approximately thirty nautical miles at that latitude to a northwestern point located at latitude 47°40'06" north, longitude 125°08'30" west; then proceeding in a southeasterly direction mirroring the coastline no farther than thirty nautical miles from the mainland Pacific coast shoreline at any line of latitude, to a southwestern point at latitude 46°53'18" north, longitude 124°53'53" west; then proceeding east along that line of latitude to the Pacific coast shoreline at latitude 46°53'18" north, longitude 124°7'36.6" west.

C.2. Gear restrictions

- a. Single point, single shank, barbless hooks are required in all fisheries.
- b. No more than eight fixed lines per boat.
- c. No more than four hand held lines per person in the Makah area fishery (Washington State Statistical Area 4B and that portion of the FMA north of 48°02'15" N. lat. (Norwegian Memorial) and east of 125°44'00" W. long.)

C.3. Quotas

- a. The quotas include troll catches by the S'Klallam and Makah Tribes in Washington State Statistical Area 4B from May 1 through September 15.
- b. The Quileute Tribe may continue a ceremonial and subsistence fishery during the time frame of October 1 through October 15 in the same manner as in 2004-2015. Fish taken during this fishery are to be counted against treaty troll quotas established for the 2020 season (estimated harvest during the October ceremonial and subsistence fishery: 20 Chinook; 40 coho).

C.4. Area Closures

- a. The area within a six nautical mile radius of the mouths of the Queets River (47°31'42" N. lat.) and the Hoh River (47°45'12" N. lat.) will be closed to commercial fishing.
- b. A closure within two nautical miles of the mouth of the Quinault River (47°21'00" N. lat.) may be enacted by the Quinault Nation and/or the State of Washington and will not adversely affect the Secretary of Commerce's management regime.

C.5. Inseason Management: In addition to standard inseason actions or modifications already noted under the season description, the following inseason guidance is provided to NMFS:

- a. Chinook remaining from the May through June treaty-Indian ocean troll harvest guideline north of Cape Falcon may be transferred to the July through September harvest guideline on a fishery impact equivalent basis.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 4a. 2020 Chinook and coho harvest quotas and guidelines (\*) for ocean salmon fishery management Alternatives - Council adopted (QTA).

Fishery or Quota Designation	Chinook for Alternative			Coho for Alternative		
	I	II	III	I	II	III
<b>NORTH OF CAPE FALCON</b>						
<b>TREATY INDIAN OCEAN TROLL<sup>a/</sup></b>						
U.S./Canada Border to Cape Falcon (All Except Coho)	18,000	15,000	12,000	-	-	-
U.S./Canada Border to Cape Falcon (All Species)	12,000	10,000	8,000	12,500	10,000	0
Subtotal Treaty Indian Ocean Troll	30,000	25,000	20,000	12,500	10,000	0
<b>NON-INDIAN COMMERCIAL TROLL<sup>b/</sup></b>						
U.S./Canada Border to Cape Falcon (All Except Coho)	20,000	11,500	0	-	-	-
U.S./Canada Border to Cape Falcon (All Species)	10,000	11,375	0	5,600	2,500	0
Subtotal Non-Indian Commercial Troll	30,000	22,875	0	5,600	2,500	0
<b>RECREATIONAL</b>						
U.S./Canada Border to Cape Alava <sup>b/</sup>	6,400 *	4,700 *	0	3,060	2,340	0
Cape Alava to Queets River <sup>b/</sup>	1,400 *	1,100 *	0	760	580	0
Queets River to Leadbetter Pt. <sup>b/</sup>	14,200 *	10,500 *	0	10,880	8,330	0
Leadbetter Pt. to Cape Falcon <sup>b/c/</sup>	8,000 *	5,800 *	0	14,700	11,250	0
Subtotal Recreational	30,000	22,125	0	29,400	22,500	0
<b>TOTAL NORTH OF CAPE FALCON</b>	<b>90,000</b>	<b>70,000</b>	<b>20,000</b>	<b>47,500</b>	<b>35,000</b>	<b>0</b>
<b>SOUTH OF CAPE FALCON</b>						
<b>COMMERCIAL TROLL<sup>a/</sup></b>						
Humbug Mt. to OR/CA Border	1,500	500	-	-	-	-
OR/CA Border to Humboldt South Jetty	-	3,750	-	-	-	-
Subtotal Commercial Troll	1,500	4,250	0	-	-	-
<b>RECREATIONAL</b>						
Cape Falcon to OR/CA Border	-	-	-	25,000 <sup>d/</sup>	22,000 <sup>e/</sup>	30,000 <sup>f/</sup>
<b>TOTAL SOUTH OF CAPE FALCON</b>	<b>1,500</b>	<b>4,250</b>	<b>0</b>	<b>25,000</b>	<b>22,000</b>	<b>30,000</b>

a/ Quotas are non-mark selective for both Chinook and coho.

b/ Quotas are non-mark-selective for Chinook and mark-selective for coho.

c/ Does not include Buoy 10 fishery. Expected catch in August and September: Alternative I - 13,000 marked coho; Alternative II - 15,000 marked coho; Alternative III - 17,000 marked coho.

d/ The quota consists of both mark-selective and non-mark-selective coho quotas: 22,000 and 3,000 respectively.

e/ The quota consists of both mark-selective and non-mark-selective coho quotas: 18,000 and 4,000 respectively.

f/ Quota is mark-selective.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 4b. 2020 Chinook and coho harvest quotas and guidelines (\*) for ocean salmon fishery management Alternatives - Council adopted (MT).

Fishery or Quota Designation	Chinook for Alternative			Coho for Alternative		
	I	II	III	I	II	III
<b>NORTH OF CAPE FALCON</b>						
<b>TREATY INDIAN OCEAN TROLL<sup>a/</sup></b>						
U.S./Canada Border to Cape Falcon (All Except Coho)	22,500	17,500	12,500	-	-	-
U.S./Canada Border to Cape Falcon (All Species)	22,500	17,500	12,500	30,000	22,500	15,000
Subtotal Treaty Indian Ocean Troll	45,000	35,000	25,000	30,000	22,500	15,000
<b>NON-INDIAN COMMERCIAL TROLL<sup>b/</sup></b>						
U.S./Canada Border to Cape Falcon (All Except Coho)	20,000	11,500	0	-	-	-
U.S./Canada Border to Cape Falcon (All Species)	10,000	11,375	0	5,600	2,500	0
Subtotal Non-Indian Commercial Troll	30,000	22,875	0	5,600	2,500	0
<b>RECREATIONAL</b>						
U.S./Canada Border to Cape Alava <sup>b/</sup>	6,400 *	4,700 *	0	3,060	2,340	0
Cape Alava to Queets River <sup>b/</sup>	1,400 *	1,100 *	0	760	580	0
Queets River to Leadbetter Pt. <sup>b/</sup>	14,200 *	10,500 *	0	10,880	8,330	0
Leadbetter Pt. to Cape Falcon <sup>b/c/</sup>	8,000 *	5,800 *	0	14,700	11,250	0
Subtotal Recreational	30,000	22,125	0	29,400	22,500	0
<b>TOTAL NORTH OF CAPE FALCON</b>	<b>105,000</b>	<b>80,000</b>	<b>25,000</b>	<b>65,000</b>	<b>47,500</b>	<b>15,000</b>
<b>SOUTH OF CAPE FALCON</b>						
<b>COMMERCIAL TROLL<sup>a/</sup></b>						
Humbug Mt. to OR/CA Border	1,500	500	-	-	-	-
OR/CA Border to Humboldt South Jetty	-	3,750	-	-	-	-
Subtotal Commercial Troll	1,500	4,250	0	-	-	-
<b>RECREATIONAL</b>						
Cape Falcon to OR/CA Border	-	-	-	25,000 <sup>d/</sup>	22,000 <sup>e/</sup>	30,000 <sup>f/</sup>
<b>TOTAL SOUTH OF CAPE FALCON</b>	<b>1,500</b>	<b>4,250</b>	<b>0</b>	<b>25,000</b>	<b>22,000</b>	<b>30,000</b>

a/ Quotas are non-mark selective for both Chinook and coho.

b/ Quotas are non-mark-selective for Chinook and mark-selective for coho.

c/ Does not include Buoy 10 fishery. Expected catch in August and September: Alternative I - 13,000 marked coho; Alternative II - 15,000 marked coho; Alternative III - 17,000 marked coho.

d/ The quota consists of both mark-selective and non-mark-selective coho quotas: 22,000 and 3,000 respectively.

e/ The quota consists of both mark-selective and non-mark-selective coho quotas: 18,000 and 4,000 respectively.

f/ Quota is mark-selective.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

2020 Preseason Report II

63

Table 5

TABLE 5a. 2020 Projected key stock escapements (thousands of fish) or management criteria for ocean fishery Alternatives - Council adopted (QTA) <sup>al</sup> (Page 1 of 2)

Key Stock/Criteria	PROJECTED			2020 Criteria	Spawner Objective or Other Comparative Standard as Noted <sup>b/</sup>
	Alt I	Alt II	Alt III		
<b>CHINOOK</b>					
Columbia Upriver Brights	230.4	231.8	239.3	74.0	Minimum ocean escapement to attain 40.0 adults over McNary Dam, with normal distribution and no mainstem harvest. The management goal has been increased to 60.0 by Columbia River managers.
Mid-Columbia Brights	78.7	79.2	81.7	14.9	Minimum ocean escapement to attain 7.9 for Little White Salmon egg-take, assuming average conversion and no mainstem harvest.
Columbia Lower River Hatchery Tules	50.1	50.9	53.9	25.0	Minimum ocean escapement to attain 14.8 adults for hatchery egg-take, with average conversion and no lower river mainstem or tributary harvest.
Columbia Lower River Natural Tules <sup>cl</sup> (threatened)	35.9%	34.2%	28.3%	≤ 38.0% Total adult equivalent fishery exploitation rate (2020 NMFS ESA guidance).	
Columbia Lower River Wild <sup>el</sup> (threatened)	19.6	19.7	20.6	6.9	Minimum ocean escapement to attain MSY spawner goal of 5.7 for N. Lewis River fall Chinook (NMFS ESA consultation standard).
Spring Creek Hatchery Tules	44.8	46.3	49.9	8.2	Minimum ocean escapement to attain 6.0 adults for Spring Creek Hatchery egg-take, assuming average conversion and no mainstem harvest.
Upper Columbia River Summer	37.6	38.1	39.1	29.0	Aggregate escapement to mouth of Columbia River.
Snake River Fall (threatened) SRFI	50.6%	45.4%	27.3%	≤ 70.0% Of 1988-1993 base period exploitation rate for all ocean fisheries (NMFS ESA consultation standard).	
Klamath River Fall	36.2	36.2	--	≥ 36.2 2020 minimum natural area adult escapement (FMP control rule).	
	--	--	40.7	≥ 40.7 2020 minimum natural area adult escapement (Council guidance).	
Federally recognized tribal harvest	50.0%	50.0%	50.0%	50.0% Equals 8.6, 8.6, and 5.3 (thousand) adult fish for Yurok and Hoopa Valley tribal fisheries.	
Exploitation (spawner reduction) rate	25.0%	25.0%	--	≤ 25.0% FMP control rule.	
	--	--	15.7%	≤ 15.7% Council guidance.	
Adult river mouth return	59.0	59.0	60.9	NA Total adults in thousands.	
Age-4 ocean harvest rate	8.9%	9.3%	6.1%	≤ 16.0% NMFS ESA consultation standard for threatened California Coastal Chinook.	
KMZ sport fishery share	7.5%	6.2%	3.6%		
River recreational fishery share	15.0%	15.0%	15.0%	NA Equals 1.3, 1.3, and 0.8 (thousand) adult fish for recreational inriver fisheries.	
Sacramento River Winter (endangered)	16.8%	17.7%	20.0%	≤ 20.0% Age-3 ocean impact rate in fisheries south of Pt. Arena. In addition, the following season restrictions apply: <u>Recreational</u> - Pt. Arena to Pigeon Pt. between the first Saturday in April and the second Sunday in November; Pigeon Pt. to the U.S./Mexico border between the first Saturday in April and the first Sunday in October. Minimum size limit ≥ 20 inches total length. <u>Commercial</u> - Pt. Arena to the U.S./Mexico border between May 1 and September 30, except Pt. Reyes to Pt. San Pedro between October 1 and 15 (Monday-Friday). Minimum size limit ≥ 26 inches total length (NMFS 2020 ESA Guidance).	
Sacramento River Fall	228.3	222.6	234.1	≥ 141.955 2020 minimum hatchery and natural area adult escapement (FMP control rule).	
Sacramento Index Exploitation Rate	51.7%	52.9%	50.5%	≤ 70.0% FMP control rule.	
Ocean commercial impacts	148.6	155.8	145.4	Includes fall (Sept-Dec) 2019 impacts (5.7 thousand SRFC).	
Ocean recreational impacts	55.9	55.5	52.4	Includes fall (Sept-Dec) 2019 impacts (3.3 thousand SRFC).	
River recreational impacts	40.3	39.3	41.3		
SRKW Prey Abundance					
North of Falcon	1,250.9	1,250.9	1,250.9	≥ 972.0 Oct 1 starting abundance of age 3+ Chinook from U.S./Canada Border to Cape Falcon	
Falcon to Horse Mt.	1,063.6	1,063.6	1,063.6	NA Oct 1 starting abundance of age 3+ Chinook from Cape Falcon to Horse Mt.	
South of Horse Mt.	543.8	543.8	543.8	NA Oct 1 starting abundance of age 3+ Chinook south of Horse Mt.	

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

2020 Preseason Report II

64

Table 5

TABLE 5a. Projected key stock escapements (thousands of fish) or management criteria for 2020 ocean fishery Alternatives - Council adopted (QTA).<sup>a/</sup> (Page 2 of 2)

Key Stock/Criteria	PROJECTED			2020 Criteria	Spawner Objective or Other Comparative Standard as Noted <sup>b/</sup>
	Alt I	Alt II	Alt III		
<b>COHO</b>	<b>COHO</b>			<b>COHO</b>	
Interior Fraser (Thompson River)	6.3%(2.3%)	5.7%(1.8%)	4.6%(0.6%)	≤ 10.0% 2020 Southern U.S. exploitation rate ceiling; PSC coho agreement.	
Skagit	34.1%(2.3%)	33.7%(1.7%)	32.8%(0.6%)	≤ 35.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Stillaguamish	27.1%(1.7%)	26.7%(1.2%)	26.0%(0.4%)	≤ 35.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Snohomish	<b>24.0%(1.7%)</b>	<b>23.6%(1.2%)</b>	<b>22.9%(0.4%)</b>	≤ 20.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Hood Canal	41.7%(2.6%)	41.3%(2.0%)	40.4%(0.7%)	≤ 45.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Strait of Juan de Fuca	8.4%(2.1%)	7.9%(1.6%)	6.8%(0.6%)	≤ 20.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Quillayute Fall	8.7	8.8	8.9	6.3 FMP MSY adult spawner estimate. Value depicted is ocean escapement.	
Hoh	3.6	3.7	3.8	2.0 FMP MSY adult spawner estimate. Value depicted is ocean escapement.	
Queets Wild	6.7	6.8	7.1	5.8 FMP MSY adult spawner estimate. Value depicted is ocean escapement.	
Grays Harbor	47.2	47.6	48.2	24.4 FMP MSY adult spawner estimate. Value depicted is ocean escapement.	
Willapa Bay	27.5	28.3	29.2	17.2 FMP MSY natural area adult spawner estimate. Value depicted is ocean escapement.	
Lower Columbia River Natural (threatened)	15.1%	12.9%	9.7%	≤ 18.0% Total marine and mainstem Columbia R. fishery exploitation rate (2020 NMFS ESA guidance).	
Upper Columbia <sup>c/</sup>	70%	73%	76%	≥ 50% Minimum percentage of the run to Bonneville Dam.	
Columbia River Hatchery Early	87.8	92.2	93.8	77.2 Minimum ocean escapement to attain hatchery egg-take goal of 21.7 early adult coho, with average conversion and no mainstem or tributary fisheries.	
Columbia River Hatchery Late	34.6	37.3	42.2	9.7 Minimum ocean escapement to attain hatchery egg-take goal of 6.4 late adult coho, with average conversion and no mainstem or tributary fisheries.	
Oregon Coastal Natural	11.7%	11.1%	10.3%	≤ 15.0% Marine and freshwater fishery exploitation rate (NMFS ESA consultation standard).	
Southern Oregon/Northern California Coast (threatened)	3.2%	3.5%	2.7%	≤ 13.0% Marine fishery exploitation rate for R/K hatchery coho (NMFS ESA consultation standard).	

a/ Coho projections in the table assume post-season 2018 fishery scalars for Canadian fisheries, except Fraser net and terminal fisheries (post-season 2016), and Fraser sport (post-season 2017). Model results for Chinook in this table used 2018 preseason catches and fishing effort scalars, and are updated with 2018 post season data if available. Assumptions for these fisheries will be changed prior to the April meeting as new information becomes available.

b/ Ocean escapement is the number of salmon escaping ocean fisheries and entering freshwater with the following clarifications. Ocean escapement for Puget Sound stocks is the estimated number of salmon entering Area 4B that are available to U.S. net fisheries in Puget Sound and spawner escapement after impacts from the Canadian, U.S. ocean, and Puget Sound troll and recreational fisheries have been deducted. Numbers in parentheses represent Council area exploitation rates for Puget Sound coho stocks. For Columbia River early and late coho stocks, ocean escapement represents the number of coho after the Buoy 10 fishery. Exploitation rates for LCN and OCN coho represent marine and freshwater impacts. Values reported for Klamath River fall Chinook are natural area adult spawners. Values reported for Sacramento River fall Chinook are hatchery and natural area adult spawners.

c/ Includes projected impacts of inriver fisheries that have not yet been shaped.

d/ Annual management objectives may be different than FMP goals, and are subject to agreement between WDFW and the treaty tribes under U.S. District Court orders. It is anticipated that fishery management will be adjusted by state and tribal comanagers during the preseason planning process to comply with stock management objectives.

e/ Includes minor contributions from East Fork Lewis River and Sandy River.



EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

2020 Preseason Report II

65

Table 5

TABLE 5b. 2020 Projected key stock escapements (thousands of fish) or management criteria for ocean fishery Alternatives - Council adopted (MT) <sup>a/</sup> (Page 1 of 2)

Key Stock/Criteria	PROJECTED			2020 Criteria	Spawner Objective or Other Comparative Standard as Noted <sup>b/</sup>
	Alt I	Alt II	Alt III		
<b>CHINOOK</b>					
Columbia Upriver Brights	229.0	230.9	238.8	74.0	Minimum ocean escapement to attain 40.0 adults over McNary Dam, with normal distribution and no mainstem harvest. The management goal has been increased to 60.0 by Columbia River managers.
Mid-Columbia Brights	78.2	78.8	81.5	14.9	Minimum ocean escapement to attain 7.9 for Little White Salmon egg-take, assuming average conversion and no mainstem harvest.
Columbia Lower River Hatchery Tules	49.8	50.7	53.8	25.0	Minimum ocean escapement to attain 14.8 adults for hatchery egg-take, with average conversion and no lower river mainstem or tributary harvest.
Columbia Lower River Natural Tules <sup>c/</sup> (threatened)	36.5%	34.6%	28.5%	≤ 38.0% Total adult equivalent fishery exploitation rate (2020 NMFS ESA guidance).	
Columbia Lower River Wild <sup>d/</sup> (threatened)	19.5	19.6	20.6	6.9	Minimum ocean escapement to attain MSY spawner goal of 5.7 for N. Lewis River fall Chinook (NMFS ESA consultation standard).
Spring Creek Hatchery Tules	44.5	46.0	49.8	8.2	Minimum ocean escapement to attain 6.0 adults for Spring Creek Hatchery egg-take, assuming average conversion and no mainstem harvest.
Upper Columbia River Summer	37.4	38.1	39.1	29.0	Aggregate escapement to mouth of Columbia River.
Snake River Fall (threatened) SRFI	54.1%	47.9%	28.7%	≤ 70.0% Of 1988-1993 base period exploitation rate for all ocean fisheries (NMFS ESA consultation standard).	
Klamath River Fall	36.2	36.2	--	≥ 36.2 2020 minimum natural area adult escapement (FMP control rule).	
	--	--	40.7	≥ 40.7 2020 minimum natural area adult escapement (Council guidance).	
Federally recognized tribal harvest	50.0%	50.0%	50.0%	50.0% Equals 8.6, 8.6, and 5.3 (thousand) adult fish for Yurok and Hoopa Valley tribal fisheries.	
Exploitation (spawner reduction) rate	25.0%	25.0%	--	≤ 25.0% FMP control rule.	
	--	--	15.7%	≤ 15.7% Council guidance.	
Adult river mouth return	59.0	59.0	60.9	NA Total adults in thousands.	
Age-4 ocean harvest rate	8.9%	9.3%	6.1%	≤ 16.0% NMFS ESA consultation standard for threatened California Coastal Chinook.	
KMZ sport fishery share	7.5%	6.2%	3.6%		
River recreational fishery share	15.0%	15.0%	15.0%	NA Equals 1.3, 1.3, and 0.8 (thousand) adult fish for recreational inriver fisheries.	
Sacramento River Winter (endangered)	16.8%	17.7%	20.0%	≤ 20.0% Age-3 ocean impact rate in fisheries south of Pt. Arena. In addition, the following season restrictions apply: <u>Recreational</u> - Pt. Arena to Pigeon Pt. between the first Saturday in April and the second Sunday in November; Pigeon Pt. to the U.S./Mexico border between the first Saturday in April and the first Sunday in October. Minimum size limit ≥ 20 inches total length. <u>Commercial</u> - Pt. Arena to the U.S./Mexico border between May 1 and September 30, except Pt. Reyes to Pt. San Pedro between October 1 and 15 (Monday-Friday). Minimum size limit ≥ 26 inches total length (NMFS 2020 ESA Guidance).	
Sacramento River Fall	228.3	222.6	234.1	≥ 141.955 2020 minimum hatchery and natural area adult escapement (FMP control rule).	
Sacramento Index Exploitation Rate	51.7%	52.9%	50.5%	≤ 70.0% FMP control rule.	
Ocean commercial impacts	148.6	155.8	145.4	Includes fall (Sept-Dec) 2019 impacts (5.7 thousand SRFC).	
Ocean recreational impacts	55.9	55.5	52.4	Includes fall (Sept-Dec) 2019 impacts (3.3 thousand SRFC).	
River recreational impacts	40.3	39.3	41.3		
SRKW Prey Abundance					
North of Falcon	1,250.9	1,250.9	1,250.9	≥ 972.0 Oct 1 starting abundance of age 3+ Chinook from U.S./Canada Border to Cape Falcon	
Falcon to Horse Mt.	1,063.6	1,063.6	1,063.6	NA Oct 1 starting abundance of age 3+ Chinook from Cape Falcon to Horse Mt.	
South of Horse Mt.	543.8	543.8	543.8	NA Oct 1 starting abundance of age 3+ Chinook south of Horse Mt.	

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

2020 Preseason Report II

66

Table 5

TABLE 5b. Projected key stock escapements (thousands of fish) or management criteria for 2020 ocean fishery management measures - Council adopted (MT).<sup>a/</sup> (Page 2 of 2)

Key Stock/Criteria	PROJECTED			2020 Criteria	Spawner Objective or Other Comparative Standard as Noted <sup>b/</sup>
	Alt I	Alt II	Alt III		
<b>COHO</b>	<b>COHO</b>			<b>COHO</b>	
Interior Fraser (Thompson River)	8.4%(4.4%)	7.2%(3.3%)	6.0%(2.0%)	≤ 10.0% 2020 Southern U.S. exploitation rate ceiling; PSC coho agreement.	
Skagit	<b>35.5%(4.1%)</b>	34.7%(3.0%)	33.7%(1.8%)	≤ 35.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Stillaguamish	28.1%(3.0%)	27.4%(2.2%)	26.7%(1.3%)	≤ 35.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Snohomish	<b>25.1%(3.0%)</b>	<b>24.4%(2.2%)</b>	<b>23.6%(1.3%)</b>	≤ 20.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Hood Canal	43.0%(4.4%)	42.2%(3.3%)	41.2%(2.0%)	≤ 45.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Straits of Juan de Fuca	9.9%(3.7%)	9.0%(2.8%)	7.9%(1.6%)	≤ 20.0% 2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>	
Quillayute Fall	8.6	8.7	8.8	6.3 FMP MSY adult spawner estimate. Value depicted is ocean escapement.	
Hoh	3.5	3.6	3.7	2.0 FMP MSY adult spawner estimate. Value depicted is ocean escapement.	
Queets Wild	6.5	6.7	6.9	5.8 FMP MSY adult spawner estimate. Value depicted is ocean escapement.	
Grays Harbor	46.3	47.0	47.7	24.4 FMP MSY adult spawner estimate. Value depicted is ocean escapement.	
Willapa Bay	27.0	27.9	28.9	17.2 FMP MSY natural area adult spawner estimate. Value depicted is ocean escapement.	
Lower Columbia River Natural (threatened)	16.7%	14.1%	10.6%	≤ 18.0% Total marine and mainstem Columbia R. fishery exploitation rate (2020 NMFS ESA guidance).	
Upper Columbia <sup>c/</sup>	69%	73%	76%	≥ 50% Minimum percentage of the run to Bonneville Dam.	
Columbia River Hatchery Early	86.3	91.0	92.9	77.2 Minimum ocean escapement to attain hatchery egg-take goal of 21.7 early adult coho, with average conversion and no mainstem or tributary fisheries.	
Columbia River Hatchery Late	33.9	36.8	41.7	9.7 Minimum ocean escapement to attain hatchery egg-take goal of 6.4 late adult coho, with average conversion and no mainstem or tributary fisheries.	
Oregon Coastal Natural	12.1%	11.4%	10.5%	≤ 15.0% Marine and freshwater fishery exploitation rate (NMFS ESA consultation standard).	
Southern Oregon/Northern California Coast (threatened)	3.2%	3.5%	2.7%	≤ 13.0% Marine fishery exploitation rate for R/K hatchery coho (NMFS ESA consultation standard).	

a/ Coho projections in the table assume post-season 2018 fishery scalars for Canadian fisheries, except Fraser net and terminal fisheries (post-season 2016), and Fraser sport (post-season 2017), Model results for Chinook in this table used 2018 preseason catches and fishing effort scalars, and are updated with 2018 post season data if available. Assumptions for these fisheries will be changed prior to the April meeting as new information becomes available.

b/ Ocean escapement is the number of salmon escaping ocean fisheries and entering freshwater with the following clarifications. Ocean escapement for Puget Sound stocks is the estimated number of salmon entering Area 4B that are available to U.S. net fisheries in Puget Sound and spawner escapement after impacts from the Canadian, U.S. ocean, and Puget Sound troll and recreational fisheries have been deducted. Numbers in parentheses represent Council area exploitation rates for Puget Sound coho stocks. For Columbia River early and late coho stocks, ocean escapement represents the number of coho after the Buoy 10 fishery. Exploitation rates for LCN and OCN coho represent marine and freshwater impacts. Values reported for Klamath River fall Chinook are natural area adult spawners. Values reported for Sacramento River fall Chinook are hatchery and natural area adult spawners.

c/ Includes projected impacts of inriver fisheries that have not yet been shaped.

d/ Annual management objectives may be different than FMP goals, and are subject to agreement between WDFW and the treaty tribes under U.S. District Court orders. It is anticipated that fishery management will be adjusted by state and tribal comanagers during the preseason planning process to comply with stock management objectives.

e/ Includes minor contributions from East Fork Lewis River and Sandy River.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 6a. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management Alternatives - Council adopted (QTA). (Page 1 of 2)

Area and Fishery	2020 Catch Projection			2020 Bycatch Mortality <sup>a/</sup> Projection			2020 Bycatch Projection <sup>b/</sup>			Observed in 2019	
	I	II	III	I	II	III	I	II	III	Catch	Bycatch Mortality
<b>OCEAN FISHERIES:</b>											
<b>CHINOOK (thousands of fish)</b>											
<b>NORTH OF CAPE FALCON</b>											
Treaty Indian Ocean Troll	30.0	25.0	20.0	3.0	2.5	2.0	7.5	6.3	5.0	18.3	1.9
Non-Indian Commercial Troll	30.0	22.9	-	14.8	10.6	-	53.6	38.1	-	23.3	9.6
Recreational	30.0	22.1	-	3.6	3.1	-	16.7	15.6	-	10.9	1.8
<b>CAPE FALCON TO HUMBUG MT.<sup>c/</sup></b>											
Commercial Troll	45.4	45.8	35.2	15.0	15.1	11.6	45.3	45.7	35.2	26.5	9.0
Recreational	5.4	5.6	6.2	0.7	0.8	0.8	2.9	2.9	3.2	4.7	0.7
<b>HUMBUG MT. TO OR/CA BORDER<sup>c/</sup></b>											
Commercial Troll	1.5	1.1	0.6	0.5	0.4	0.2	1.5	1.1	0.6	1.9	0.8 <sup>e/</sup>
Recreational	1.8	1.1	0.4	0.2	0.1	0.1	1.0	0.6	0.2	0.6	0.1 <sup>e/</sup>
<b>OR/CA BORDER TO HORSE MT.<sup>d/</sup></b>											
Commercial Troll	0.0	3.8	0.0	0.0	1.2	0.0	0.0	3.7	0.0	5.9	2.5 <sup>e/</sup>
Recreational	4.9	4.5	1.8	0.7	0.6	0.2	2.6	2.4	0.9	5.0	0.8 <sup>e/</sup>
<b>HORSE MT. TO PT. ARENA</b>											
Commercial Troll	19.7	1.1	1.1	6.5	0.4	0.4	19.7	1.1	1.1	10.5	7.8 <sup>e/</sup>
Recreational	8.4	8.4	8.4	1.1	1.1	1.1	4.4	4.4	4.4	3.9	0.8 <sup>e/</sup>
<b>PT. ARENA TO PIGEON PT.</b>											
Commercial Troll	83.6	96.0	69.2	27.6	31.7	22.8	83.4	95.9	69.1	159.4	65.7 <sup>e/</sup>
Recreational	43.4	43.4	41.3	5.9	5.9	5.6	20.8	20.8	19.8	56.5	8.0 <sup>e/</sup>
<b>SOUTH OF PIGEON PT.</b>											
Commercial Troll	38.7	44.0	65.8	12.8	14.5	21.7	38.6	43.9	65.7	95.9	13.7 <sup>e/</sup>
Recreational	14.1	14.1	14.1	1.9	1.9	1.9	6.8	6.7	6.7	23.1	2.4 <sup>e/</sup>
<b>TOTAL OCEAN FISHERIES</b>											
Commercial Troll	248.9	239.6	192.0	80.2	76.4	58.8	249.7	235.8	176.7	341.7	111.0
Recreational	108.1	99.1	72.1	14.3	13.6	9.8	55.1	53.4	35.3	104.7	14.7
<b>INSIDE FISHERIES:</b>											
Area 4B	-	-	-	-	-	-	-	-	-	-	-
Buoy 10	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.3	3.5 <sup>e/</sup>

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 6a. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management Alternatives adopted by the Council (QTA). (Page 2 of 2)

Area and Fishery	2020 Catch Projection			2020 Bycatch Mortality <sup>a/</sup> Projection			2020 Bycatch Projection <sup>b/</sup>			Observed in 2019	
	I	II	III	I	II	III	I	II	III	Catch	Bycatch Mortality
<b>OCEAN FISHERIES:</b>											
<b>COHO (thousands of fish)</b>											
<b>NORTH OF CAPE FALCON</b>											
Treaty Indian Ocean Troll <sup>f/</sup>	12.5	10.0	-	1.3	1.1	4.4	3.3	2.7	17.0	55.5	3.4
Non-Indian Commercial Troll	5.6	2.5	-	5.0	2.6	-	17.8	9.4	-	5.4	1.6
Recreational	29.4	22.5	-	7.2	5.1	-	34.0	23.1	-	81.6	20.4
<b>SOUTH OF CAPE FALCON</b>											
Commercial Troll	-	-	-	2.4	2.7	2.3	9.2	10.3	8.9	-	1.9
Recreational <sup>f/</sup>	25.0	22.0	30.0	9.7	8.2	12.1	52.1	44.3	63.1	49.1	9.4
<b>TOTAL OCEAN FISHERIES</b>											
Commercial Troll	18.1	12.5	0.0	8.8	6.4	6.7	30.3	22.4	25.9	60.9	6.9
Recreational	54.4	44.5	30.0	16.9	13.3	12.1	86.1	67.4	63.1	130.7	29.8
<b>INSIDE FISHERIES:</b>											
Area 4B	-	-	-	-	-	-	-	-	-	-	-
Buoy 10	13.0	15.0	17.0	3.1	3.4	3.8	14.1	15.5	17.4	22.8	6.3 <sup>e/</sup>

a/ The bycatch mortality reported in this table consists of drop-off mortality (includes predation on hooked fish) plus hook-and-release mortality of Chinook and coho salmon in Council-area fisheries. Drop-off mortality for both Chinook and coho is assumed to be equal to 5% of total encounters. The hook-and-release mortality (HRM) rates used for both Chinook and coho are:

Commercial: 26%.

Recreational, north of Pt. Arena: 14%.

Recreational, south of Pt. Arena: 16% (based on the expected proportion of fish that will be caught using mooching versus trolling gear, and the HRMs of 42.2% and 14% for these two respective gear types).

b/ Bycatch calculated as dropoff mortality plus fish released.

c/ Includes Oregon territorial water, late season Chinook fisheries.

d/ The commercial fishery in this area is closed between Humboldt South Jetty and Horse Mountain.

e/ Based on reported released Chinook or coho. Reported releases in California fisheries are used as a surrogate in Oregon fisheries.

f/ Includes fisheries that allow retention of all legal sized coho.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 6b. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management Alternatives - Council adopted (MT). (Page 1 of 2)

Area and Fishery	2020 Catch Projection			2020 Bycatch Mortality <sup>a/</sup> Projection			2020 Bycatch Projection <sup>b/</sup>			Observed in 2019	
	I	II	III	I	II	III	I	II	III	Catch	Bycatch Mortality
<b>OCEAN FISHERIES:</b>											
<b>CHINOOK (thousands of fish)</b>											
<b>NORTH OF CAPE FALCON</b>											
Treaty Indian Ocean Troll	45.0	35.0	25.0	4.6	3.6	2.6	11.6	9.0	6.4	18.3	1.9
Non-Indian Commercial Troll	30.0	22.9	0.0	14.8	10.6	0.0	53.6	38.1	0.0	23.3	9.6
Recreational	30.0	22.1	0.0	3.6	3.1	0.0	16.7	15.6	0.0	10.9	1.8
<b>CAPE FALCON TO HUMBUG MT.<sup>c/</sup></b>											
Commercial Troll	45.4	45.8	35.2	15.0	15.1	11.6	45.3	45.7	35.2	26.5	9.0
Recreational	5.4	5.6	6.2	0.7	0.8	0.8	2.9	2.9	3.2	4.7	0.7
<b>HUMBUG MT. TO OR/CA BORDER<sup>c/</sup></b>											
Commercial Troll	1.5	1.1	0.6	0.5	0.4	0.2	1.5	1.1	0.6	1.9	0.8 <sup>e/</sup>
Recreational	1.8	1.1	0.4	0.2	0.1	0.1	1.0	0.6	0.2	0.6	0.1 <sup>e/</sup>
<b>OR/CA BORDER TO HORSE MT.<sup>d/</sup></b>											
Commercial Troll	0.0	3.8	0.0	0.0	1.2	0.0	0.0	3.7	0.0	5.9	2.5 <sup>e/</sup>
Recreational	4.9	4.5	1.8	0.7	0.6	0.2	2.6	2.4	0.9	5.0	0.8 <sup>e/</sup>
<b>HORSE MT. TO PT. ARENA</b>											
Commercial Troll	19.7	1.1	1.1	6.5	0.4	0.4	19.7	1.1	1.1	10.5	7.8 <sup>e/</sup>
Recreational	8.4	8.4	8.4	1.1	1.1	1.1	4.4	4.4	4.4	3.9	0.8 <sup>e/</sup>
<b>PT. ARENA TO PIGEON PT.</b>											
Commercial Troll	83.6	96.0	69.2	27.6	31.7	22.8	83.4	95.9	69.1	159.4	65.7 <sup>e/</sup>
Recreational	43.4	43.4	41.3	5.9	5.9	5.6	20.8	20.8	19.8	56.5	8.0 <sup>e/</sup>
<b>SOUTH OF PIGEON PT.</b>											
Commercial Troll	38.7	44.0	65.8	12.8	14.5	21.7	38.6	43.9	65.7	95.9	13.7 <sup>e/</sup>
Recreational	14.1	14.1	14.1	1.9	1.9	1.9	6.8	6.7	6.7	23.1	2.4 <sup>e/</sup>
<b>TOTAL OCEAN FISHERIES</b>											
Commercial Troll	263.9	249.6	197.0	81.8	77.4	59.3	253.8	238.5	178.1	341.7	111.0
Recreational	108.1	99.1	72.1	14.3	13.6	9.8	55.1	53.4	35.3	104.7	14.7
<b>INSIDE FISHERIES:</b>											
Area 4B	-	-	-	-	-	-	-	-	-	-	-
Buoy 10	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.3	3.5 <sup>e/</sup>

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

2020 Preseason Report II

TABLE 6b. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management Alternatives adopted by the Council (MT). (Page 2 of 2)

Area and Fishery	2020 Catch Projection			2020 Bycatch Mortality <sup>a/</sup> Projection			2020 Bycatch Projection <sup>b/</sup>			Observed in 2019	
	I	II	III	I	II	III	I	II	III	Catch	Bycatch Mortality
<b>COHO (thousands of fish)</b>											
<u>OCEAN FISHERIES:</u>											
NORTH OF CAPE FALCON											
Treaty Indian Ocean Troll <sup>f/</sup>	30.0	22.5	15.0	2.1	1.6	1.1	3.7	3.0	2.1	55.5	3.4
Non-Indian Commercial Troll	5.6	2.5	-	5.0	2.6	-	17.8	9.4	-	5.4	1.6
Recreational	29.4	22.5	-	7.2	5.1	-	34.0	23.1	-	81.6	20.4
SOUTH OF CAPE FALCON											
Commercial Troll	-	-	-	2.4	2.7	2.3	9.2	10.3	8.9	-	1.9
Recreational <sup>f/</sup>	25.0	22.0	30.0	9.7	8.2	12.1	52.1	44.3	63.1	49.1	9.4
TOTAL OCEAN FISHERIES											
Commercial Troll	35.6	25.0	15.0	9.5	6.9	3.4	30.8	22.7	11.1	60.9	6.9
Recreational	54.4	44.5	30.0	16.9	13.3	12.1	86.1	67.4	63.1	130.7	29.8
<u>INSIDE FISHERIES:</u>											
Area 4B	-	-	-	-	-	-	-	-	-	-	-
Buoy 10	13.0	15.0	17.0	3.1	3.4	3.9	14.1	15.5	17.4	22.8	6.3 <sup>e/</sup>

a/ The bycatch mortality reported in this table consists of drop-off mortality (includes predation on hooked fish) plus hook-and-release mortality of Chinook and coho salmon in Council-area fisheries. Drop-off mortality for both Chinook and coho is assumed to be equal to 5% of total encounters. The hook-and-release mortality (HRM) rates used for both Chinook and coho are:

Commercial: 26%.

Recreational, north of Pt. Arena: 14%.

Recreational, south of Pt. Arena: 16% (based on the expected proportion of fish that will be caught using mooching versus trolling gear, and the HRMs of 42.2% and 14% for these two respective gear types).

b/ Bycatch calculated as dropoff mortality plus fish released.

c/ Includes Oregon territorial water, late season Chinook fisheries.

d/ The commercial fishery in this area is closed between Humboldt South Jetty and Horse Mountain.

e/ Based on reported released Chinook or coho. Reported releases in California fisheries are used as a surrogate in Oregon fisheries.

f/ Includes fisheries that allow retention of all legal sized coho.

70

Table 6

## EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 7a. Expected coastwide lower Columbia Natural (LCN), Oregon coastal natural (OCN), and Rogue/Klamath (RK) coho, and Lower Columbia River (LCR) natural tule Chinook exploitation rates by fishery for 2020 ocean fisheries management Alternatives - Council adopted (QTA).

Fishery	Exploitation Rate (Percent)											
	LCN Coho			OCN Coho			RK Coho			LCR Tule Chinook		
	I	II	III	I	II	III	I	II	III	I	II	III
SOUTHEAST ALASKA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	2.3%	2.5%
BRITISH COLUMBIA	0.3%	0.3%	0.3%	0.6%	0.6%	0.6%	0.5%	0.4%	0.5%	12.4%	12.6%	13.2%
PUGET SOUND/STRAIT	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.7%	0.8%
NORTH OF CAPE FALCON												
Treaty Indian Ocean Troll	0.9%	0.7%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	1.8%	1.5%	1.2%
Recreational	4.3%	3.1%	0.0%	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	4.0%	3.2%	0.0%
Non-Indian Troll	1.6%	0.8%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	5.2%	3.9%	0.0%
SOUTH OF CAPE FALCON												
Recreational:										0.1%	0.2%	0.2%
Cape Falcon to Humbug Mt.	3.6%	3.3%	3.9%	6.7%	6.3%	6.6%	0.6%	0.5%	0.8%	-	-	-
Humbug Mt. to OR/CA border (KMZ)	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%	0.0%	-	-	-
OR/CA border to Horse Mt. (KMZ)	0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.7%	0.6%	0.2%	-	-	-
Fort Bragg	0.0%	0.0%	0.0%	0.3%	0.3%	0.3%	0.7%	0.7%	0.7%	-	-	-
South of Pt. Arena	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.3%	0.3%	0.3%	-	-	-
Troll:										1.2%	1.3%	1.2%
Cape Falcon to Humbug Mt.	0.4%	0.5%	0.4%	0.6%	0.6%	0.5%	0.1%	0.1%	0.1%	-	-	-
Humbug Mt. to OR/CA border (KMZ)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-	-
OR/CA border to Horse Mt. (KMZ)	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.6%	0.0%	-	-	-
Fort Bragg	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	-	-	-
South of Pt. Arena	0.0%	0.0%	0.0%	0.3%	0.4%	0.4%	0.2%	0.2%	0.3%	-	-	-
BUOY 10	2.3%	2.5%	2.8%	0.1%	0.2%	0.2%	0.0%	0.0%	0.0%	8.2%	8.4%	9.2%
ESTUARY/FRESHWATER	NA	NA	NA	1.4%	1.4%	1.4%	NA	NA	NA			
<b>TOTAL<sup>a/</sup></b>	<b>11.4%</b>	<b>8.9%</b>	<b>5.2%</b>	<b>11.7%</b>	<b>11.1%</b>	<b>10.3%</b>	<b>3.2%</b>	<b>3.5%</b>	<b>2.7%</b>	<b>35.9%</b>	<b>34.2%</b>	<b>28.3%</b>

a/ Totals do not include Buoy 10 and estuary/freshwater for LCN and RK coho; estuary/freshwater catch is included in the total for OCN. For LCR Tule Chinook, includes projected impacts of inriver fisheries that have not yet been shaped. Bolded values identify ocean exploitation rates that, when combined with freshwater harvest rates, would exceed the total allowable exploitation rate.

## EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 7b. Expected coastwide lower Columbia Natural (LCN), Oregon coastal natural (OCN), and Rogue/Klamath (RK) coho, and Lower Columbia River (LCR) natural tule Chinook exploitation rates by fishery for 2020 ocean fisheries management Alternatives - Council adopted (MT).

Fishery	Exploitation Rate (Percent)											
	LCN Coho			OCN Coho			RK Coho			LCR Tule Chinook		
	I	II	III	I	II	III	I	II	III	I	II	III
SOUTHEAST ALASKA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	2.3%	2.5%
BRITISH COLUMBIA	0.3%	0.3%	0.3%	0.6%	0.6%	0.6%	0.5%	0.4%	0.5%	12.3%	12.6%	13.2%
PUGET SOUND/STRAIT	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.7%	0.8%
NORTH OF CAPE FALCON												
Treaty Indian Ocean Troll	2.5%	1.9%	1.3%	0.6%	0.4%	0.3%	0.0%	0.0%	0.0%	2.5%	2.0%	1.5%
Recreational	4.3%	3.1%	0.0%	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	4.0%	3.2%	0.0%
Non-Indian Troll	1.6%	0.8%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	5.1%	3.9%	0.0%
SOUTH OF CAPE FALCON												
Recreational:										0.1%	0.2%	0.2%
Cape Falcon to Humbug Mt.	3.6%	3.3%	3.9%	6.7%	6.3%	6.6%	0.6%	0.5%	0.8%	-	-	-
Humbug Mt. to OR/CA border (KMZ)	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%	0.0%	-	-	-
OR/CA border to Horse Mt. (KMZ)	0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.7%	0.6%	0.2%	-	-	-
Fort Bragg	0.0%	0.0%	0.0%	0.3%	0.3%	0.3%	0.7%	0.7%	0.7%	-	-	-
South of Pt. Arena	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.3%	0.3%	0.3%	-	-	-
Troll:										1.2%	1.3%	1.2%
Cape Falcon to Humbug Mt.	0.4%	0.5%	0.4%	0.6%	0.6%	0.5%	0.1%	0.1%	0.1%	-	-	-
Humbug Mt. to OR/CA border (KMZ)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-	-
OR/CA border to Horse Mt. (KMZ)	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.6%	0.0%	-	-	-
Fort Bragg	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	-	-	-
South of Pt. Arena	0.0%	0.0%	0.0%	0.3%	0.4%	0.4%	0.2%	0.2%	0.3%	-	-	-
BUOY 10	2.3%	2.5%	2.8%	0.1%	0.2%	0.2%	0.0%	0.0%	0.0%			
ESTUARY/FRESHWATER	NA	NA	NA	1.4%	1.4%	1.4%	NA	NA	NA	8.1%	8.4%	9.2%
<b>TOTAL<sup>a/</sup></b>	<b>13.0%</b>	<b>10.1%</b>	<b>6.1%</b>	<b>12.1%</b>	<b>11.4%</b>	<b>10.5%</b>	<b>3.2%</b>	<b>3.5%</b>	<b>2.7%</b>	<b>36.5%</b>	<b>34.6%</b>	<b>28.5%</b>

a/ Totals do not include Buoy 10 and estuary/freshwater for LCN and RK coho; estuary/freshwater catch is included in the total for OCN. For LCR Tule Chinook, includes projected impacts of inriver fisheries that have not yet been shaped. Bolded values identify ocean exploitation rates that, when combined with freshwater harvest rates, would exceed the total allowable exploitation rate.



EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 8. Projected coho mark rates for 2020 fisheries under base period fishing patterns (percent marked).

Area	Fishery	June	July	August	Sept
Canada					
Johnstone Strait	Recreational	--	41%	39%	--
West Coast Vancouver Island	Recreational	56%	50%	46%	47%
North Georgia Strait	Recreational	57%	60%	59%	55%
South Georgia Strait	Recreational	29%	62%	47%	61%
Juan de Fuca Strait	Recreational	54%	54%	55%	52%
Johnstone Strait	Troll	65%	58%	48%	54%
NW Vancouver Island	Troll	54%	45%	46%	23%
SW Vancouver Island	Troll	58%	54%	54%	53%
Georgia Strait	Troll	64%	61%	62%	54%
Puget Sound					
Strait of Juan de Fuca (Area 5)	Recreational	55%	55%	55%	54%
Strait of Juan de Fuca (Area 6)	Recreational	55%	56%	56%	53%
San Juan Island (Area 7)	Recreational	57%	64%	57%	43%
North Puget Sound (Areas 6 & 7A)	Net	--	63%	63%	46%
Council Area					
Neah Bay (Area 4/4B)	Recreational	50%	56%	54%	56%
LaPush (Area 3)	Recreational	53%	56%	57%	55%
Westport (Area 2)	Recreational	57%	57%	56%	52%
Columbia River (Area 1)	Recreational	60%	59%	58%	58%
Tillamook	Recreational	55%	53%	48%	33%
Newport	Recreational	52%	49%	46%	34%
Coos Bay	Recreational	41%	39%	28%	16%
Brookings	Recreational	35%	25%	23%	7%
Neah Bay (Area 4/4B)	Troll	55%	56%	54%	51%
LaPush (Area 3)	Troll	56%	57%	54%	54%
Westport (Area 2)	Troll	53%	55%	55%	57%
Columbia River (Area 1)	Troll	57%	57%	56%	57%
Tillamook	Troll	55%	53%	51%	50%
Newport	Troll	52%	51%	46%	44%
Coos Bay	Troll	42%	39%	34%	23%
Brookings	Troll	31%	34%	36%	49%
Columbia River					
Buoy 10	Recreational	--	--	--	61%

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 9a. Preliminary projected exvessel value under Council-adopted 2020 non-Indian commercial troll regulatory Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (QTA).

Management Area	Alternative	Exvessel Value (thousands of dollars) <sup>a/</sup>				
		2020 Projected <sup>b/</sup>	2019 Actual	Percent Change from 2019	2015-2019 Average	Percent Change From 2015-2019 Average
North of Cape Falcon	I	2,475	1,941	+27%	2,825	-12%
	II	1,862		-4%		-34%
	III	0		-100%		-100%
Cape Falcon to Humbug Mt.	I	3,235	1,890	+71%	3,337	-3%
	II	3,262		+73%		-2%
	III	2,511		+33%		-25%
Humbug Mt. to OR/CA Border	I	117	143	-18%	199	-41%
	II	81		-43%		-59%
	III	43		-70%		-78%
OR/CA Border to Horse Mt.	I	0	314	-100%	212	-100%
	II	201		-36%		-5%
	III	0		-100%		-100%
Horse Mt. to Pt. Arena	I	1,217	646	+88%	1,592	-24%
	II	69		-89%		-96%
	III	69		-89%		-96%
Pt. Arena to Pigeon Pt.	I	5,213	9,952	-48%	4,652	+12%
	II	5,988		-40%		+29%
	III	4,318		-57%		-7%
South of Pigeon Pt.	I	2,555	6,344	-60%	2,583	-1%
	II	2,906		-54%		+12%
	III	4,347		-31%		+68%
Total South of Cape Falcon	I	12,336	19,288	-36%	12,576	-2%
	II	12,507		-35%		-1%
	III	11,288		-41%		-10%
West Coast Total	I	14,811	21,229	-30%	15,400	-4%
	II	14,369		-32%		-7%
	III	11,288		-47%		-27%

a/ Values are inflation-adjusted to 2019 dollars. Exvessel values are not comparable to the income impacts shown in Table 10a.

b/ Projections are based on expected catches in the Council management area and estimated 2019 average weights and exvessel prices.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 9b. Preliminary projected exvessel value under Council-adopted 2020 non-Indian commercial troll regulatory Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (MT).

Management Area	Alternative	Exvessel Value (thousands of dollars) <sup>a/</sup>				
		2020 Projected <sup>b/</sup>	2019 Actual	Percent Change from 2019	2015-2019 Average	Percent Change From 2015-2019 Average
North of Cape Falcon	I	2,475	1,941	+27%	2,825	-12%
	II	1,862		-4%		-34%
	III	0		-100%		-100%
Cape Falcon to Humbug Mt.	I	3,235	1,890	+71%	3,337	-3%
	II	3,262		+73%		-2%
	III	2,511		+33%		-25%
Humbug Mt. to OR/CA Border	I	117	143	-18%	199	-41%
	II	81		-43%		-59%
	III	43		-70%		-78%
OR/CA Border to Horse Mt.	I	0	314	-100%	212	-100%
	II	201		-36%		-5%
	III	0		-100%		-100%
Horse Mt. to Pt. Arena	I	1,217	646	+88%	1,592	-24%
	II	69		-89%		-96%
	III	69		-89%		-96%
Pt. Arena to Pigeon Pt.	I	5,213	9,952	-48%	4,652	+12%
	II	5,988		-40%		+29%
	III	4,318		-57%		-7%
South of Pigeon Pt.	I	2,555	6,344	-60%	2,583	-1%
	II	2,906		-54%		+12%
	III	4,347		-31%		+68%
Total South of Cape Falcon	I	12,336	19,288	-36%	12,576	-2%
	II	12,507		-35%		-1%
	III	11,288		-41%		-10%
West Coast Total	I	14,811	21,229	-30%	15,400	-4%
	II	14,369		-32%		-7%
	III	11,288		-47%		-27%

a/ Values are inflation-adjusted to 2019 dollars. Exvessel values are not comparable to the income impacts shown in Table 10b.

b/ Projections are based on expected catches in the Council management area and estimated 2019 average weights and exvessel prices.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 10a. Preliminary projected angler trips and coastal community income impacts generated under Council-adopted 2020 recreational ocean salmon fishery regulatory Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (QTA).

Management Area	Alternative	Angler Trips (thousands)			Community Income Impacts (thousands of dollars) <sup>a/</sup>			Percent Change in Income Impacts	
		Estimates Based on the Options	2019 Actual	2015-2019 Avg.	Estimates Based on the Options	2019 Actual	2015-2019 Avg.	Compared to 2019	Compared to 2015-2019 Avg.
North of Cape Falcon <sup>b/</sup>	I	33.2	80.4	71.2	4,474	10,823	10,127	-59%	-56%
	II	24.9			3,360			-69%	-67%
	III	0.0			0			-100%	-100%
Cape Falcon to Humbug Mt.	I	53.2	75.2	47.0	3,941	5,569	3,457	-29%	+14%
	II	54.8			4,057			-27%	+17%
	III	60.5			4,480			-20%	+30%
Humbug Mt. to OR/CA Border	I	6.0	4.4	5.3	605	271	326	+123%	+86%
	II	3.6			366			+35%	+12%
	III	1.2			123			-55%	-62%
OR/CA Border to Horse Mt.	I	9.9	7.7	6.6	1,009	954	805	+6%	+25%
	II	9.2			930			-3%	+15%
	III	3.7			374			-61%	-54%
Horse Mt. to Pt. Arena	I	18.0	7.6	8.7	3,042	1,284	1,396	+137%	+118%
	II	18.0			3,042			+137%	+118%
	III	18.0			3,042			+137%	+118%
Pt. Arena to Pigeon Pt.	I	65.1	58.1	53.5	13,406	14,113	12,874	-5%	+4%
	II	65.1			13,396			-5%	+4%
	III	61.6			12,680			-10%	-2%
South of Pigeon Pt.	I	34.2	30.3	16.5	7,043	4,078	2,189	+73%	+222%
	II	34.1			7,010			+72%	+220%
	III	33.8			6,956			+71%	+218%
Total South of Cape Falcon	I	186.5	183.3	137.5	29,047	26,269	21,047	+11%	+38%
	II	184.7			28,801			+10%	+37%
	III	178.8			27,655			+5%	+31%
West Coast Total	I	219.7	263.6	208.7	33,520	37,092	31,174	-10%	+8%
	II	209.7			32,161			-13%	+3%
	III	178.8			27,655			-25%	-11%

a/ Income impacts are not comparable to the exvessel values shown in Table 9a. All dollar values are expressed in inflation-adjusted 2019 dollars.

b/ Does not include Buoy 10 fishery.

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 10b. Preliminary projected angler trips and coastal community income impacts generated under Council-adopted 2020 recreational ocean salmon fishery regulatory Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (MT).

Management Area	Alternative	Angler Trips (thousands)			Community Income Impacts (thousands of dollars) <sup>a/</sup>			Percent Change in Income Impacts	
		Estimates Based on the Options	2019 Actual	2015-2019 Avg.	Estimates Based on the Options	2019 Actual	2015-2019 Avg.	Compared to 2019	Compared to 2015-2019 Avg.
North of Cape Falcon <sup>b/</sup>	I	33.2	80.4	71.2	4,474	10,823	10,127	-59%	-56%
	II	24.9			3,360			-69%	-67%
	III	0.0			0			-100%	-100%
Cape Falcon to Humbug Mt.	I	53.2	75.2	47.0	3,941	5,569	3,457	-29%	+14%
	II	54.8			4,057			-27%	+17%
	III	60.5			4,480			-20%	+30%
Humbug Mt. to OR/CA Border	I	6.0	4.4	5.3	605	271	326	+123%	+86%
	II	3.6			366			+35%	+12%
	III	1.2			123			-55%	-62%
OR/CA Border to Horse Mt.	I	9.9	7.7	6.6	1,009	954	805	+6%	+25%
	II	9.2			930			-3%	+15%
	III	3.7			374			-61%	-54%
Horse Mt. to Pt. Arena	I	18.0	7.6	8.7	3,042	1,284	1,396	+137%	+118%
	II	18.0			3,042			+137%	+118%
	III	18.0			3,042			+137%	+118%
Pt. Arena to Pigeon Pt.	I	65.1	58.1	53.5	13,406	14,113	12,874	-5%	+4%
	II	65.1			13,396			-5%	+4%
	III	61.6			12,680			-10%	-2%
South of Pigeon Pt.	I	34.2	30.3	16.5	7,043	4,078	2,189	+73%	+222%
	II	34.1			7,010			+72%	+220%
	III	33.8			6,956			+71%	+218%
Total South of Cape Falcon	I	186.5	183.3	137.5	29,047	26,269	21,047	+11%	+38%
	II	184.7			28,801			+10%	+37%
	III	178.8			27,655			+5%	+31%
West Coast Total	I	219.7	263.6	208.7	33,520	37,092	31,174	-10%	+8%
	II	209.7			32,161			-13%	+3%
	III	178.8			27,655			-25%	-11%

a/ Income impacts are not comparable to the exvessel values shown in Table 9b. All dollar values are expressed in inflation-adjusted 2019 dollars.

b/ Does not include Buoy 10 fishery.

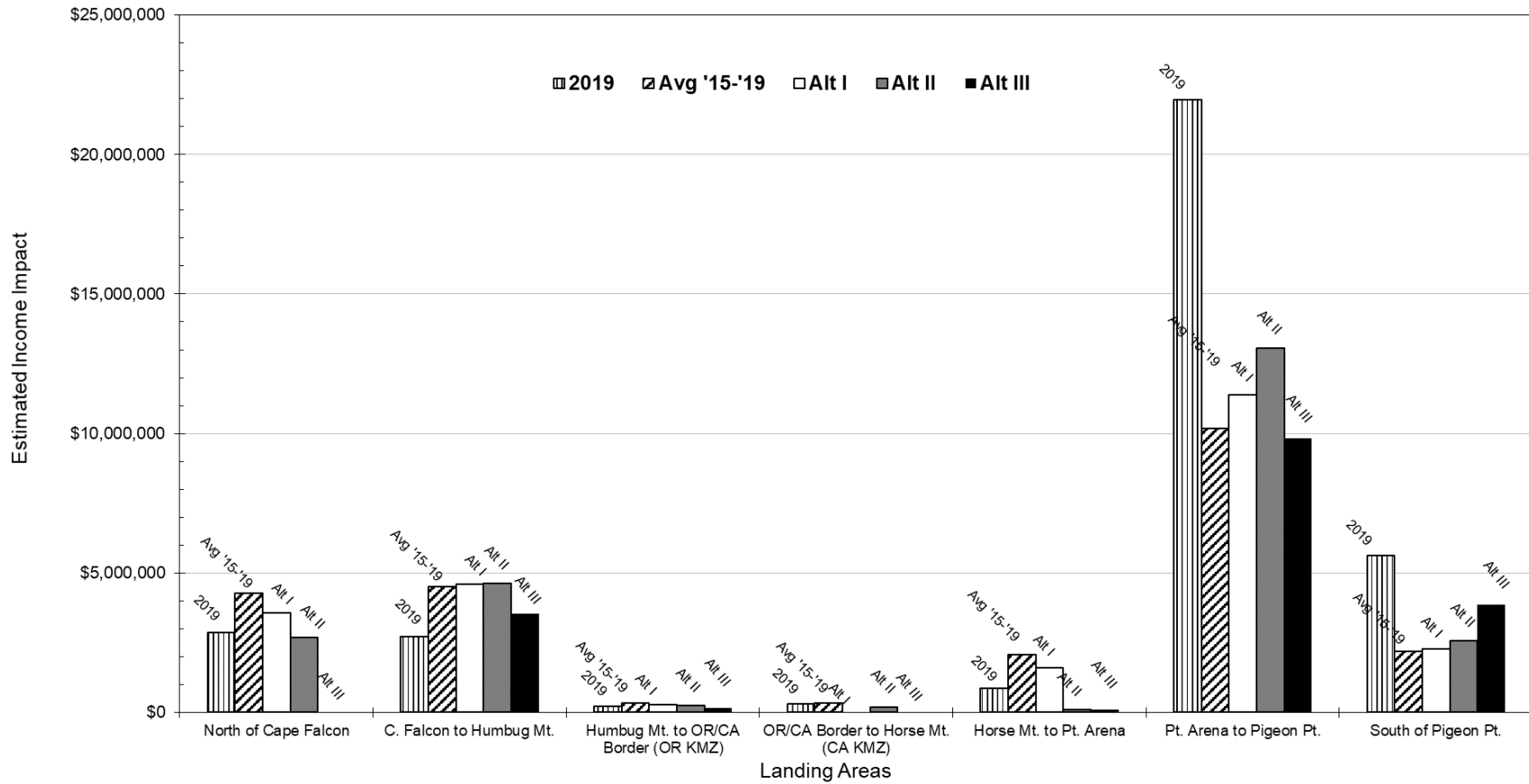


FIGURE 1a. Projected community income impacts associated with landings projected under the Council adopted 2020 commercial fishery Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (QTA).

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

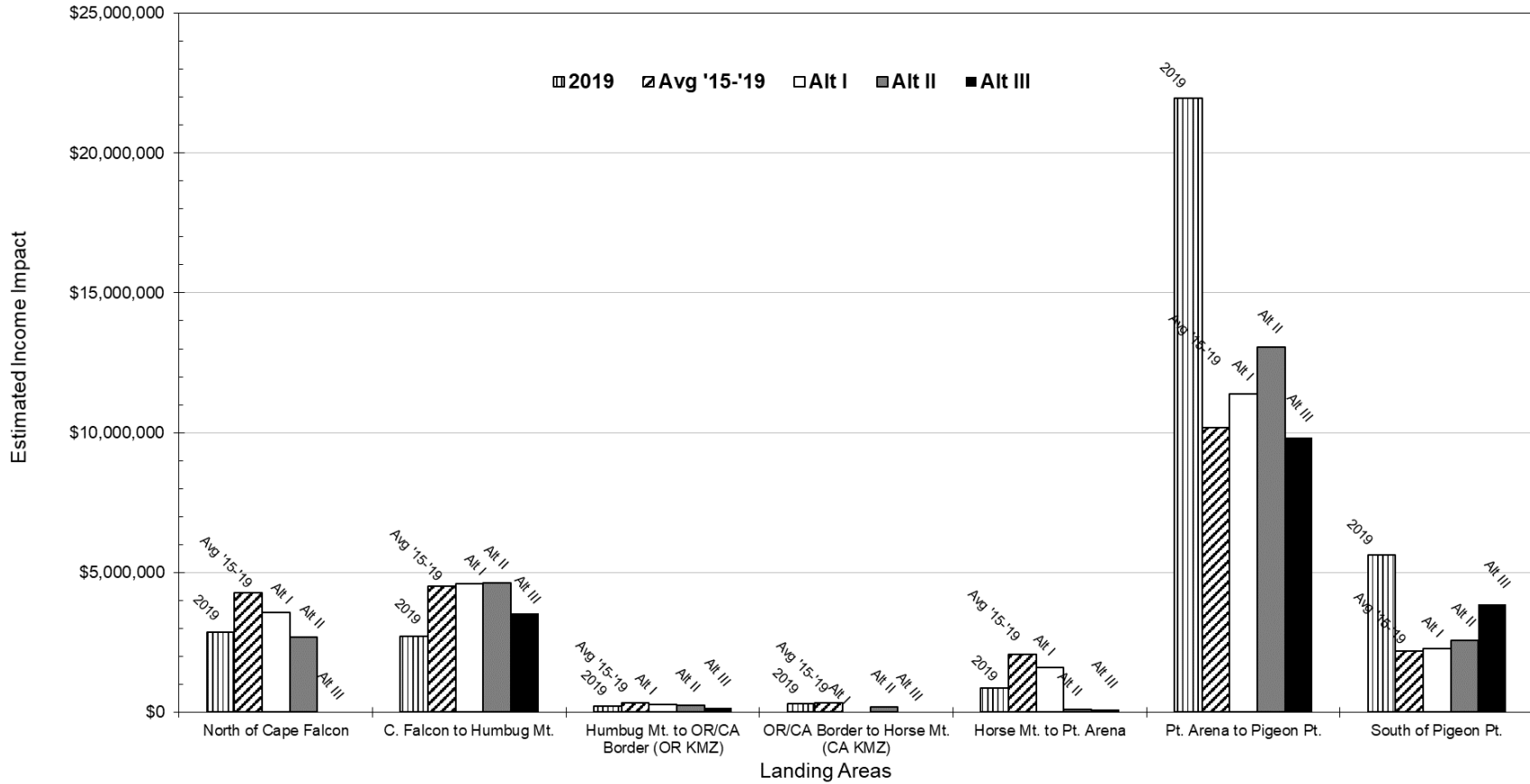


FIGURE 1b. Projected community income impacts associated with landings projected under the Council adopted 2020 commercial fishery Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (MT).

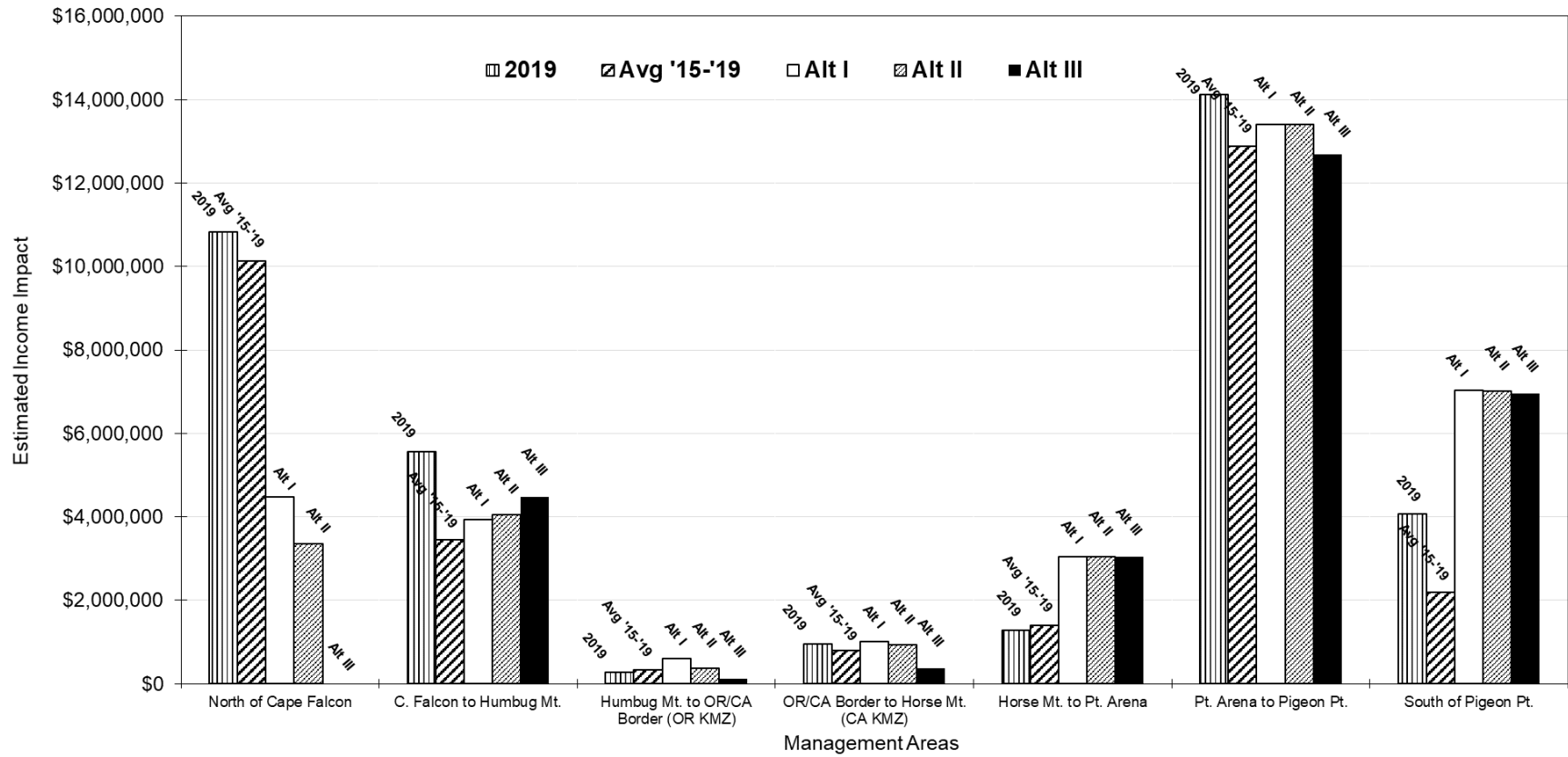


FIGURE 2a. Projected community income impacts associated with angler effort projected under the Council adopted 2020 recreational fishery Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (QTA).



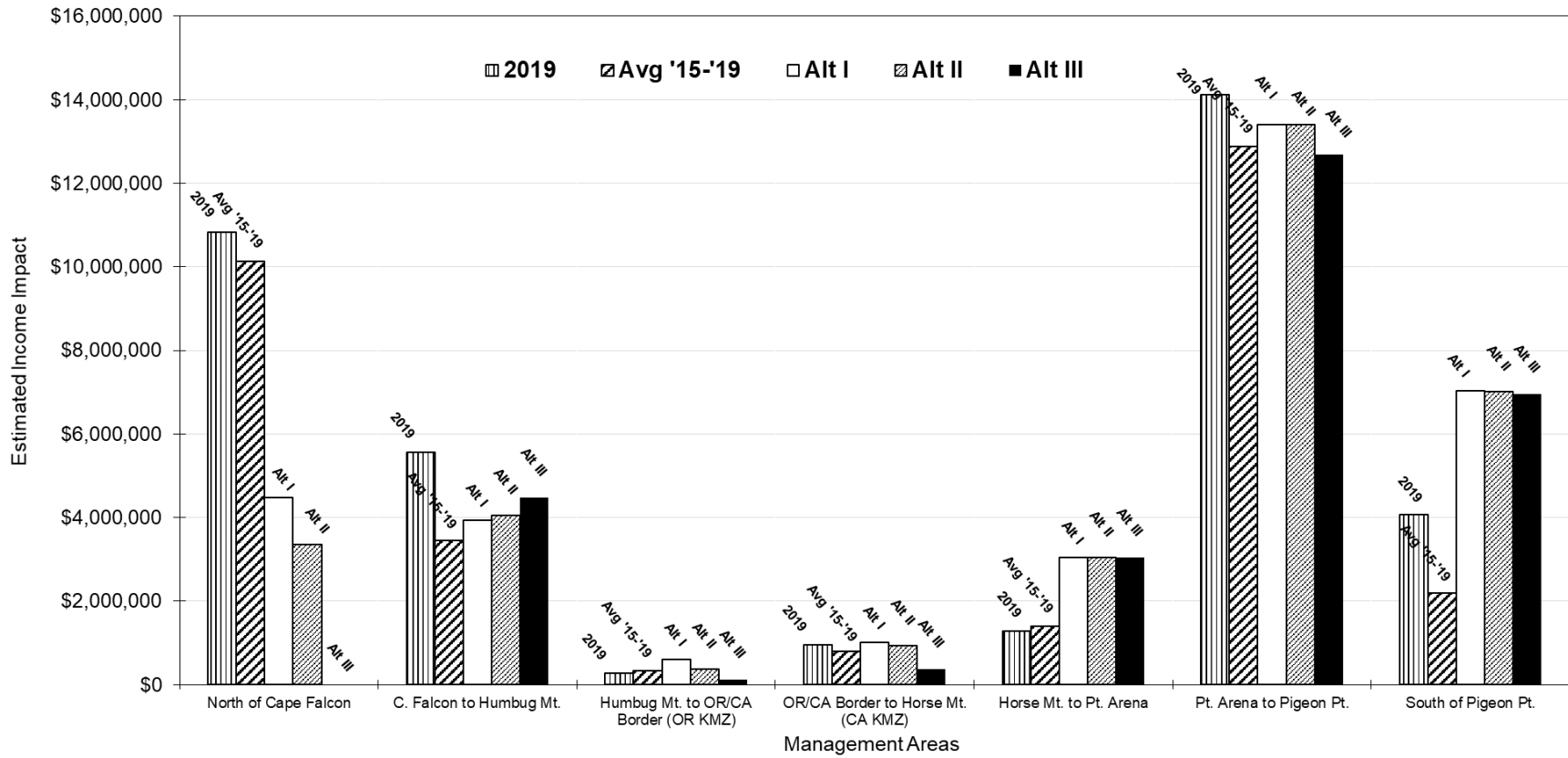


FIGURE 2b. Projected community income impacts associated with angler effort projected under the Council adopted 2020 recreational fishery Alternatives compared to 2019 and the 2015-2019 average (in inflation-adjusted dollars) (MT).

### APPENDIX A: PROJECTED IMPACTS FOR AGE-3 SACRAMENTO RIVER WINTER CHINOOK, ADULT KLAMATH RIVER FALL CHINOOK, AND ADULT SACRAMENTO RIVER FALL CHINOOK.

Table A-1. Sacramento River winter run Chinook age-3 ocean impact rate south of Pt. Arena by fishery and Alternative. The age-3 SRWC impact rate was projected for each of the proposed 2020 fishing season Alternatives. The impacts are displayed as a percent for each Alternative by fishery, port area, and month. Max rate: 20%.

Commercial										Recreational										
<b>Alternative I</b>					16.8 Total					<b>Alternative I</b>					Recreational					
Port Area	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Total	Port Area	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Total
SF	0.11	0.50	0.45	0.36	0.19	0.07			1.68	SF	0.22	0.89	1.30	1.90	0.69	0.11	0.20	0.00		5.32
MO	0.46	1.48	0.49	0.75					3.18	MO	1.25	0.61	1.07	2.48	1.10	0.08	0.00			6.59
Total	0.56	1.98	0.94	1.11	0.19	0.07	0.00	0.00	4.86	Total	1.47	1.50	2.37	4.38	1.79	0.18	0.20	0.00	0.00	11.90
<b>Alternative II</b>					17.7 Total					<b>Alternative II</b>					Recreational					
Port Area	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Total	Port Area	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Total
SF	0.11	0.64	0.38	0.63	0.19	0.07			2.02	SF	0.22	0.89	1.30	1.88	0.69	0.11	0.19			5.29
MO	0.43	2.18	0.42	0.77					3.80	MO	1.25	0.61	1.07	2.46	1.09	0.07				6.55
Total	0.54	2.82	0.80	1.40	0.19	0.07	0.00	0.00	5.82	Total	1.47	1.50	2.37	4.34	1.78	0.17	0.19	0.00	0.00	11.83
<b>Alternative III</b>					20.0 Total					<b>Alternative III</b>					Recreational					
Port Area	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Total	Port Area	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Total
SF	0.14	0.46		0.44	0.18	0.07			1.29	SF	0.22	0.20	0.79	1.91	0.68	0.10	0.18			4.08
MO	0.43	2.35	2.82	2.54					8.15	MO	1.25	0.61	1.08	2.49	1.08	0.02				6.53
Total	0.57	2.81	2.82	2.98	0.18	0.07	0.00	0.00	9.44	Total	1.47	0.81	1.87	4.40	1.76	0.12	0.18	0.00	0.00	10.61

SF Pt. Arena to Pigeon Pt. (San Francisco)  
 MO Pigeon Pt. to the U.S./Mexico Border (Monterey)

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

Table A-2. Klamath River fall Chinook ocean impacts in numbers of fish by fishery and Alternative.

Commercial											Recreational											
<b>Alternative I</b>											<b>Alternative I</b>											
<i>36,213 natural area spawners, 25.0% spawner reduction rate, 8.9% age-4 ocean harvest rate</i>																						
Port Area	Fall 2019		Summer 2020						Summer Total	Year Total	Port Area	Fall 2019			Summer 2020						Summer Total	Year Total
	Sep	Oct-Dec	Mar	Apr	May	Jun	Jul	Aug				Sep	Oct	Nov-Dec	Mar	Apr	May	Jun	Jul	Aug		
NO	60	0		32	90	40	89	354	605	665	NO	0	0		0	0	0	0	18	7	25	25
CO		0		94	166	191	363	1,147	1,961	1,961	CO	0	0	0	0	0	2	12	36	31	81	81
KO		0			40	74	50		164	164	KO		0				2	42	88		132	132
KC											KC							220	227		447	447
FB								1,202	1,202	1,202	FB	0	0	0	5	39	89	143	34		310	310
SF		0			322	773	1,116	425	2,636	2,636	SF	0	0			27	28	115	138	10	318	318
MO					167	112	65	2	346	346	MO				28	5	9	21	3		66	66
Total	60	0		126	785	1,190	1,683	3,131	6,915	6,975	Total	0	0	0	0	60	76	487	671	86	1,380	1,380
<b>Alternative II</b>											<b>Alternative II</b>											
<i>36,208 natural area spawners, 25.0% spawner reduction rate, 9.3% age-4 ocean harvest rate</i>																						
Port Area	Fall 2019		Summer 2020						Summer Total	Year Total	Port Area	Fall 2019			Summer 2020						Summer Total	Year Total
	Sep	Oct-Dec	Mar	Apr	May	Jun	Jul	Aug				Sep	Oct	Nov-Dec	Mar	Apr	May	Jun	Jul	Aug		
NO	60	0		32	90	40	88	367	617	677	NO	0	0		0	0	0	0	18	10	28	28
CO		0		94	166	191	361	1,190	2,002	2,002	CO	0	0	0	0	0	2	12	36	32	82	82
KO		0			42	53			95	95	KO		0				2	42	25		69	69
KC						362	200	298	860	860	KC							176	226		402	402
FB											FB	0	0	0	5	39	89	142	34		309	309
SF		0			322	994	951	753	3,020	3,020	SF	0	0			27	28	115	138	10	318	318
MO					159	164	55	2	380	380	MO				28	5	9	21	3		66	66
Total	60	0		126	779	1,804	1,655	2,610	6,974	7,034	Total	0	0	0	0	60	76	444	606	89	1,275	1,275
<b>Alternative III</b>											<b>Alternative III</b>											
<i>40,714 natural area spawners, 15.7% spawner reduction rate, 6.1% age-4 ocean harvest rate</i>																						
Port Area	Fall 2019		Summer 2020						Summer Total	Year Total	Port Area	Fall 2019			Summer 2020						Summer Total	Year Total
	Sep	Oct-Dec	Mar	Apr	May	Jun	Jul	Aug				Sep	Oct	Nov-Dec	Mar	Apr	May	Jun	Jul	Aug		
NO	60	0			90	40	89	459	678	738	NO	0	0		0	0	0	0	18	19	37	37
CO		0			166	192	365	290	1,013	1,013	CO	0	0	0	0	0	2	12	36	37	87	87
KO		0			42				42	42	KO		0					15	14		29	29
KC											KC								140		140	140
FB											FB	0	0	0	5	39	89	143	35		311	311
SF		0			411	700		548	1,659	1,659	SF	0	0			27	13	113	139	10	302	302
MO					160	176	372	7	715	715	MO				28	5	9	21	3		66	66
Total	60	0			870	1,108	825	1,305	4,108	4,168	Total	0	0	0	0	60	60	238	511	103	972	972

NO Cape Falcon to S. End of Heceta Bank      FB Horse Mt. to Pt. Arena (Fort Bragg)  
 CO S. End of Heceta Bank to Humbug Mt.      SF Pt. Arena to Pigeon Pt. (San Francisco)  
 KO Humbug Mt. to OR/CA Border (Oregon KMZ)      MO Pigeon Pt. to U.S./Mexico Border (Monterey)  
 KC OR/CA Border to Horse Mt. (California KMZ)

EA part 2 (Preseason Report II) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

2020 Preseason Report II

84

Table A-3. Sacramento River fall Chinook ocean impacts in numbers of fish by fishery and Alternative.

Commercial											Recreational											
Alternative I 204,541 Total											Alternative I											
Port Area	Fall 2019		Summer 2020						Summer Total	Year Total	Port Area	Fall 2019			Summer 2020						Summer Total	Year Total
	Sep	Oct-Dec	Mar	Apr	May	Jun	Jul	Aug			Sep	Oct	Nov-Dec	Mar	Apr	May	Jun	Jul	Aug			
NO	187	0	1,340	3,361	2,265	3,866	4,865	15,697	15,884	NO	39	0		8	5	9	38	329	68	457	496	
CO	0	0	1,992	2,805	3,096	1,637	2,815	12,345	12,345	CO	0	0		2	3	11	112	355	296	779	779	
KO				0	188	293	147		628	KO	0					101	198	360		659	659	
KC										KC	27						919	1,033		1,952	1,979	
FB								11,417	11,417	FB	76	0			187	633	1,158	2,408	867	5,253	5,329	
SF	4,929	561		17,165	20,760	18,241	10,317	66,483	71,973	SF	2,844	296		2,074	3,804	6,150	11,973	6,604	30,605	33,745	33,745	
MO				18,617	13,579	3,466	738	36,400	36,400	MO				6,262	1,702	1,951	2,538	454	12,907	12,907	12,907	
<b>Total</b>	<b>5,116</b>	<b>561</b>	<b>3,332</b>	<b>42,137</b>	<b>39,994</b>	<b>27,357</b>	<b>30,151</b>	<b>142,971</b>	<b>148,648</b>	<b>Total</b>	<b>2,986</b>	<b>296</b>		<b>10</b>	<b>8,531</b>	<b>6,259</b>	<b>10,527</b>	<b>18,995</b>	<b>8,289</b>	<b>52,611</b>	<b>55,893</b>	
Alternative II 211,257 Total											Alternative II											
Port Area	Fall 2019		Summer 2020						Summer Total	Year Total	Port Area	Fall 2019			Summer 2020						Summer Total	Year Total
	Sep	Oct-Dec	Mar	Apr	May	Jun	Jul	Aug			Sep	Oct	Nov-Dec	Mar	Apr	May	Jun	Jul	Aug			
NO	187	0	1,340	3,361	2,265	3,866	5,068	15,900	16,087	NO	39	0		8	5	9	38	329	90	479	518	
CO	0	0	1,992	2,805	3,096	1,637	2,932	12,462	12,462	CO	0	0		2	3	11	112	355	307	790	790	
KO					592	209			801	KO	0					101	198	105		404	404	
KC						543	750	333	1,626	KC	27						735	1,033		1,768	1,795	
FB										FB	76	0			187	633	1,158	2,408	867	5,253	5,329	
SF	4,929	561		17,165	26,691	15,635	18,359	77,850	83,340	SF	2,844	296		2,074	3,804	6,150	11,973	6,604	30,605	33,745	33,745	
MO				17,789	19,936	2,971	759	41,455	41,455	MO				6,262	1,702	1,951	2,538	454	12,907	12,907	12,907	
<b>Total</b>	<b>5,116</b>	<b>561</b>	<b>3,332</b>	<b>41,712</b>	<b>52,740</b>	<b>24,859</b>	<b>27,451</b>	<b>150,094</b>	<b>155,771</b>	<b>Total</b>	<b>2,986</b>	<b>296</b>		<b>10</b>	<b>8,531</b>	<b>6,259</b>	<b>10,343</b>	<b>18,739</b>	<b>8,322</b>	<b>52,204</b>	<b>55,486</b>	
Alternative III 197,800 Total											Alternative III											
Port Area	Fall 2019		Summer 2020						Summer Total	Year Total	Port Area	Fall 2019			Summer 2020						Summer Total	Year Total
	Sep	Oct-Dec	Mar	Apr	May	Jun	Jul	Aug			Sep	Oct	Nov-Dec	Mar	Apr	May	Jun	Jul	Aug			
NO	187	0		3,361	2,265	3,866	6,214	15,706	15,893	NO	39	0		8	5	9	38	329	169	558	597	
CO	0	0		2,805	3,096	1,637	704	8,242	8,242	CO	0	0		2	3	11	112	355	347	830	830	
KO					592				592	KO	0						73	58		131	131	
KC										KC	27							633		633	660	
FB										FB	76	0			187	633	1,158	2,408	867	5,253	5,329	
SF	4,929	561		21,871	18,782		13,114	53,767	59,257	SF	2,844	296		2,074	1,963	6,150	11,973	6,604	28,764	31,904	31,904	
MO				17,789	21,367	19,769	2,535	61,460	61,460	MO				6,262	1,702	1,951	2,538	454	12,907	12,907	12,907	
<b>Total</b>	<b>5,116</b>	<b>561</b>		<b>46,418</b>	<b>45,511</b>	<b>25,271</b>	<b>22,566</b>	<b>139,766</b>	<b>145,443</b>	<b>Total</b>	<b>2,986</b>	<b>296</b>		<b>10</b>	<b>8,531</b>	<b>4,318</b>	<b>9,482</b>	<b>18,293</b>	<b>8,441</b>	<b>49,075</b>	<b>52,357</b>	

NO Cape Falcon to S. End of Heceta Bank      FB Horse Mt. to Pt. Arena (Fort Bragg)  
 CO S. End of Heceta Bank to Humbug Mt.      SF Pt. Arena to Pigeon Pt. (San Francisco)  
 KO Humbug Mt. to OR/CA Border (Oregon KMZ)      MO Pigeon Pt. to U.S./Mexico Border (Monterey)  
 KC OR/CA Border to Horse Mt. (California KMZ)

Appendix A

## APPENDIX B: NEPA AND ESA ANALYSES INCORPORATED BY REFERENCE

Several documents supporting the analyses of effects to the environment from the Alternatives have been incorporated by reference. Those documents are described and passages relevant to analyses contained in this EA are excerpted below.

### NMFS 2003: West Coast Salmon Harvest Programmatic EIS

This document evaluates how NMFS reviews annual salmon fishery plans in three jurisdictions, the North Pacific Fishery Management Council for Southeast Alaska; the Pacific Fishery Management Council for the Washington, Oregon, and California coast; and *U.S. v. Oregon* for the Columbia River Basin. In general, NMFS seeks to implement fisheries that are consistent with a variety of statutory and legal obligations related to resource conservation, socioeconomic benefits associated with resource use, and treaty trust obligations. Fishery plans are developed annually within the context of framework plans to meet the year-specific circumstances related to the status of stocks affected by the fisheries. This final PEIS evaluates different ways to balance these objectives and different strategies that can be used that may provide better solutions for meeting the obligations and objectives of the respective framework plans. The Alternatives considered in this final PEIS are programmatic in nature and are designed to provide an overview of fishery management methods and strategies that can be implemented as part of the annual planning processes.

This document includes the following statements relative to Council area salmon fisheries:

*While the levels of salmon catch fluctuate from year to year, the amount of groundfish taken as incidental catch is very low so that changes in the salmon fishery do not substantially alter the projections for harvest-related mortality in the groundfish fishery.*

*Other Council managed species such as halibut, highly migratory species (draft FMP), and coastal pelagic species are also landed jointly with salmon. For all of these stocks, fish caught on the same trip with salmon are documented. Data on the commercial segment of these fisheries show the co-occurrence rates for salmon and these other Council-managed species is low, as well as for non-Council-managed species. Changes in the salmon fishery are not expected to have a substantial impact on the directed fisheries for the non-salmon stocks.*

*The commercial troll fishery off the coasts of Washington, Oregon, and California is classified as a Category III fishery, indicating a remote or no likelihood of known incidental mortality or serious injury of marine mammals. In general, recreational fishery uses the same gear and techniques as the commercial fisheries and can be assumed to have similar rates of encounters and results.*

*After excluding ESA listed marine mammals, only three species of marine mammals are defined as strategic under MMPA within the coverage area: short-finned pilot whales, mesoplodont beaked whales, and Minke whales (Barlow et al. 1997). This strategic classification denotes that projected human-caused mortality exceeds the species' annual potential biological removal estimate under MMPA standards. As with ESA listed marine mammal species, there is no record of these three species being affected by the ocean salmon fisheries managed by the Council.*

*Steller sea lion interaction with the Pacific Coast salmon fisheries is rare and NMFS has determined mortality and serious injury incidental to commercial fishing operations would have a negligible effect.<sup>1</sup> Available information indicates that Pacific Coast salmon fisheries are not likely*

---

<sup>1</sup> The eastern DPS of Steller sea lions was delisted under the ESA on November 4, 2013 (78 FR 66140).

*to jeopardize the existence of the Guadalupe fur seal. No sea turtles have been reported taken by the ocean salmon fisheries off Washington, Oregon, or California. NMFS has determined that commercial fishing by Pacific Coast fisheries would pose a negligible threat to the Pacific species.*

*Short-term effects on seabirds are minimal, if any. The types of vessels used in the fishery and the conduct of the vessels are not conducive to collisions or the introduction of rats other non-indigenous species to seabird breeding colonies. Anecdotal information suggests accidental bird encounters are a rare event for commercial and recreational ocean salmon fisheries (Council 1999a). Long-term effects on seabirds from the ocean salmon fisheries are also minimal.*

*The removal of adult salmon by the ocean fisheries is not considered to significantly affect the lower trophic levels or the overall marine ecosystem because salmon are not the only or primary predator in the marine environment.*

### **PFMC 2006: EA for 2006 Ocean Salmon Management Measures**

The 2006 regulations EA analyzes the environmental and socioeconomic impacts of proposed management measures for ocean salmon fisheries occurring off the coasts of Washington, Oregon, and California. The document evaluated the 2006 annual ocean salmon harvest management measures with respect to compliance with the terms of the Salmon FMP, obligations under the Pacific Salmon Treaty (PST), and the level of protection required by all consultation standards for salmon species listed under the ESA. The range of alternatives analyzed in the 2006 Regulations EA included the effects of three levels of *de minimis* fishing strategies on KRFC when the stock was projected to fall below the 35,000 natural spawner floor for the third consecutive year. The escapement floor for naturally spawning KRFC was projected to not be attained even with complete closure of ocean salmon fisheries between Cape Falcon, Oregon, and Point Sur, California; therefore, the management measures required implementation by emergency rule. The NMFS-recommended 2006 salmon fishery management measures did not completely close fisheries between Cape Falcon and Point Sur, but limited fisheries to provide a minimum of 21,100 natural spawning adult KRFC in 2006. The 2006 EA supported NMFS' Finding of No Significant Impacts (FONSI) for the 2006 ocean salmon regulations.

*Appendix A of Amendment 18 (EFH Appendix A) describes salmon EFH and fishing and non-fishing impacts to this habitat. It found no evidence of direct gear effects on this habitat from Council-managed salmon fisheries. ... Because EFH impacts are extensively described and analyzed in EFH Appendix A, and this analysis demonstrates the fishery has no significant impacts, EFH will not be considered further in this environmental assessment.*

*Fisheries management can affect safety if, for example, season openings make it more likely that fishermen will have to go out in bad weather because fishing opportunities are limited. The EA incorporated into Amendment 8 to the Salmon FMP analyzed alternatives to adjust management measures if unsafe weather affected fishery access. The range of management measures considered for the proposed action would be within the range described in that EA. Since these types of potential impacts have been previously analyzed and found not to be significant, they are not discussed in this EA.*

### **NMFS 2009: Biological Opinion on Ocean Fisheries Effects on Southern Resident Killer Whales**

This document constitutes the National Marine Fisheries Service's (NMFS) current biological opinion (Opinion) regarding the effects of proposed Pacific coast ocean salmon fisheries conducted under the Pacific Coast Salmon Fishery Management Plan (FMP) on the Southern Resident killer whale (*Orcinus orca*) distinct population segment. On April 12, 2019 NMFS reinitiated consultation under the Endangered

Species Act (ESA) to evaluate effects of the Pacific coast ocean salmon fisheries incorporating updated scientific information since its last consultation in 2009 (memorandum from Ryan Wulff, NMFS, to Chris Yates, NMFS, dated April 12, 2019). NMFS expects to have a new biological opinion in place by May 1, 2020. A new analytical approach, utilizing the best available science, (PFMC 2020c) developed by NMFS in conjunction with PFMC will be used to assess the ocean salmon fisheries managed under the FMP.

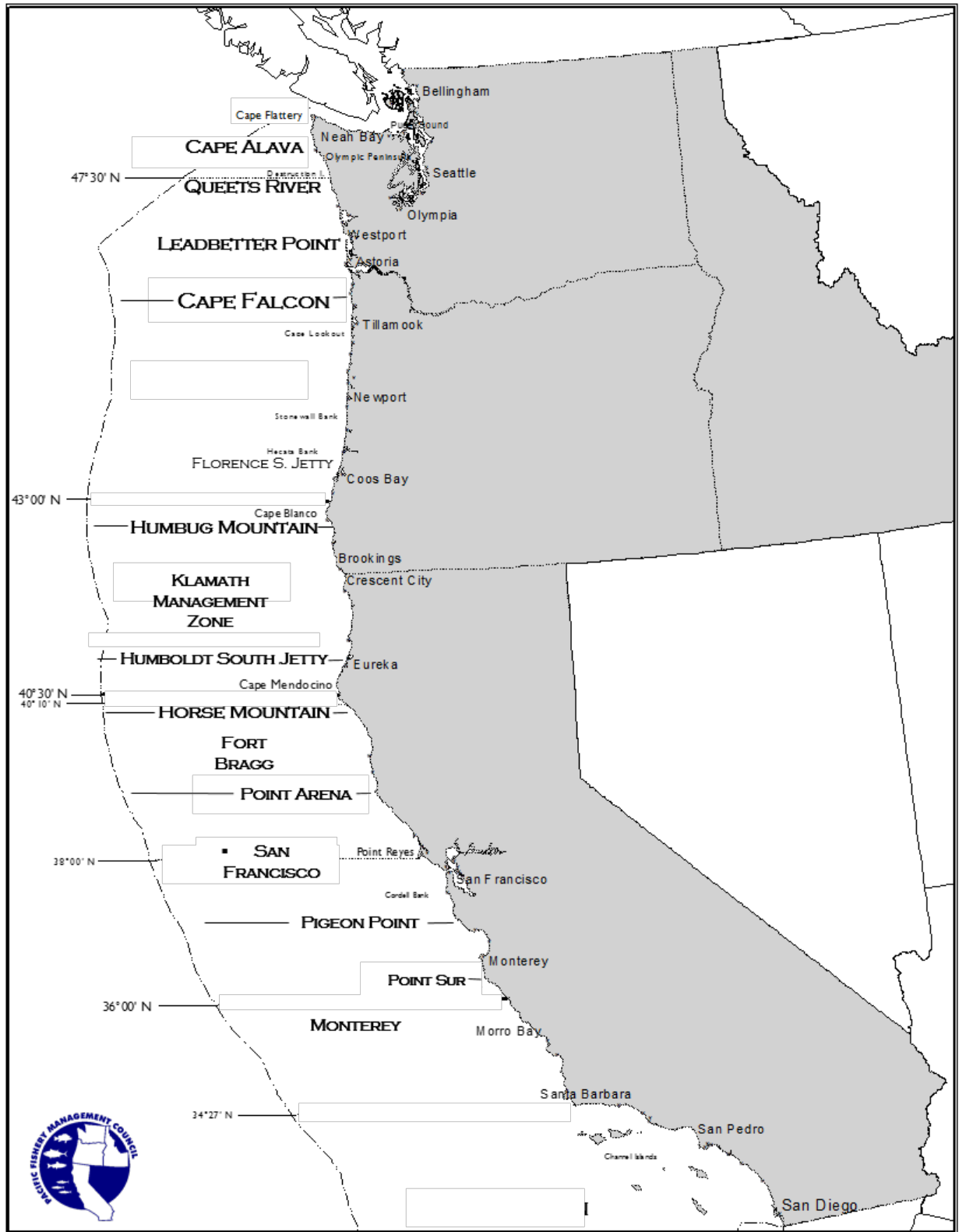


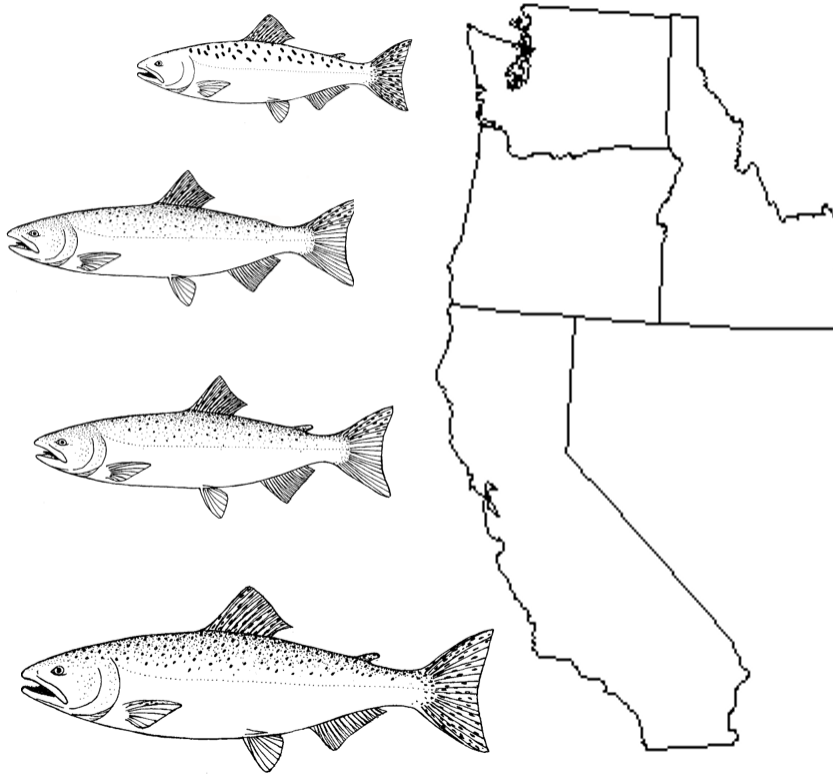
FIGURE 3. Map of Pacific West Coast with major salmon ports and management boundaries. This map is for reference only and is not intended for use in navigation or fishery regulation.



**FINAL  
ENVIRONMENTAL ASSESSMENT PART 3  
FOR  
2020 OCEAN SALMON FISHERY REGULATIONS**  
REGULATION IDENTIFIER NUMBER 0648-BJ48

**BASED ON**

**PRESEASON REPORT III  
COUNCIL ADOPTED MANAGEMENT MEASURES**



**Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, OR 97220-1384  
(503) 820-2280  
[www.pcouncil.org](http://www.pcouncil.org)**

**APRIL 2020**

# ACKNOWLEDGMENTS

---

## SALMON TECHNICAL TEAM

**DR. MICHAEL O'FARRELL, CHAIR**

National Marine Fisheries Service, Santa Cruz, California

**MR. JON CAREY, VICE CHAIR**

National Marine Fisheries Service, Lacey, Washington

**MS. WENDY BEEGHLEY**

Washington Department of Fish and Wildlife, Olympia, Washington

**MR. CRAIG FOSTER**

Oregon Department of Fish and Wildlife, Clackamas, Oregon

**DR. STEVE HAESEKER**

U.S. Fish and Wildlife Service, Vancouver, Washington

**MS. ASHTON HARP**

Northwest Indian Fisheries Commission, Forks, Washington

**DR. PETE M<sup>C</sup>HUGH (ALTERNATE FOR ALEX LETVIN)**

California Department of Fish and Wildlife, Santa Rosa, California

**MS. MINDY ROWSE**

National Marine Fisheries Service, Seattle, Washington

## PACIFIC FISHERY MANAGEMENT COUNCIL STAFF

**MS. ROBIN EHLKE**

**DR. JIM SEGER**

The Salmon Technical Team and the Council staff express their thanks for the expert assistance provided by Mr. Kyle Van de Graaf, Washington Department of Fish and Wildlife; Mr. Eric Schindler, Oregon Department of Fish and Wildlife; Ms. Grace Ghrist and Ms. Jennifer Simon, California Department of Fish and Wildlife; Dr. Ed Waters, economist on contract with the Pacific Fishery Management Council, and numerous other agency and tribal personnel in completing this report.

This document may be cited in the following manner:

Pacific Fishery Management Council. 2020. *Preseason Report III: Council Adopted Management Measures and Environmental Assessment Part 3 for 2020 Ocean Salmon Fishery Regulations: RIN 0648-BJ48*. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220-1384.



A report of the Pacific Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award Number FNA20NMF4410011.

## TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES.....	ii
LIST OF FIGURES.....	ii
LIST OF ACRONYMS AND ABBREVIATIONS.....	iii
1.0 INTRODUCTION .....	1
2.0 SELECTION OF FINAL MANAGEMENT MEASURES .....	1
2.1 Inseason Management.....	2
2.2 State Waters Fisheries.....	3
3.0 SALMON FISHERY MANAGEMENT PLAN REQUIREMENTS .....	3
4.0 SPECIES LISTED UNDER THE ENDANGERED SPECIES ACT .....	4
5.0 OBLIGATIONS UNDER THE PACIFIC SALMON TREATY .....	6
5.1 Chinook Salmon Management.....	6
5.2 Coho Salmon Management.....	7
6.0 CHINOOK SALMON MANAGEMENT .....	9
6.1 North of Cape Falcon.....	9
6.1.1 Objectives.....	9
6.1.2 Achievement of Objectives .....	9
6.2 South of Cape Falcon.....	9
6.2.1 Objectives.....	10
6.2.2 Achievement of Objectives .....	11
7.0 COHO SALMON MANAGEMENT .....	12
7.1 Objectives .....	12
7.2 Achievement of Objectives.....	12
8.0 PINK SALMON MANAGEMENT .....	13
9.0 IMPORTANT FEATURES OF THE ADOPTED MANAGEMENT MEASURES.....	13
9.1 Commercial.....	13
9.2 Recreational .....	14
9.3 Treaty Indian.....	15
10.0 SOCIOECONOMIC IMPACTS OF THE ADOPTED MANAGEMENT MEASURES .....	15
10.1 Economic Impacts .....	15
10.2 Community Impacts .....	17
10.3 Social Impacts .....	17
11.0 Environmental Effects of the Proposed Action.....	18

**LIST OF TABLES**

	<u>Page</u>
TABLE 1. 2020 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted.....	21
TABLE 2. 2020 Recreational management measures for non-Indian ocean salmon fisheries - Council adopted.....	29
TABLE 3. 2020 Treaty Indian ocean troll management measures for ocean salmon fisheries - Council adopted.....	35
TABLE 4. Chinook and coho harvest quotas and guidelines for 2020 ocean salmon fishery management measures - Council adopted.....	37
TABLE 5. Projected key stock escapements (thousands of fish) or management criteria for 2020 ocean salmon fishery management measures - Council adopted.....	38
TABLE 6. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management measures - Council adopted.....	42
TABLE 7. Expected coastwide lower Columbia Natural (LCN), Oregon coastal natural (OCN), and Rogue/Klamath (RK) coho, and Lower Columbia River (LCR) natural tule Chinook exploitation rates by fishery for 2020 ocean salmon fisheries - Council adopted.....	44
TABLE 8. 2020 projected coho mark rates for mark-selective fisheries under Council adopted management measures (percent marked).....	45
TABLE 9. Preliminary projected exvessel value by catch area under Council-adopted 2020 non-Indian commercial troll management measures compared with 2019 and the 2015-2019 average (inflation-adjusted 2019 dollars).....	46
TABLE 10. Preliminary projected angler trips and associated state-level personal income impacts under Council-adopted recreational ocean salmon management measures compared with 2019 and the 2015-2019 average (inflation-adjusted 2019 dollars).....	46
TABLE 11. Environmental effects of the Proposed Action relative to criteria and Alternatives analyzed in Preseason Reports I and II.....	47
TABLE 12. Stock status relative to overfished and overfishing criteria.....	49
APPENDIX A. Assessment of impacts to stocks of FMP or ESA concern arising from three potential delayed opening scenarios for the California ocean salmon recreational fishery.....	52

**LIST OF FIGURES**

	<u>Page</u>
FIGURE 1. 2020 non-Indian commercial salmon seasons – Council adopted.....	28
FIGURE 2. 2020 recreational salmon seasons – Council adopted.....	34
FIGURE 3. Projected coastal community personal income impacts associated with the 2020 commercial troll fishery under Council-adopted management measures compared to estimated 2019 and the 2015-2019 inflation-adjusted average (in 2019 dollars).....	50
FIGURE 4. Projected coastal community personal income impacts associated with the 2020 recreational ocean salmon fishery under Council-adopted management measures compared to estimated 2019 and the 2015-2019 inflation-adjusted average (in 2019 dollars).....	51
FIGURE 5 Map of Pacific West Coast with major salmon ports and management boundaries.....	51

## LIST OF ACRONYMS AND ABBREVIATIONS

AABM	Aggregate Abundance Based Management
ABC	Acceptable Biological Catch
ACL	Annual Catch Limit(s)
AI	Abundance Index
BO	biological opinion
CDFW	California Department of Fish and Wildlife
Council	Pacific Fishery Management Council
CPUE	catch per unit effort
CYER	Calendar year exploitation rate
EA	Environmental Assessment
EEZ	Economic Exclusive Zone
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FMP	fishery management plan
FONSI	finding of no significant impact
FRAM	Fishery Regulation Assessment Model
GSI	genetic stock identification
IPHC	International Pacific Halibut Commission
ISBM	Individual Stock Based Management
KMZ	Klamath Management Zone (Humbug Mountain to Horse Mountain)
KRFC	Klamath River fall Chinook
LCN	Lower Columbia Natural (wild Columbia River coho below Bonneville Dam)
LCR	Lower Columbia River (wild Col. River tule fall Chinook below Bonneville Dam)
LRH	Lower River Hatchery (hatchery Col. River tule fall Chinook below Bonneville Dam)
LRW	Lower River Wild (Columbia River bright fall wild Chinook below Bonneville Dam).
MSY	maximum sustainable yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
ODFW	Oregon Department of Fish and Wildlife
OCN	Oregon coastal natural (coho)
OFL	Overfishing Limit
OPI	Oregon Production Index
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
RK	Rogue/Klamath (hatchery coho)
SAS	Salmon Advisory Subpanel
SCH	Spring Creek Hatchery (Col. R. tule fall Chinook returning to Spring Creek Hatchery [above Bonneville Dam])
SEAK	Southeast Alaska
SONCC	Southern Oregon/Northern California Coast (coho ESU)
SRFC	Sacramento River fall Chinook
SRFI	Snake River fall (Chinook) index
SRW	Snake River wild fall Chinook
SRWC	Sacramento River winter Chinook
STT	Salmon Technical Team
SWO	State Waters Only (fisheries off Oregon south of Cape Falcon)
TAC	Total Allowable Catch
WCVI	West Coast Vancouver Island
WDFW	Washington Department of Fish and Wildlife

## 1.0 INTRODUCTION

This is the last in an annual series of four reports prepared by the Salmon Technical Team (STT) of the Pacific Fishery Management Council (Council). The reports document and help guide salmon ocean fishery management off the coasts of Washington, Oregon, and California. This report describes the Council's 2020 ocean salmon management measures adopted for submission to the U.S. Secretary of Commerce, and characterizes the expected impacts on ocean salmon fisheries and the stocks which support them.

This report also constitutes the third and final part of an Environmental Assessment (EA) to comply with National Environmental Policy Act (NEPA) requirements for the 2020 ocean salmon regulations and includes a description and analysis of a Proposed Action. An EA is used to determine whether an action being considered by a Federal agency has significant environmental impacts. The second part of the EA (Preseason Report II) presented a statement of the purpose and need, a description of the affected environment, a description of 2020 ocean salmon regulation alternatives being considered, and an analysis of the effects of those alternatives on the affected environment. The first part of the EA (Preseason Report I) included a description of the No-Action alternative and an analysis of the effects of the No-Action alternative on salmon stocks managed under the Pacific Coast Salmon Fishery Management Plan (FMP), which is one component of the affected environment. Along with the description and analysis of the Proposed Action in this report, these three parts of the EA will provide the necessary components to determine if a finding of no significant impact (FONSI) or Environmental Impact Statement (EIS) is warranted.

The Council's recommendations for the 2020 ocean salmon fishery regulations meet all objectives of the FMP (Section 3), including Annual Catch Limits (ACLs) set according to the FMP and described in Preseason Report I; the level of protection required by all consultation standards for salmon species listed under the Endangered Species Act (ESA) (Section 4), and; the obligations under the Pacific Salmon Treaty (PST) (Section 5).

Under the Council's recommended salmon fisheries, salmon stocks originating from Washington, Oregon, and California meet all of the applicable conservation objectives in the FMP.

Sacramento River fall Chinook, Klamath River fall Chinook, Queets coho, Strait of Juan de Fuca coho, and Snohomish coho salmon stocks were classified as overfished in 2018, and the Council adopted rebuilding plans for all five stocks in 2019. In 2020, all stocks except Snohomish coho remain overfished; Snohomish coho meet the criteria for not overfished-rebuilding status.

## 2.0 SELECTION OF FINAL MANAGEMENT MEASURES .

The following figures and tables describe the Council-adopted management measures covering the period from May 6, 2020 through May 15, 2021 unless modified inseason:

- Table 1 - Non-Indian commercial ocean salmon management measures;
- Figure 1 - Geographic outline of commercial troll (non-Indian) ocean salmon seasons;
- Table 2 - Recreational ocean salmon management measures;
- Figure 2 - Geographic outline of recreational ocean salmon seasons;
- Table 3 - Treaty Indian commercial ocean management measures; and
- Table 4 - Allowable catch quotas for Chinook and coho.

In addition, Tables 5, 6, and 7 provide information on the biological impacts and landing estimates for the Council's management recommendations. Table 8 displays the expected mark (healed adipose fin-clip) rate for coho encountered in Council adopted mark-selective fisheries. Tables 9 and 10, and Figures 3 and 4, provide information on the economic impacts of the proposed fisheries. Table 11 summarizes

environmental effects of the Proposed Action and Alternatives. The assessment of stock status with regard to overfished, overfishing, and approaching an overfished condition is described in Table 12.

The 2020 seasons are constrained primarily by: (1) Klamath River Fall Chinook south of Cape Falcon, (2) Oregon coastal natural coho north of the OR/CA border, and (3) and lower Columbia River natural tule Chinook, Puget Sound Chinook, lower Columbia River natural coho, and Washington coastal coho north of Cape Falcon.

Regulations and expected fishing patterns for the Treaty Indian ocean fisheries were developed by the Hoh, S'Klallam, Makah, Quileute, and Quinault tribes for their respective fisheries.

## 2.1 *Inseason Management*

Inseason changes are made to meet the preseason intent of the management measures described in this document, but must also meet the Council's FMP goals, especially in regard to conservation and allocation goals, Federally-recognized Indian fishing rights, consultation standards for ESA-listed salmon stocks, and obligations under the PST.

Inseason actions that are anticipated for the 2020-2021 management season include, but are not limited to, the following possibilities:

1. Adjustments in landing limits and days open for non-Indian commercial fisheries.
2. Changing the days or number of days of fishing allowed per calendar week for recreational fisheries.
3. Transfer of coho quotas among recreational port areas north of Cape Falcon.
4. Trading portions of Chinook and coho quotas between recreational and non-Indian commercial sectors north of Cape Falcon.
5. Routine openings and closings, and other management measures associated with quota management, including modifying open areas, bag limits, species retention limits, and mark-selective retention restrictions.
6. Transferring unused or exceeded quota to subsequent fisheries on an impact neutral, fishery equivalent basis.
7. Closing or postponing Oregon recreational and commercial fisheries scheduled to open March 15, 2021, if necessary to meet 2021 management objectives.
8. Closing or postponing California recreational fisheries scheduled to open April 3 or May 1, 2021, or commercial fisheries scheduled to open April 15, 2021, if necessary to meet 2021 management objectives.
9. Closing or postponing commercial fisheries north of Cape Falcon scheduled to open May 1, 2021, if necessary to meet 2021 management objectives.
10. Adjustments to incidental Pacific halibut catch regulations in commercial fisheries, including landing and possession ratios and landing and possession limits per trip.
11. Closing or postponing fisheries, or extending California Klamath Management Zone recreational fisheries due to federal (NMFS) or state actions relating to monitoring or access constraints stemming from the COVID-19 pandemic.

Inseason action will generally be accomplished through National Marine Fisheries Service (NMFS) sponsored conference calls attended by representatives of affected state and tribal management agencies, the Council, the Salmon Advisory Subpanel (SAS), and the STT. The Council may also make recommendations for inseason actions at any of its regularly scheduled meetings.



## 2.2 State Waters Fisheries

In addition to the seasons shown in Tables 1 and 2, the Oregon Department of Fish and Wildlife (ODFW) may permit fall fisheries for salmon in certain areas within state marine waters. Potential seasons off the Oregon coast typically include commercial and recreational fisheries at the mouths of the Chetco, Elk, and other rivers, although none are planned for 2020. Washington may also establish limited recreational salmon fisheries in state marine waters if additional impacts on critical coho and/or Chinook stocks can be accommodated within management constraints. California will not establish any additional state marine water salmon fisheries in 2020.

## 3.0 SALMON FISHERY MANAGEMENT PLAN REQUIREMENTS

The Council's FMP includes objectives for setting annual management measures to regulate ocean salmon fisheries between the U.S./Canada border and the U.S./Mexico border. The objectives include biological, administrative, and allocation requirements. In recommending final management measures, the Council attempts to meet all objectives in a fair and balanced manner, while maintaining established priorities.

Biological objectives for stocks originating in the three west coast states and impacted by Council area ocean fisheries are listed in Table 3-1 of the FMP. The objectives generally consist of meeting spawning escapement numbers associated with maximum sustainable yield ( $S_{MSY}$ ), overfishing limits (OFL), acceptable biological catch (ABC), and annual catch limits (ACL), or exploitation rate limits designed to support recovery of depressed stocks or to rebuild overfished stocks, while encompassing a long-term average harvest approximating MSY. Impacts on these stocks relative to the applicable objectives are described in Table 5.

Administrative objectives are requirements for meeting other applicable law outside of the FMP. These requirements include ESA consultation standards, international treaties, and tribal trust responsibilities. The FMP defers to NMFS consultation standards for salmon stocks listed under the ESA in regards to biological conservation objectives. Section 4.0 of this document provides greater detail on ESA-listed stocks, while impacts of the Council-adopted salmon management measures on ESA-listed stocks are included in Table 5.

The FMP requires compliance with relevant terms of the PST. Section 5.0 of this document provides greater detail on PST provisions and stocks, while impacts of the Council-adopted salmon management measures on those stocks are included in Table 5.

The FMP also requires compliance with treaty fishing rights as described in Court orders in the *U.S. v. Washington* (Puget Sound), *Hoh v. Baldrige* (Washington coast), and *U.S. v. Oregon* (Columbia River) cases, and the Solicitor General opinion (Klamath River) governing allocation and management of shared salmon resources. Much of the North of Falcon forum is dedicated to annual negotiations establishing allocation among the tribes, non-Indian fishing sectors, and ocean and inside interests. The results of these negotiations inform the Council's adoption of final management measure recommendations while meeting its biological, administrative, and allocation objectives.

The Columbia River treaty tribes establish periodic management agreements with the state comanagers and Federal agencies. These agreements are approved pursuant to provisions of *U.S. v. Oregon* procedures. Recent agreements have included an entitlement for the treaty tribes of 50 percent of the coho return destined for areas upstream from Bonneville Dam. Council area fisheries are shaped in order to meet this requirement in some years.

The Yurok and Hoopa Valley tribes are entitled to 50 percent of the total Klamath River fall Chinook (KRFC) harvest, which is calculated as a harvest of KRFC equal to that taken in all non-tribal fisheries.



The Council must account for all harvest impacts when assessing the achievement of KRFC conservation objectives.

In addition to the allocation objectives associated with sharing between Treaty Indian and non-Indian sectors, the Salmon FMP includes formulas for sharing Chinook and coho quotas north of Cape Falcon between commercial and recreational sectors, and among recreational port subareas, and for coho south of Cape Falcon between commercial and recreational sectors. The 2020 salmon management measures adopted by the Council meet all these allocation requirements.

#### 4.0 SPECIES LISTED UNDER THE ENDANGERED SPECIES ACT

Since 1989, NMFS listed 17 Evolutionarily Significant Units (ESUs) of salmon under the ESA:

Species	ESU	Status	Most Recent		Original Listing	
<b>Chinook</b>						
Chinook Salmon ( <i>O. tshawytscha</i> )	Sacramento River Winter	Endangered	83 FR 18233	4/26/2018	54 FR 32085	8/1/1989
	Snake River Fall	Threatened	76 FR 50448	8/15/2011	57 FR 14653	4/22/1992
	Snake River Spring/Summer	Threatened	76 FR 50448	8/15/2011	57 FR 14653	4/22/1992
	Puget Sound	Threatened	76 FR 50448	8/15/2011	64 FR 14308	3/24/1999
	Lower Columbia River	Threatened	76 FR 50448	8/15/2011	64 FR 14308	3/24/1999
	Upper Willamette River	Threatened	76 FR 50448	8/15/2011	64 FR 14308	3/24/1999
	Upper Columbia River Spring	Endangered	76 FR 50448	8/15/2011	64 FR 14308	3/24/1999
	Central Valley Spring	Threatened	76 FR 50447	8/15/2011	64 FR 50394	9/16/1999
	California Coastal	Threatened	76 FR 50447	8/15/2011	64 FR 50394	9/16/1999
<b>Chum</b>						
Chum Salmon ( <i>O. keta</i> )	Hood Canal Summer-Run	Threatened	76 FR 50448	8/15/2011	64 FR 14508	3/25/1999
	Columbia River	Threatened	76 FR 50448	8/15/2011	64 FR 14508	3/25/1999
<b>Coho</b>						
Coho Salmon ( <i>O. kisutch</i> )	Central California Coastal	Endangered	76 FR 50447	8/15/2011	61 FR 56138	10/31/1996
	S. Oregon/ N. California Coastal	Threatened	76 FR 50447	8/15/2011	62 FR 24588	5/6/1997
	Oregon Coastal	Threatened	76 FR 50448	8/15/2011	63 FR 42587	8/10/1998
	Lower Columbia River	Threatened	76 FR 50448	8/15/2011	70 FR 37160	6/28/2005
<b>Sockeye</b>						
Sockeye Salmon ( <i>O. nerka</i> )	Snake River	Endangered	76 FR 50448	8/15/2011	56 FR 58619	11/20/1991
	Ozette Lake	Threatened	76 FR 50448	8/15/2011	64 FR 14528	3/25/1999

As the listings have occurred, NMFS has initiated formal consultations and issued biological opinions (BOs) that consider the impacts resulting from implementation of the FMP, or from annual management measures, to listed salmonid species. NMFS has also reinitiated consultation on certain ESUs when new information has become available on the status of the stocks or on the impacts of the FMP on the stocks. The consultation standards referred to in this document include (1) reasonable and prudent alternatives, (2) conservation objectives for which NMFS conducted Section 7 consultations and arrived at a no-jeopardy conclusion, and (3) NMFS requirements under Section 4(d) determinations. A list of current BOs in effect, the species they apply to, and their duration follows:

<b>Date</b>	<b>Evolutionarily Significant Unit covered and effective period</b>
3/8/1996	Snake River spring/summer and fall Chinook and sockeye (until reinitiated)
4/28/1999	Oregon Coastal natural coho, Southern Oregon/ Northern California coastal coho, Central California coastal coho (until reinitiated)
4/28/2000	Central Valley spring Chinook (until reinitiated)
4/27/2001	Hood Canal summer chum 4(d) limit (until reinitiated)
4/30/2001	Upper Willamette Chinook, Upper Columbia spring Chinook, Lake Ozette sockeye, Columbia River chum, and 10 steelhead ESUs (until reinitiated)
4/30/2004	Puget Sound Chinook (until reinitiated)
6/13/2005	California coastal Chinook (until reinitiated)
4/26/2012	Lower Columbia River Chinook (until reinitiated)
4/9/2015	Lower Columbia River natural coho (until reinitiated)
4/26/2018	Sacramento River winter Chinook (until reinitiated)

Amendment 12 to the Salmon FMP added the generic category “species listed under the ESA” to the list of stocks in the salmon management unit and modified respective escapement goals to include “manage consistent with NMFS jeopardy standards or recovery plans to meet immediate conservation needs and long-term recovery of the species.” Amendment 14 specified those listed ESUs and clarified which stocks in the FMP management unit were representative of the ESUs.

In a letter received by the Council on February 28, 2020, NMFS provided guidance on protective measures for species listed under the ESA during the 2020 fishing season. The letter summarized the requirements of NMFS’ BOs on the effects of potential actions under the salmon FMP on listed salmon and provided the anticipated consultation standards of the BOs in preparation for the 2020 management season, as well as further guidance and recommendations for the 2020 management season. Additional guidance was provided during the April Council meeting.

The ESA consultation standards, exploitation rates, and other criteria in place for the 2020 management season are presented in Table 5. Some listed stocks are either rarely caught in Council area fisheries (e.g., spring Chinook from the upper Columbia River) or already receive sufficient protection from other salmon FMP and ESA standards (e.g., Central Valley spring Chinook). NMFS has determined that management actions designed to limit catch from these ESUs, beyond what will be provided by harvest constraints for other stocks, are not necessary.

Of the ESA-listed Chinook and coho, Council-managed fisheries have substantive impacts on Sacramento River winter Chinook (SRWC), Central Valley spring Chinook, California coastal Chinook, Snake River wild (SRW) fall Chinook, lower Columbia River (LCR) fall Chinook, and all of the coho stocks. Impacts to Puget Sound Chinook are relatively low in Council area ocean fisheries, but may be a constraining stock when structuring both ocean and inside fisheries during the North of Falcon process.

Additional listed salmonid ESUs found within the Council area, but not substantively impacted by Council managed fisheries, include:

<b>Chinook</b>	<b>Steelhead</b>
Snake River spring/summer (threatened)	Southern California (endangered)
Upper Willamette (threatened)	South-central California coast (threatened)
Puget Sound (threatened)	Upper Columbia River (endangered)
Upper Columbia River spring (endangered)	Middle Columbia River (threatened)
	Snake River Basin (threatened)
<b>Sockeye</b>	Puget Sound (threatened)
Snake River (endangered)	Central Valley, California (threatened)
Ozette Lake Sockeye (threatened)	Central California coast (threatened)
	Upper Willamette River (threatened)
<b>Chum</b>	Lower Columbia River (threatened)
Columbia River (threatened)	Northern California (threatened)
Hood Canal summer (threatened)	

## 5.0 OBLIGATIONS UNDER THE PACIFIC SALMON TREATY

In 1985 the PST was signed, setting long-term goals for the benefit of the shared salmon resources of the United States and Canada. The Pacific Salmon Commission (PSC) is the body formed by the governments of Canada and the United States to implement the PST.

### 5.1 Chinook Salmon Management

A new ten-year agreement under the PST was adopted by both the U.S. and Canada and implemented beginning with the 2019 fishing year. The new agreement includes reductions to catch ceilings for Southeast Alaska (SEAK) and West Coast Vancouver Island (WCVI) aggregate abundance based management (AABM) fisheries relative to the prior 2009 agreement. For SEAK, the reductions range from 1.5 percent in years of high abundance to 7.5 percent in years of low abundance. For WCVI, the reductions range from 2.4 percent in years of high abundance to 12.5 percent in years of low abundance. Additionally, beginning with the 2019 agreement, while catch ceilings will continue to be determined using the Abundance Index(AI) from the PSC Chinook Model for Northern British Columbia and WCVI AABM fisheries, the allowable catches for SEAK fisheries will be set using a catch-per-unit-effort (CPUE) estimate from the early winter power troll fishery (see Tables 1 and 2 in Chapter 3 of the 2019 Agreement for specifics).

Fisheries not subject to AABM regimes, including Council-area fisheries, are subject to a new set of individual stock based management (ISBM) obligations under the 2019 agreement. These provisions require the calendar year exploitation rate (CYER) by all U.S. fisheries south of the U.S./Canada border on specific indicator stocks to be below some level of the average 2009 – 2015 CYER if they do not achieve their management objectives (see Attachment I in Chapter 3 of the 2019 Agreement for specifics). Similar to previous ISBM obligations, these limits are taken into account during preseason planning processes, however, relative to meeting the provisions of the PST, the CYER limits are evaluated on a postseason basis only. Canadian fisheries that are not included in AABM complexes are managed under ISBM constraints, which, similar to U.S. ISBM fisheries, require the CYER by Canadian ISBM fisheries on specific indicator stocks to be below some level of the average 2009 – 2015 CYER if they do not achieve their management objectives. Expectations for Canadian and Alaskan fisheries harvest and stock abundance forecasts are incorporated into the Chinook Fishery Regulation Assessment Model (FRAM) to estimate total exploitation rate impacts from all marine fisheries (Table 5).

Key considerations for Canadian domestic fishery management for Chinook in 2020 include: (1) meeting domestic conservation obligations for WCVI, Lower Strait of Georgia, Fraser River Spring 4.2 and 5.2, Fraser Summer 5.2, Fraser Summer 4.1 and Fraser Fall 4.1 (Harrison River) stocks; (2) meeting First Nations Food, Social and Ceremonial and treaty obligations for Chinook harvests in native fisheries; and (3) monitoring of incidental impacts during commercial and native fisheries directed at sockeye, and chum

salmon. It is anticipated that the details of the fishery regulatory package off WCVI and in the Juan de Fuca-Strait of Georgia areas will be driven by levels of allowable impact on WCVI, Lower Strait of Georgia and Fraser River Chinook stocks, in addition to Interior Fraser (Thompson River) coho, and potentially Thompson and/or Chilcotin River Steelhead (depending on a listing decision under Canada's Species at Risk Act). Increasing the availability of Chinook salmon in key foraging areas of Southern Resident Killer Whales in the southern BC region is an additional consideration which will be supported through conservation actions implemented for Fraser River and other Chinook salmon.

## 5.2 *Coho Salmon Management*

In 2002, the PSC adopted a management plan for coho salmon originating in Washington and Southern British Columbia river systems. The plan is directed at the conservation of key management units, four from Southern British Columbia (Interior Fraser, Lower Fraser, Strait of Georgia Mainland, and Strait of Georgia Vancouver Island) and nine from Washington (Skagit, Stillaguamish, Snohomish, Hood Canal, Strait of Juan de Fuca, Quillayute, Hoh, Queets, and Grays Harbor). Exploitation rate limits for intercepting fisheries are established for individual management units through formulas specified in the 2019 PST Southern Coho Management Plan, and are based on total allowable fishery exploitation rates.

The categorical status of U.S. coho management units is reported to comply with obligations pursuant to the 2019 PST Southern Coho Management Plan. Categorical status is employed by the PSC under the 2019 PST Southern Coho Management Plan to indicate general ranges of allowable total exploitation rates for U.S. and Canadian coho management units. Three categories are employed: low (total exploitation rate less than 20 percent), moderate (total exploitation rate 20 percent to 40 percent), and abundant (total exploitation rate greater than 40 percent). For the Puget Sound management units, the 2019 PST Southern Coho Management Plan uses the thresholds and stepped harvest rate goals from the Comprehensive Coho Agreement, developed by Washington and the Puget Sound tribes, and adopted by the Council as FMP conservation objectives in November 2009. Actual exploitation rate constraints for Canadian fisheries on U.S. coho management units are determined by formulas that specify sharing of allowable exploitation rates and a "composite rule." The composite rule adjusts constraints for Canadian fishery exploitation rates based on the number of U.S. management units which fall in a given category. For example, if only one Washington coastal or Puget Sound coho management unit is in low status, Canadian fisheries are constrained to a total exploitation rate on that unit of 12 percent; if two or more Washington coastal management units are in low status, the constraint becomes 10 percent. The most restrictive exploitation rate limit for Canadian fishery impacts on U.S. coho management units is 10 percent.

For several Washington coastal coho management units, management objectives are expressed as a range of spawning escapements expected to produce MSY. Using the forecast abundance, the exploitation rate necessary to achieve the lower end of the escapement range is calculated and used to classify the categorical status of the management units. If the management unit is in the low abundance status, exploitation rates up to 20 percent are allowed.

For 2020, Puget Sound and Washington coast coho constraints are as follows:

Status categories and constraints for Puget Sound and Washington Coast coho under the FMP and PST Southern Coho Management Plan.

<b>FMP</b>			
FMP Stock	Total Exploitation Rate Constraint <sup>a/</sup>	Categorical Status <sup>a/</sup>	
Skagit	35%	Low	
Stillaguamish	35%	Low	
Snohomish	20%	Critical	
Hood Canal	45%	Low	
Strait of Juan de Fuca	20%	Critical	
Quillayute Fall	59%		
Hoh	65%		
Queets	65%		
Grays Harbor	65%		

#### **PST Southern Coho Management Plan**

U.S. Management Unit	Total Exploitation Rate Constraint <sup>b/</sup>	Categorical Status <sup>c/</sup>	
Skagit	35%	Moderate	
Stillaguamish	35%	Moderate	
Snohomish	20%	Low	
Hood Canal	45%	Moderate	
Strait of Juan de Fuca	20%	Low	
Quillayute Fall <sup>c/</sup>	31%	Moderate	
Hoh <sup>c/</sup>	52%	Abundant	
Queets <sup>c/</sup>	26%	Moderate	
Grays Harbor	29%	Moderate	

a/ Preliminary. For Puget Sound stocks, the exploitation rate constraints and categorical status (Normal, Low, Critical) reflect application of Comprehensive Coho Agreement rules, as adopted in the FMP. For Washington Coast stocks, exploitation rate constraints represent MFMT. Note that under *U.S. v. Washington* and *Hoh v. Baldrige* case law, the management objectives can differ from FMP objectives provided there is an annual agreement among the state and tribal comanagers; therefore, the exploitation rates used to report categorical status do not necessarily represent maximum allowable rates for these stocks.

b/ Preliminary. For Puget Sound and Washington Coast management units, the exploitation rate constraints reflect application of the 2002 PST Southern Coho Management Plan.

c/ Categories (Abundant, Moderate, Low) correspond to the general exploitation rate ranges depicted in paragraph 3(a) of the 2002 PST Southern Coho Management Plan. For Washington Coast stocks, categorical status is determined by the exploitation rate associated with meeting the escapement goal (or the lower end of the escapement goal range).

Key considerations for Canadian fishery management for coho in 2020 are expected to include: (1) meeting domestic conservation obligations for Interior Fraser (including Thompson River) coho; (2) coho harvests by First Nations fisheries; (3) incidental impacts during commercial and First Nations fisheries directed at pink, Chinook, sockeye, and chum salmon; and (4) the desire to provide increased opportunity for sport fisheries through mark-selective retention regulations. The Canadian fishery regimes affecting coho are expected to be driven by Canadian domestic allowable impacts on the Thompson River component of the Interior Fraser management unit.

In previous years prior to 2014, Canadian fisheries were managed so as not to exceed a three percent maximum exploitation rate. In May 2014, Canada decided to permit up to a 16% exploitation rate on upper Fraser coho in Canadian fisheries to allow for impacts in fisheries directed at a record Fraser sockeye forecast. Since 2015, upper Fraser coho in Canadian fisheries have been managed per low status limitations. The projected status of Canadian coho management units in 2020 indicates continuing concerns for the condition of Interior Fraser coho. The Interior Fraser coho management unit is anticipated to remain in low status, resulting in a requirement to constrain the total mortality fishery exploitation rate for 2020 Southern U.S. fisheries to a maximum of 10.0 percent.

## 6.0 CHINOOK SALMON MANAGEMENT

### 6.1 North of Cape Falcon

Abundance projections important to Chinook harvest management north of Cape Falcon in 2020 are:

- *Columbia River hatchery tules.* Combined production of Lower River Hatchery (LRH) and Spring Creek Hatchery (SCH) stocks returning to the Columbia River is forecasted to be 97,200, which is slightly lower than the 2019 preseason expectation of 100,500. The 2020 LRH forecast is 51,000, which is below the forecast of 54,500 in 2019. The 2020 SCH forecast is 46,200, which is similar to the 2019 forecast of 46,000.

#### 6.1.1 Objectives

Key Chinook salmon management objectives shaping management measures north of Cape Falcon are:

- NMFS consultation standards and annual guidance for ESA listed stocks as provided in Section 4.0 above. Relevant stocks for the area north of Cape Falcon include LCR natural tule Chinook, Columbia Lower River Wild (LRW) fall Chinook, SRW fall Chinook and Puget Sound Chinook.
- Fisheries north of Cape Falcon were shaped to minimize impacts on LCR natural tule Chinook and Puget Sound Chinook.

#### 6.1.2 Achievement of Objectives

Fishery quotas under the adopted management measures are presented in Table 4. Stock-specific management criteria and their forecast values are provided in Table 5. Projected fishery landings, bycatch, and bycatch mortality estimates are summarized in Table 6. Table 7 provides a breakdown of impacts by fishery and area for LCR tule Chinook. Descriptions pertaining to the achievement of key objectives for Chinook salmon management north of Cape Falcon are as follows:

- *LCR natural tule fall Chinook.* The projected exploitation rate in the adopted management measures is 38.0 percent, and meets the 38.0 percent maximum for 2020.
- *LRW fall Chinook.* The adopted management measures have a projected ocean escapement of 19,200 adults, which is projected to be sufficient to meet the ESA consultation standard of an adult spawning escapement of at least 5,700 in the North Fork Lewis River.
- *SRW fall Chinook.* The adopted management measures have an ocean exploitation rate that is 51.3 percent of the base period exploitation rate, which is less than the ESA consultation standard of no more than 70 percent of the 1988-1993 base period exploitation rate for all ocean fisheries.
- *Puget Sound Chinook.* The State of Washington and the Puget Sound treaty tribes reached agreement on a package of fisheries to be modeled in concert with the Council's final adoption of the proposed action. The impacts of Council-area fisheries on Puget Sound stocks, combined with this package of inside fisheries, meet all the requirements for ESA-listed Puget Sound Chinook described in the February 27, 2020 letter from NMFS and supplemental NMFS guidance received during the April 2020 PFMC meeting, and the applicable Biological Opinion.

The adopted management measures for Council-area Chinook fisheries north of Cape Falcon satisfy NMFS ESA consultation standards and guidance, FMP conservation objectives, and all other objectives for relevant Chinook stocks (Table 5).

### 6.2 South of Cape Falcon

Status of Chinook stocks important to 2020 Chinook harvest management south of Cape Falcon are:



- *KRFC*. The ocean abundance forecast for this stock is 149,618 age-3, 36,241 age-4, and 739 age-5 fish. Last year's preseason forecast was 167,504 age-3, 106,119 age-4, and 599 age-5 fish.
- *SRFC*. The Sacramento Index forecast is 473,183, which is higher than last year's preseason forecast of 379,632.
- *SRWC*. The forecast of age-3 escapement absent fishing is 3,077, which is higher than last year's preseason forecast of 1,924.

### 6.2.1 Objectives

Key Chinook salmon management objectives shaping management measures south of Cape Falcon are:

- A *KRFC* natural area spawner escapement of at least 36,206 adults, which is produced, in expectation, by a maximum exploitation rate of 25.0 percent (FMP control rule).
- A *SRFC* hatchery and natural area spawner escapement of at least 141,955 adults, which is produced, in expectation, by a maximum exploitation rate of 70.0 percent (FMP control rule).
- NMFS consultation standards and annual guidance for ESA-listed stocks as provided in Section 4.0 above. Relevant stocks for the area south of Cape Falcon include *SRWC*, California coastal Chinook, *SRW* fall Chinook, and *LCR* natural tule Chinook.

For 2020, the Klamath River fall Chinook (*KRFC*) harvest control rule specifies a *de minimis* maximum allowable exploitation rate of 25.0 percent. The Salmon Fishery Management Plan (FMP) requires consideration of several factors when recommending *de minimis* exploitation rate. From page 31 of the FMP:

“When recommending an allowable *de minimis* exploitation rate in a given year, the Council shall also consider the following circumstances:

- The potential for critically low natural spawner abundance, including considerations for substocks that may fall below crucial genetic thresholds;
- Spawner abundance levels in recent years;
- The status of co-mingled stocks;
- Indicators of marine and freshwater environmental conditions;
- Minimal needs for tribal fisheries;
- Whether the stock is currently in an approaching overfished condition;
- Whether the stock is currently overfished;
- Other considerations as appropriate”.

At the March 2020 PFMC meeting, each of the circumstances above were discussed by the Council and its advisors during the development of the three Alternatives for south of Cape Falcon fisheries (except for minimal needs for tribal fisheries, which were not determined). The potential for critically low natural spawner abundance and substocks falling below crucial genetic thresholds is expected to be relatively low (18%), given the natural-area spawner projection of 36,206 produced by the 25.0 percent *de minimis* exploitation rate. The projected risk is lower under scenarios with lower exploitation rates. The forecast of natural-area spawners in the absence of additional fishing is 48,237, which is above the maximum sustainable yield spawner escapement ( $S_{MSY}$ ). If fishing seasons are structured such that the maximum allowable exploitation rate of 25.0 percent is met, the natural-area adult spawner expectation is 36,206, which is greater than the Minimum Stock Size Threshold (MSST) but below  $S_{MSY}$ . The natural-area

spawner abundance has been lower than 36,206 in four of the last five years. With regard to co-mingled stocks, Sacramento River fall Chinook (SRFC) have a relatively large abundance forecast. The 2020 abundance forecast is the second largest over the past five years. Indicators of marine and freshwater conditions provided in the California Current Integrated Ecosystem Assessment (CCIEA) California Current Ecosystem Status Report for 2020 suggest a mixed assessment of marine conditions. Several ecological indicators implied average to above average productivity in 2019. However, there were also indicators of poor conditions, such as low krill densities in California and Oregon and low abundance of juvenile rockfish. With regard to freshwater conditions, the CCIEA report identifies snow-water equivalent values in northern California as above average as of February 1, 2020. The KRFC stock currently meets the criteria for being at risk of approaching an overfished condition. However, KRFC is currently overfished.

At the April 2020 PFMC meeting, it was agreed that the KRFC harvest control rule was being implemented as intended, which has led to the limited seasons south of Cape Falcon that employ restrictive time/area closures. These include closures for the commercial fishery in the California portion of the KMZ, and restricted seasons for the Fort Bragg commercial fishery and both the Oregon and California KMZ recreational fisheries.

## 6.2.2 Achievement of Objectives

Fishery quotas under the adopted management measures are presented in Table 4. Stock-specific management criteria and their forecast values under the adopted management measures are provided in Table 5. Projected fishery landings, bycatch, and bycatch mortality estimates are summarized in Table 6. Table 7 provides a breakdown of impacts by fishery and area for LCR tule Chinook. Table 12 provides an assessment of stock status. Descriptions pertaining to the achievement of key objectives for Chinook salmon management south of Cape Falcon are found below.

- *KRFC*. The projected escapement is 36,206, which is equivalent to the 2020 control rule-defined minimum natural area adult spawners.
- *SRFC*. The adopted management measures have a projected escapement of 233,174, which exceeds the control rule-defined minimum of 141,955 hatchery and natural area adult spawners.
- *SRWC*. The adopted management measures result in a projected age-3 impact rate of 16.2 percent, which is consistent with the ESA consultation standard that (1) limits the age-3 impact rate in 2020 fisheries south of Point Arena to a maximum of 20.0 percent and (2) specifies time/area closures and minimum size limit constraints south of Point Arena.
- *California coastal Chinook*. The adopted management measures result in a projected KRFC age-4 ocean harvest rate of 8.8 percent, which is consistent with the consultation standard limiting the KRFC age-4 ocean harvest rate to a maximum of 16.0 percent.
- *LCR natural tule fall Chinook*. The projected exploitation rate in the adopted management measures is 38.0 percent, equivalent to the 38.0 percent maximum for 2020.
- *SRW fall Chinook*. The adopted management measures have an ocean exploitation rate of 51.3 percent of the base period exploitation rate, which is less than the ESA consultation standard of no more than 70 percent of the 1988-1993 base period exploitation rate for all ocean fisheries.

The adopted management measures for Chinook fisheries south of Cape Falcon satisfy NMFS ESA consultation standards and guidance, FMP conservation objectives, and all other objectives for relevant Chinook stocks (Table 5).



## 7.0 COHO SALMON MANAGEMENT

Abundance projections relevant to coho harvest management in Council area fisheries are:

- *Oregon Production Index (OPI) Hatchery coho.* The 2020 forecast for hatchery coho from the Columbia River and the coast south of Cape Falcon of 185,700 is substantially lower than the 2019 forecast of 933,500. The Columbia River early coho forecast is 130,700 compared to the 2019 forecast of 545,000, and the Columbia River late coho forecast is 50,300, compared to the 2019 forecast of 360,600.
- *Oregon Coastal Natural (OCN) coho.* The 2020 OCN forecast is 83,000 compared to the 2019 forecast of 76,100.
- *Lower Columbia Natural (LCN) coho.* The 2020 LCN forecast is 24,600 compared to the 2019 forecast of 36,900.
- *Puget Sound coho.* Among Puget Sound natural stocks, Strait of Juan de Fuca and Snohomish coho are in the critical category in 2020. Skagit, Stillaguamish, and Hood Canal coho are in the low category.
- *Interior Fraser (Thompson River) coho.* This Canadian stock continues to be depressed, but will not constrain ocean coho fisheries north of Cape Falcon in 2020.
- *Washington coastal wild coho.* Forecasts for most Washington coastal coho stocks in 2020 are lower than in 2019. Under the PST Southern Coho Management Plan, Hoh coho are in the abundant category, while Quillayute fall, Queets, and Grays Harbor coho are in the moderate category.

### 7.1 Objectives

Key coho management objectives shaping management measures in 2020 Council area fisheries are:

- NMFS consultation standards and annual guidance for ESA-listed stocks are provided in Section 4.0. Relevant stocks include Central California Coast coho (south of the Oregon/California border), Southern Oregon/Northern California Coastal (SONCC) coho, OCN coho, and LCN coho. The maximum allowable exploitation rates for 2020 are: (1) a combined marine/freshwater exploitation rate not to exceed 15.0 percent for OCN coho, (2) a combined exploitation rate in marine-area and mainstem Columbia River fisheries not to exceed 18.0 percent for LCN coho, and (3) a marine exploitation rate not to exceed 13.0 percent for Rogue/Klamath hatchery coho, used as a surrogate for the SONCC coho ESU. Furthermore, coho retention is prohibited in all California ocean fisheries.
- FMP conservation objectives and obligations under Section 5.2 of the PST Southern Coho Management Plan for stocks originating along the Washington coast, Puget Sound, and British Columbia. The forecasts for some Puget Sound coho stocks and for Interior Fraser coho in 2020 are low; however, the majority of the exploitation on these stocks occurs in Puget Sound and was addressed in development of fishing seasons for inside waters during the North of Falcon co-management process by the state and tribes. Because of their abundance status, Interior Fraser coho are subject to an exploitation rate ceiling of 10.0 percent in southern U.S. fisheries under the PST Southern Coho Management Plan.

### 7.2 Achievement of Objectives

Fishery quotas under the adopted management measures are presented in Table 4. Stock-specific management criteria and their forecast values are provided in Table 5. Projected fishery landings, bycatch, and bycatch mortality are summarized in Table 6. Table 7 provides a breakdown of impacts by fishery and area for LCN, OCN, and Rogue/Klamath (RK) coho. Table 8 provides expected coho mark rates for west coast fisheries by month. Table 12 provides an assessment of stock status.

- *LCN coho*. The adopted management measures satisfy the maximum 18.0 percent exploitation rate for combined marine and mainstem Columbia River fisheries, with a marine exploitation rate of 10.6 percent and a mainstem Columbia River exploitation rate of 6.3 percent.
- *OCN coho*. The adopted management measures satisfy the maximum 15.0 percent exploitation rate for combined marine and freshwater fisheries, with a marine exploitation rate of 10.2 percent and a freshwater exploitation rate of 1.4 percent.
- *Washington coastal wild coho*. The adopted management measures provide ocean escapement numbers of 8,700, 3,600, 6,700, and 47,100 for Quillayute fall, Hoh, Queets, and Grays Harbor natural coho respectively. These ocean escapement levels, when combined with scheduled in-river fisheries, meet FMP management objectives or objectives agreed to by WDFW and the treaty tribes for those coho stocks.
- *Interior Fraser coho*. The Southern U.S. exploitation rates in the adopted management measures total 7.4 percent, which complies with the 10.0 percent maximum required by the PST Southern Coho Management Plan.

The adopted management measures for coho fisheries satisfy NMFS ESA consultation standards and guidance, FMP objectives, and all other objectives for relevant coho stocks other than and including those listed in Table 5.

## **8.0 PINK SALMON MANAGEMENT**

Pink salmon runs occur in odd-numbered years and were not an important management consideration in 2020.

## **9.0 IMPORTANT FEATURES OF THE ADOPTED MANAGEMENT MEASURES**

Significant changes from recent seasons are highlighted below, but this section is not intended to be a comprehensive description of the adopted management measures. For detailed information on the adopted ocean salmon seasons see Table 1 (non-Indian commercial), Table 2 (recreational), and Table 3 (Treaty Indian).

Adopted management measures in the area north of Cape Falcon were shaped to meet NMFS consultation standards and annual guidance for Chinook and coho stocks of concern. The 2020 Chinook total allowable catch (TAC) is similar to 2019 due to a slightly lower abundance of LCR natural tule Chinook and to help meet overall conservation objectives for Puget Sound Chinook. The 2020 coho TAC is decreased substantially relative to 2019 due to much lower abundance forecasts for Columbia River and coastal Washington coho stocks.

Fisheries south of Cape Falcon are primarily constrained by KRFC. The adopted management measures reflect FMP guidance to achieve, in expectation, a maximum allowable harvest rate of 25.0 percent or an escapement of 36,206 natural area spawners for KRFC under the *de minimis* regime of its harvest control rule.

### **9.1 Commercial**

North of Cape Falcon, the non-Indian troll Chinook quota is split evenly between the spring (May-June) fishery and the summer fishery (July-September). A preseason trade of 2,560 coho from the commercial fishery allocation to the recreational fishery in exchange for 640 Chinook from the recreational allocation is in place. The non-Indian commercial Chinook quota of 27,640 is increased slightly compared to the 26,250 Chinook quota in 2019. The non-Indian commercial coho quota of 2,000 is substantially decreased relative to the 2019 quota of 30,400 coho.

The spring fishery in the area north of Cape Falcon will be open for all salmon except coho seven days per week May 6 through June 28. Chinook subarea guidelines and weekly (defined as Thursday through Wednesday) landing and possession limits are in effect in the area between the U.S./Canada border and the Queets River and in the area between Leadbetter Point and Cape Falcon. In 2021, the season is scheduled to open May 1 for all salmon except coho consistent with preseason regulations as described for this area and subareas for May 6-June 28, 2020.

The summer fishery in the area north of Cape Falcon will be open for all salmon seven days per week July 1 through September 30. A landing and possession limit of 10 marked coho per vessel per landing week is in effect coastwide, and all landed coho must be marked with a healed adipose fin clip.

For the Oregon coast between Cape Falcon and Humbug Mountain, Chinook fisheries will be open portions of April and May, and nearly all of June-October. Weekly landing and possession limits will be in place for September and October.

For the Oregon portion of the Klamath Management Zone (KMZ), from Humbug Mountain to the Oregon/California border, the season will be open for portions of April and May, followed by monthly quotas in June and July. The summer quota fisheries have weekly landing and possession limits. The California portion of the KMZ, from the Oregon/California border to Horse Mountain, will remain closed to commercial fishing for the entirety of the 2020 season.

The fishery from Horse Mountain to Point Arena, the Fort Bragg management area, will be open August 1-10 and for the month of September, with a minimum size limit of 27 inches.

The San Francisco management area, from Point Arena to Pigeon Point, will be open for two periods in May, totaling 21 days of fishing. For June, it will open and close on June 1 and 6, and again on June 14 and 30, totaling 23 days of fishing for the month. The area will again open on July 13 continuously through August 28. Thereafter it will be open for the month of September, and the Monday through Friday fall area target zone fishery between Point Reyes and Point San Pedro will occur during the first half of October. Minimum size limits will be 27 inches prior to September 1 and 26 inches thereafter.

Fisheries south of Pigeon Point, in the Monterey management area, will be open for 26 days in May (May 1-12, 18-31) and then have a season that conforms to that of the San Francisco management area for June through August, including a 27-inch size limit.

## 9.2 *Recreational*

The recreational fishery north of Cape Falcon will open seven days per week for all salmon except coho June 20 through June 28 in all areas with a one salmon daily bag limit. Beginning June 29, the fishery will open in all areas for all salmon and will continue through September 30, or when Chinook subarea guidelines or coho subarea quotas are attained. A preseason trade of 640 Chinook from the recreational fishery allocation to the commercial troll fishery in exchange for 2,560 coho from commercial fishery allocation to the recreational fishery is in place. The recreational Chinook quota of 26,360 is similar to the 2019 quota of 26,250 Chinook. The recreational coho quota of 26,500 is substantially decreased relative to the 2019 quota of 159,600 coho. All coho must be marked with a healed adipose fin clip.

Beginning June 29, the Neah Bay, La Push, and Columbia River subareas will open seven days per week, while the Westport subarea will open five days per week, Sunday through Thursday. Daily bag limits are two salmon, only one of which may be a Chinook in subareas south of the Queets River; in subareas north of the Queets River, up to two Chinook are allowed in the daily bag limit. During the period June 20 through September 30, the minimum size limit for Chinook is 22 inches in subareas south of the Queets River and 24 inches in subareas north of the Queets River.

For the north and central Oregon coast south of Cape Falcon, the Chinook fishery opened March 15 and will run uninterrupted through October. Coho fisheries consist of a mark-selective coho quota beginning

on June 27 and a non-mark-selective coho quota beginning on September 4 in the area from Cape Falcon to Humbug Mountain.

For the Oregon KMZ, the season will run from Saturday, June 20 to Friday, August 7. In the California KMZ, the recreational season will run from Saturday June 6 to Sunday August 9. The minimum size limit will be 24 inches in the Oregon KMZ and 20 inches in the California KMZ. Note that if COVID-19-related inseason action further delays the recreational season along the California Coast, the California KMZ season may be extended into late August on an impact neutral basis (Table 2, C.5.f). During the April Council meeting, it was determined that three delayed opening scenarios (May 16, June 1, and June 16) for the California recreational fishery south of Horse Mountain allow the KMZ fishery to remain open until August 12, 15, and 29, respectively, without increasing impacts for stocks of concern (Appendix A).

The area from Horse Mountain to Pigeon Point, which includes the Fort Bragg and San Francisco management areas, will open on May 1 and run continuously through November 8. The minimum size limit will be 20 inches in both areas for the entire season.

South of Pigeon Point, in the Monterey management area, the season will be open from May 1 through October 4 with a 24-inch minimum size limit.

### 9.3 *Treaty Indian*

The adopted management measures for Chinook fisheries are generally similar in structure to recent years, and coho retention is allowed in the summer season. The Treaty Indian troll fishery opens on May 1 with a Chinook only fishery and runs through June 30 with a 17,500 sub-quota. The summer fishery opens on July 1 and runs through September 15 with a sub-quota of 17,500 Chinook and 16,500 coho. The Treaty Indian fishery management areas are located between the U.S./Canada border and Pt. Chehalis, Washington (Table 3, C.1).

## 10.0 SOCIOECONOMIC IMPACTS OF THE ADOPTED MANAGEMENT MEASURES

### 10.1 *Economic Impacts*

The short-term economic effects of the Council-adopted management measures for non-Indian fisheries are shown in Tables 9 and 10. Table 9 shows projected commercial troll impacts by management area expressed in terms of estimated potential exvessel value. Table 10 shows projected recreational fishery impacts by management area in terms of the number of projected angler-trips and community personal income impacts generated by those activities. Note that exvessel revenue values shown for the commercial troll fishery in Table 9 and income impact values shown for the recreational fishery in Table 10 are not directly comparable. More directly comparable measures of short-term economic impacts from commercial and recreational salmon fisheries appear in Figures 3 and 4, which show estimated community income impacts under the Council-adopted commercial troll and recreational fishery management measures, respectively, compared to historic levels in real (inflation-adjusted) dollars. Income impacts indicate the amount of income generated by the economic linkages associated with commercial and recreational fishing. While a reduction in income impacts associated with commercial or recreational fishing activity may not necessarily reflect a net loss, it is likely to indicate losses to businesses and individuals in communities that depend on that activity for livelihood, depending on the availability of substitute activities. Unless otherwise noted, the economic effects of the commercial and recreational fisheries summarized below are compared in terms of estimated community income impacts.

Total economic effects may vary from what is indicated by the short-term impacts from ocean fisheries activities reported in Tables 9 and 10 and Figures 3 and 4. Salmon that remain unharvested in the ocean do not necessarily represent an economic loss, as they may augment inside harvest or provide additional spawning escapement that contributes to ocean abundance in subsequent years. Restricting ocean harvests may increase opportunities for inside harvesters (e.g., higher commercial revenue or more angler trips) or

contribute to higher inside catch per unit effort (CPUE) representing lower costs for commercial harvesters and/or higher success rates for recreational fishers. Salmon that remain unharvested by both ocean fisheries and inside fisheries may impact future production, although the magnitude of this effect varies depending on the biology of the affected stocks, habitat, and environmental factors.

Exvessel revenues in Table 9 are based on estimated harvest by catch area, while commercial income impacts in Figure 3 are based on projected deliveries by landing area. Historically there has been a divergence between catch and deliveries (landings) associated with a particular area. The difference is due to salmon caught in certain management areas being delivered to ports in neighboring management areas. In an attempt to account for this effect and assign income impacts to the “correct” landing area, adjustments are made based on historical patterns. The patterns are typically inferred from the most recent year’s catch and landings data. For example, 2019 data shows there were deliveries of salmon: (1) caught north of Cape Falcon to landing ports between Cape Falcon and Humbug Mountain, (2) caught between Cape Falcon and Humbug Mountain to landing ports in the Oregon KMZ region, (3) caught between Point Arena and Pigeon Point to landing ports in the Fort Bragg region, and (4) caught south of Pigeon Point to landing ports in the San Francisco region.

The expected harvest levels used to model commercial fishery impacts are taken from Table 6. Estimated total harvest combined with the prior year’s average Chinook weights per fish and exvessel prices per pound were assumed to be the best indicators of expected revenues in the coming season. Coastwide average Chinook weight per fish in 2019 was approximately 15 percent below the prior year and recent five-year average, while coastwide average Chinook exvessel prices in 2019 were 21 percent lower than the prior year and the lowest in inflation-adjusted terms since 2014. If this year’s actual average weight per fish or exvessel prices diverge significantly from what was observed last year, then salmon exvessel revenues and resulting commercial fisheries income impacts projected in this document may prove to be correspondingly biased.

Fishing effort estimates for the recreational fishery south of Cape Falcon are based on measures developed by the STT for modeling biological impacts. STT estimates for south of Cape Falcon use multi-year averages to predict effort for the coming year, as compared to last year. Consequently, if the multi-year average for a particular time period and area happens to be higher than last year’s effort level, then the model may forecast an increase in effort for the coming year even though management measures may actually be relatively more constraining, or *vice-versa*.

Recreational fishery effort north of Cape Falcon was estimated using historical CPUE estimates (“success rates”) applied to expected harvest levels. Expected recreational harvest levels north of Cape Falcon were projected by multiplying the adopted quotas for the two species by historic ratios of actual catch to actual quotas. Effort was then estimated by multiplying expected recreational harvest levels by recent year weighted average coho and Chinook angler success rates and summing the results. Economic impacts were then calculated using average per trip estimates that considered historic ratios of charter and private vessel angling.



## 10.2 Community Impacts

Projected income impacts under the Proposed Action in coastal communities adjacent to commercial and recreational salmon fishery management areas are shown in Figure 3 and Figure 4, and comparisons of impacts under the Proposed Action with impacts under Alternatives I, II and III are summarized in Table 11.<sup>1</sup> Projected coastwide income impacts from commercial salmon landings and processing under the Proposed Action are near the top of the range analyzed under the Alternatives but approximately 32 percent lower than estimated total coastwide commercial fisheries income impacts last year (Figure 3 and Table 11). Regionally the picture is mixed, with income impacts from commercial salmon fisheries under the Proposed Action projected to be at least somewhat above last year's level in the three regions north of the Oregon/California border, but below last year's levels in all regions south of the Oregon/California border, including 100 percent lower in the California KMZ (Oregon/California Border to Horse Mountain). With respect to the 2015-2019 inflation-adjusted average, income impacts from commercial salmon fisheries under the Proposed Action are projected to be two percent lower overall coastwide, and below the 2015-2019 inflation-adjusted average in all regions north of Point Arena, but at least somewhat above the 2015-2019 inflation-adjusted average in both regions south of Point Arena (Figure 3 and Table 11).

Projected coastwide income impacts from expenditures by recreational salmon anglers under the Proposed Action are in the middle of the range analyzed under the Alternatives and overall are about 17 percent below the estimated total coastwide recreational fisheries income impacts from last year's activity (Table 11 and Figure 4). Regionally the picture is mixed, with recreational fisheries income impacts under the Proposed Action projected to be below last year's level north of Cape Falcon, from Cape Falcon to Humbug Mountain, and south of Pigeon Point, but at least somewhat above last year's level in all other regions. Compared with the 2015-2019 inflation-adjusted average, recreational fisheries income impacts under the Proposed Action are projected to be slightly lower overall coastwide, and lower north of Cape Falcon and in the Oregon KMZ (Humbug Mountain to the Oregon/California border), but above the 2015-2019 inflation-adjusted average in the other five regions (Figure 4 and Table 10, Table 11).

## 10.3 Social Impacts

The effect of the Proposed Action on other indicators of community social welfare (e.g., poverty, divorce rates, graduation/dropout rates, incidents of domestic violence, etc.) cannot be directly measured. Change in personal income in communities may be used as a rough proxy for other socioeconomic effects to the degree change in these indicators correlates with potential change in income. However, changes in the broader regional economy ("cumulative effects") and long-term trends in fishery-related employment are more likely to drive these indicators of social wellbeing than the short-term economic effects of the Proposed Action.

To the extent practicable, social impacts were considered when non-tribal commercial and recreational salmon seasons were shaped. To minimize regulatory complexity in recreational fisheries, season dates and regulations were kept as consistent as possible within major management areas. Bag limits allow a greater number of fishers to participate in the fishery. Minimum size limits remain consistent throughout the season in most areas, which, in addition to biological benefits, tend to increase regulatory compliance. Where size limits do change in-season, they decrease, such that anglers complying with earlier size limits will still be in compliance with the reduced limits. Efforts were made to accommodate important cultural events such as the Independence Day and Labor Day holidays as well as traditional fishing derby events.

---

<sup>1</sup> Income impacts for recreational fisheries under Alternatives I, II and III summarized in Table 11 may differ for certain regions from those shown in Table 10 and Figure 4 of Preseason Report II due to a change in the weighting factors applied; however the differences do not affect the overall coastwide totals under the Alternatives or inferences regarding the relative rankings of the Alternatives for each region.

Commercial fisheries often include vessel limits per trip or per open period in an effort to stretch quota attainment over a longer period of time. Doing so can provide greater access for smaller vessels, increase safety at sea by making it easier to avoid fishing in inclement weather, improve marketing opportunities, and extend the period during which consumers have access to fresh, wild caught salmon. Notification mechanisms by phone or email allow commercial vessels greater flexibility in choosing a port of landing to take advantage of better markets or to access better infrastructure.

Salmon are an important part of tribal culture and have been since time immemorial. Salmon provide economic, cultural, ceremonial, and subsistence benefits to west coast tribal communities. Under the Proposed Action, based on the adopted Chinook and coho quotas, Washington coastal treaty tribes are projected to have similar opportunities for Chinook, but substantially reduced ocean coho opportunity, when compared with 2019 (Table 3 and Table 6). The Klamath River tribal share under the Proposed Action is 8,632 adult KRFC, a substantial decrease from the 2019 allocation of 32,401 adult KRFC. Note that as with the non-tribal commercial and recreational salmon fisheries described in section 10.1 Economic Impacts, restricting ocean salmon harvests may allow increased opportunities for inside harvest and escapement (and vice versa).

## 11.0 ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

The Proposed Action, adoption of the 2020 ocean salmon regulations, was assessed relative to the environmental components and criteria established in Preseason Report II (Part 2 of this EA). The impacts of the Proposed Action on most target stocks and ESA-listed salmon fall within the range of impacts analyzed for the Alternatives in Preseason Report II. For stocks where the impacts of the Proposed Action may fall outside the range of impacts under the Alternatives in Preseason Report II, such impacts result from the shaping of fisheries that occur outside of the Council area, and are within the impact limitations of the FMP, ESA consultation standards, and PST (Table 11). Economic impacts of the Proposed Action fall within the range of impacts projected for the Alternatives in Preseason Report II as summarized in Table 11.

Under No Action, the seasons would be the same as in 2019. Although not true for all regions, relative to No Action (as represented by the 2019 values) the Proposed Action would provide lower overall coastwide income impacts from both commercial and recreational fishing (Table 11).

For some components of the affected environment (non-target fish species, marine mammals, non-salmonid ESA-listed species, sea birds, biodiversity and ecosystem function, and public health and safety) the differences in the effects of the alternatives are either not discernable or are not expected to be substantial. These components are addressed below.

*Non-target fish species:* As discussed in Preseason Report II, section 8.3, non-target fish species (e.g., groundfish) are managed under other fishery management plans (FMPs). As described in Preseason Report II, impacts to groundfish stocks from salmon troll fisheries continue to be managed as part of the open access groundfish fishery sector; similarly, Coastal Pelagic Species and Highly Migratory species, which are uncommonly encountered in the salmon fishery, would be managed subject to the regulations for those respective FMPs. Retention of halibut caught incidental to commercial salmon fisheries is managed under the Pacific Halibut Catch Share Plan (85 FR 14586, March 13, 2020). Management of non-target fish species is the same among all alternatives and there is no difference in how fishing is conducted among the alternatives; therefore, there is no discernible difference in the effects among the alternatives on non-target fish species.

*Marine mammals (not ESA-listed):* Ocean salmon troll fisheries off California, Oregon, and Washington continue to be classified under the Marine Mammal Protection Act as Category III—remote likelihood of or no known incidental mortality and serious injury of marine mammals (84 FR 22051). Fishing gear

requirements under all alternatives is the same; therefore, there is no discernible difference in the effects among the alternatives on marine mammals.

*Other (non-salmonid) ESA-listed species:* Other than ESA-listed salmon, the only ESA-listed species that may be affected by the proposed action is the Southern Resident killer whale distinct population segment (SRKW), as mentioned in Preseason Report II (section 8.5). NMFS reinitiated ESA consultation on salmon fishery impacts on the endangered Southern Resident killer whale distinct population segment (DPS) in 2019, and has completed a biological opinion on the 2020 ocean salmon fisheries. NMFS provided guidance to the Council in developing 2020 ocean salmon fisheries (see section 8.5, Preseason Report II) which was informed by the draft risk assessment analysis prepared by the Council’s ad hoc SRKW workgroup.

The alternatives present a range of salmon harvest and fishing opportunity, which have the potential to affect SRKW prey availability and vessel interaction. Alternatives I, II, and III each have two catch projections, reflecting various options being considered in the Treaty Indian Troll fishery (see Preseason Report II); these are the “QTA” (Quinault Treaty Area) and “MT” (Makah Tribe) options. Under both options, Alternative I would harvest the most salmon and have the most number of fishing days available to the fishing fleet, compared with the other alternatives. Under both options, Alternative III, would harvest the fewest salmon and have the fewest number of fishing days available to the fishing fleet compared to the other alternatives. Projected catch of Chinook salmon under Alternative IV, the Council’s recommended alternative, would be near the average of all of the other alternatives and options. Catch projections for Chinook salmon under all alternatives is shown in the table below, as reported in table 6a and 6b in Preseason Report II and table 6 in Preseason Report III.

Comparison of 2020 Chinook salmon catch projection under all alternatives compared with 2019 observed Chinook salmon catch. Treaty Indian Troll Alternatives: QTA = Quinault Treaty Area; MT = Makah Tribe. Values are in thousands of Chinook salmon.

	Applicable Treaty Indian Option	2020 Catch Projection (thousands of Chinook salmon)			Alternative IV (Final Preferred)	2019 Observed Catch
		Alternative I	Alternative II	Alternative III		
Total Ocean Salmon Fisheries	QTA (percent of Alt IV)	357.0 (103.9%)	338.7 (98.6%)	264.1 (76.9%)	343.6	446.4
	MT (percent of Alt IV)	372.0 (108.3%)	348.7 (101.5%)	269.1 (78.3%)		

The amount of Chinook salmon catch projected under all alternatives is within the range of observed catch over the past decade (2010-2019) and lower than that in 2019. All alternatives provide for escapement of salmon stocks that meets FMP conservation objectives and ESA biological opinion requirements and are responsive to the abundance of salmon stocks similar to that over this last decade. For many Chinook salmon stocks, particularly Columbia River Chinook salmon, the proposed action provides escapement substantially above what is required for spawning (see Table 5, below). All alternatives provide substantial periods of time when salmon fishing is closed; for example, in the Council’s recommended alternative, commercial and recreational fisheries between the U.S/Canada border and Cape Falcon are closed October 2020 through April 2021, while, under Alternative III, these fisheries would be closed from May 2020 through April 2021 (see Tables 1, 2, and 3, below for the Council’s recommended alternative and Tables 1, 2, 3a, and 3b in Preseason Report II for Alternatives I, II, and III). Therefore, while Alternative III would have the least potential impact on SRKW, all alternatives provide for prey availability and periods of time where no vessel interaction with SRKW from the ocean salmon fishery or prey removal would occur. All alternatives are consistent with the guidance provided to the Council, as cited in Preseason Report II, section 8.5. Informed by the ad hoc SRKW Workgroup’s Risk Assessment, the range of alternatives were designed



in 2020 accounting for salmon abundance potentially contributing to prey availability for SRKW, with the preferred alternative falling in the mid-range of effects that may have occurred among all alternatives. This level of effects will be spread locally to different areas of Pacific Coastal EEZ, likely not be detectable, and would be within the range of the last 10 years of similar effects.

*Seabirds:* As described in Preseason Report II, section 8.6, interactions between the Pacific Coast salmon fishery and seabirds are rare. There is no difference in how fisheries are conducted under the alternatives, in terms of vessels and gear. Therefore, there is no discernible difference between the effects of the Alternatives on seabirds.

*Biodiversity and Ecosystem Functioning:* There are no anticipated impacts on biodiversity and ecosystem functioning from any of the alternatives; therefore, there is no discernible difference between the effects of the alternatives on biodiversity and ecosystem functioning.

*Public Health and Safety:* There are no anticipated impacts from the proposed action on public health and safety. None of the alternatives affect vessel operation and all alternatives include provisions for deviating from the landing requirements in situations of hazardous weather or mechanical difficulty. Regulatory flexibility is provided for NMFS to work with the West Coast states, as informed by an evaluation of actions or orders promulgated or issued by jurisdictions in these areas, to address public health concerns related to COVID-19 concluding that these actions would likely make access to the fishery impracticable (e.g., restrictions on activities or closure of harbors, launch ramps and other forms of access) or would make information essential to manage and implement the fishery unavailable; this would be the same under all alternatives.

TABLE 1. 2020 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted. (Page 1 of 7)

<b>A. SEASON DESCRIPTIONS</b>
<b>North of Cape Falcon</b>
<b>Supplemental Management Information</b>
<p>1. Overall non-Indian TAC: 54,000 Chinook and 28,500 coho marked with a healed adipose fin clip (marked).                      2. Non-Indian commercial troll TAC: 27,640 Chinook and 2,000 marked coho.                      3. Trade: Commercial troll traded 2,560 marked coho to the recreational fishery for 640 Chinook.</p>
<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>May 6 through the earlier of June 28, or 13,820 Chinook. No more than 5,100 of which may be caught in the area between the U.S./Canada border and the Queets River, and no more than 3,770 of which may be caught in the area between Leadbetter Pt. and Cape Falcon (C.8).</li> </ul> <p>Open seven days per week (C.1). All salmon, except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p> <p>In the area between the U.S./Canada border and the Queets River, the landing and possession limit is 75 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p>In the area between Leadbetter Pt. and Cape Falcon, the landing and possession limit is 75 Chinook per vessel per landing week (Thurs.-Wed.) (C.1, C.6).</p> <p>When it is projected that approximately 75% of the overall Chinook guideline has been landed, or approximately 75% of any of the individual Chinook subarea guidelines have been landed, inseason action will be considered to ensure the guideline is not exceeded.</p> <p>In 2021, the season will open May 1 for all salmon except coho consistent with preseason regulations as described for this area and subareas for May 6-June 28, 2020, including subarea salmon guidelines and weekly vessel limits. These regulations would apply from the opening of the fishery on May 1, 2021, until modified following Council review at its March and/or April 2021 meetings. Catch during this opening will be counted towards quotas set for this area and subareas at the April 2021 meeting.</p>
<p><b>U.S./Canada Border to Cape Falcon</b></p> <ul style="list-style-type: none"> <li>July 1 through the earlier of September 30, or 13,820 Chinook or 2,000 coho (C.8).</li> </ul> <p>Open seven days per week. All salmon. Chinook minimum size limit of 28 inches total length. Coho minimum size limit of 16 inches total length (B, C.1). All coho must be marked with a healed adipose fin clip (C.8.e). No chum retention north of Cape Alava, Washington in August and September (C.4, C.7). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p> <p>Landing and possession limit of 10 marked coho per vessel per landing week (Thurs.-Wed.) (C.1).</p>
<p><b>For all commercial troll fisheries north of Cape Falcon:</b></p> <p>Mandatory closed areas include: Salmon troll Yelloweye Rockfish Conservation Area, Cape Flattery, and Columbia Control Zones, and beginning August 10, the Grays Harbor Control Zone (C.5). Vessels must land and deliver their salmon within 24 hours of any closure of this fishery.</p> <p>Vessels fishing or in possession of salmon <u>north</u> of Leadbetter Point must land and deliver all species of fish in a Washington port and must possess a Washington troll and/or salmon delivery license. Vessels may not land fish east of the Sekiu River or east of the Megler-Astoria bridge. <u>For delivery to Washington ports south of Leadbetter Point</u>, vessels must notify the Washington Department of Fish and Wildlife at 360-249-1215 prior to crossing the Leadbetter Point line with area fished, total Chinook, coho, and halibut catch aboard, and destination with approximate time of delivery. During any single trip, only one side of the Leadbetter Point line may be fished (C.11).</p> <p>Vessels fishing or in possession of salmon while fishing <u>south</u> of Leadbetter Point must land and deliver all species of fish within the area and south of Leadbetter Point, except that Oregon permitted vessels may also land all species of fish in Garibaldi, Oregon. Under state law, vessels must report their catch on a state fish receiving ticket. Oregon State regulations require all fishers landing salmon into Oregon from any fishery between Leadbetter Point, Washington and Cape Falcon, Oregon to notify ODFW within one hour of delivery or prior to transport away from the port of landing by either calling 541-867-0300 ext. 271 or sending notification via e-mail to nfallcon.trollreport@state.or.us. Notification shall include vessel name and number, number of salmon by species, port of landing and location of delivery, and estimated time of delivery. Inseason actions may modify harvest guidelines in later fisheries to achieve or prevent exceeding the overall allowable troll harvest impacts (C.8).</p> <p>Vessels in possession of salmon <u>north of the Queets River</u> may not cross the Queets River line without first notifying WDFW at 360-249-1215 with area fished, total Chinook, coho, and halibut catch aboard and destination. Vessels in possession of salmon <u>south of the Queets River</u> may not cross the Queets River line without first notifying WDFW at 360-249-1215 with area fished, total Chinook, coho, and halibut catch aboard, and destination (C.11).</p>

TABLE 1. 2020 Commercial troll management measures for non-Indian ocean salmon fisheries – Council adopted. (Page 2 of 7)
<b>A. SEASON DESCRIPTIONS</b>
<b>South of Cape Falcon</b>
<b>Supplemental Management Information</b>
<ol style="list-style-type: none"> <li>1. Sacramento River fall Chinook spawning escapement of 233,174 hatchery and natural area adults.</li> <li>2. Sacramento Index exploitation rate of 50.7%.</li> <li>3. Klamath River recreational fishery allocation: 1,296 adult Klamath River fall Chinook.</li> <li>4. Klamath tribal allocation: 8,632 adult Klamath River fall Chinook.</li> <li>5. CA/OR share of Klamath River fall Chinook commercial ocean harvest: 61% / 39%.</li> <li>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the California Fish and Game Commission.</li> </ol>
<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• April 20-30;</li> <li>• May 1-5, 26-31;</li> <li>• June 4-30;</li> <li>• July 1-31;</li> <li>• August 1-25;</li> <li>• September 1-October 31 (C.8.g, C.9).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B, C.1). All vessels fishing in the area must land their salmon in the State of Oregon. See gear restrictions and definitions (C.2, C.3).</p> <p>Beginning September 1, no more than 75 Chinook allowed per vessel per landing week (Thurs.-Wed.).</p> <p>In 2021, the season will open March 15 for all salmon except coho. Chinook minimum size limit of 28 inches total length (B, C.1). Gear and other restrictions same as in 2020 (C.2, C.3, C.4). This opening could be modified following Council review at its March 2021 meetings (C.8).</p>
<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• April 20-30;</li> <li>• May 1-5, 26-31;</li> <li>• June 4 through the earlier of June 30, or a 700 Chinook quota;</li> <li>• July 1 through the earlier of July 31, or a 300 Chinook quota (C.8.g, C.9).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 28 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). Prior to June 4, all salmon caught in this area must be landed and delivered in the State of Oregon.</p> <p>June 4-July 31 weekly landing and possession limit of 40 Chinook per vessel per landing week (Thurs.-Wed.)(C.8.f). Any remaining portion of Chinook quotas may be transferred inseason on an impact neutral basis to the next open quota period (C.8.b).</p> <p>All vessels fishing in this area during June and July, must land and deliver all salmon within this area or into Port Orford within 24 hours of any closure of this fishery and prior to fishing outside of this area(C.6).</p> <p>For all quota managed seasons (June and July), Oregon state regulations require fishers to notify ODFW within one hour of landing and prior to transport away from the port of landing by calling 541-867-0300 Ext. 252 or sending notification via e-mail to kmzor.trollreport@state.or.us, with vessel name and number, number of salmon by species, location of delivery, and estimated time of delivery.</p> <p>In 2021, the season will open March 15 for all salmon except coho. Chinook minimum size limit of 28 inches total length (B; C.1). Gear restrictions same as in 2020 (C.2, C.3, C.4). This season would open without quota or weekly landing limits unless modified following Council review at its March 2021 meeting (C.8).</p>

TABLE 1. 2020 Commercial troll management measures for non-Indian ocean salmon fisheries – Council adopted. (Page 3 of 7)
A. SEASON DESCRIPTIONS
South of Cape Falcon
Supplemental Management Information
<p><b>OR/CA Border to Humboldt South Jetty (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• Closed (C.9).</li> </ul> <p>In 2021, the season will open May 1 through the earlier of May 31, or a 3,000 Chinook quota. Chinook minimum size limit of 27 inches total length. Landing and possession limit of 20 Chinook per vessel per day (C.8.f). Open five days per week (Fri.-Tue.). All salmon except coho (C.4, C.7). Any remaining portion of Chinook quotas may be transferred inseason on an impact neutral basis to the next open quota period (C.8.b). All fish caught in this area must be landed within the area, within 24 hours of any closure of the fishery (C.6), and prior to fishing outside the area (C.10). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). Klamath Control Zone closed (C.5.e). See California State regulations for an additional closures adjacent to the Smith River. This opening could be modified following Council review at its March or April 2021 meetings.</p>
<p><b>Humboldt South Jetty to Horse Mt.</b></p> <ul style="list-style-type: none"> <li>• Closed.</li> </ul> <p>When the fishery is closed between the OR/CA border and Humboldt Mountain (C.11) and open to the south, vessels with fish on board caught in the open area off California may seek temporary mooring in Brookings, Oregon prior to landing in California only if such vessels first notify the Chetco River Coast Guard Station via VHF channel 22A between the hours of 0500 and 2200 and provide the vessel name, number of fish on board, and estimated time of arrival (C.6).</p>
<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• August 1-10;</li> <li>• September 1-30 (C.8.g, C.9).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California and north of Point Arena (C.6).</p> <p>In 2021, the season will open April 15 for all salmon except coho. Chinook minimum size limit of 27 inches total length. Gear restrictions same as in 2020. This opening could be modified following Council review at its March or April 2021 meetings.</p>
<p><b>Point Arena to Pigeon Point (San Francisco)</b></p> <ul style="list-style-type: none"> <li>• May 6-12, 18-31;</li> <li>• June 1-6, 14-30;</li> <li>• July 13-31;</li> <li>• August 1-28;</li> <li>• September 1-30 (C.8.g, C.9).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length through August, then 26 inches thereafter (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California. All salmon caught in the area prior to September 1 must be landed and offloaded no later than 11:59 p.m., August 30 (C.6). During September, all salmon must be landed south of Point Arena (C.6, C.11).</p> <p>In 2021, the season will open May 1 for all salmon except coho. Chinook minimum size limit of 27 inches total length. Gear restrictions same as in 2020. This opening could be modified following Council review at its March or April 2021 meetings.</p>
<p><b>Point Reyes to Point San Pedro (Fall Area Target Zone)</b></p> <ul style="list-style-type: none"> <li>• October 1-2, 5-9, 12-15.</li> </ul> <p>Open five days per week (Mon.-Fri.). All salmon except coho (C.4, C.7). Chinook minimum size limit of 26 inches total length (B, C.1). All salmon caught in this area must be landed between Point Arena and Pigeon Point (C.6, C.11). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3).</p>
<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>• May 1-12, 18-31;</li> <li>• June 1-6, 14-30;</li> <li>• July 13-31;</li> <li>• August 1-28 (C.8.g, C.9).</li> </ul> <p>Open seven days per week. All salmon except coho (C.4, C.7). Chinook minimum size limit of 27 inches total length (B, C.1). See compliance requirements (C.1) and gear restrictions and definitions (C.2, C.3). All salmon must be landed in California. All salmon caught in the area must be landed and offloaded no later than 11:59 p.m., August 30 (C.6).</p> <p>In 2021, the season will open May 1 for all salmon except coho. Chinook minimum size limit of 27 inches total length. Gear restrictions same as in 2020. This opening could be modified following Council review at its March or April 2021 meeting.</p>
<p><b>For all commercial troll fisheries in California:</b> California State regulations require all salmon be made available to a CDFW representative for sampling immediately at port of landing. Any person in possession of a salmon with a missing adipose fin, upon request by an authorized agent or employee of the CDFW, shall immediately relinquish the head of the salmon to the State (California Fish and Game Code §8226).</p>

TABLE 1. 2020 Commercial troll management measures for non-Indian ocean salmon fisheries – Council adopted. (Page 4 of 7)

B. MINIMUM SIZE (Inches) (See C.1)					
Area (when open)	Chinook		Coho		Pink
	Total Length	Head-off	Total Length	Head-off	
North of Cape Falcon	28	21.5	16	12	None
Cape Falcon to Humbug Mt.	28	21.5	-	-	None
Humbug Mt. to OR/CA Border (OR KMZ)	28	21.5	-	-	None
OR/CA Border to Humboldt South Jetty (CA KMZ)	Closed	-	-	-	-
Horse Mt. to Pt. Arena (FB)	27	20.5	-	-	27
Pt. Arena to Pigeon Pt. (SF) through August	27	20.5	-	-	27
Pt. Arena to Pigeon Pt. (SF) September-October	26	19.5	-	-	26
Pigeon Pt. to U.S./Mexico Border (MO)	27	20.5	-	-	27

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS**

C.1. Compliance with Minimum Size or Other Special Restrictions: All salmon on board a vessel must meet the minimum size, landing/possession limit, or other special requirements for the area being fished and the area in which they are landed if the area is open or has been closed less than 48 hours for that species of salmon. Salmon may be landed in an area that has been closed for a species of salmon more than 48 hours only if they meet the minimum size, landing/possession limit, or other special requirements for the area in which they were caught. Salmon may not be filleted prior to landing.

Any person who is required to report a salmon landing by applicable state law must include on the state landing receipt for that landing both the number and weight of salmon landed by species. States may require fish landing/receiving tickets be kept on board the vessel for 90 days or more after landing to account for all previous salmon landings.

C.2. Gear Restrictions:

- a. Salmon may be taken only by hook and line using single point, single shank, barbless hooks.
- b. Cape Falcon, Oregon, to the OR/CA border: No more than 4 spreads are allowed per line.
- c. OR/CA border to U.S./Mexico border: No more than 6 lines are allowed per vessel, and barbless circle hooks are required when fishing with bait by any means other than trolling.

C.3. Gear Definitions:

*Trolling defined:* Fishing from a boat or floating device that is making way by means of a source of power, other than drifting by means of the prevailing water current or weather conditions.

*Troll fishing gear defined:* One or more lines that drag hooks behind a moving fishing vessel engaged in trolling. In that portion of the fishery management area off Oregon and Washington, the line or lines must be affixed to the vessel and must not be intentionally disengaged from the vessel at any time during the fishing operation.

*Spread defined:* A single leader connected to an individual lure and/or bait.

*Circle hook defined:* A hook with a generally circular shape and a point which turns inward, pointing directly to the shank at a 90° angle.

C.4. Vessel Operation in Closed Areas with Salmon on Board:

- a. Except as provided under C.4.b below, it is unlawful for a vessel to have troll or recreational gear in the water while in any area closed to fishing for a certain species of salmon, while possessing that species of salmon; however, fishing for species other than salmon is not prohibited if the area is open for such species, and no salmon are in possession.
- b. When Genetic Stock Identification (GSI) samples will be collected in an area closed to commercial salmon fishing, the scientific research permit holder shall notify NOAA OLE, USCG, CDFW, WDFW, ODFW, and OSP at least 24 hours prior to sampling and provide the following information: the vessel name, date, location and time collection activities will be done. Any vessel collecting GSI samples in a closed area shall not possess any salmon other than those from which GSI samples are being collected. Salmon caught for collection of GSI samples must be immediately released in good condition after collection of samples.

TABLE 1. 2020 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted. (Page 5 of 7)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS (continued)**

**C.5. Control Zone Definitions:**

- a. *Cape Flattery Control Zone* - The area from Cape Flattery (48°23'00" N. lat.) to the northern boundary of the U.S. EEZ; and the area from Cape Flattery south to Cape Alava (48°10'00" N. lat.) and east of 125°05'00" W. long.
- b. *Mandatory Yelloweye Rockfish Conservation Area* – The area in Washington Marine Catch Area 3 from 48°00.00' N. lat.; 125°14.00' W. long. to 48°02.00' N. lat.; 125°14.00' W. long. to 48°02.00' N. lat.; 125°16.50' W. long. to 48°00.00' N. lat.; 125°16.50' W. long. and connecting back to 48°00.00' N. lat.; 125°14.00' W. long.
- c. *Grays Harbor Control Zone* - The area defined by a line drawn from the Westport Lighthouse (46° 53'18" N. lat., 124° 07'01" W. long.) to Buoy #2 (46° 52'42" N. lat., 124°12'42" W. long.) to Buoy #3 (46° 55'00" N. lat., 124°14'48" W. long.) to the Grays Harbor north jetty (46° 55'36" N. lat., 124°10'51" W. long.).
- d. *Columbia Control Zone* - An area at the Columbia River mouth, bounded on the west by a line running northeast/southwest between the red lighted Buoy #4 (46°13'35" N. lat., 124°06'50" W. long.) and the green lighted Buoy #7 (46°15'09" N. lat., 124°06'16" W. long.); on the east, by the Buoy #10 line which bears north/south at 357° true from the south jetty at 46°14'00" N. lat., 124°03'07" W. long. to its intersection with the north jetty; on the north, by a line running northeast/southwest between the green lighted Buoy #7 to the tip of the north jetty (46°15'48" N. lat., 124°05'20" W. long.), and then along the north jetty to the point of intersection with the Buoy #10 line; and, on the south, by a line running northeast/southwest between the red lighted Buoy #4 and tip of the south jetty (46°14'03" N. lat., 124°04'05" W. long.), and then along the south jetty to the point of intersection with the Buoy #10 line.
- e. *Klamath Control Zone* - The ocean area at the Klamath River mouth bounded on the north by 41°38'48" N. lat. (approximately 6 nautical miles north of the Klamath River mouth); on the west by 124°23'00" W. long. (approximately 12 nautical miles off shore); and on the south by 41°26'48" N. lat. (approximately 6 nautical miles south of the Klamath River mouth).
- f. Waypoints for the 40 fathom regulatory line from Cape Falcon to Humbug Mt. (50 CFR 660.71 (k) (12)-(70), when in place.

45°46.00' N. lat., 124°04.49' W. long.;	44°41.68' N. lat., 124°15.38' W. long.;	43°17.96' N. lat., 124°28.81' W. long.;
45°44.34' N. lat., 124°05.09' W. long.;	44°34.87' N. lat., 124°15.80' W. long.;	43°16.75' N. lat., 124°28.42' W. long.;
45°40.64' N. lat., 124°04.90' W. long.;	44°33.74' N. lat., 124°14.44' W. long.;	43°13.97' N. lat., 124°31.99' W. long.;
45°33.00' N. lat., 124°04.46' W. long.;	44°27.66' N. lat., 124°16.99' W. long.;	43°13.72' N. lat., 124°33.25' W. long.;
45°32.27' N. lat., 124°04.74' W. long.;	44°19.13' N. lat., 124°19.22' W. long.;	43°12.26' N. lat., 124°34.16' W. long.;
45°29.26' N. lat., 124°04.22' W. long.;	44°15.35' N. lat., 124°17.38' W. long.;	43°10.96' N. lat., 124°32.33' W. long.;
45°20.25' N. lat., 124°04.67' W. long.;	44°14.38' N. lat., 124°17.78' W. long.;	43°05.65' N. lat., 124°31.52' W. long.;
45°19.99' N. lat., 124°04.62' W. long.;	44°12.80' N. lat., 124°17.18' W. long.;	42°59.66' N. lat., 124°32.58' W. long.;
45°17.50' N. lat., 124°04.91' W. long.;	44°09.23' N. lat., 124°15.96' W. long.;	42°54.97' N. lat., 124°36.99' W. long.;
45°11.29' N. lat., 124°05.20' W. long.;	44°08.38' N. lat., 124°16.79' W. long.;	42°53.81' N. lat., 124°38.57' W. long.;
45°05.80' N. lat., 124°05.40' W. long.;	44°08.30' N. lat., 124°16.75' W. long.;	42°50.00' N. lat., 124°39.68' W. long.;
45°05.08' N. lat., 124°05.93' W. long.;	44°01.18' N. lat., 124°15.42' W. long.;	42°49.13' N. lat., 124°39.70' W. long.;
45°03.83' N. lat., 124°06.47' W. long.;	43°51.61' N. lat., 124°14.68' W. long.;	42°46.47' N. lat., 124°38.89' W. long.;
45°01.70' N. lat., 124°06.53' W. long.;	43°42.66' N. lat., 124°15.46' W. long.;	42°45.74' N. lat., 124°38.86' W. long.;
44°58.75' N. lat., 124°07.14' W. long.;	43°40.49' N. lat., 124°15.74' W. long.;	42°44.79' N. lat., 124°37.96' W. long.;
44°51.28' N. lat., 124°10.21' W. long.;	43°38.77' N. lat., 124°15.64' W. long.;	42°45.01' N. lat., 124°36.39' W. long.;
44°49.49' N. lat., 124°10.90' W. long.;	43°34.52' N. lat., 124°16.73' W. long.;	42°44.14' N. lat., 124°35.17' W. long.;
44°44.96' N. lat., 124°14.39' W. long.;	43°28.82' N. lat., 124°19.52' W. long.;	42°42.14' N. lat., 124°32.82' W. long.;
44°43.44' N. lat., 124°14.78' W. long.;	43°23.91' N. lat., 124°24.28' W. long.;	42°40.50' N. lat., 124°31.98' W. long.;
44°42.26' N. lat., 124°13.81' W. long.;	43°20.83' N. lat., 124°26.63' W. long.;	

- C.6. **Notification When Unsafe Conditions Prevent Compliance with Regulations:** If prevented by unsafe weather conditions or mechanical problems from meeting special management area landing restrictions, vessels must notify the U.S. Coast Guard and receive acknowledgment of such notification prior to leaving the area. This notification shall include the name of the vessel, port where delivery will be made, approximate number of salmon (by species) on board, the estimated time of arrival, and the specific reason the vessel is not able to meet special management area landing restrictions.

In addition to contacting the U.S. Coast Guard, vessels fishing south of the Oregon/California border must notify CDFW within one hour of leaving the management area by calling 800-889-8346 and providing the same information as reported to the U.S. Coast Guard. All salmon must be offloaded within 24 hours of reaching port.



TABLE 1. 2020 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted. (Page 6 of 7)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS** *(continued)*

C.7. Incidental Halibut Harvest: License applications for incidental harvest for halibut during commercial salmon fishing must be obtained from IPHC. The application deadline was March 15, 2020 to obtain a 2020 license from IPHC.

During the 2020 salmon troll season, incidental harvest is authorized only during April, May, and June, and after June 30 if quota remains and if announced on the NMFS hotline (phone: 800-662-9825 or 206-526-6667). WDFW, ODFW, and CDFW will monitor landings. If the landings are projected to exceed the IPHC's 44,899 pound preseason allocation or the total Area 2A non-Indian commercial halibut allocation, NMFS will take inseason action to prohibit retention of halibut in the non-Indian salmon troll fishery.

Beginning May 1, 2020 through the end of the 2020 salmon troll fishery, and beginning April 1, 2021, until modified through inseason action or superseded by the 2021 management measures the following applies:

License holders may land no more than one Pacific halibut per each two Chinook, except one Pacific halibut may be landed without meeting the ratio requirement, and no more than 35 halibut may be landed per trip.

Incidental Pacific halibut catch regulations in the commercial salmon troll fishery adopted for 2020, prior to any 2020 inseason action, will be in effect when incidental Pacific halibut retention opens on April 1, 2021 unless otherwise modified by inseason action at the March 2021 Council meeting.

- a. "C-shaped" yelloweye rockfish conservation area is an area to be voluntarily avoided for salmon trolling. NMFS and the Council request salmon trollers voluntarily avoid this area in order to protect yelloweye rockfish. The area is defined in the Pacific Council Halibut Catch Sharing Plan in the North Coast subarea (Washington marine area 3), with the following coordinates in the order listed:

48°18' N. lat.; 125°18' W. long.;  
 48°18' N. lat.; 124°59' W. long.;  
 48°11' N. lat.; 124°59' W. long.;  
 48°11' N. lat.; 125°11' W. long.;  
 48°04' N. lat.; 125°11' W. long.;  
 48°04' N. lat.; 124°59' W. long.;  
 48°00' N. lat.; 124°59' W. long.;  
 48°00' N. lat.; 125°18' W. long.;  
 and connecting back to 48°18' N. lat.; 125°18' W. long.

C.8. Inseason Management: In addition to standard inseason actions or modifications already noted under the season description, the following inseason guidance is provided to NMFS:

- a. Chinook remaining from the May through June non-Indian commercial troll harvest guideline north of Cape Falcon may be transferred to the July through September harvest guideline if the transfer would not result in exceeding preseason impact expectations on any stocks.
- b. Chinook remaining from May, June, and/or July non-Indian commercial troll quotas in the Oregon or California KMZ may be transferred to the Chinook quota for the next open period if the transfer would not result in exceeding preseason impact expectations on any stocks.
- c. NMFS may transfer salmon between the recreational and commercial fisheries north of Cape Falcon if there is agreement among the areas' representatives on the Salmon Advisory Subpanel (SAS), and if the transfer would not result in exceeding preseason impact expectations on any stocks.
- d. At the March 2021 meeting, the Council will consider inseason recommendations for special regulations for any experimental fisheries (proposals must meet Council protocol and be received in November 2020).
- e. If retention of unmarked coho (adipose fin intact) is permitted by inseason action, the allowable coho quota will be adjusted to ensure preseason projected impacts on all stocks is not exceeded.
- f. Landing limits may be modified inseason to sustain season length and keep harvest within overall quotas.
- g. NMFS may close fisheries through inseason action on the recommendation of the affected state(s) of Washington, Oregon or California where the recommendation to close is informed by an evaluation of actions or orders promulgated or issued by jurisdictions in these areas to address public health concerns related to COVID-19 concluding that these actions would likely make access to the fishery impracticable (e.g., restrictions on activities or closure of harbors, launch ramps and other forms of access) or would make information essential to manage and implement the fishery unavailable. NMFS should open fisheries closed on this basis through inseason action upon notice from the affected State(s) that said actions or orders making access to the fishery impracticable have been lifted and information essential to manage and implement the fishery would be available.

C.9. State Waters Fisheries: Consistent with Council management objectives:

- a. The State of Oregon may establish additional late-season fisheries in state waters.
- b. The State of California may establish limited fisheries in selected state waters.
- c. Check state regulations for details

TABLE 1. 2020 Commercial troll management measures for non-Indian ocean salmon fisheries - Council adopted. (Page 7 of 7)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS** *(continued)*

C.10. For the purposes of California Fish and Game Code, Section 8232.5, the definition of the Klamath Management Zone (KMZ) for the ocean salmon season shall be that area from Humbug Mountain, Oregon, to Horse Mountain, California.

C.11. Latitudes for geographical reference of major landmarks along the west coast. Source: 2018 West Coast federal salmon regulations. <https://www.govinfo.gov/content/pkg/FR-2018-05-01/pdf/2018-09164.pdf>.

Cape Flattery, WA	48°23'00" N lat.	Humboldt South Jetty, CA	40°45'53" N lat.
Cape Alava, WA	48°10'00" N lat.	Horse Mountain, CA	40°05'00" N lat.
Queets River, WA	47°31'42" N lat.	Point Arena, CA	38°57'30" N lat.
Leadbetter Point, WA	46°38'10" N lat.	Point Reyes, CA	37°59'44" N lat.
Cape Falcon, OR	45°46'00" N lat.	Point San Pedro, CA	37°35'40" N lat.
Florence South Jetty, OR	44°00'54" N lat.	Pigeon Point, CA	37°11'00" N lat.
South end Heceta Bank line, OR	44°00'54" N lat.	Point Sur, CA	36°18'00" N lat.
Humbug Mountain, OR	43°58'00" N lat.	Point Conception, CA	34°27'00" N lat.
Oregon-California border	42°00'00" N lat.		



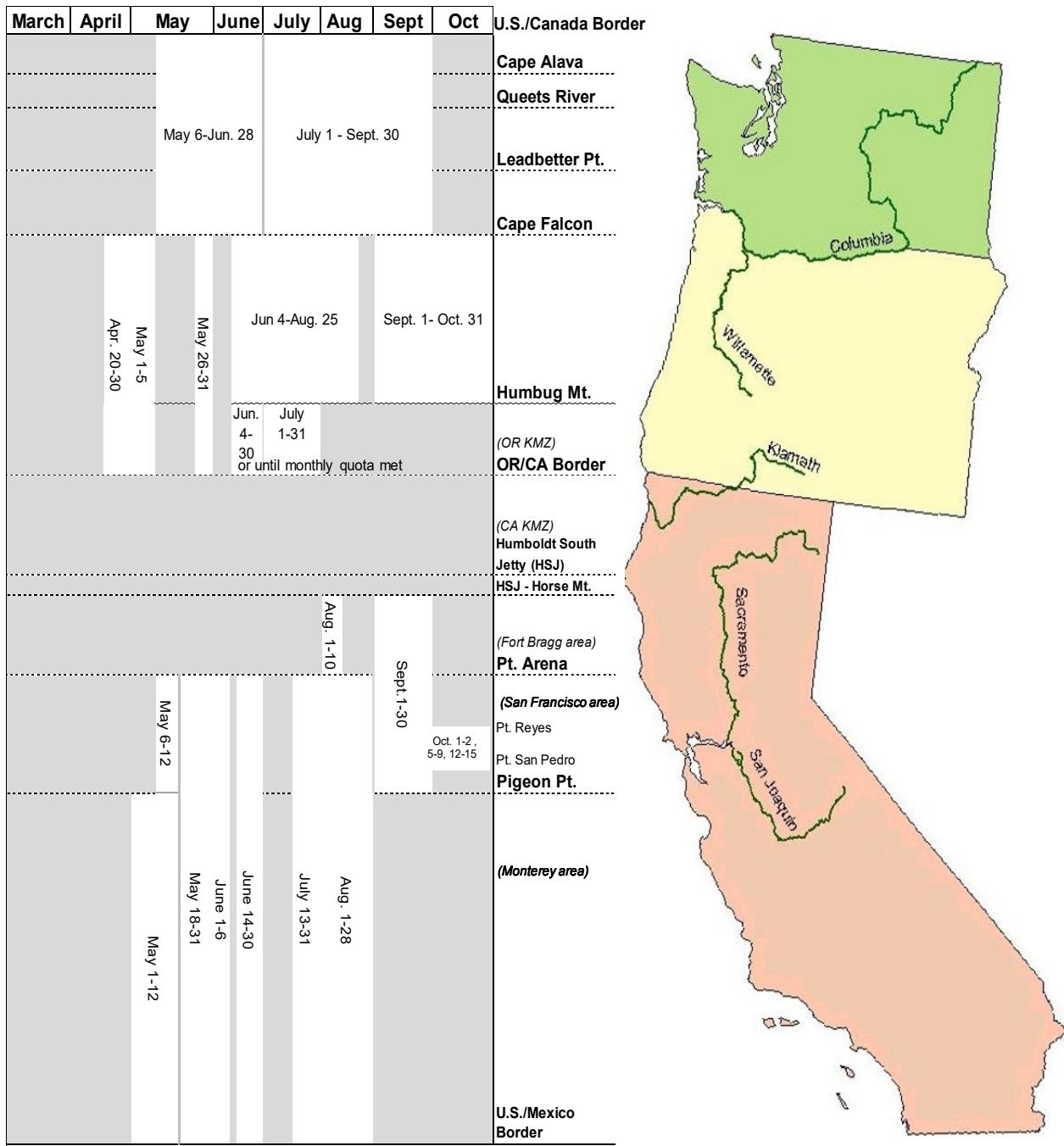


FIGURE 1. 2020 non-Indian commercial salmon seasons – Council adopted.

TABLE 2. 2020 Recreational management measures for non-Indian ocean salmon fisheries - Council adopted. (Page 1 of 5)

<b>A. SEASON DESCRIPTIONS</b>
<b>North of Cape Falcon</b>
<b>Supplemental Management Information</b>
<ol style="list-style-type: none"> <li>1. Overall non-Indian TAC: 54,000 Chinook and 28,500 coho marked with a healed adipose fin clip (marked).</li> <li>2. Recreational TAC: 26,360 Chinook and 26,500 marked coho; all retained coho must be marked.</li> <li>3. Commercial troll traded 2,560 marked coho to the recreational fishery for 640 Chinook.</li> <li>4. No Area 4B add-on fishery.</li> <li>5. Buoy 10 fishery opens August 1 with an expected landed catch of 16,280 marked coho in August and September.</li> </ol>
<p><b>U.S./Canada Border to Cape Alava (Neah Bay Subarea)</b></p> <ul style="list-style-type: none"> <li>• June 20 through the earlier of September 30, or 2,760 marked coho subarea quota, with a subarea guideline of 5,600 Chinook (C.5).</li> </ul> <p>Open seven days a week. See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p> <p>During June 20-28: All salmon except coho; one salmon per day (C.1).</p> <p>Beginning June 29: All salmon, except no chum beginning August 1; two salmon per day. All coho must be marked with a healed adipose fin clip (C.1).</p> <p>Beginning August 1, Chinook non-retention east of the Bonilla-Tatoosh line (C.4.a) during Council managed ocean fishery.</p>
<p><b>Cape Alava to Queets River (La Push Subarea)</b></p> <ul style="list-style-type: none"> <li>• June 20 through the earlier of September 30, or 690 marked coho subarea quota, with a subarea guideline of 1,300 Chinook (C.5).</li> </ul> <p>Open seven days a week. See salmon minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p> <p>During June 20-28: All salmon except coho; one salmon per day (C.1).</p> <p>Beginning June 29: All salmon, except no chum beginning August 1; two salmon per day. All coho must be marked with a healed adipose fin clip (C.1).</p>
<p><b>Queets River to Leadbetter Point (Westport Subarea)</b></p> <ul style="list-style-type: none"> <li>• June 20 through the earlier of September 30, or 9,800 marked coho subarea quota, with a subarea guideline of 12,460 Chinook (C.5).</li> </ul> <p>Chinook minimum size limit of 22 inches total length (B). Coho minimum size limit of 16 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>During June 20-28: Open seven days per week. All salmon except coho; one salmon per day (C.1).</p> <p>Beginning June 29: Open five days per week (Sun.-Thurs.). All salmon; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (C.1).</p> <p>Grays Harbor Control Zone closed beginning August 10 (C.4.b).</p>
<p><b>Leadbetter Point to Cape Falcon (Columbia River Subarea)</b></p> <ul style="list-style-type: none"> <li>• June 20 through the earlier of September 30, or 13,250 marked coho subarea quota, with a subarea guideline of 7,000 Chinook (C.5).</li> </ul> <p>Chinook minimum size limit of 22 inches total length (B). Coho minimum size limit of 16 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>During June 20-28: Open seven days per week. All salmon except coho; one salmon per day (C.1).</p> <p>Beginning June 29, open seven days per week. All salmon; two salmon per day, no more than one of which may be a Chinook. All coho must be marked with a healed adipose fin clip (C.1).</p> <p>Columbia Control Zone closed (C.4.c).</p>
<p><b>For all Recreational fisheries north of Cape Falcon:</b> Inseason management may be used to sustain season length and keep harvest within the overall Chinook and coho recreational TACs for north of Cape Falcon (C.5).</p>

TABLE 2. 2020 Recreational management measures for non-Indian ocean salmon fisheries – Council adopted. (Page 2 of 5)
<b>A. SEASON DESCRIPTIONS</b>
<b>South of Cape Falcon</b>
<b>Supplemental Management Information</b>
<ol style="list-style-type: none"> <li>1. Sacramento River fall Chinook spawning escapement of 233,174 hatchery and natural area adults.</li> <li>2. Sacramento Index exploitation rate of 50.7%.</li> <li>3. Klamath River recreational fishery allocation: 1,296 adult Klamath River fall Chinook.</li> <li>4. Klamath tribal allocation: 8,632 adult Klamath River fall Chinook.</li> <li>5. Overall recreational coho TAC: 22,000 coho marked with a healed adipose fin clip (marked), and 3,000 coho in the non-mark-selective coho fishery.</li> <li>6. Fisheries may need to be adjusted to meet NMFS ESA consultation standards, FMP requirements, other management objectives, or upon receipt of new allocation recommendations from the California Fish and Game Commission (CFGC).</li> </ol>
<p><b>Cape Falcon to Humbug Mt.</b></p> <ul style="list-style-type: none"> <li>• March 15-October 31 (C.6), except as provided below during the all-salmon mark-selective fishery and the non-mark-selective coho fishery (C.5).</li> </ul> <p>Open seven days per week. All salmon except coho, two fish per day (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2021, the season will open March 15 for all salmon except coho, two salmon per day (C.1). Same minimum size limits (B), and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting (C.5).</p>
<p><b>Cape Falcon to Humbug Mt.</b> <u>Mark-selective coho fishery:</u></p> <ul style="list-style-type: none"> <li>• June 27 through the earlier of August 16, or 22,000 marked coho quota (C.5.g, C.6).</li> </ul> <p>Open seven days per week. All salmon, two salmon per day. All retained coho must be marked with a healed adipose fin clip (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p> <p>Any remainder of the mark-selective coho quota may be transferred inseason on an impact neutral basis to the non-selective coho quota from Cape Falcon to Humbug Mountain (C.5).</p>
<p><b>Cape Falcon to Humbug Mt.</b> <u>Non-mark-selective coho fishery:</u></p> <ul style="list-style-type: none"> <li>• September 4-5, and open each Friday and Saturday through the earlier of September 30, or 3,000 non-mark-selective coho quota (C.5.g, C.6). Open days may be modified inseason.</li> </ul> <p>All salmon, two salmon per day (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p>
<p><b>Humbug Mt. to OR/CA Border (Oregon KMZ)</b></p> <ul style="list-style-type: none"> <li>• June 20-August 7 (C.5.g, C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). See minimum size limits (B). See gear restrictions and definitions (C.2, C.3).</p>
<p><b>For Recreational Fisheries from Cape Falcon to Humbug Mt.:</b> Fishing in the Stonewall Bank yelloweye rockfish conservation area restricted to trolling only on days the all depth recreational halibut fishery is open (call the halibut fishing hotline 1-800-662-9825 for specific dates) (C.3.b, C.4.d).</p>

TABLE 2. 2020 Recreational management measures for non-Indian ocean salmon fisheries – Council adopted. (Page 3 of 5)
A. SEASON DESCRIPTIONS
<p><b>OR/CA Border to Horse Mt. (California KMZ)</b></p> <ul style="list-style-type: none"> <li>• June 6-August 9 (C.5.f, C.5.g, C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>Klamath Control Zone closed in August (C.4.e). See California State regulations for additional closures adjacent to the Smith, Eel, and Klamath Rivers.</p> <p>In 2021, season opens May 1 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B); and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting.</p>
<p><b>Horse Mt. to Point Arena (Fort Bragg)</b></p> <ul style="list-style-type: none"> <li>• May 1-November 8 (C.5.f, C.5.g, C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2021, season opens April 3 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length (B); and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting.</p>
<p><b>Point Arena to Pigeon Point (San Francisco)</b></p> <ul style="list-style-type: none"> <li>• May 1-November 8 (C.5.f, C.5.g, C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 20 inches total length. See gear restrictions and definitions (C.2, C.3).</p> <p>In 2021, season opens April 3 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B); and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting.</p>
<p><b>Pigeon Point to U.S./Mexico Border (Monterey)</b></p> <ul style="list-style-type: none"> <li>• May 1-October 4 (C.5.f, C.5.g, C.6).</li> </ul> <p>Open seven days per week. All salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B). See gear restrictions and definitions (C.2, C.3).</p> <p>In 2021, season opens April 3 for all salmon except coho, two salmon per day (C.1). Chinook minimum size limit of 24 inches total length (B); and the same gear restrictions as in 2020 (C.2, C.3). This opening could be modified following Council review at its March 2021 meeting.</p>
<p>California State regulations require all salmon be made available to a CDFW representative for sampling immediately at port of landing. Any person in possession of a salmon with a missing adipose fin, upon request by an authorized agent or employee of the CDFW, shall immediately relinquish the head of the salmon to the State (California Code of Regulations Title 14 Section 1.73).</p>

**B. MINIMUM SIZE (Inches) (See C.1)**

Area (when open)	Chinook	Coho	Pink
North of Cape Falcon (Westport and Col R)	22	16	None
North of Cape Falcon (Neah Bay and La Push)	24	16	None
Cape Falcon to Humbug Mt.	24	16	None
Humbug Mt. to OR/CA Border (OR KMZ)	24	-	None
OR/CA Border to Horse Mt. (CA KMZ)	20	-	20
Horse Mt. to Pt. Arena (FB)	20	-	20
Pt. Arena to Pigeon Pt. (SF)	20	-	20
Pigeon Pt. to U.S./Mexico Border (MO)	24	-	24

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 4 of 5)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS**

- C.1. **Compliance with Minimum Size and Other Special Restrictions:** All salmon on board a vessel must meet the minimum size or other special requirements for the area being fished and the area in which they are landed if that area is open. Salmon may be landed in an area that is closed only if they meet the minimum size or other special requirements for the area in which they were caught. Salmon may not be filleted prior to landing.
- Ocean Boat Limits:* Off the coast of Washington, Oregon, and California each fisher aboard a vessel may continue to use angling gear until the combined daily limits of Chinook and coho salmon for all licensed and juvenile anglers aboard have been attained (additional state restrictions may apply).
- C.2. **Gear Restrictions:** Salmon may be taken only by hook and line using barbless hooks. All persons fishing for salmon, and all persons fishing from a boat with salmon on board must meet the gear restrictions listed below for specific areas or seasons.
- U.S./Canada Border to Pt. Conception, California:* No more than one rod may be used per angler; and no more than two single point, single shank, barbless hooks are required for all fishing gear.
  - Horse Mt., California, to Pt. Conception, California:* Single point, single shank, barbless circle hooks (see gear definitions below) are required when fishing with bait by any means other than trolling, and no more than two such hooks shall be used. When angling with two hooks, the distance between the hooks must not exceed five inches when measured from the top of the eye of the top hook to the inner base of the curve of the lower hook, and both hooks must be permanently tied in place (hard tied). Circle hooks are not required when artificial lures are used without bait.
- C.3. **Gear Definitions:**
- Recreational fishing gear defined:* Off Oregon and Washington, angling tackle consists of a single line that must be attached to a rod and reel held by hand or closely attended; the rod and reel must be held by hand while playing a hooked fish. No person may use more than one rod and line while fishing off Oregon or Washington. Off California, the line must be attached to a rod and reel held by hand or closely attended; weights directly attached to a line may not exceed four pounds (1.8 kg). While fishing off California north of Pt. Conception, no person fishing for salmon, and no person fishing from a boat with salmon on board, may use more than one rod and line. Fishing includes any activity which can reasonably be expected to result in the catching, taking, or harvesting of fish.
  - Trolling defined:* Angling from a boat or floating device that is making way by means of a source of power, other than drifting by means of the prevailing water current or weather conditions.
  - Circle hook defined:* A hook with a generally circular shape and a point which turns inward, pointing directly to the shank at a 90° angle.
- C.4. **Control Zone Definitions:**
- The Bonilla-Tatoosh Line:* A line running from the western end of Cape Flattery to Tatoosh Island Lighthouse (48°23'30" N. lat., 124°44'12" W. long.) to the buoy adjacent to Duntze Rock (48°24'37" N. lat., 124°44'37" W. long.), then in a straight line to Bonilla Pt. (48°35'39" N. lat., 124°42'58" W. long.) on Vancouver Island, British Columbia.
  - Grays Harbor Control Zone -* The area defined by a line drawn from the Westport Lighthouse (46° 53'18" N. lat., 124° 07'01" W. long.) to Buoy #2 (46° 52'42" N. lat., 124°12'42" W. long.) to Buoy #3 (46° 55'00" N. lat., 124°14'48" W. long.) to the Grays Harbor north jetty (46° 55'36" N. lat., 124°10'51" W. long.).
  - Columbia Control Zone:* An area at the Columbia River mouth, bounded on the west by a line running northeast/southwest between the red lighted Buoy #4 (46°13'35" N. lat., 124°06'50" W. long.) and the green lighted Buoy #7 (46°15'09" N. lat., 124°06'16" W. long.); on the east, by the Buoy #10 line which bears north/south at 357° true from the south jetty at 46°14'00" N. lat., 124°03'07" W. long. to its intersection with the north jetty; on the north, by a line running northeast/southwest between the green lighted Buoy #7 to the tip of the north jetty (46°15'48" N. lat., 124°05'20" W. long. and then along the north jetty to the point of intersection with the Buoy #10 line; and on the south, by a line running northeast/southwest between the red lighted Buoy #4 and tip of the south jetty (46°14'03" N. lat., 124°04'05" W. long.), and then along the south jetty to the point of intersection with the Buoy #10 line.
  - Stonewall Bank Yelloweye Rockfish Conservation Area:* The area defined by the following coordinates in the order listed:  
44°37.46' N. lat.; 124°24.92' W. long.  
44°37.46' N. lat.; 124°23.63' W. long.  
44°28.71' N. lat.; 124°21.80' W. long.  
44°28.71' N. lat.; 124°24.10' W. long.  
44°31.42' N. lat.; 124°25.47' W. long.  
and connecting back to 44°37.46' N. lat.; 124°24.92' W. long.
  - Klamath Control Zone:* The ocean area at the Klamath River mouth bounded on the north by 41°38'48" N. lat. (approximately 6 nautical miles north of the Klamath River mouth); on the west by 124°23'00" W. long. (approximately 12 nautical miles off shore); and, on the south by 41°26'48" N. lat. (approximately 6 nautical miles south of the Klamath River mouth).

TABLE 2. 2020 Recreational management Alternatives for non-Indian ocean salmon fisheries - Council adopted. (Page 5 of 5)

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS** *(continued)*

- C.5. Inseason Management: Regulatory modifications may become necessary inseason to meet preseason management objectives such as quotas, harvest guidelines, and season duration. In addition to standard inseason actions or modifications already noted under the season description, the following inseason guidance is provided to NMFS:
- a. Actions could include modifications to bag limits, or days open to fishing, and extensions or reductions in areas open to fishing.
  - b. Coho may be transferred inseason among recreational subareas north of Cape Falcon to help meet the recreational season duration objectives (for each subarea) after conferring with representatives of the affected ports and the Council's SAS recreational representatives north of Cape Falcon, and if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - c. Chinook and coho may be transferred between the recreational and commercial fisheries north of Cape Falcon if there is agreement among the representatives of the SAS, and if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - d. Fishery managers may consider inseason action modifying regulations restricting retention of unmarked (adipose fin intact) coho. To remain consistent with preseason expectations, any inseason action shall consider, if significant, the difference between observed and preseason forecasted (adipose-clipped) mark rates. Such a consideration may also include a change in bag limit of two salmon, no more than one of which may be a coho.
  - e. Marked coho remaining from the Cape Falcon to Humbug Mt. recreational mark-selective coho quota may be transferred inseason to the Cape Falcon to Humbug Mt. non-mark-selective recreational fishery if the transfer would not result in exceeding preseason impact expectations on any stocks.
  - f. NMFS may by inseason action close recreational fisheries between May 1 and June 15, 2020 in the Fort Bragg, San Francisco, and Monterey subareas on the recommendation of the California Department of Fish and Wildlife. The recommendation to close would be informed by an evaluation of actions or orders enacted by jurisdictions in these subareas to address public health concerns related to COVID-19 that would make access to the ocean salmon recreational fishery impracticable (e.g., restrictions on activities or closure of harbors, launch ramps and other forms of access). If NMFS closes these subareas May 1-15, May 16-31, June 1-15, or an additive combination of these specific date ranges in succession; NMFS may by inseason action extend the season in the California KMZ beyond August 9 not to exceed August 31 if the STT determines that such opening would not increase impacts to stocks in the FMP beyond those described in Table 5 of Pre-III for 2020, and would otherwise meet the objectives described in that table, including but not limited to 50/50 harvest sharing with the Klamath River Tribes (Yurok and Hoopa Valley Tribe).
  - g. NMFS may close fisheries through inseason action on the recommendation of the affected state(s) of Washington, Oregon or California where the recommendation to close is informed by an evaluation of actions or orders promulgated or issued by jurisdictions in these areas to address public health concerns related to COVID-19 concluding that these actions would likely make access to the fishery impracticable (e.g., restrictions on activities or closure of harbors, launch ramps and other forms of access) or would make information essential to manage and implement the fishery unavailable. NMFS should open fisheries closed on this basis through inseason action upon notice from the affected State(s) that said actions or orders making access to the fishery impracticable have been lifted and information essential to manage and implement the fishery would be available.
- C.6. Additional Seasons in State Territorial Waters: Consistent with Council management objectives, the States of Washington, Oregon, and California may establish limited seasons in state waters. Check state regulations for details.

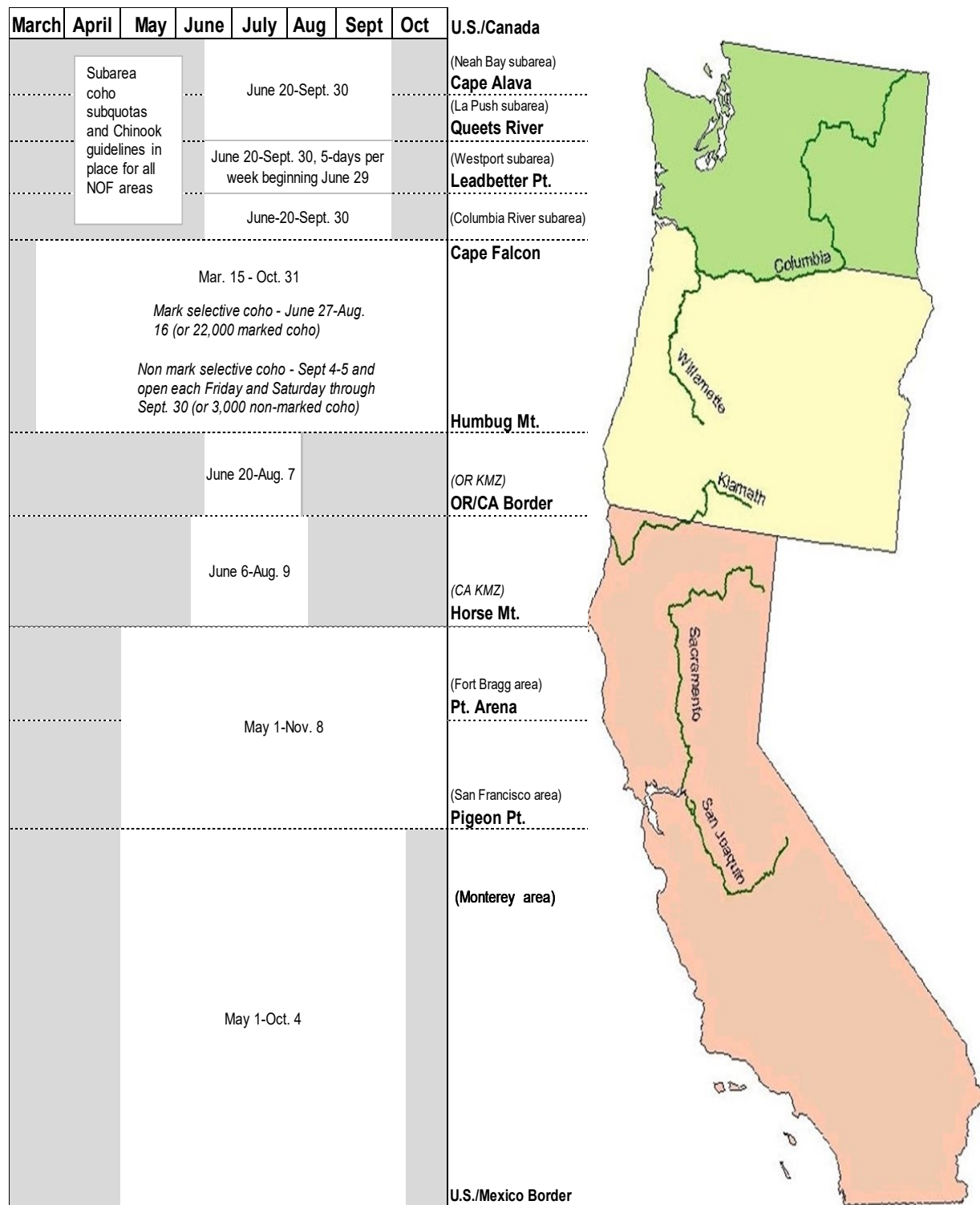


FIGURE 2. 2020 recreational salmon seasons – Council adopted.



TABLE 3. 2020 Treaty Indian ocean troll management measures for ocean salmon fisheries - Council adopted. (Page 1 of 2)

<b>A. SEASON DESCRIPTIONS</b>	
<b>Supplemental Management Information</b>	
1. Overall Treaty-Indian TAC: 35,000 Chinook and 16,500 coho. 2. Overall Chinook and/or coho TACs may need to be reduced or fisheries adjusted to meet NMFS ESA guidance, FMP requirements, upon conclusion of negotiations in the North of Falcon forum, or upon receipt of preseason catch and abundance expectations for Canadian and Alaskan fisheries.	
<ul style="list-style-type: none"> <li>• May 1 through the earlier of June 30 or 17,500 Chinook quota.</li> </ul> All salmon may be retained except coho. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season (C.5). See size limit (B) and other restrictions (C).	
<ul style="list-style-type: none"> <li>• July 1 through the earlier of September 15, or 17,500 Chinook quota, or 16,500 coho quota.</li> </ul> All Salmon. See size limit (B) and other restrictions (C).	

<b>B. MINIMUM LENGTH (TOTAL INCHES)</b>					
Area (when open)	Chinook		Coho		Pink
	Total Length	Head-off	Total Length	Head-off	
North of Cape Falcon	24.0 (61.0 cm)	18.0 (45.7 cm)	16.0 (40.6 cm)	12.0 (30.5 cm)	None

**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS**

C.1. Tribe and Area Boundaries. All boundaries may be changed to include such other areas as may hereafter be authorized by a Federal court for that tribe's treaty fishery.

S'KLALLAM - Washington State Statistical Area 4B (defined to include those waters of Puget Sound easterly of a line projected from the Bonilla Point light on Vancouver Island to the Tatoosh Island light, thence to the most westerly point on Cape Flattery and westerly of a line projected true north from the fishing boundary marker at the mouth of the Sekiu River [WAC 220-301-030]).

MAKAH - Washington State Statistical Area 4B and that portion of the FMA north of 48°02'15" N. lat. (Norwegian Memorial) and east of 125°44'00" W. long.

QUILEUTE - A polygon commencing at Cape Alava, located at latitude 48°10'00" north, longitude 124°43'56.9" west; then proceeding west approximately forty nautical miles at that latitude to a northwestern point located at latitude 48°10'00" north, longitude 125°44'00" west; then proceeding in a southeasterly direction mirroring the coastline at a distance no farther than forty nautical miles from the mainland Pacific coast shoreline at any line of latitude, to a southwestern point at latitude 47°31'42" north, longitude 125°20'26" west; then proceeding east along that line of latitude to the Pacific coast shoreline at latitude 47°31'42" north, longitude 124°21'9.0" west.

HOH - That portion of the FMA between 47°54'18" N. lat. (Quillayute River) and 47°21'00" N. lat. (Quinault River) and east of 125°44'00" W. long.

QUINAULT - A polygon commencing at the Pacific coast shoreline near Destruction Island, located at latitude 47°40'06" north, longitude 124°23'51.362" west; then proceeding west approximately thirty nautical miles at that latitude to a northwestern point located at latitude 47°40'06" north, longitude 125°08'30" west; then proceeding in a southeasterly direction mirroring the coastline no farther than thirty nautical miles from the mainland Pacific coast shoreline at any line of latitude, to a southwestern point at latitude 46°53'18" north, longitude 124°53'53" west; then proceeding east along that line of latitude to the Pacific coast shoreline at latitude 46°53'18" north, longitude 124°7'36.6" west.

C.2. Gear restrictions

- a. Single point, single shank, barbless hooks are required in all fisheries.
- b. No more than eight fixed lines per boat.
- c. No more than four hand held lines per person in the Makah area fishery (Washington State Statistical Area 4B and that portion of the FMA north of 48°02'15" N. lat. (Norwegian Memorial) and east of 125°44'00" W. long.)

C.3. Quotas

- a. The quotas include troll catches by the S'Klallam and Makah Tribes in Washington State Statistical Area 4B from May 1 through September 15.
- b. The Quileute Tribe may continue a ceremonial and subsistence fishery during the time frame of October 1 through October 15 in the same manner as in 2004-2015. Fish taken during this fishery are to be counted against treaty troll quotas established for the 2020 season (estimated harvest during the October ceremonial and subsistence fishery: 20 Chinook; 40 coho).



**C. REQUIREMENTS, DEFINITIONS, RESTRICTIONS, OR EXCEPTIONS** *(continued)*

C.4. Area Closures

- a. The area within a six nautical mile radius of the mouths of the Queets River (47°31'42" N. lat.) and the Hoh River (47°45'12" N. lat.) will be closed to commercial fishing.
- b. A closure within two nautical miles of the mouth of the Quinault River (47°21'00" N. lat.) may be enacted by the Quinault Nation and/or the State of Washington and will not adversely affect the Secretary of Commerce's management regime.

C.5. Inseason Management: In addition to standard inseason actions or modifications already noted under the season description, the following inseason guidance is provided to NMFS:

- a. Chinook remaining from the May through June treaty-Indian ocean troll harvest guideline north of Cape Falcon may be transferred to the July through September harvest guideline on a fishery impact equivalent basis.

TABLE 4. Chinook and coho harvest quotas and guidelines for 2020 ocean salmon fishery management measures - Council adopted.

Fishery or Quota Designation	Chinook	Coho
<b>NORTH OF CAPE FALCON</b>		
TREATY INDIAN OCEAN TROLL <sup>a/</sup>		
U.S./Canada Border to Cape Falcon (All Except Coho)	17,500	-
U.S./Canada Border to Cape Falcon (All Species)	17,500	16,500
Subtotal Treaty Indian Ocean Troll	35,000	16,500
NON-INDIAN COMMERCIAL TROLL <sup>b/</sup>		
U.S./Canada Border to Cape Falcon (All Except Coho)	13,820	-
U.S./Canada Border to Cape Falcon (All Species)	13,820	2,000
Subtotal Non-Indian Commercial Troll	27,640	2,000
RECREATIONAL		
U.S./Canada Border to Cape Alava <sup>b/</sup>	5,600	2,760
Cape Alava to Queets River <sup>b/</sup>	1,300	690
Queets River to Leadbetter Pt. <sup>b/</sup>	12,460	9,800
Leadbetter Pt. to Cape Falcon <sup>b/c/</sup>	7,000	13,250
Subtotal Recreational	26,360	26,500
TOTAL NORTH OF CAPE FALCON	89,000	45,000
<b>SOUTH OF CAPE FALCON</b>		
COMMERCIAL TROLL <sup>a/</sup>		
Humbog Mt. to OR/CA Border	1,000	-
OR/CA Border to Humboldt South Jetty	-	-
Subtotal Troll	1,000	-
RECREATIONAL		
Cape Falcon to OR/CA Border	-	25,000 <sup>d/</sup>
TOTAL SOUTH OF CAPE FALCON	1,000	25,000

a/ Quotas are non-mark selective for both Chinook and coho.

b/ Quotas are non-mark-selective for Chinook and mark-selective for coho.

c/ Does not include Buoy 10 fishery. Expected catch of 17,600 Chinook and 16,280 marked coho.

d/ The quota consists of both mark-selective and non-mark-selective quotas of 22,000 and 3,000, respectively.

EA part 3 (Preseason Report III) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 5. Projected key stock escapements (thousands of fish) or management criteria for 2020 ocean salmon fishery management measures - Council adopted.<sup>a/</sup> (Page 1 of 4)

Key Stock/Criteria	2020		Spawner Objective or Other Comparative Standard as Noted <sup>b/</sup>
	PROJECTED	Criteria	
CHINOOK	CHINOOK	CHINOOK	CHINOOK
<u>SRKW PREY ABUNDANCE:</u>			
North of Falcon	1,249.8	≥ 972.0	Oct 1 starting abundance of age 3+ Chinook from U.S./Canada Border to Cape Falcon
Falcon to Horse Mt.	1,070.2	NA	Oct 1 starting abundance of age 3+ Chinook from Cape Falcon to Horse Mt.
South of Horse Mt.	542.4	NA	Oct 1 starting abundance of age 3+ Chinook south of Horse Mt.
<u>PUGET SOUND:</u>			
Elwha Summer/Fall	3.3%	≤ 10.0%	Southern U.S. exploitation rate (NMFS ESA consultation standard).
Dungeness Spring	3.4%	≤ 10.0%	Southern U.S. exploitation rate (NMFS ESA consultation standard).
Mid-Hood Canal Summer/Fall	12.2%	TBD	Preterminal Southern U.S. exploitation rate. Discussions are ongoing between WA state and tribal co-managers regarding a conservation standard for 2020 that is in accordance with NMFS guidance.
Skokomish Summer/Fall	48.3%	≤ 50.0%	Total exploitation rate (NMFS ESA consultation standard).
Nooksack Spring	10.5%	≤ 10.5%	Southern U.S. exploitation rate (NMFS ESA consultation standard).
	0.94	≤ 1.00	ISBM obligation applicable, as this stock lacks a CTC agreed escapement goal. Compliance assessed postseason by the PSC.
Skagit Summer/Fall	48.0%	≤ 48.0%	Total exploitation rate (NMFS ESA consultation standard).
	--	≤ 0.95	ISBM obligation not applicable, escapement goal expected to be met. Compliance assessed postseason by the PSC.
Skagit Spring	9.0%	≤ 10.3%	Southern U.S. exploitation rate (NMFS ESA consultation standard).
	--	≤ 0.95	ISBM obligation not applicable, escapement goal expected to be met. Compliance assessed postseason by the PSC.
Stillaguamish Summer/Fall	18.4%	≤ 22.0%	Rebuilding exploitation rate (NMFS ESA consultation standard).
	0.48	≤ 1.00	ISBM obligation applicable, as this stock lacks a CTC agreed escapement goal. Compliance assessed postseason by the PSC.
Snohomish Summer/Fall	7.7%	≤ 8.0%	Southern U.S. exploitation rate limit under critical abundance forecast for 2020 (NMFS ESA consultation standard).
	0.65	≤ 1.00	ISBM obligation applicable, as this stock lacks a CTC agreed escapement goal. Compliance assessed postseason by the PSC.
Lake Washington Summer/Fall	0.571	≥ 0.500	Natural-origin escapement in the Cedar River (NMFS ESA consultation standard).
Green River Summer/Fall	≥ 1.200	≥ 1.200	Natural-origin spawning escapement (NMFS ESA consultation standard). Spawner objective can be met through fishery mgmt and/or hatchery broodstock management actions.
White River Spring	15.7%	≤ 22.0%	Southern U.S. exploitation rate (NMFS ESA consultation standard).
Puyallup Summer/Fall	1.157	≥ 0.750	Natural-origin spawning escapement (NMFS ESA consultation standard). Spawner objective can be met through fishery mgmt and/or hatchery broodstock management actions.
Nisqually River Summer/Fall	48.8%	≤ 47.0%	Total exploitation rate, (NMFS ESA consultation standard). An additional 2% ER may be added to facilitate inriver selective gear studies after meeting base criteria during final preseason modeling.
Puget Sound Spring	1.8%	≤ 3.0%	Exploitation rate in PFMC fisheries (NMFS ESA consultation standard).
Puget Sound Summer/Fall	4.8%	≤ 6.0%	Exploitation rate in PFMC fisheries (NMFS ESA consultation standard).

EA part 3 (Preseason Report III) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 5. Projected key stock escapements (thousands of fish) or management criteria for 2020 ocean fishery management measures - Council Adopted.<sup>a/</sup> (Page 2 of 4)

Key Stock/Criteria	PROJECTED	2020 Criteria	Spawner Objective or Other Comparative Standard as Noted <sup>b/</sup>
<b>CHINOOK</b>	<b>CHINOOK</b>		<b>CHINOOK</b>
<u>WASHINGTON COAST:</u>			
Hoko Fall	2.170	0.85	FMP MSY spawning escapement objective.
	2.3%	≤ 10.0%	Calendar year exploitation rate ISBM obligation. Compliance assessed postseason by the PSC.
Quillayute Fall	>3.0	3.0	FMP MSY spawning escapement objective.
	--	≤ 0.85	ISBM obligation not applicable, escapement goal expected to be met. Compliance assessed postseason by the PSC.
Hoh Fall	>1.2	1.2	FMP MSY spawning escapement objective.
	--	≤ 0.85	ISBM obligation not applicable, escapement goal expected to be met. Compliance assessed postseason by the PSC.
Queets Fall	>2.5	2.5	FMP MSY spawning escapement objective.
	--	≤ 0.85	ISBM obligation not applicable, escapement goal expected to be met. Compliance assessed postseason by the PSC.
Grays Harbor Fall	>13.3	13.3	FMP MSY spawning escapement objective.
	--	≤ 0.85	ISBM obligation not applicable, escapement goal expected to be met. Compliance assessed postseason by the PSC.
<u>COLUMBIA RIVER:</u>			
Columbia Upriver Brights	227.0	74.0	Minimum ocean escapement to attain 40.0 adults over McNary Dam, with normal distribution and no mainstem harvest. The management goal has been increased to 60.0 by Columbia River managers.
Mid-Columbia Brights	77.5	14.9	Minimum ocean escapement to attain 7.9 for Little White Salmon egg-take, assuming average conversion and no mainstem harvest.
Columbia Lower River Hatchery Tules	50.0	25.0	Minimum ocean escapement to attain 14.8 adults for hatchery egg-take, with average conversion and no lower river mainstem or tributary harvest.
Columbia Lower River Natural Tules (threatened)	38.0%	≤ 38.0%	Total adult equivalent fishery exploitation rate (2020 NMFS ESA guidance).
Columbia Lower River Wild <sup>a/</sup> (threatened)	19.2	6.9	Minimum ocean escapement to attain MSY spawner goal of 5.7 for N. Lewis River fall Chinook (NMFS ESA consultation standard).
Spring Creek Hatchery Tules	45.5	8.2	Minimum ocean escapement to attain 6.0 adults for Spring Creek Hatchery egg-take, assuming average conversion and no mainstem harvest.
Upper Columbia River Summer	38.0	29.0	Aggregate escapement to mouth of Columbia River.
Snake River Fall (threatened) SRFI	51.3%	≤ 70.0%	Of 1988-1993 base period exploitation rate for all ocean fisheries (NMFS ESA consultation standard).

EA part 3 (Preseason Report III) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 5. Projected key stock escapements (thousands of fish) or management criteria for 2020 ocean fishery management measures - Council Adopted.<sup>a/</sup> (Page 3 of 4)

Key Stock/Criteria	PROJECTED	2020 Criteria	Spawner Objective or Other Comparative Standard as Noted <sup>b/</sup>
<b>CHINOOK</b>	<b>CHINOOK</b>		<b>CHINOOK</b>
<u>OREGON COAST:</u>			
Nehalem Fall	--	≤ 0.85	ISBM obligation not applicable, escapement goal expected to be met. Compliance assessed postseason by the PSC.
Siletz Fall	--	≤ 0.85	ISBM obligation not applicable, escapement goal expected to be met. Compliance assessed postseason by the PSC.
Siuslaw Fall	--	≤ 0.85	ISBM obligation applicable, escapement goal not expected to be met. Compliance assessed postseason by the PSC.
South Umpqua	--	≤ 0.85	ISBM obligation applicable, as this stock lacks a CTC agreed escapement goal. Compliance assessed postseason by the PSC.
Coquille	--	≤ 0.85	ISBM obligation applicable, as this stock lacks a CTC agreed escapement goal. Compliance assessed postseason by the PSC.
<u>CALIFORNIA:</u>			
Klamath River Fall	36.2	≥ 36.2	2020 minimum natural area adult escapement (FMP control rule).
Federally recognized tribal harvest	50.0%	50.0%	Equals 8.6 (thousand) adult fish for Yurok and Hoopa Valley tribal fisheries.
Exploitation (spawner reduction) rate	25.0%	≤ 25.0%	FMP control rule.
Adult river mouth return	59.1	NA	Total adults in thousands.
Age-4 ocean harvest rate	8.8%	≤ 16.0%	NMFS ESA consultation standard for threatened California Coastal Chinook.
KMZ sport fishery share	8.6%		Includes 0.0 (thousand) adult fish impacted in the KMZ sport fishery during fall (Sept-Dec) 2019.
River recreational fishery share	15.0%	NA	Equals 1.3 (thousand) adult fish for recreational inriver fisheries.
Sacramento River Winter (endangered)	16.2%	≤ 20.0%	Age-3 ocean impact rate in fisheries south of Pt. Arena. In addition, the following season restrictions apply: <u>Recreational</u> - Pt. Arena to Pigeon Pt. between the first Saturday in April and the second Sunday in November; Pigeon Pt. to the U.S./Mexico border between the first Saturday in April and the first Sunday in October. Minimum size limit ≥ 20 inches total length. <u>Commercial</u> - Pt. Arena to the U.S./Mexico border between May 1 and September 30, except Pt. Reyes to Pt. San Pedro between October 1 and 15 (Monday-Friday). Minimum size limit ≥ 26 inches total length (NMFS 2020 ESA Guidance).
Sacramento River Fall	233.2	≥ 142.0	2020 minimum hatchery and natural area adult escapement (FMP control rule).
Sacramento Index Exploitation Rate	50.7%	≤ 70.0%	FMP control rule.
Ocean commercial impacts	151.3		Includes fall (Sept-Dec) 2019 impacts (5.7 thousand SRFC).
Ocean recreational impacts	47.6		Includes fall (Sept-Dec) 2019 impacts (3.3 thousand SRFC).
River recreational impacts	41.1		Equals 17.1% of the total harvest.

EA part 3 (Preseason Report III) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 5. Projected key stock escapements (thousands of fish) or management criteria for 2020 ocean fishery management measures - Council Adopted.<sup>a/</sup> (Page 4 of 4)

Key Stock/Criteria	PROJECTED	2020 Criteria	Spawner Objective or Other Comparative Standard as Noted <sup>b/</sup>
COHO	COHO		COHO
Interior Fraser (Thompson River)	7.4%(2.6%)	≤ 10.0%	2020 Southern U.S. exploitation rate ceiling; PSC coho agreement.
Skagit	31.1%(2.5%)	≤ 35.0%	2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>
Stillaguamish	17.8%(1.8%)	≤ 35.0%	2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>
Snohomish	12.6%(1.8%)	≤ 20.0%	2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>
Hood Canal	42.2%(2.7%)	≤ 45.0%	2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>
Strait of Juan de Fuca	9.0%(2.2%)	≤ 20.0%	2020 total exploitation rate ceiling; FMP matrix <sup>d/</sup>
Quillayute Fall	8.7	6.3	FMP MSY adult spawner estimate. Value depicted is ocean escapement.
Hoh	3.6	2.0	FMP MSY adult spawner estimate. Value depicted is ocean escapement.
Queets Wild	6.7	5.8	FMP MSY adult spawner estimate. Value depicted is ocean escapement.
Grays Harbor	47.1	24.4	FMP MSY adult spawner estimate. Value depicted is ocean escapement.
Willapa Bay	27.7	17.2	FMP MSY natural area adult spawner estimate. Value depicted is ocean escapement.
Lower Columbia River Natural (threatened)	16.9%	≤ 18.0%	Total marine and mainstem Columbia R. fishery exploitation rate (2020 NMFS ESA guidance).
Upper Columbia <sup>c/</sup>	69.7%	≥ 50%	Minimum percentage of the run to Bonneville Dam.
Columbia River Hatchery Early	86.7	77.2	Minimum ocean escapement to attain hatchery egg-take goal of 21.7 early adult coho, with average conversion and no mainstem or tributary fisheries.
Columbia River Hatchery Late	35.4	9.7	Minimum ocean escapement to attain hatchery egg-take goal of 6.4 late adult coho, with average conversion and no mainstem or tributary fisheries.
Oregon Coastal Natural	11.6%	≤ 15.0%	Marine and freshwater fishery exploitation rate (NMFS ESA consultation standard).
Southern Oregon/Northern California Coast (threatened)	3.1%	≤ 13.0%	Marine fishery exploitation rate for R/K hatchery coho (NMFS ESA consultation standard).

a/ Reflects 2020 fisheries and abundance estimates.

b/ ISBM obligation is assessed as a proportion of the 2009-2015 average calendar year exploitation rate. Ocean escapement is the number of salmon escaping ocean fisheries and entering freshwater with the following clarifications. Ocean escapement for Puget Sound stocks is the estimated number of salmon entering Area 4B that are available to U.S. net fisheries in Puget Sound and spawner escapement after impacts from the Canadian, U.S. ocean, and Puget Sound troll and recreational fisheries have been deducted. Numbers in parentheses represent Council area exploitation rates for Puget Sound coho stocks. For Columbia River early and late coho stocks, ocean escapement represents the number of coho after the Buoy 10 fishery. Exploitation rates for LCN and OCN coho and LCR Tule Chinook represent marine and freshwater impacts. Values reported for Klamath River fall Chinook and Willapa Bay coho are natural area adult spawners. Values reported for Sacramento River fall Chinook are hatchery and natural area adult spawners.

c/ Includes projected impacts of inriver fisheries that have not yet been shaped.

d/ Annual management objectives may be different than FMP goals, and are subject to agreement between WDFW and the treaty tribes under U.S. District Court orders. It is anticipated that fishery management will be adjusted by state and tribal comanagers during the preseason planning process to comply with stock management objectives.

e/ Includes minor contributions from East Fork Lewis River and Sandy River.

TABLE 6. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management measures - Council adopted. (Page 1 of 2)

Area and Fishery	Catch Projection	Bycatch Mortality <sup>a/</sup> Projection	Bycatch Projection <sup>b/</sup>	Observed in 2019	
				Catch	Bycatch Mortality
<b>OCEAN FISHERIES:</b>					
<b>CHINOOK (thousands of fish)</b>					
<b>NORTH OF CAPE FALCON</b>					
Treaty Indian Ocean Troll	35.0	3.6	8.9	18.3	1.9
Non-Indian Commercial Troll	27.6	12.7	46.0	23.3	9.6
Recreational	26.4	3.2	14.8	10.9	1.8
<b>CAPE FALCON TO HUMBUG MT.<sup>d/</sup></b>					
Commercial Troll	39.4	13.0	39.3	26.5	9.0
Recreational	6.1	0.8	3.2	4.7	0.7
<b>HUMBUG MT. TO OR/CA BORDER<sup>d/</sup></b>					
Commercial Troll	1.3	0.4	1.3	1.9	0.8 <sup>e/</sup>
Recreational	1.6	0.2	0.8	0.6	0.1 <sup>e/</sup>
<b>OR/CA BORDER TO HORSE MT.<sup>d/</sup></b>					
Commercial Troll	0.0	0.0	0.0	5.9	2.5 <sup>e/</sup>
Recreational	5.6	0.8	2.9	5.0	0.8 <sup>e/</sup>
<b>HORSE MT. TO PT. ARENA</b>					
Commercial Troll	7.8	2.6	7.8	10.5	7.8 <sup>e/</sup>
Recreational	8.1	1.1	4.3	3.9	0.8 <sup>e/</sup>
<b>PT. ARENA TO PIGEON PT.</b>					
Commercial Troll	96.9	32.0	96.8	159.4	65.7 <sup>e/</sup>
Recreational	41.2	5.6	19.7	56.5	8.0 <sup>e/</sup>
<b>SOUTH OF PIGEON PT.</b>					
Commercial Troll	39.3	13.0	39.2	95.9	13.7 <sup>e/</sup>
Recreational	7.5	1.0	3.6	23.1	2.4 <sup>e/</sup>
<b>TOTAL OCEAN FISHERIES</b>					
Commercial Troll	247.2	77.2	239.2	341.7	111.0
Recreational	96.4	12.8	49.4	104.7	14.7
<b>INSIDE FISHERIES:</b>					
Area 4B	-	-	-	-	-
Buoy 10	17.6	10.4	2.0	11.3	3.5 <sup>e/</sup>

TABLE 6. Preliminary projections of Chinook and coho harvest impacts for 2020 ocean salmon fishery management measures - Council adopted. (Page 2 of 2)

Area and Fishery	Catch Projection	Bycatch Mortality <sup>a/</sup> Projection	Bycatch Projection <sup>b/</sup>	Observed in 2019	
				Catch	Bycatch Mortality
<b>OCEAN FISHERIES:</b>		<b>COHO (thousands of fish)</b>			
<b>NORTH OF CAPE FALCON</b>					
Treaty Indian Ocean Troll <sup>f/</sup>	16.5	1.5	3.4	55.5	3.4
Non-Indian Commercial Troll	2.0	2.8	10.2	5.4	1.6
Recreational	26.5	6.3	29.0	81.6	20.4
<b>SOUTH OF CAPE FALCON</b>					
Commercial Troll	-	2.4	9.1	-	1.9
Recreational <sup>f/</sup>	25.0	9.3	49.1	49.1	9.4
<b>TOTAL OCEAN FISHERIES</b>					
Commercial Troll	18.5	6.7	22.8	60.9	6.9
Recreational	51.5	15.6	78.2	130.7	29.8
<b>INSIDE FISHERIES:</b>					
Area 4B	-	-	-	-	-
Buoy 10	16.3	3.9	17.6	22.8	6.3 <sup>e/</sup>

a/ The bycatch mortality reported in this table consists of drop-off mortality (includes predation on hooked fish) plus hook-and-release mortality of Chinook and coho salmon in Council-area fisheries. Drop-off mortality for both Chinook and coho is assumed to be equal to 5% of total encounters. The hook-and-release mortality (HRM) rates used for both Chinook and coho are:

Commercial: 26%.

Recreational, north of Pt. Arena: 14%.

Recreational, south of Pt. Arena: 16% (based on the expected proportion of fish that will be caught using mooching versus trolling gear, and the HRMs of 42.2% and 14% for these two respective gear types).

b/ Bycatch calculated as dropoff mortality plus fish released.

c/ Includes Oregon territorial water, late season Chinook fisheries.

d/ The commercial fishery in this area is closed between Humboldt South Jetty and Horse Mountain.

e/ Based on reported released Chinook or coho. Reported releases in California fisheries are used as a surrogate in Oregon fisheries.

f/ Includes fisheries that allow retention of all legal sized coho.



EA part 3 (Preseason Report III) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 7. Expected coastwide lower Columbia Natural (LCN), Oregon coastal natural (OCN), and Rogue/Klamath (RK) coho, and Lower Columbia River (LCR) natural tule Chinook exploitation rates by fishery for 2020 ocean salmon fisheries - Council adopted.

Fishery	Exploitation Rate (Percent)			
	LCN Coho	OCN Coho	RK Coho	LCR Tule Chinook
SOUTHEAST ALASKA	0.0%	0.0%	0.0%	2.4%
BRITISH COLUMBIA	0.3%	0.6%	0.5%	13.6%
PUGET SOUND/STRAIT	0.1%	0.0%	0.0%	0.4%
NORTH OF CAPE FALCON				
Treaty Indian Ocean Troll	1.4%	0.3%	0.0%	1.9%
Recreational	3.8%	0.7%	0.0%	3.6%
Non-Indian Troll	0.8%	0.2%	0.0%	4.8%
SOUTH OF CAPE FALCON				
Recreational:				0.2%
Cape Falcon to Humbug Mt.	3.5%	6.6%	0.5%	-
Humbug Mt. to OR/CA border (KMZ)	0.0%	0.1%	0.2%	-
OR/CA border to Horse Mt. (KMZ)	0.0%	0.2%	0.7%	-
Fort Bragg	0.0%	0.2%	0.7%	-
South of Pt. Arena	0.0%	0.1%	0.2%	-
Troll:				1.1%
Cape Falcon to Humbug Mt.	0.4%	0.6%	0.1%	-
Humbug Mt. to OR/CA border (KMZ)	0.0%	0.0%	0.0%	-
OR/CA border to Horse Mt. (KMZ)	0.0%	0.0%	0.0%	-
Fort Bragg	0.0%	0.0%	0.1%	-
South of Pt. Arena	0.0%	0.3%	0.2%	-
BUOY 10	2.8%	0.2%	0.0%	
ESTUARY/FRESHWATER	3.5%	1.4%	0.3%	10.0%
<b>TOTAL<sup>a/</sup></b>	<b>16.9%</b>	<b>11.6%</b>	<b>3.1%</b>	<b>38.0%</b>

a/ Totals do not include estuary/freshwater for RK coho; estuary/freshwater catch is included in the total for LCN, OCN, and LCR Tule Chinook.

TABLE 8. 2020 projected coho mark rates for mark-selective fisheries under Council adopted management measures (percent marked).

Area	Fishery	June	July	August	September
Canada					
Johnstone Strait	Recreational	55%	46%	47%	--
West Coast Vancouver Island	Recreational	56%	48%	40%	39%
North Georgia Strait	Recreational	58%	60%	59%	56%
South Georgia Strait	Recreational	28%	61%	46%	57%
Juan de Fuca Strait	Recreational	54%	53%	53%	49%
Johnstone Strait	Troll	--	--	--	--
NW Vancouver Island	Troll	53%	44%	43%	20%
SW Vancouver Island	Troll	57%	53%	51%	--
Georgia Strait	Troll	--	--	--	--
Puget Sound					
Strait of Juan de Fuca (Area 5)	Recreational	--	55%	53%	52%
Strait of Juan de Fuca (Area 6)	Recreational	--	55%	55%	50%
San Juan Island (Area 7)	Recreational	--	62%	54%	39%
North Puget Sound (Areas 6 & 7A)	Net	--	--	61%	43%
Council Area					
Neah Bay (Area 4/4B)	Recreational	50%	55%	53%	54%
LaPush (Area 3)	Recreational	53%	55%	56%	52%
Westport (Area 2)	Recreational	57%	57%	54%	49%
Columbia River (Area 1)	Recreational	60%	58%	55%	53%
Tillamook	Recreational	55%	52%	44%	26%
Newport	Recreational	52%	47%	42%	27%
Coos Bay	Recreational	41%	37%	24%	12%
Brookings	Recreational	--	--	--	--
Neah Bay (Area 4/4B)	Troll	--	55%	53%	48%
LaPush (Area 3)	Troll	--	57%	52%	51%
Westport (Area 2)	Troll	--	54%	53%	54%
Columbia River (Area 1)	Troll	--	56%	53%	53%
Tillamook	Troll	--	--	--	--
Newport	Troll	--	--	--	--
Coos Bay	Troll	--	--	--	--
Brookings	Troll	--	--	--	--
Columbia River					
Buoy 10	Recreational	--	--	--	55%

TABLE 9. Preliminary projected exvessel value by catch area under Council-adopted 2020 non-Indian commercial troll management measures compared with 2019 and the 2015-2019 average (inflation-adjusted 2019 dollars).

Management Area	Exvessel Value (thousands of dollars) <sup>a/</sup>			Percent Change	
	2020 Projected <sup>b/</sup>	2019	2015-2019 Average	From 2019 (Modeled)	From 2015-2019 Average
North of Cape Falcon	2,236	1,941	2,825	+15%	-21%
Cape Falcon to Humbug Mt.	2,806	1,890	3,337	+48%	-16%
Humbug Mt. to OR/CA Border (OR KMZ)	96	143	199	-33%	-52%
OR/CA Border to Horse Mt. (CA KMZ)	0	314	212	-100%	-100%
Horse Mt. to Pt. Arena (Fort Bragg)	479	646	1,592	-26%	-70%
Pt. Arena to Pigeon Pt. (SF)	6,045	9,952	4,652	-39%	+30%
South of Pigeon Pt. (MO)	2,594	6,344	2,583	-59%	+0%
Total South of Cape Falcon	12,020	19,288	12,576	-38%	-4%
West Coast Total	14,256	21,229	15,400	-33%	-7%

a/ Exvessel value estimates are not comparable to the community income impacts shown in Table 10.

b/ 2020 projections are based on expected catches in the Council management areas, 2019 exvessel prices and 2019 average weight per fish.

TABLE 10. Preliminary projected angler trips and associated state-level personal income impacts under Council-adopted recreational ocean salmon management measures compared with 2019 and the 2015-2019 average (inflation-adjusted 2019 dollars).

Management Area	Coastal Community Income Impacts <sup>a/</sup>							
	Angler Trips (thousands)			(thousands of dollars) <sup>b/</sup>			Percent Change in Income Impacts	
	2020 Projected	2019	2015-2019 Avg.	2020 Projected	2019	2015-2019 Avg.	Compared to 2019	Compared to 2015-2019 Avg.
North of Cape Falcon	29.6	80.4	71.2	3,982	10,823	10,127	-63%	-61%
Cape Falcon to Humbug Mt.	60.5	75.2	47.0	4,480	5,569	3,457	-20%	+30%
Humbug Mt. to OR/CA Border (OR KMZ)	5.1	4.4	5.3	315	271	326	+16%	-3%
OR/CA Border to Horse Mt. (CA KMZ)	11.6	7.7	6.6	1,436	954	805	+51%	+78%
Horse Mt. to Pt. Arena (Fort Bragg)	17.4	7.6	8.7	2,928	1,284	1,396	+128%	+110%
Pt. Arena to Pigeon Pt. (SF)	61.6	58.1	53.5	14,975	14,113	12,874	+6%	+16%
South of Pigeon Pt. (MO)	20.7	30.3	16.5	2,781	4,078	2,189	-32%	+27%
Total South of Cape Falcon	176.8	183.3	137.5	26,914	26,269	21,047	+2%	+28%
West Coast Total	206.4	263.6	208.7	30,896	37,092	31,174	-17%	-1%

a/ Income impacts are not comparable to exvessel values shown in Table 9.

b/ Dollar amounts are in inflation-adjusted 2019 values.

EA part 3 (Preseason Report III) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 11. Environmental effects of the Proposed Action relative to criteria and Alternatives analyzed in Preseason Reports I and II.<sup>ai</sup> (Page 1 of 2)

Environmental Component	No-Action	Alternative			Proposed Action	2020 Criteria	Objective or Other Comparative Standard as Noted
	Alternative <sup>bi</sup>	I	II	III			
<b>Chinook</b>							
KRFC Spawning Escapement	24,178	36,213	36,208	40,714	36,206	≥ 36,206	2020 minimum natural area adult escapement.
Exploitation (spawner reduction) rate	<b>49.9%</b>	25.0%	25.0%	15.7%	25.0%	≤ 25.0%	FMP control rule.
SRFC Spawning Escapement	199,616	228,346	222,636	234,075	233,174	≥ 141,955	2020 minimum hatchery and natural area adult escapement.
Exploitation Rate	57.8%	51.7%	52.9%	50.5%	50.7%	≤ 70%	FMP control rule.
<b>Canadian Stocks</b>							
Interior Fraser Coho	NA	6.3%(2.3%)	5.7%(1.8%)	4.6%(0.6%)	7.4%(2.6%)	≤ 10.0%	2020 Southern U.S. exploitation rate ceiling; PSC coho agreement.
<b>Puget Sound Coho</b>							
Skagit	NA	34.1%(2.3%)	33.7%(1.7%)	32.8%(0.6%)	31.1%(2.5%)	≤ 35.0%	2020 total exploitation rate ceiling; FMP matrixd/
Stillaguamish	NA	27.1%(1.7%)	26.7%(1.2%)	26.0%(0.4%)	17.8%(1.8%)	≤ 35.0%	2020 total exploitation rate ceiling; FMP matrixd/
Snohomish	NA	<b>24.0%(1.7%)</b>	<b>23.6%(1.2%)</b>	<b>22.9%(0.4%)</b>	12.6%(1.8%)	≤ 20.0%	2020 total exploitation rate ceiling; FMP matrixd/
Hood Canal	NA	41.7%(2.6%)	41.3%(2.0%)	40.4%(0.7%)	42.2%(2.7%)	≤ 45.0%	2020 total exploitation rate ceiling; FMP matrixd/
Strait of Juan de Fuca	NA	8.4%(2.1%)	7.9%(1.6%)	6.8%(0.6%)	9.0%(2.2%)	≤ 20.0%	2020 total exploitation rate ceiling; FMP matrixd/
<b>Washington Coastal Coho (in thousands of fish)</b>							
Quillayute Fall Coho	NA	8.7	8.8	8.9	8.7	6.3	<u>For all Washington Coastal coho stocks listed:</u>
Hoh Coho	NA	3.6	3.7	3.8	3.6	2.0	FMP MSY adult spawner estimate.
Queets Wild Coho	NA	6.7	6.8	7.1	6.7	5.8	Value depicted is ocean escapement.
Grays Harbor Coho	NA	47.2	47.6	48.2	47.1	24.4	
Willapa Bay Natural Coho	NA	27.5	28.3	29.2	27.7	17.2	
<b>ESA-Listed Salmon</b>							
California Coastal Chinook	<b>16.5%</b>	8.9%	9.3%	6.1%	8.8%	≤ 16.0%	KRFC age-4 ocean harvest rate.
SRWC	15.5%	16.8%	17.7%	20.0%	16.2%	≤ 20.0%	SRWC age-3 ocean impact rate in fisheries south of Pt. Arena.
LCR Natural Tule Chinook <sup>di</sup>	NA	35.9%	34.2%	28.3%	38.0%	≤ 38.0%	Total adult equivalent fishery exploitation rate.
LCN Coho <sup>di</sup>	NA	15.1%	12.9%	9.7%	16.9%	≤ 18.0%	Total marine and mainstem Columbia fishery exploitation rate. (2020 NMFS ESA guidance).
OCN coho <sup>di</sup>	NA	11.7%	11.1%	10.3%	11.6%	≤ 15.0%	Marine and freshwater fishery exploitation rate (NMFS ESA consultation standard).
SONCC (RK) coho	NA	3.2%	3.5%	2.7%	3.1%	≤ 13.0%	Marine fishery exploitation rate for R/K hatchery coho (NMFS ESA consultation standard).

TABLE 11. Environmental effects of the Proposed Action relative to criteria and Alternatives analyzed in Preseason Reports I and II.<sup>a/</sup> (Page 2 of 2)

Environmental Component	No-Action	Alternative			Proposed Action
	Alternative <sup>b/</sup>	I	II	III	
<b>Socioeconomics</b>					
Commercial Community Personal Income Impacts (thousands of dollars)					
North of Cape Falcon	2,860	3,570	2,681	-	3,216
Cape Falcon to Humbug Mt.	2,718	4,606	4,635	3,545	3,998
Humbug to OR/CA border (OR KMZ)	231	277	245	170	235
OR/CA border to Horse Mt. (CA KMZ)	312	-	200	-	-
Horse Mt. to Pt. Arena (Fort Bragg)	864	1,611	99	97	640
Pt. Arena to Pigeon Pt. (San Francisco)	21,970	11,382	13,070	9,841	13,131
South of Pigeon Pt. (Monterey)	5,618	2,264	2,575	3,853	2,299
West Coast Total	34,573	23,710	23,506	17,506	23,519
Recreational Community Personal Income Impacts (thousands of dollars)					
North of Cape Falcon	10,823	4,474	3,360	-	3,982
Cape Falcon to Humbug Mt.	5,569	3,941	4,057	4,480	4,480
Humbug to OR/CA border (OR KMZ)	271	371	225	76	315
OR/CA border to Horse Mt. (CA KMZ)	954	1,230	1,133	456	1,436
Horse Mt. to Pt. Arena (Fort Bragg)	1,284	3,042	3,042	3,042	2,928
Pt. Arena to Pigeon Pt. (San Francisco)	14,113	15,835	15,823	14,978	14,975
South of Pigeon Pt. (Monterey)	4,078	4,600	4,579	4,543	2,781
West Coast Total	37,092	33,494	32,218	27,574	30,896

a/ Impacts assumed when Alternatives were adopted in March may have changed due to updated information from the PSC, North of Falcon process, or other sources. Data for Alternatives based on Table 5a of 2020 Preseason Report II.

b/ Socioeconomic impacts under the No-Action Alternative are assumed equal to 2019 estimates.

c/ Annual management objectives may be different than FMP goals, and are subject to agreement between WDFW and the treaty tribes under U.S. District Court orders. Values in parentheses indicate impacts in Council-area fisheries.

d/ Includes projected impacts of inriver fisheries.

EA part 3 (Preseason Report III) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

TABLE 12. Stock status relative to overfished and overfishing criteria. A stock is approaching an overfished condition if the 3-year geometric mean of the most recent two years and the forecasted spawning escapement is less than the minimum stock size threshold (MSST); a stock would experience overfishing if the total annual exploitation rate exceeds the maximum fishing mortality threshold (MFMT). Occurrences of stocks approaching an overfished condition, or experiencing overfishing, are indicated in bold. 2020 spawning escapement and exploitation rate estimates are based on 2020 preseason abundance forecasts and 2020 adopted Council regulations.

	Estimated Adult Spawning Escapement										Total Exploitation Rate					
	2015	2016	2017	2018	2019 <sup>a/</sup>	Forecast 2020 <sup>b/</sup>	3-yr Geo Mean	MSST	S <sub>MSY</sub>	2015	2016	2017	2018	2019 <sup>a/</sup>	2020 <sup>b/</sup>	MFMT
<b>Chinook</b>																
Sacramento Fall	113,468	89,699	43,466	105,531	162,532	233,174	158,733	91,500	122,000	0.55	0.56	0.68	0.52	0.68	0.51	0.78
Klamath River Fall	28,112	13,937	19,904	52,352	20,245	36,206	33,730	30,525	40,700	0.59	0.37	0.10	0.32	0.42	0.25	0.71
Southern Oregon <sup>c/</sup>	30,462	27,278	91,977	39,497	19,426	NA	41,325	20,500	34,992	NA	NA	NA	NA	NA	NA	0.54
Central and Northern OR	247	118	114	92	64	NA	88	30 fish/mi	60 fish/mi	0.43	0.48	0.46	NA	NA	NA	0.78
Upper Columbia Bright - Fall <sup>d/</sup>	323,276	151,373	96,096	58,540	77,880	93,400	75,233	19,182	39,625	0.40	0.51	0.48	NA	NA	NA	0.86
Upper Columbia - Summer <sup>d/</sup>	88,691	79,253	56,265	38,816	41,090	35,500	38,399	6,072	12,143	0.65	0.63	0.52	NA	NA	NA	0.75
Willapa Bay - Fall <sup>e/</sup>	2,824	1,887	3,078	2,853	NA	NA	2,549	1,696	3,393	0.48	0.61	0.55	NA	NA	NA	0.78
Grays Harbor Fall <sup>e/</sup>	17,305	11,248	17,145	20,741	NA	NA	15,874	5,694	13,326	0.48	0.61	0.55	NA	NA	NA	0.78
Grays Harbor Spring	1,841	926	1,384	493	1,185	NA	932	700	1,400	NA	NA	NA	NA	NA	NA	0.78
Queets - Fall <sup>d/</sup>	5,313	2,915	2,702	2,095	NA	NA	2,546	1,250	2,500	0.48	0.61	0.55	NA	NA	NA	0.87
Queets - Sp/Su	532	704	825	484	NA	NA	655	350	700	NA	NA	NA	NA	NA	NA	0.78
Hoh - Fall <sup>e/</sup>	1,795	2,831	1,808	2,478	NA	NA	2,332	600	1,200	0.48	0.61	0.55	NA	NA	NA	0.90
Hoh Sp/Su	1,070	1,144	1,364	793	NA	NA	1,074	450	900	NA	NA	NA	NA	NA	NA	0.78
Quillayute - Fall <sup>e/</sup>	3,440	3,654	3,604	3,937	7,256	NA	4,687	1,500	3,000	0.48	0.61	0.55	NA	NA	NA	0.87
Quillayute - Sp/Su	783	871	1,097	990	1,015	NA	1,033	600	1,200	NA	NA	NA	NA	NA	NA	0.78
Hoko -Su/Fa <sup>d/</sup>	2,877	1,324	1,188	2,062	1,815	NA	1,644	425	850	0.30	0.28	0.27	NA	NA	NA	0.78
<b>Coho</b>																
Willapa Bay	17,086	30,667	10,878	14,920	NA	21,132	15,081	8,600	17,200	0.44	0.38	0.33	0.31	NA	0.36	0.74
Grays Harbor	21,278	38,595	26,907	49,622	NA	34,008	35,676	18,320	24,426	0.49	0.12	0.32	0.22	NA	0.32	0.65
Queets	2,028	5,156	5,232	2,631	NA	5,795	<b>4,305</b>	4,350	5,800	0.26	0.15	0.23	0.24	NA	0.27	0.65
Hoh	1,794	5,009	4,478	2,463	NA	2,157	2,876	1,890	2,520	0.39	0.08	0.43	0.34	NA	0.48	0.65
Quillayute Fall	2,571	9,630	7,474	6,091	6,506	7,186	6,579	4,725	6,300	0.47	0.18	0.42	0.30	NA	0.22	0.59
Juan de Fuca	3,859	8,435	5,530	5,470	NA	6,865	<b>5,922</b>	7,000	11,000	0.18	0.03	0.06	0.08	NA	0.09	0.60
Hood Canal	26,926	24,313	23,283	NA	NA	20,299	21,740	10,750	14,350	0.59	0.40	0.35	0.57	NA	0.42	0.65
Skagit	5,794	35,822	20,184	19,047	NA	21,434	20,198	14,875	25,000	<b>0.63</b>	0.20	0.09	0.49	NA	0.31	0.60
Stillaguamish	2,914	13,048	6,099	23,937	NA	16,031	13,277	6,100	10,000	0.48	0.16	0.12	0.22	NA	0.18	0.50
Snohomish	12,804	44,141	18,195	58,135	NA	34,152	33,057	31,000	50,000	0.55	0.18	0.21	0.25	NA	0.13	0.60

a/ Preliminary.

b/ Preliminary approximations based on preseason forecasts and Council adopted (preseason) fishing regulations.

c/ MSST 18,440 (20,500 as measured at Huntley Park).

d/ CWT based exploitation rates from PSC-CTC 2018 Exploitation Rate Analysis.

e/ Queets River fall Chinook CWT exploitation rates used as a proxy. Exploitation rates in the terminal fisheries will differ from those calculated for Queets fall CWTs.

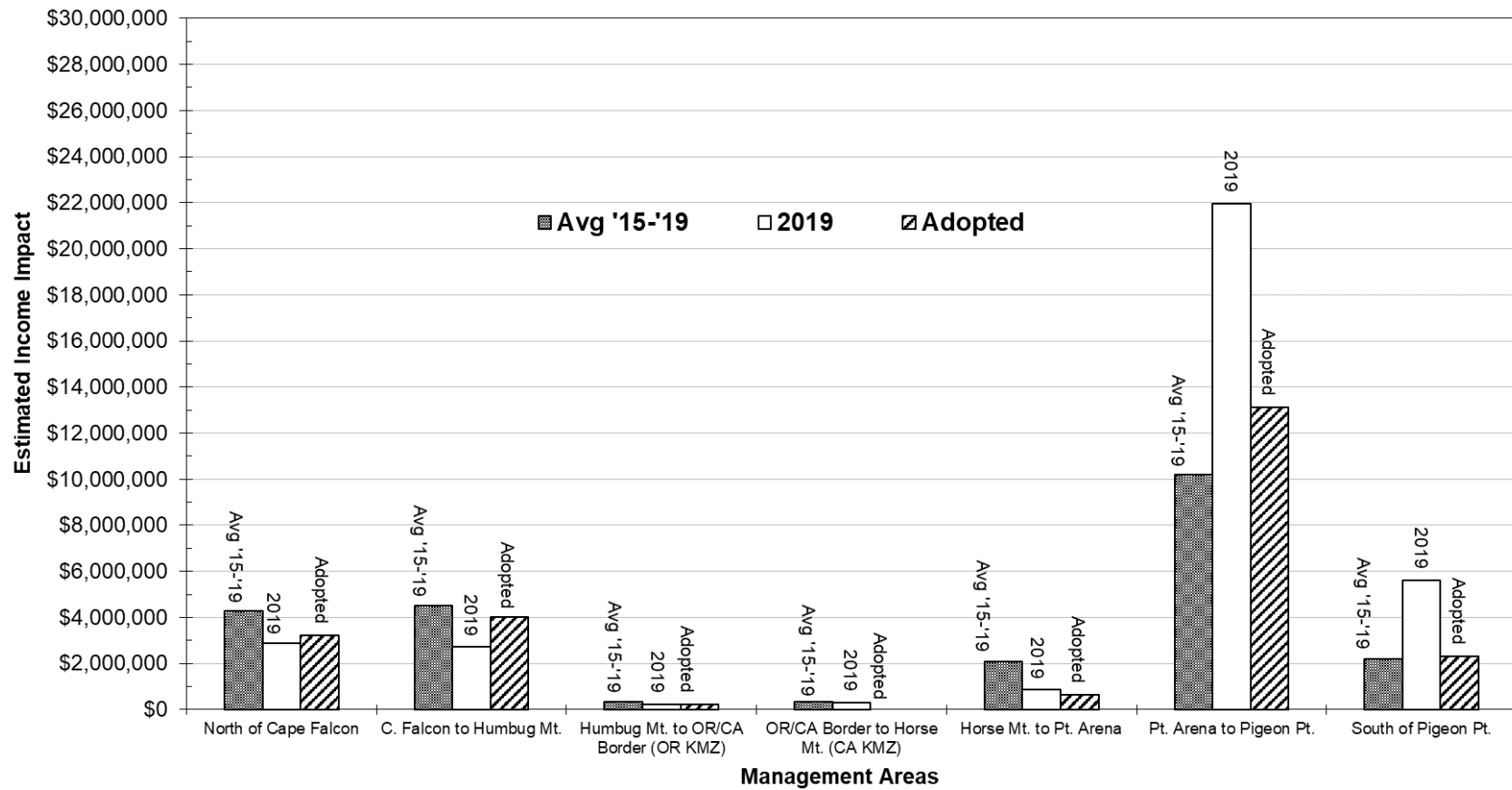


FIGURE 3. Projected coastal community personal income impacts associated with the 2020 commercial troll fishery under Council-adopted management measures compared to estimated 2019 and the 2015-2019 inflation-adjusted average (in 2019 dollars).

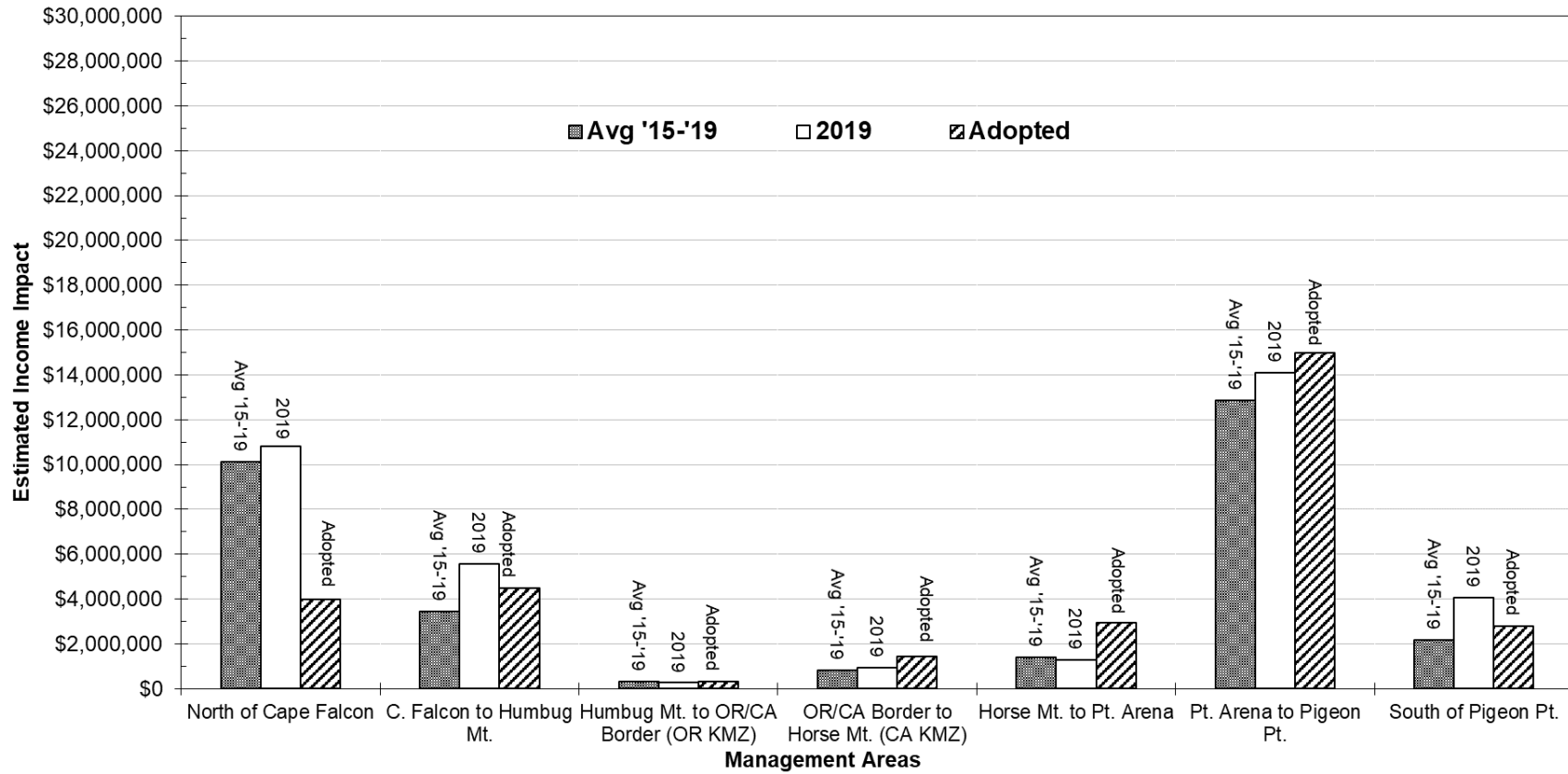


FIGURE 4. Projected coastal community personal income impacts associated with the 2020 recreational ocean salmon fishery under Council-adopted management measures compared to estimated 2019 and the 2015-2019 inflation-adjusted average (in 2019 dollars).



EA part 3 (Preseason Report III) 2020 Ocean Salmon Fisheries Management (0648-BJ48) April 2020

APPENDIX A. Assessment of impacts to stocks of FMP or ESA concern arising from three potential delayed opening scenarios for the California ocean salmon recreational fishery

Stock	Category	Parameter	Adopted seasons	Delayed opening scenarios assessed			FMP/ESA Objective
				Open 5/16 <sup>a/</sup>	Open 6/1 <sup>b/</sup>	Open 6/16 <sup>c/</sup>	
Klamath R. Fall Chinook	FMP/ESA Objectives	Escapement	36,206	36,206	36,206	36,206	(Esc. $\geq$ 36.2K)
		HR	25.0%	25.0%	25.0%	25.0%	(HR $\leq$ 25%)
		Age-4 HR	8.8%	8.8%	8.8%	8.8%	(HR $\leq$ 16%) <sup>d/</sup>
	Ocean impacts	Troll-CA	4,136	4,136	4,138	4,143	
		Troll-OR	2,748	2,749	2,750	2,753	
		Troll-Total	6,884	6,886	6,887	6,895	
		Sport-CA	1,155	1,147	1,134	1,052	
		Sport-OR	267	267	267	267	
		Sport-Total	1,424	1,414	1,402	1,321	
	Catch	Ocean Catch	7,335	7,327	7,317	7,247	
		River Sport Catch	1,296	1,301	1,307	1,356	
		Tribal Catch	8,632	8,628	8,624	8,603	
		% Tribal	50%	50%	50%	50%	
	Sacramento R. Fall Chinook	FMP Objectives	Escapement	233,174	235,635	238,264	242,212
HR			50.7%	50.2%	49.6%	48.8%	(HR $\leq$ 70%)
Catch		Troll-CA	125,149	125,149	125,149	125,149	
		Troll-OR	26,128	26,128	26,128	26,128	
		Troll-Total	151,277	151,277	151,277	151,277	
		Sport-CA	45,663	42,768	39,674	35,029	
		Sport-OR	1,921	1,921	1,921	1,921	
		Sport-Total	47,584	44,689	41,595	36,950	
River Sport		41,148	41,583	42,047	42,743		
Sacramento R. Winter Chinook		ESA Guidance	Age-3 IR	16.2%	15.6%	14.9%	13.8%
SONCC Coho	ESA Guidance	Ocean ER	3.1%	- <sup>e/</sup>	- <sup>e/</sup>	3.0%	(ER $\leq$ 13%)

a/ California KMZ recreational season starts June 6 and remains open through August 12

b/ California KMZ recreational season starts June 6 and remains open through August 15

c/ California KMZ recreational season starts June 16 and remains open through August 29

d/ Surrogate for ESA-listed California Coastal Chinook

e/ Taken as impact neutral (or reducing) given results for the longest KMZ recreational season

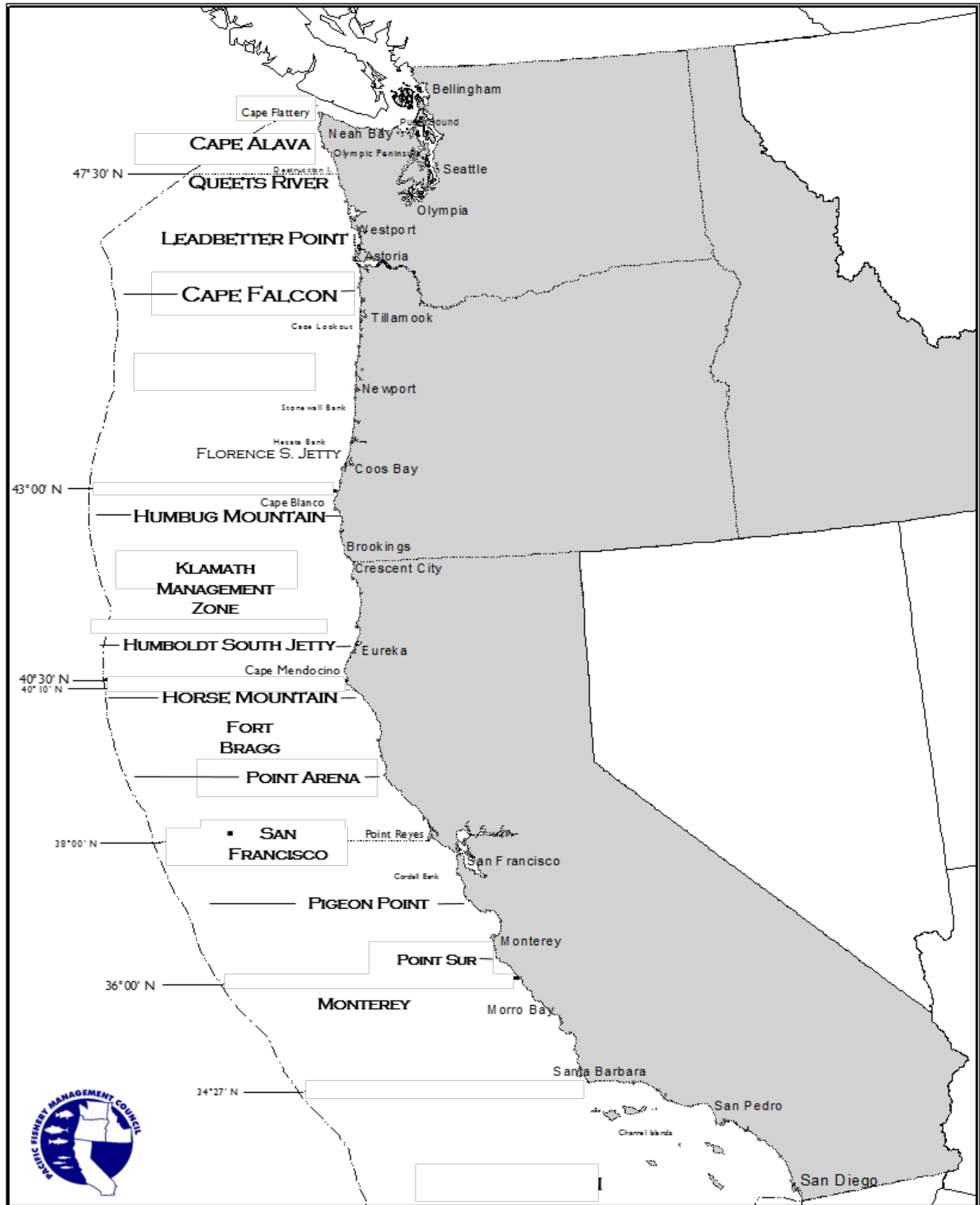


FIGURE 5. Map of Pacific West Coast with major salmon ports and management boundaries. This map is for reference only and is not intended for use in navigation or fishery regulation.

## **ADDENDUM: CONSISTENCY WITH OTHER APPLICABLE LAW**

### ***Magnuson-Stevens Conservation and Management Act (MSA)***

The MSA provides parameters and guidance for Federal fisheries management. Overarching principles for fisheries management are found in the MSA's National Standards, which articulate a broad set of policies governing fisheries management. In crafting fisheries management regimes, the Fishery Management Councils and National Marine Fisheries Service (NMFS) must balance their recommendations to meet these different national standards.

The purpose of this action is to develop annual management measures for Pacific salmon under the Pacific Coast Salmon Fishery Management Plan (FMP). National Standard 1 (NS1) requires that "Conservation and management measures shall prevent overfishing while achieving on a continuing basis, the optimum yield from each fishery for the United States fishing industry." The alternatives for the management measures are designed to ensure that conservation objectives in the salmon FMP and annual catch limits (ACLs) are met. These reference points are in turn designed to prevent overfishing while achieving optimum yield on a continuing basis. In 2020, some salmon stocks are forecast at low abundance, and will be managed to meet harvest control rules, Endangered Species Act (ESA) constraints, and other limits and objectives in the FMP and under the Pacific Salmon Treaty (PST). There are several stocks of primary concern due to constraints on the fishery to meet their conservation and management objectives in 2020. These are: Klamath River fall-run Chinook salmon (KRFC), Oregon Coastal natural coho (ESA-listed threatened), Lower Columbia River natural tule Chinook salmon (ESA-listed threatened), Puget Sound Chinook salmon (ESA-listed threatened), Lower Columbia River natural coho (ESA-listed threatened), and Washington coastal coho (notably, Grays Harbor and Queets coho stocks).

The alternatives were developed to limit impacts to the stocks referenced above while allowing fisheries that are determined to be unlikely to affect the future productivity and sustainability of those stocks (e.g., limiting fishery impacts to the *de minimis* level defined in the harvest control rule for KRFC).

Two of the three stocks of primary concern, and three additional stocks, were determined in 2018 to be overfished: KRFC, Sacramento River fall-run Chinook salmon (SRFC), Queets coho, Juan de Fuca coho, and Snohomish coho. The alternatives in this EA were designed to be risk averse with respect to these stocks and the recommended fishing would not constitute overfishing and would achieve spawning escapements consistent with the FMP's conservation objectives, proposed rebuilding plans, and PST agreements. The result is that the proposed action is in compliance with provisions of the FMP and the PST. The three salmon stocks with specified ACLs (KRFC, SRFC, and Willapa Bay natural coho salmon) are each projected to meet the stock-specific ACL set pre-season under any of the alternatives considered. Therefore, except for the No-action alternative, the alternatives are consistent with NS1.

National Standard 2 requires the use of the best available scientific information. The Council's Scientific and Statistical Committee (SSC) reviews and recommends the methods used to develop alternatives for salmon management measures. The No-action Alternative (see PRE I, Chapter V) would not meet this standard, as it does not take into account current abundance projections for salmon stocks. However, the other alternatives are crafted based on up to date scientific information regarding abundance and the methods approved by the SSC.

National Standard 3 requires individual stocks of fish to be managed as a unit throughout their ranges and interrelated stocks of fish to be managed as a unit. The conservation objectives and ACLs are established for individual stocks in the Salmon FMP and are based on either escapement or on total fishery exploitation rate, both of which account for impacts to stocks from fisheries throughout their range. All salmon stocks are managed as a unit in Council-area fisheries to ensure all conservation objectives are met. The alternatives were developed to be consistent with the conservation objectives and ACLs in the FMP.

National Standard 4 requires that “Conservation and management measures shall not discriminate between residents of different States.” And that “allocation shall be: (A) fair and equitable...; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no...entity acquires an excessive share.” The alternatives were developed to be consistent with the allocation guidelines in the FMP, which were in turn developed to meet National Standard 4.

National Standard 5 requires efficiency, where practicable, in the utilization of fishery resources. All alternatives in this EA meet this standard.

National Standard 6 requires conservation objectives and management measures to take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches. All alternatives allow for inseason management of Council-area salmon fisheries to meet conservation objectives and preseason management objectives.

National Standard 7 requires that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication. All alternatives in this EA meet this standard.

National Standard 8 requires that conservation and management measures shall, consistent with the conservation requirements of the MSA, take into account the importance of fishery resources to fishing communities in order to “(A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.” The alternatives represent a range of management measures with various economic impacts. The Final Preferred Alternative (see PRE III) was developed to provide the optimum balance between the short-term needs of the communities and the long-term needs of the communities, needs which rely on long-term health of the salmon stocks.

National Standard 9 requires the reduction, to the extent practicable, of bycatch or bycatch mortality. All alternatives in this EA are expected to have no significant effects due to bycatch mortality on non-target species.

National Standard 10 requires, to the extent practicable, conservation and management measures to promote the safety of human life at sea. The Alternatives in this EA are not expected to impact risks to salmon fishermen.

### ***Paperwork Reduction Act (PRA)***

The purposes of the PRA are to minimize the burden of information collection by the Federal Government on the public; maximize the utility of any information thus collected; improve the quality of information used in Federal decision making, minimize the cost of collection, use and dissemination of such information; and improve accountability. The PRA requires Federal agencies to obtain clearance from the Office of Management and Budget before collecting information. This clearance requirement is triggered if certain conditions are met. “Collection of information” is defined broadly. In summary it means obtaining information from third parties or the public by or for an agency through a standardized method

---

Environmental Assessment Addendum: Consistency with other Applicable Law

2020 Ocean Salmon Fisheries Management Measures

(0648-BJ48)

imposed on 10 or more persons. Collection of information need not be mandatory to meet the trigger definition. Even information collected by a third party, if at the behest of a Federal agency, may trigger the clearance requirement. Within NMFS, the Office of the Chief Information Officer is responsible for PRA compliance. Obtaining clearance can take up to 9 months and is one aspect of NMFS review and approval of Council decisions.

The proposed action includes an existing approved collection-of-information requirement which is being implemented under Federal regulations. A specific requirement on when and where to land fish is imposed when necessary to ensure timely and accurate assessment of catches in specific regulatory areas. If fishermen are unable to comply with this landing requirement because of unsafe weather or mechanical problems, they must notify the U.S. Coast Guard of their problem, and advise of the name of the vessel, the port where delivery will be made, the approximate amount of salmon on board, and the estimated time of arrival. This emergency provision is rarely used, but is important to be retained for safety purposes. Authorization under the PRA for this information collection (OMB Control No. 0648-0433) was extended on August 11, 2017, and will expire on August 31, 2020, NMFS is pursuing a new extension (85 FR 17314, March 27, 2020).

### ***Marine Mammal Protection Act (MMPA)***

The MMPA of 1972 is the principle Federal legislation that guides marine mammal species protection and conservation policy in the United States. Under the MMPA, NMFS is responsible for the management and conservation of 153 stocks of whales, dolphins, porpoise, as well as seals, sea lions, and fur seals; while the US Fish and Wildlife Service is responsible for walrus, sea otters, and the West Indian manatee.

Off the west coast, the Southern Resident Puget Sound killer whale stock (SRKW) is listed as endangered under the ESA; Guadalupe fur seal, and Southern sea otter California stock are listed as threatened under the ESA. The sperm whale (WA, OR, CA stock), humpback whale (WA, OR, CA, Mexico stock), blue whale eastern north Pacific stock, and Fin whale (WA, OR, CA stock) are listed as endangered under the ESA. Any species listed as endangered or threatened under the ESA is automatically considered depleted under the MMPA.

The commercial salmon troll fisheries off the west coast are classified as Category III fisheries, indicating a remote or no likelihood of causing incidental mortality or serious injury to marine mammals (85 FR 21079, April 16, 2020). Recreational salmon fisheries are assumed to have similar impacts as they use similar gear and techniques.

### ***National Environmental Policy Act (NEPA)***

This environmental assessment (EA) is intended to meet the NEPA requirements that apply to the proposed action.

### ***Endangered Species Act (ESA)***

Ocean salmon fisheries conducted under the FMP do affect ESA-listed salmon species. The alternatives analyzed in this EA were developed to be consistent with biological opinions issued by NMFS. The proposed action is consistent with those biological opinions.

Of the ESA-listed marine mammals described above (see MMPA section), Council-managed salmon fisheries only impact listed Southern Resident Killer Whales. NMFS consulted on the effects of the ocean

salmon fisheries on the ESA-listed Southern Resident killer whale (SRKW) distinct population segment (DPS) in 2009. As discussed above, NMFS reinitiated consultation in 2019 to consider new information. NMFS completed the Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Conference Opinion Consultation on Implementation of the Pacific Fishery Management Council Salmon Fishery Management Plan in 2020 for Southern Resident Killer Whales and their Current and Proposed Critical Habitat. The biological opinion concluded that the 2020 Council-area ocean salmon fisheries would not jeopardize the SRKW DPS and does not adversely modify critical habitat. Effects on listed Puget Sound yelloweye rockfish and bocaccio, and Pacific eulachon were addressed in a 2010 biological opinion (NMFS 2010b). The effects to ESA-listed North American green sturgeon were considered in a 2007 biological opinion (NMFS 2007b).

The following BOs and Section 4(d) determinations have been prepared for West Coast stocks by NMFS.

**Table 1. NMFS ESA Biological Opinions regarding Evolutionarily Significant Units (ESUs) and Distinct Population Segments (DPSs) affected by PFMC Fisheries.**

<b>Date</b>	<b>Duration</b>	<b>Species Considered</b>
<b><i>Salmonid Species</i></b>		
March 8, 1996	until reinitiated	Snake River spring/summer and fall Chinook Snake River sockeye
April 28, 1999	until reinitiated	S. Oregon/N. California Coastal coho Central California Coast coho Oregon Coast natural coho
April 28, 2000	until reinitiated	Central Valley Spring-run Chinook California Coastal Chinook
April 27, 2001	until withdrawn	Hood Canal summer-run chum
April 30, 2001	until reinitiated	Upper Willamette River Chinook Columbia River chum Ozette Lake sockeye Upper Columbia River spring-run Chinook Ten listed steelhead DPSs
June 13, 2005	until reinitiated	California Coastal Chinook
April 4, 2015	until reinitiated	Lower Columbia River coho
March 3, 2018	until reinitiated	Sacramento River winter-run Chinook
April 29, 2004	until reinitiated	Puget Sound Chinook
April 26, 2012	until reinitiated	Lower Columbia River Chinook
<b><i>Non-Salmonid Species</i></b>		
April 30, 2007	until reinitiated	North American Green Sturgeon
December 22, 2008	until December 2018	Eastern and Western DPS Steller Sea Lion (eastern DPS was delisted November 4, 2013 (78 FR 66140))
April 2020	Until May 2021	Southern Resident Killer Whales
April 30, 2011	until reinitiated	Puget Sound/Georgia Basin Rockfish
April 30, 2011	until reinitiated	Pacific Eulachon

## ***Coastal Zone Management Act (CZMA)***

Section 307(c)(1) of the CZMA of 1972 requires all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. These management measures are based primarily on the Pacific Coast Salmon Fishery Management Plan (Salmon FMP) and its amendments, which were previously found to be consistent to the maximum extent practicable with the approved coastal zone management programs of the affected states (i.e., Washington, Oregon, and California). This determination was sent to the responsible state agencies on February 26, 2020, for review under section 307(c)(1) of the CZMA. The state agencies did not object to this determination.

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

The Migratory Bird Treaty Act of 1918 was designed to end the commercial trade of migratory birds and their feathers that, by the early years of the 20th century, had diminished populations of many native bird species. The act states it is unlawful to take, kill, or possess migratory birds and their parts (including eggs, nests, and feathers) and is a shared agreement between the United States, Canada, Japan, Mexico, and Russia to protect a common migratory bird resource. The Migratory Bird Treaty Act prohibits the directed take of seabirds, but the incidental take of seabirds does occur. None of the alternatives directly affect any seabirds protected by the Migratory Bird Treaty Act.

## ***Executive Order 13175: Consultation and Coordination with Indian Tribal Governments (EO 13175)***

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

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

The U.S. government formally recognizes that the four Washington Coastal Tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for salmon within the Council-managed area. Each of the treaty tribes has the discretion to administer their fisheries and to establish their own policies to achieve program objectives. In addition, other tribes with Federally-recognized fishing rights may be impacted by Council-area fisheries, including tribes from Puget Sound, the Columbia River, and the Klamath River. Accordingly, the proposed action and other alternatives have been developed through the Council process. Through the tribal representative on the Council and tribal comments submitted to NMFS and the Council, the Tribes have had a role in the developing the proposed action and analyzing the effects of the alternatives; therefore, the proposed action is consistent with EO 13175.

## ***Executive Order 12898: Environmental Justice***

Executive Order 12898 obligates Federal agencies to identify and address “disproportionately high adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations in the United States” as part of any overall environmental analysis associated with an action. NOAA guidance, NAO 216-6, at 7.02, states that “consideration of Executive Order 12898 should be specifically included in the NEPA documentation for decision making purposes.” Agencies should also

encourage public participation “especially by affected communities” as part of a broader strategy to address environmental justice issues.

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

Fisheries conducted under the FMP are not expected to disproportionately affect minority and low-income communities. West Coast Indian tribes are part of the Council’s decision-making process on salmon management issues, and tribes with treaty rights to salmon, groundfish, or halibut have a seat on the Council. Available demographic data detailed in the Salmon FMP Amendment 14, Appendix B show that coastal counties where fishing communities are located are variable in terms of social indicators like income, employment, and race and ethnic composition. As a result, the alternatives are not expected to disproportionately affect fishing communities, nor minority and low income groups in particular.

### ***Executive Order 13132: Federalism***

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

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

The proposed action would not have federalism implications subject to Executive Order 13132.

### ***REGULATORY FLEXIBILITY ACT (RFA)***

This action is exempt from the procedures of the RFA because NMFS is waiving notice and comment for the reasons described below under the Administrative Procedures Act determination section.



## **ADMINISTRATIVE PROCEDURE ACT (APA)**

NOAA's Assistant Administrator for Fisheries (AA) finds it is impracticable and contrary to public interest to provide for prior notice and comment on the rule implementing the salmon management measures and waives this requirement under 5 U.S.C. 553(b)(B) for the reasons explained below.

The annual salmon management cycle traditionally begins May 1 and continues through April 30 of the following year. May 1 was chosen because the pre-May harvests constitute a relatively small portion of the annual catch. The time frame of the preseason process for determining the annual modifications to ocean salmon fishery management measures depends on when the pertinent biological data are available. Salmon stocks are managed to meet annual spawning escapement goals or specific exploitation rates. Achieving either of these objectives requires designing management measures that are appropriate for the ocean abundance predicted for that year. These preseason abundance forecasts, which are derived from previous years' observed spawning escapements, vary substantially from year to year, and are not available until January and February because spawning escapement continues through fall.

The preseason planning and public review process associated with developing Pacific Fishery Management Council (Council) recommendations is initiated in February as soon as the forecast information becomes available. The public planning process requires coordination of management actions of four states, numerous Indian tribes, and the Federal Government, all of which have management authority over the stocks. This complex process includes the affected user groups, as well as the general public. The process is compressed into a two-month period which culminates at the April Council meeting at which the Council adopts a recommendation that is forwarded to NMFS for review, approval, and implementation of fishing regulations typically effective on May 1. For 2020, even with the waiver of notice and comment, NMFS does not expect the rule to be effective until May 6 to accommodate the necessary regulatory process to review, approve, and implement these fishing regulations.

As described in the Federal Register Notice for this action under the "Schedule Used to Establish 2020 Management Measures" section, the Council solicited public comment on its proposed management options and notified the public of the measures it recommended to NMFS for implementation. In addition to opportunities for public input at the March and April Council meetings, the Council held public hearings on the alternatives via webinar for each coastal state between the March and April Council meetings. In addition to the Council process, notice and opportunity for public comment is provided through meetings and caucuses of State, Tribal, local governments, and the various user groups. This parallel process occurs throughout the February to April time frame when Council recommendations are developed. The major meetings that concern salmon fisheries on the West Coast include the North of Cape Falcon Forum, sponsored by the state of Washington and Northwest Indian tribes with treaty fishing rights; *U.S. v. Oregon* meetings related to ocean and Columbia River fisheries; and meetings held by the Oregon Fish and Wildlife Commission and the California Fish and Game Commission. Recommendations and information from these forums are incorporated into the Council process when representatives from these entities provide comments and information at Council sponsored functions.

Providing opportunity for prior notice and public comments on the Council's recommended measures through a proposed and final rulemaking process would require 30 to 60 days in addition to the two-month period required for development of the regulations. Delaying implementation of annual fishing regulations, which are based on the current stock abundance projections, for an additional 60 days, would require that fishing regulations for May and June be set in the previous year, without knowledge of current stock status. For the 2020 fishing regulations, the current stock abundance was not available to the Council until

February. In addition, information related to northern fisheries and stock status in Alaska and Canada, which is important to assessing the amount of available salmon in the southern U.S. ocean fisheries is not available until mid- to late-March. Because a substantial amount of fishing normally occurs mid-May through June, managing the fishery with measures developed using the prior year's data could have significant adverse effects on the managed stocks, including ESA-listed stocks. Although salmon fisheries that open prior to May are managed under measures developed the previous year, as modified by the Council at its March meeting, relatively little harvest occurs during that period (e.g., less than 5 percent of commercial and recreational harvest occurred prior to May 1 in the period 2001 through 2017). Allowing the much more substantial harvest levels normally associated with the May and June seasons to be promulgated under the prior year's regulations would impair NMFS' ability to protect weak stocks and ESA-listed stocks, and provide harvest opportunity where appropriate. The choice of May 1 as the beginning of the regulatory season balances the need to gather and analyze the data needed to meet the management objectives of the Salmon FMP and the requirements to provide adequate public notice and comment on the regulations implemented by NMFS. Providing for notice and public comment on the Council's recommendations, in addition to that provided for through the Council process, is therefore impracticable and contrary to the public interest.

If the 2020 measures are not in place on May 6 when the first salmon fisheries under the 2020 regulations are scheduled to begin, ocean salmon fisheries will not open as scheduled, or would open or continue based on the prior year's management measures which do not account for current year abundance projections without inseason action by NMFS. This would result in lost fishing opportunity, negative economic impacts, potential harm to stocks at low abundance and ESA-listed stocks, and confusion for the public as the state fisheries adopt concurrent regulations that conform to the Federal management measures.

Overall, the annual population dynamics of the various salmon stocks require managers to vary the season structure of the various West Coast area fisheries to both protect weaker stocks and give fishers access to stronger salmon stocks, particularly hatchery produced fish. Failure to implement these measures immediately could compromise the status of certain stocks, or result in foregone opportunity to harvest stocks whose abundance has increased relative to the previous year, thereby undermining the purposes of this Agency action. Based upon the above-described need to have these measures effective on May 6 and the fact that there is limited time available to implement these new measures after the final Council meeting in April and before the commencement of the ocean salmon fishing year on May 6, NMFS has concluded it is impracticable to provide an opportunity for prior notice and public comment under 5 U.S.C. 553(b)(B).

The AA also finds that good cause exists under 5 U.S.C. 553(d)(3), to waive the 30-day delay in effectiveness of this action. As previously discussed, these measures are essential to conserve threatened and endangered salmon stocks, and to provide for harvest of more abundant stocks. If these measures are not in place on May 6, then the West Coast ocean salmon fisheries will not open as scheduled.

To enhance notification to the fishing industry of this action, NMFS will announce the new measures over the telephone hotline used for inseason management actions and also post the regulations on its West Coast Region website (<http://www.westcoast.fisheries.noaa.gov>). Additionally, NMFS will advise the states of Washington, Oregon, and California on the new management measures. These states announce the seasons for applicable state and Federal fisheries through their own public notification systems.

## **Background**

### **Proposed Action:**

Develop annual management measures for the 2020 Ocean Salmon Fisheries Management Measures including: commercial, recreational, and tribal ocean salmon fisheries. Details of the proposed action can be found in the environmental assessment (EA), to which this finding of no significant impact (FONSI) is attached.

### **Alternatives Evaluated in the Environmental Assessment:**

No-action Alternative

Alternative I

Alternative II

Alternative III

Preferred Alternative (Council Recommendation)

### **Selected Alternative:**

The National Marine Fisheries Service (NMFS) is selecting the Pacific Fishery Management Council's (Council) preferred alternative, which is described in the attached EA in the part titled "Preseason Report III."

### **Related Consultations:**

The proposed action is consistent with existing consultations on salmon fishery impacts to species listed as threatened or endangered under the Endangered Species Act (ESA), and these are described in the attached EA.

In 2019, NMFS reinitiated ESA consultation on the effects of implementing the Council's Pacific Coast Salmon Fishery Management Plan (FMP) on the endangered Southern Resident killer whale (SRKW) distinct population segment. NMFS has completed an Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Conference Opinion Consultation on *Implementation of the Pacific Fishery Management Council Salmon Fishery Management Plan in 2020 for Southern Resident Killer Whales and their Current and Proposed Critical Habitat*. The biological opinion concluded that the proposed action would not jeopardize the endangered whales and would not adversely modify their current and proposed critical habitat.

The area affected by the annual management measures of the Salmon FMP has been identified as essential fish habitat (EFH) under the Salmon FMP, Coastal Pelagic Species FMP, and Pacific Coast Groundfish FMP. The proposed action may have an adverse impact on EFH identified in these FMPs. Because the potential adverse impact on EFH is not substantial, NMFS conducted an abbreviated EFH consultation pursuant to 50 CFR 600.920(h) and prepared an EFH Assessment that incorporates all of the information required in 50 CFR 920(g)(2). The abbreviated EFH consultation was incorporated into the NMFS biological opinion on the effects of the Salmon FMP on ESA-listed salmonids dated April 30, 2001. The consultation concluded that there are appropriate conservation measures governing fishing actions that occur under the Salmon FMP to minimize potential adverse impacts to EFH for species managed under the FMPs



listed above. NMFS has continued to confirm these conclusions from the original 2001 EFH consultation through subsequent EFH consultations, including one completed most recently in 2018 for Sacramento River winter-run Chinook salmon.

## **Significance Review**

The Council on Environmental Quality (CEQ) Regulations state that the determination of significance using an analysis of effects requires examination of both context and intensity, and lists ten criteria for intensity (40 C.F.R. § 1508.27). In addition, the Companion Manual for National Oceanic and Atmospheric Administration Administrative Order 216-6A provides sixteen criteria, the same ten as the CEQ Regulations and six additional, for determining whether the impacts of a proposed action are significant. Each criterion is discussed below with respect to the proposed action and considered individually as well as in combination with the others.

***1. Can the proposed action reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?***

No, the proposed action will not result in a significant effect. The proposed action has been developed to be consistent with the Council's Pacific Coast Salmon Fishery Management Plan (FMP). The framework FMP and each amendment to the FMP have been analyzed under the National Environmental Policy Act (NEPA), and no significant effects have been found.

***2. Can the proposed action reasonably be expected to significantly affect public health or safety?***

This proposed action will not impact public health or safety because the proposed action, consistent with the FMP, has provisions to adjust management measures if unsafe weather or public health emergency affects the fisheries' access and is consistent with previously analyzed management measures used since the FMP was adopted.

***3. Can the proposed action reasonably be expected to result in significant impacts to unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?***

No significant impacts are expected to occur in any of the above areas. No ground disturbing activity is part of this proposed action.

**4. *Are the proposed action's effects on the quality of the human environment likely to be highly controversial?***

The impacts of the proposed action are not expected to be highly controversial. Due to the use of the best available scientific information in decision-making, as provided by the Council's Salmon Technical Team and Scientific and Statistical Committee (SSC) during development of the alternatives, and extensive public input into the development of the action. With respect to the impacts of the proposed action on endangered SRKW, the EA drew from the analysis of the Council's ad hoc workgroup (SRKW Workgroup), which included salmon and SRKW experts and allowed for public participation. The SRKW Workgroup is assigned to reassess the effects of Council-area salmon fisheries on SRKW. The SRKW Workgroup held several public meetings and work sessions to develop their risk assessment and made presentations at multiple Council meetings. The Council's SSC reviewed the SRKW Workgroup's technical analysis and found it to be "reasonable and appropriate." The analysis in this EA is based on the SRKW Workgroup's extensive analysis of, and applies that analysis to, the proposed action. There is no substantial dispute regarding the effects of the management measures authorized in this action.

**5. *Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?***

The effects of this proposed action are not anticipated to be highly uncertain or involve unknown risks. The proposed 2020 ocean salmon fisheries would be comparable to previous fisheries developed under the Salmon FMP, which has been in place for many years. Salmon fisheries conducted under the FMP have been monitored and analyzed in the Council's pre-season process for many years and, thus, risks from the fisheries are relatively well known. There is some uncertainty involved in projecting stock abundance in a given year; however, such uncertainty is addressed by implementing precautionary management measures to protect the less abundant stocks (i.e., "weak" stocks). In order to prevent overfishing on, and conserve, the weaker stocks, there is less harvest opportunity on the more abundant stocks that intermix with weak stocks in the fisheries. In addition to the precautionary measures, the regulations allow, consistent with the FMP, for in-season management actions to be taken in some areas as additional information becomes available.

**6. *Can the proposed action reasonably be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?***

The proposed action will not be setting precedents for future actions with significant effects because the fisheries management measures are structured each year based on the FMP framework and the best available scientific information.

**7. *Is the proposed action related to other actions that when considered together will have individually insignificant but cumulatively significant impacts?***

No, the proposed action will not be expected to have any significant cumulative effects. The ocean salmon fisheries are managed in a sustainable manner and consistent with the Magnuson-Stevens Fishery Conservation and Management Act (MSA), ESA, Marine Mammal Protection Act (MMPA), and other applicable law. The Council and NMFS account for impacts from other salmon fisheries in developing and analyzing the alternatives to achieve conservation objectives. Annual ocean salmon management regimes, such as the proposed action, are designed to be consistent with the associated current ESA consultations, and based on measures that serve to protect multiple stocks in the mixed-stock ocean salmon fisheries, especially where stocks overlap and intermingle in the ocean. Management measures for the ocean salmon fisheries are developed annually taking into account scientific and management information from the prior year's fisheries, as well as new scientific information regarding status of the stocks, environmental conditions that may affect the salmon stocks, and socio-economic impacts of the alternatives.

**8. *Can the proposed action reasonably be expected to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?***

No significant effects of this proposed action are anticipated on cultural, scientific, or historical resources. No ground disturbing activity is anticipated. In addition, tribes with treaty fishing rights for West Coast salmon have representation on the Council and are involved in the preseason planning process.

**9. *Can the proposed action reasonably be expected to have a significant impact on endangered or threatened species, or their critical habitat as defined under the Endangered Species Act of 1973?***

This proposed action would not significantly affect any endangered or threatened species or its critical habitat. Several salmonid and non-salmonid species that are potentially impacted by the fisheries are listed as threatened or endangered under the ESA. NMFS has issued biological opinions addressing the effects of the fisheries on all of these species. Stock abundance forecasts are developed each year, for ESA-listed and non-

listed salmon stocks, and annual management measures are crafted to ensure fishery impacts on ESA-listed stocks are within that allowed under the appropriate biological opinion to minimize or avoid adverse effects on each stock. The alternatives for the 2020 fisheries were developed consistent with the biological opinions for these species.

As discussed above (see question #4) the Council formed an SRKW Workgroup in 2019, concurrent with NMFS' reinitiation of consultation, to reassess the effects of Council salmon fisheries on SRKW. NMFS' Endangered Species Act (ESA) Section 7(a)(2) *Biological Opinion and Conference Opinion Consultation on Implementation of the Pacific Fishery Management Council Salmon Fishery Management Plan in 2020 for Southern Resident Killer Whales and their Current and Proposed Critical Habitat* concluded that the proposed action is not likely to jeopardize the continued existence of the SRKW distinct population segment or destroy or adversely modify its designated critical or proposed habitat.

Reduction in Chinook salmon as prey for SRKW due to Council fisheries ranged from 0.9 to 30.1 percent from 1992-2016 with level of reduction decreasing throughout the time period. The reduction in prey over the last 10 years is roughly half of that over the full time series. The 2020 Council salmon fisheries are estimated to reduce the amount of Chinook prey available to SRKW and other predators by approximately 10 percent, leaving 90 percent of Chinook abundance available as prey. Therefore, while the proposed action may affect ESA-listed species, it is not expected to be significant under NEPA because the proposed action is designed to minimize or avoid adverse effects on ESA-listed species, the proposed action is temporary as the fisheries are developed each year to be responsive to the abundance and conservation needs of each salmon stock on an annual basis, and the proposed action is consistent with existing ESA biological opinions, and the reduction in Chinook salmon (prey for SRKW) resulting from Council fisheries is low.

***10. Can the proposed action reasonably be expected to threaten a violation of Federal, state, or local law or requirements imposed for environmental protection?***

This proposed action will not threaten a violation of any federal, state, or local law or requirement imposed for the protection of the environment.

***11. Can the proposed action reasonably be expected to significantly adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act?***

No. Ocean salmon fisheries are classified under the MMPA as Category III (85 FR 21079, April 16, 2020), indicating there is "a remote likelihood of or no known incidental mortality or serious injury of marine mammals" (MMPA 118(c) I).

***12. Can the proposed action reasonably be expected to significantly adversely affect managed fish species?***

No. The proposed action is consistent with conservation and management objectives of the FMP. The EA considered impacts to non-target fish species (see the EA part “Preseason Report II section 8.3”). Ocean salmon fishery impacts to groundfish stocks (e.g., species such as rockfish and flatfish that live on or near the bottom of the ocean) are managed as part of the open access groundfish fishery sector. Retention of halibut caught incidental to commercial salmon fisheries is managed under the Pacific Halibut Catch Share Plan (85 FR 14586, March 13, 2020). The proposed action has no impacts to other managed fish species.

***13. Can the proposed action reasonably be expected to significantly adversely affect essential fish habitat as defined under the Magnuson-Stevens Fishery Conservation and Management Act?***

The area affected by the annual management measures of the Salmon FMP has been identified as essential fish habitat (EFH) under the Salmon FMP, Coastal Pelagic Species FMP, and Pacific Coast Groundfish FMP. The proposed action may have an adverse impact on EFH identified in these FMPs. Because the potential adverse impact on EFH is not substantial, NMFS conducted an abbreviated EFH consultation pursuant to 50 CFR 600.920(h) and prepared an EFH Assessment that incorporates all of the information required in 50 CFR 920(g)(2). The abbreviated EFH consultation was incorporated into the NMFS biological opinion on the effects of the Salmon FMP on ESA-listed salmonids dated April 30, 2001. The consultation concluded that there are appropriate conservation measures governing fishing actions that occur under the Salmon FMP to minimize potential adverse impacts to EFH for species managed under the FMPs listed above. NMFS has continued to confirm these conclusions from the 2001 EFH consultation through subsequent EFH consultations, including one completed most recently in 2018 for Sacramento River winter-run Chinook salmon.

***14. Can the proposed action reasonably be expected to significantly adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?***

The proposed action is not expected to adversely affect vulnerable marine, coastal, or coral ecosystems. The proposed action does include any substrate-disturbing activity.

***15. Can the proposed action reasonably be expected to significantly adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?***

Substantial impacts to biodiversity and ecosystem function is not anticipated because higher trophic-level species affected by the salmon fisheries are primarily marine mammals, which generally are opportunistic feeders with various available prey options



and their populations have been stable or increasing. With respect to SRKW, NMFS and the Council specifically considered predator-prey relationships between the whales and Pacific salmon, informed by the SRKW Workgroup risk assessment. Based on the risk assessment, NMFS is most concerned when Chinook salmon abundance north of Cape Falcon, Oregon, (NOF) is critically low, and there may be insufficient foraging opportunities for SRKWs. NMFS provided guidance to the Council to assess the pre-fishery forecasted abundance levels (FRAM time step one) by spatial aggregate (north of Cape Falcon, Cape Falcon south to Humbug Mountain, and aggregated South of Humbug Mountain management areas). If the NOF abundance is equal to or less than the average of the seven lowest years of abundance (FRAM time step one, refer to PFMC 2020 Appendix E, Table 2), the Council should implement precautionary conservation measures for Council-area salmon fisheries that affect the abundance in NOF waters (this includes salmon fisheries in Washington, Oregon, and California waters) to benefit the whales. The abundance of Chinook salmon in 2020 is forecast above the level of concern and the level of prey removal due to Council-area fisheries anticipated in 2020 is low; therefore, the proposed action should not have a significant adverse effect on the predator-prey relationship between SRKW and Chinook salmon.

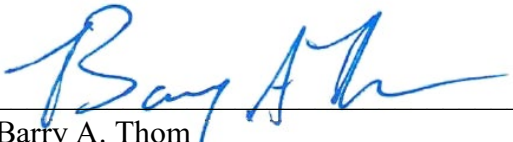
Generally, the Pacific Coast salmon fisheries have a minimal impact on marine mammals, as noted in the response to question #11. Direct salmon fisheries impacts on seabirds are minimal to non-existent. Harvest removes fish that otherwise would have remained in the ecosystem to prey on lower trophic level species; however, salmon fisheries' removals are not significant in this respect and wide-scale changes in oceanographic conditions, resulting from El Niño events for example, are the primary determinants of abundance, variability, and structure of lower trophic level populations. In addition, maintaining biodiversity by conserving listed salmon evolutionarily significant units is a key management goal.

***16. Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?***

The proposed action would not be expected to import, introduce, or contribute to the spread of non-indigenous species. The fishing vessels participating in the proposed action would not increase the risk of introduction through ballast water or hull fouling. Disposition of the catch does not include any translocation of living marine resources nor use of any nonindigenous species as bait.

## Determination

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for 2020 Ocean Salmon Fisheries Management Measures, it is hereby determined that the 2020 Ocean Salmon Fisheries Management Measures will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an environmental impact statement for this action is not necessary.

  
\_\_\_\_\_  
Barry A. Thom  
Regional Administrator  
West Coast Region  
National Marine Fisheries Service

April 30, 2020  
Date