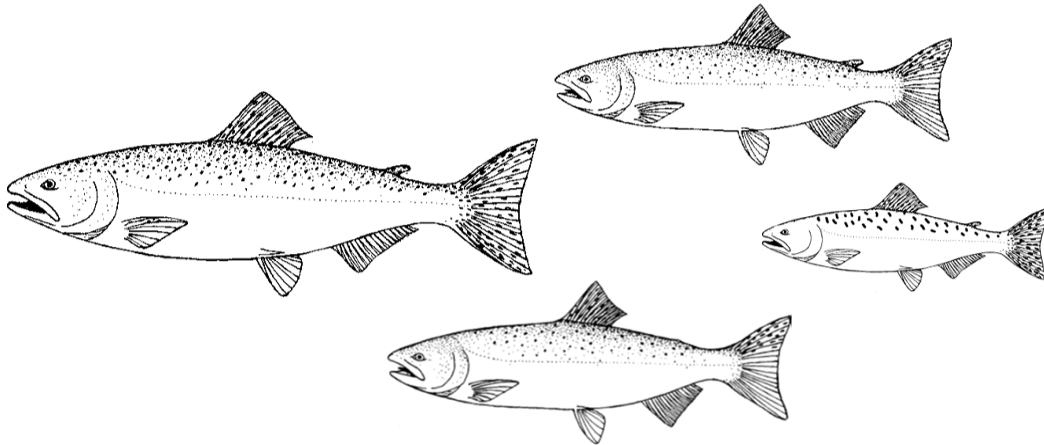


PACIFIC COAST SALMON FISHERY MANAGEMENT PLAN

*FOR COMMERCIAL AND RECREATIONAL SALMON FISHERIES
OFF THE COASTS OF WASHINGTON, OREGON, AND CALIFORNIA
AS REVISED THROUGH AMENDMENT 21
(Effective September 2021)*



Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384
503-820-2280
www.pcouncil.org

September 2021



This document contains the complete text of the Pacific Coast Salmon Fishery Management Plan as amended through Amendment 21 which was adopted by the Council in November 2020 and approved for implementation by the Secretary of Commerce in September 2021.

This document may be cited in the following manner:

Pacific Fishery Management Council (PFMC). Pacific Coast Salmon Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California as Revised through Amendment 21. PFMC, Portland, OR. 83 p.

This document is published by the Pacific Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award Number FNA20NMF4410011.

TABLE OF CONTENTS

	<u>Page</u>
SUPPLEMENTARY FMP DOCUMENTS.....	v
LIST OF ACRONYMS AND ABBREVIATIONS.....	vi
INTRODUCTION	1
1 WHAT THE PLAN COVERS	5
1.1 STOCK CLASSIFICATION	5
1.2 CHANGES OR ADDITIONS	6
2 ACHIEVING OPTIMUM YIELD	13
2.1 THEORY	13
2.2 IMPLEMENTATION.....	13
3 CONSERVATION	14
3.1 STATUS DETERMINATION CRITERIA	15
3.1.1 General Application to Salmon Fisheries	15
3.1.2 Overfishing	16
3.1.2.1 Council Action	16
3.1.3 Approaching an Overfished Condition	16
3.1.3.1 Council Action	16
3.1.4 Overfished.....	16
3.1.4.1 Council Action	17
3.1.5 Not Overfished-Rebuilding.....	18
3.1.6 Rebuilt.....	18
3.1.6.1 Council Action	18
3.1.7 Changes or Additions to Status Determination Criteria.....	19
3.2 SALMON STOCK CONSERVATION OBJECTIVES	19
3.2.1 Basis.....	19
3.2.2 Changes or Additions.....	20
3.3 HARVEST CONTROLS	28
3.3.1 Relationship to ESA consultation standards	28
3.3.2 Relationship to the Pacific Salmon Treaty.....	28
3.3.3 Acceptable Biological Catch.....	29
3.3.4 Annual Catch Limits	29
3.3.4.1 Preseason ACLs	30
3.3.4.2 Postseason ACLs.....	30
3.3.5 Accountability Measures	30
3.3.5.1 Preseason and In-season Accountability Measures	30
3.3.5.2 Post-season Accountability Measures	31
3.3.5.3 Performance and Re-evaluation of the ACLs and AMs System	31
3.3.6 Specific Control Rules for Stocks, Indicator Stocks, and Complexes	32
3.3.6.1 Klamath River Fall Chinook, Sacramento River Fall Chinook.....	32
3.3.6.2 Washington Coast Chinook and Coho, Columbia River Summer Chinook, Upriver Bright Fall Chinook	33
3.3.6.3 Puget Sound Coho	34
3.3.6.4 Oregon Coastal Natural Coho	35
3.3.7 Changes and Additions to Control Rules.....	38

3.4	MANAGEMENT FOR HATCHERY AND ESA-LISTED STOCKS.....	38
3.4.1	Hatchery Stocks	38
3.4.2	Stocks Listed Under the Endangered Species Act.....	38
3.5	BYCATCH	41
3.5.1	Definition and Management Intent	41
3.5.2	Occurrence.....	42
3.5.3	Standard Reporting Methodology.....	42
4	HABITAT AND PRODUCTION	43
4.1	ESSENTIAL FISH HABITAT	43
4.1.1	Identification and Description.....	43
4.1.2	Adverse Effects of Fishing on Essential Fish Habitat.....	44
4.1.3	Adverse Effects of Non-Fishing Activities on Essential Fish Habitat.....	44
4.1.4	Procedures for Amending Salmon EFH	45
4.2	COMPENSATION FOR NATURAL PRODUCTION LOSSES	46
4.3	ARTIFICIAL PRODUCTION.....	46
5	HARVEST	48
5.1	OVERALL FISHERY OBJECTIVES.....	48
5.2	MANAGEMENT CONSIDERATIONS BY SPECIES AND AREA.....	49
5.2.1	Chinook Salmon	49
5.2.1.1	South of latitude 40°10' N	49
5.2.1.2	Latitude 40°10' N to Humbug Mountain (Klamath Management Zone).....	49
5.2.1.3	Humbug Mountain to Cape Falcon	50
5.2.1.4	North of Cape Falcon	50
5.2.2	Coho Salmon.....	50
5.2.2.1	South of Cape Falcon	50
5.2.2.2	North of Cape Falcon	51
5.2.3	Pink Salmon.....	51
5.3	ALLOCATION.....	51
5.3.1	Commercial (Non-Tribal) and Recreational Fisheries North of Cape Falcon	52
5.3.1.1	Goal, Objectives, and Priorities.....	52
5.3.1.2	Allocation Schedule Between Gear Types	53
5.3.1.3	Recreational Subarea Allocations.....	54
5.3.2	Commercial and Recreational Fisheries South of Cape Falcon.....	55
5.3.3	Tribal Indian Fisheries	58
5.3.3.1	California.....	58
5.3.3.2	Columbia River	58
5.3.3.3	U.S. v. Washington Area.....	58
5.4	U.S. HARVEST AND PROCESSING CAPACITY AND ALLOWABLE LEVEL OF FOREIGN FISHING	59
6	MEASURES TO MANAGE THE HARVEST	60
6.1	MANAGEMENT BOUNDARIES AND MANAGEMENT ZONES.....	60
6.2	MINIMUM HARVEST LENGTHS FOR OCEAN COMMERCIAL AND RECREATIONAL FISHERIES	62
6.3	RECREATIONAL DAILY BAG LIMIT	62
6.4	FISHING GEAR RESTRICTIONS.....	62
6.5	SEASONS AND QUOTAS.....	62
6.5.1	Preferred Course of Action	63
6.5.2	Procedures for Calculating Seasons.....	63

6.5.3	Species-Specific and Other Selective Fisheries	63
6.5.3.1	Guidelines.....	63
6.5.3.2	Selective Fisheries Which May Change Allocation Percentages North of Cape Falcon	64
6.5.4	Procedures for Calculating Quotas	64
6.5.5	Procedures for Regulating Ocean Harvests of Pink and Sockeye.....	65
6.6	OTHER MANAGEMENT MEASURES	65
6.6.1	Treaty Indian Ocean Fishing.....	65
6.6.1.1	Seasons	66
6.6.1.2	Quotas.....	66
6.6.1.3	Areas.....	66
6.6.1.4	Size Limits and Gear Restrictions	67
6.6.2	Net Prohibition.....	67
6.6.3	Prohibition on Removal of Salmon Heads.....	67
6.6.4	Steelhead Prohibition	67
6.6.5	Prohibition on Use of Commercial Troll Fishing Gear for Recreational Fishing.....	68
6.6.6	Experimental Fisheries	68
6.6.7	Scientific Research	68
6.6.8	Southern Resident Killer Whale Management Measures	68
7	DATA NEEDS, DATA COLLECTION METHODS, AND REPORTING REQUIREMENTS	71
7.1	INSEASON MANAGEMENT	71
7.1.1	Data Needs.....	71
7.1.2	Methods for Obtaining Inseason Data	71
7.2	ANNUAL AND LONG-TERM MANAGEMENT.....	72
7.2.1	Data Needs.....	72
7.2.2	Methods for Obtaining Annual and Long-Term Data	72
7.3	REPORTING REQUIREMENTS	72
8	SCHEDULE AND PROCEDURES FOR ANALYZING THE EFFECTIVENESS OF THE SALMON FMP	73
9	SCHEDULE AND PROCEDURES FOR PRESEASON MODIFICATION OF REGULATIONS	74
10	INSEASON MANAGEMENT ACTIONS AND PROCEDURES.....	76
10.1	FIXED INSEASON ACTIONS	76
10.1.1	Automatic Season Closures When the Quotas Are Reached.....	76
10.1.2	Rescission of Automatic Closure.....	76
10.1.3	Adjustment for Error in Preseason Estimates	76
10.2	FLEXIBLE INSEASON ACTIONS	76
10.3	PROCEDURES FOR INSEASON ACTIONS	77
11	SCHEDULE AND PROCEDURES FOR FMP AMENDMENT AND EMERGENCY REGULATIONS	79
12	LITERATURE CITED.....	80

LIST OF TABLES

	<u>Page</u>
TABLE I. Record of salmon FMP documents.....	2
TABLE 1-1. Chinook stocks and stock complexes identified in the Salmon FMP. (Page 1 of 4)	7
TABLE 1-2. Coho stocks and stock complexes identified in the Salmon FMP. (Page 1 of 2)	11
TABLE 1-3. Pink salmon stocks and stock complexes identified in the Salmon FMP.	12
TABLE 1-4. Common and scientific names of EC species shared between all four of the Council's FMPs.	12
TABLE 3-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes in the Pacific Coast salmon FMP. These may change periodically. The most recent values are reported annually in Preseason Reports I and III. (Page 1 of 7)	21
TABLE 3-2. Allowable fishery impact rate criteria for OCN coho stock components.	37
TABLE 3-3. Listing of evolutionarily significant units, their ESA status, and associated stocks managed under the FMP	40
TABLE 5-1. Initial commercial/recreational harvest allocation schedule north of Cape Falcon	53
TABLE 5-2. Percentage allocation of total allowable coho harvest among the four recreational port areas north of Cape Falcon	55
TABLE 5-3. Example distributions of the recreational coho TAC north of Leadbetter Point	55
TABLE 5-4. Allocation of allowable ocean harvest of coho salmon (thousands of fish) south of Cape Falcon. ^{a/}	56
TABLE 6-1. Council- and State-managed control zones and river mouth areas used in managing ocean salmon fisheries, listed north to south.	70

LIST OF FIGURES

	<u>Page</u>
FIGURE 3-1. Control rule for Sacramento River and Klamath River fall Chinook. Abundance is pre-fishery ocean abundance in spawner equivalent units, and F is the exploitation rate. Reference points in the control rule are defined in the text.	33
FIGURE 3-2. Control rule for several Chinook and coho stocks managed under the terms of the PST. Abundance is pre-fishery ocean abundance in spawner equivalent units, and F is the exploitation rate. Reference points in the control rule are defined in the text.	34
FIGURE 3-3. Control rule for Puget Sound coho. Abundance is pre-fishery ocean abundance in spawner equivalent units, and F is the exploitation rate. Reference points in the control rule are defined in the text.	35

SUPPLEMENTARY FMP DOCUMENTS

(Available from Council office and web site: www.pccouncil.org):

APPENDIX A TO THE PACIFIC COAST SALMON PLAN:

IDENTIFICATION AND DESCRIPTION OF ESSENTIAL FISH HABITAT, ADVERSE IMPACTS,
AND RECOMMENDED CONSERVATION MEASURES FOR SALMON

APPENDIX B - FROM AMENDMENT 14 TO THE PACIFIC COAST SALMON PLAN:

DESCRIPTION OF THE OCEAN SALMON FISHERY AND ITS SOCIAL AND ECONOMIC
CHARACTERISTICS

APPENDIX C TO THE PACIFIC COAST SALMON PLAN:

REVIEW OF OCEAN SALMON FISHERIES – STOCK ASSESSMENT AND FISHERY
EVALUATION DOCUMENT FOR THE PACIFIC COAST SALMON FISHERY MANAGEMENT
PLAN (Latest annual edition)

PRESEASON REPORT I:

STOCK ABUNDANCE ANALYSIS AND ENVIRONMENTAL ASSESSMENT PART 1 FOR
OCEAN SALMON FISHERY REGULATIONS (Latest annual edition)

PRESEASON REPORT III:

COUNCIL ADOPTED MANAGEMENT MEASURES AND ENVIRONMENTAL ASSESSMENT
PART 3 FOR OCEAN SALMON FISHERY REGULATIONS (Latest annual edition)

LIST OF ACRONYMS AND ABBREVIATIONS

ABC	acceptable biological catch
ACL	annual catch limit
AEQ	adult equivalent
AM	accountability measure
ASETF	Anadromous Salmonid Environmental Task Force
CRFMP	Columbia River Fish Management Plan
Council	Pacific Fishery Management Council
CVF	Central Valley fall (Chinook stock complex)
EA	Environmental Assessment
EC	ecosystem component
EEZ	exclusive economic zone (three to 200 miles offshore)
EIS	Environmental Impact Statement
ESA	Endangered Species Act
EFH	essential fish habitat
ESU	Evolutionarily significant unit
F	instantaneous rate of fishing mortality
FAB	Fisheries Advisory Board (established in <i>U.S. v. Washington</i>)
FNMC	far-north migrating coastal (Chinook stock complex)
FMP	fishery management plan
FR	Federal Register
FRAM	Fishery Regulation Assessment Model
HAPC	Habitat Areas of Particular Concern
HC	Habitat Committee
HU	Hydrologic Unit
KRFC	Klamath River fall Chinook
KRTT	Klamath River Technical Team
LCN	Lower Columbia River natural coho
MFMT	maximum fishing mortality threshold
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSP	maximum sustainable production
MSST	minimum stock size threshold
MSY	maximum sustainable yield
N	abundance of fish in numbers
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCN	Oregon coastal natural coho
ODFW	Oregon Department of Fish and Wildlife
OFL	overfishing limit
OFR	Office of the Federal Register
OPI	Oregon Production Index
OY	optimum yield
PFMC	Pacific Fishery Management Council
PSC	Pacific Salmon Commission
QDNR	Quinalt Department of Natural Resources
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

S	number of adult spawners
SAS	Salmon Advisory Subpanel
Secretary	Secretary of Commerce
SEIS	Supplemental Environmental Impact Statement
SFA	Sustainable Fisheries Act
SONC	Southern Oregon/Northern California (Chinook stock complex)
SONCC	Southern Oregon/Northern California coast coho
SRFC	Sacramento River fall Chinook
SRFCRT	Sacramento River Fall Chinook Review Team
SSC	Scientific and Statistical Committee
STT	Salmon Technical Team
TAC	total allowable catch
WDF	Washington Department of Fisheries
WDFW	Washington Department of Fish and Wildlife

INTRODUCTION

This document is the *Pacific Coast Salmon Fishery Management Plan*, a fishery management plan (FMP) of the Pacific Fishery Management Council (Council or PFMC) as revised and updated for implementation in 2021 and beyond. It guides management of commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California.

Since 1977, salmon fisheries in the exclusive economic zone (EEZ) (three to 200 miles offshore) off Washington, Oregon, and California have been managed under salmon FMPs of the Council. Creation of the Council and the subsequent development and implementation of these plans were initially authorized under the Fishery Conservation and Management Act of 1976. This act, now known as the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; MSA), was amended by the Sustainable Fisheries Act (SFA) in 1996, and most recently amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA) in 2007. The plan presented in this document contains or references all the elements required for an FMP under the MSA.

The Council's first salmon FMP and its environmental impact statement (EIS) were issued to govern the 1977 salmon season. A new salmon management plan and EIS were issued in 1978 to replace the 1977 documents. To establish management measures from 1979 through 1983, the 1978 FMP was amended annually and published along with a supplemental EIS (SEIS) and Regulatory Impact Review/Regulatory Flexibility Analysis (RIR/RFA). This annual process was lengthy, complex, and costly. It lacked a long-range perspective and was too cumbersome to allow for timely implementation of the annual regulations and efficient fishery management. Therefore, in 1984, the Council adopted a comprehensive framework amendment that was designed to end the need for annual plan amendments and supplemental EISs (PFMC 1984).

The comprehensive framework plan amendment of 1984 (Amendment 6) replaced the 1978 plan as the base FMP document and established a framework of fixed management objectives with flexible elements to allow annual management measures to be varied to reflect changes in stock abundance and other critical factors. Subsequently, at irregular intervals, the Council has developed various amendments to portions of the framework plan to address specific management issues raised by participants in the salmon management process or as necessary to respond to reauthorization of the MSA. Amendments adopted since implementation of the framework FMP in 1984 have been accompanied by an environmental assessment (EA) or a SEIS (i.e., Amendment 14), unless a NEPA analysis was not required (i.e., Amendment 17) because the actions contained in the amendment were either previously analyzed in a NEPA document or fit within the criteria for Categorical Exclusion.

The primary amendment issues since 1984 have included specific spawner escapement goals for Oregon coastal natural (OCN) coho and Klamath River fall Chinook (Amendments 7, 9, 11, 13, and 15), non-Indian harvest allocation (Amendments 7, 9, 10, and 14), inseason management criteria (Amendment 7), habitat and essential fish habitat (EFH) definition (Amendments 8, 14, and 18), safety (Amendment 8), status determination criteria (SDC) (Amendments 10, 14, 16, and 17), management objectives for stocks listed under the Endangered Species Act (ESA) (Amendments 12 and 14), bycatch reporting and priorities for avoiding bycatch (Amendment 14), selective fisheries (Amendment 14 and 17), stock classification (Amendment 16 and 17), annual catch limits (ACLs) and accountability measures (AMs) (Amendment 16), *de minimis* fishing provisions (Amendments 15 and 16).

The Council modified the OCN coho management goals under Amendment 13 in 1999 (PFMC 1999) and established *de minimis* fishing provisions for Klamath river fall Chinook under Amendment 15 (PFMC and NMFS 2007). Amendments 14 (PFMC 2000a) and 16 (PFMC and NMFS 2011), included extensive

revisions of the FMP primarily to respond to reauthorization of the MSA and to improve the readability and organization of the plan.

Amendment 19 added a suite of lower trophic level species to the FMP's list of ecosystem component (EC) species. Consistent with the objectives of the Council's FMPs and its Fishery Ecosystem Plan, Amendment 19 prohibits future development of directed commercial fisheries for the suite of EC species shared between all four FMPs (Shared EC Species) until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

Amendment 20 focused on two primary changes. The first change adjusted the process and schedule of setting the preseason regulations in order to provide sufficient time for NMFS to complete the federal rulemaking process prior to the anticipated implementation date for the annual management measures for ocean salmon fisheries. The second change adjusted the area of the Klamath Management Zone (KMZ) by moving the southern boundary five nautical miles north from Horse Mountain (lat. 40°05' N) to lat. 40°10' N. In addition, Amendment 20 included housekeeping edits intended to update and correct existing language.

Amendment 21 added management measures intended to limit impacts of the Council-managed salmon fisheries on Southern Resident Killer Whales (SRKW) by limiting the extent to which they reduce Chinook salmon prey availability for SRKW. A Chinook salmon abundance threshold has been identified and if Chinook abundance falls below that threshold, then a series of management actions will be implemented through annual management measures as part of the preseason process.

This document is the current salmon FMP through Amendment 21. Appendix A contains the complete description of EFH, Appendix B provides a description of the fishery and its social and economic characteristics, and Appendix C, which will always be the Council's most current annual review of the ocean fisheries, provides an annual updating of the fishery information. The reader may wish to refer to the original salmon FMP and individual amendment documents for more background and explanatory information, including the environmental impact assessments, EISs, and examples of management options not adopted by the Council.

Table 1 contains a complete listing of the issues in each amendment through Amendment 21.

TABLE I. Record of salmon FMP documents.

DOCUMENT	CONTENT SUMMARY
Final 1977 Plan	Initial FMP/EIS document for the 1977 salmon season.
Final 1978 Plan (43 FR 29791, July 11, 1978) Effective July 11, 1978 ^{a/}	Initial, comprehensive FMP/EIS document. Amended each year to establish annual management measures for 1979-1983.
Final Framework Amendment (49 FR 43679, Oct. 31, 1984) Effective Nov. 25, 1984 ^{b/} Technical amendment:	Comprehensive amendment and SEIS that replaced the 1978 Plan as a multi-year FMP document. 1) Spawner escapement goals, procedures to modify spawner goals, and inseason modification of daily bag limits (50 FR 812, Jan. 7, 1985). 2) Inseason rescission of automatic closures (50 FR 4977, Feb. 5, 1985). 3) Season opening and closing dates (50 FR 42529, Oct. 21, 1985).
Amendment 7 (52 FR 4146, Feb. 10, 1987) Effective Mar. 8, 1987	1) Sliding scale OCN coho spawner escapement goal. 2) Inseason management actions and procedures. 3) Coho harvest allocation south of Cape Falcon.
Amendment 8 (53 FR 30285, Aug. 11, 1988)	1) Habitat policy and objectives.

DOCUMENT	CONTENT SUMMARY
Effective Aug. 8, 1988; required no implementing regulations	2) Consideration of temporary season adjustments for vessels precluded from harvesting due to unsafe weather.
Amendment 9 (54 FR 19185, May 4, 1989) Effective May 1, 1989; except radio report section implemented July 13, 1989 (54 FR 29730, July 14, 1989)	1) Klamath River fall Chinook harvest rate spawner escapement goal. 2) Commercial/recreational harvest allocation north of Cape Falcon. 3) Inseason notice procedures. 4) Steelhead management intent. 5) Radio reporting requirements for commercial fishers. 6) Deleted limitations on season opening and closing dates.
Clarifying letter:	To Mr. Rolland Schmitt re harvest allocation, Issue 2; Feb. 27, 1989.
Technical amendment:	Minor modification of Klamath spawner goal based on Council recommendation, March 8, 1989 (54 FR 19800, May 8, 1989 and 59 FR 23000, May 4, 1994).
Amendment 10 (56 FR 26774, June 11, 1991) Effective July 11, 1991	1) Inseason reallocation objectives for commercial and recreational fisheries south of Cape Falcon. 2) Criteria guiding non-Indian catch allocation north of Cape Falcon, especially concerning recreational port allocation. 3) Definition of overfishing.
Amendment 11 (59 FR 23013, May 4, 1994) Effective April 29, 1994 Clarifying letter: Technical amendment:	OCN coho spawner escapement goal of 42 spawners/mile, incidental exploitation rate of 20% or less on OCN coho at low stock sizes and sport coho harvest allocation criteria at low harvest levels. To Mr. Gary Smith re incidental harvest and sport allocation; Apr. 15, 1994. Minor modification of Klamath spawner goal to meet tribal allocation based on Council recommendation of April 11, 1996 (61 FR 20186, May 6, 1996).
Amendment 12 (62 FR 35450, July 1, 1997) Effective July 31, 1997	1) Procedures governing retention of salmon bycatch in trawl nets. 2) Management objectives for ESA-listed salmon species. 3) Update of the salmon FMP (no change in management objectives).
Amendment 13 (64 FR 26328, May 14, 1999) Effective June 14, 1999)	Revision of management objectives for OCN coho to increase the probability of recovery and to prevent listing under the ESA.
Amendment 14 (66 FR 29238, May 30, 2001; Effective June 29, 2001)	1) Update of the EIS and editorial improvements in the plan. 2) New requirements of the SFA, including essential fish habitat, optimum yield, overfishing, and bycatch. 3) Clarification of the stocks managed and management objectives 4) Minor revision of allocation north of Cape Falcon to allow more harvest in selective fisheries.
Amendment 15 (73 FR 9960, February 25, 2008; Effective March 26, 2008)	Revision of Council action required under a Conservation Alert for Klamath River fall Chinook to allow <i>de minimis</i> fisheries.
Amendment 16 (76 FR 81851, December 29, 2011; Effective January 30, 2012)	1) Application of new requirements of the MSA as amended in 2007 and revised NS1 Guidelines. 2) Stock classification. 3) Establishment of ACLs and AMs. 4) Acceptable biological catch and incorporating scientific uncertainty. 5) Revision of status determination criteria. 6) Characterization of stock conservation objectives related to reference points 7) Development and modification of <i>de minimis</i> fishing provisions.

DOCUMENT	CONTENT SUMMARY
Amendment 17 (Effective January 1, 2013)	<ol style="list-style-type: none"> 1) Minor corrections from Amendment 16 and updating language to reflect current practices. 2) Approval of maximum fishing mortality threshold for Quillayute fall coho.
Amendment 18 (Effective September 12, 2014)	Update to reflect new information on EFH, including criteria for impassable barriers; addition of HAPCs; adjustments to geographic extent of EFH; addition of non-fishing activities and conservation measures; minor typographical adjustments and clarifications.
Amendment 19 (Effective March 10, 2016)	Update to add a suite of lower trophic level species to the FMP's list of ecosystem EC species and to prohibit future development of commercial fisheries for the suite of EC species shared between all four FMPs (Shared EC Species) until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.
Amendment 20 (Effective April 22, 2021)	<ol style="list-style-type: none"> 1) Housekeeping edits to update and correct existing language. 2) Change the implementation date for the annual management measures from May 1 to May 16 and adjust the preseason schedule accordingly. 3) Modify definition of Klamath Management Zone to move southern boundary five miles to the north.
Amendment 21 (Effective September 13, 2021, Notice of Decision 86 FR 51017)	Added management measures intended to limit impacts of the Council-managed salmon fisheries on SRKW by limiting the extent to which they reduce Chinook salmon prey availability for SRKW. Minor housekeeping edits as needed.

a/ Implemented by emergency regulation on April 14, 1978 (43 FR 15629) and May 24, 1978 (43 FR 22214).

b/ Implemented by emergency regulation on May 3, 1984 (49 FR 18853; May 3, 1984).

1 WHAT THE PLAN COVERS

"It is therefore declared to be the purposes of the Congress in this Act (1) to take immediate action to conserve and manage the fishery resources found off the coasts of the United States, and the anadromous species and Continental Shelf Fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone . . . , and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species and Continental Shelf fishery resources . . . (7) to promote the protection of essential fish habitat in the review of projects conducted under Federal permits, licenses, or other authorities that affect or have the potential to affect such habitat."

Magnuson-Stevens Act, § 2(b)

This fishery management plan (FMP) covers the coastwide aggregate of natural and hatchery salmon species that is contacted by salmon fisheries in the exclusive economic zone (EEZ) off the coasts of Washington, Oregon, and California. Salmon of U.S. and Canadian origin are included except when specific species are managed in those waters by another management entity with primary jurisdiction (i.e., sockeye and pink salmon by the Fraser River Panel of the Pacific Salmon Commission (PSC) in the Fraser River Panel Area (U.S.) between 49°N latitude and 48°N latitude). In addition, the plan contains requirements and recommendations with regard to EFH for the managed stocks as described in Chapter 4 and Appendix A. The essential fish habitat includes marine areas within the EEZ as well as estuarine and freshwater habitat within the internal waters of Washington, Oregon, California, and Idaho.

Chinook or king salmon (*Oncorhynchus tshawytscha*) and coho or silver salmon (*O. kisutch*) are the main species caught in Council-managed ocean salmon fisheries. In odd-numbered years, catches of pink salmon (*O. gorbuscha*) can also be significant, primarily off Washington and Oregon (PFMC 2012a). Therefore, while all species of salmon fall under the jurisdiction of this plan, it currently contains fishery management objectives only for Chinook, coho, pink (odd-numbered years only), and any salmon species listed under the Endangered Species Act (ESA) that is measurably impacted by Council fisheries.

The plan contains no fishery management objectives for even-numbered year pink salmon, chum (*O. keta*), sockeye (*O. nerka*), steelhead (*O. mykiss*), sea-run cutthroat (*O. clarki*) or spring run Chinook from the mid-Columbia River tributaries (White Salmon, Klickitat, Yakima, Deschutes, John Day, Umatilla, and Walla Walla basins). The Council does not manage fisheries for these species and incidental catches are inconsequential (low hundreds of fish each year) to very rare (PFMC and NMFS 2011). In the event this situation should change, management objectives for these species could be developed and incorporated by plan amendment. The incidental harvest of these salmon species can be allowed or restricted under existing federal fishery regulations.

The FMP also includes a suite of EC species that are shared between all four FMPs (Shared EC Species) and prohibits future development of directed commercial fisheries for those species until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

1.1 STOCK CLASSIFICATION

The MSA requires that an FMP describe the species of fish involved in the fishery. The NS1 Guidelines provide a structure for classifying stocks in and around the fishery, and organizing stock complexes. This classification scheme helps conceptualize how the fishery operates, which stocks are affected by various

fishery sectors, and how SDC and ACL provisions, among other MSA Section 303(a) provisions, may be applied.

The stocks identified in an FMP are classified as in or out of the fishery, and as target or non-target stocks. Target stocks and some non-target stocks are in the fishery; ecosystem component (ECs) stocks are non-target stocks that are not in the fishery. Individual stocks can also be formed into stock complexes for management and assessment purposes. Stock complexes are groups of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impacts of management actions on the stocks are similar. Stock complexes may be formed to facilitate management requirements such as setting ACLs in a mixed stock fishery. Each stock complex has one or more indicator stocks to establish annual harvest constraints based on status of those indicator stocks.

To the extent practicable, the Council has partitioned the coastwide aggregate of Chinook, coho, and pink salmon into various stock components and complexes with specific conservation objectives. A detailed listing of the individual stocks and stock complexes managed under this plan are provided in Tables 1-1, 1-2, and 1-3. Stocks designated as hatchery stocks rely on artificial production exclusively, while those designated as natural stocks have at least some component of the stock that relies on natural production, although hatchery production and naturally spawning hatchery fish may contribute to abundance and spawning escapement estimates. Table 1-4 lists the non-target Shared EC Species that are not in the fishery, for which future fishery development is prohibited until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

1.2 CHANGES OR ADDITIONS

The following classification actions will require an FMP amendment: adding stocks to the FMP either to the fishery or as EC species, removing stocks from the FMP, and reclassifying stocks as either in the fishery or as an EC species. The following actions will not require an FMP amendment as long as the stocks and complex remain in their original designation (in the fishery or EC): composition of stock complexes, specification of indicator stocks for complexes, identification as target or non-target stocks. All of these actions require a comprehensive technical review of the best scientific information available providing evidence that, in the view of the Salmon Technical Team (STT), Scientific and Statistical Committee (SSC), and the Council, such modifications are justified. Insofar as possible, proposed changes noted above that do not require a plan amendment will be reviewed and approved within the schedule established for salmon estimation methodology reviews and prior to the preseason planning process. The following actions will not require an FMP amendment: changes or additions involving ESA-listed stocks upon the recommendation of NMFS, changes or additions involving hatchery stocks upon the recommendation of the pertinent federal, state, and tribal management entities; and Federal court-ordered changes.

TABLE 1-1. Chinook stocks and stock complexes identified in the Salmon FMP. (Page 1 of 4)

Stocks and Complexes In The Fishery		Description	Target/Non-Target
Stock or Stock Complex	Component Stocks		
Central Valley Fall Chinook Stock Complex		Fall and late fall Chinook from the Sacramento and San Joaquin basins; the indicator stock is Sacramento River Fall Chinook.	
	Sacramento River Fall	Primarily hatchery stock with smaller natural component. Single largest contributor to ocean fisheries off California, a significant contributor off southern and central Oregon, and present north into British Columbia. Primary impact south of Pt. Arena; considerable overlap with coastal and Klamath River fall Chinook between Pt. Arena and Horse Mt.	Target
	Sacramento River Late Fall	Natural and hatchery components from upper Sacramento basin. Minor contributions to ocean fisheries.	Target
	San Joaquin River Fall	Natural and hatchery components. Minor contributions to ocean fisheries.	Target
Central Valley Spring		ESA-listed Threatened. Minor contributions to ocean fisheries off California, also known to occur off Oregon.	Non-Target ESA
Sacramento River Winter		ESA-listed Endangered. Minor contributions to ocean fisheries south of Pt. Arena.	Non-Target ESA
California Coastal Chinook		ESA-listed Threatened. Eel, Mattole, Mad Rivers fall and spring stocks. Minor contributions to ocean fisheries off northern California and southern Oregon.	Non-Target ESA
Southern Oregon Northern California Chinook Stock Complex		Natural and hatchery stocks south of the Elk River, Oregon to, and including, the Klamath River, plus Umpqua River spring Chinook; the indicator stock is Klamath River fall Chinook.	
	Klamath River Fall	Natural and hatchery components from the Klamath basin. Major contributions to ocean fisheries from Humbug Mt. to Horse Mt. and to Klamath River tribal and recreational fisheries. Significant contributions to ocean fisheries from Cape Falcon to Pt. Sur.	Target
	Klamath River Spring	Natural and hatchery components from the Klamath basin. Minor contributions to ocean fisheries from Cape Falcon to Pt. Sur.	Non-Target
	Smith River	Natural spring and fall stocks from the Smith River basin. Minor contributions to ocean fisheries off northern California and Oregon.	Non-Target
	Southern Oregon Coast	Aggregate of natural and hatchery fall and spring stocks in all streams south of Elk River, plus Umpqua spring stock; Rogue River fall stock is used to indicate relative abundance and ocean contribution rates. Significant contributions to ocean fisheries off northern California and Oregon.	Target

TABLE 1-1. Chinook stocks and stock complexes identified in the Salmon FMP. (Page 2 of 4)

Stocks and Complexes In The Fishery		Description	Target/Non-Target
Stock or Stock Complex	Component Stocks		
Far-North-Migrating Coastal Chinook Stock Complex		Spring/summer and fall stocks from the Central and Northern Oregon Coast (from the Elk River north, except Umpqua River spring Chinook), and spring/summer and fall coastal stocks north of the Columbia River. Indicator stocks for this complex are Quillayute, Hoh, Queets, and Grays Harbor fall Chinook. These stocks are subject to provisions of the Pacific Salmon Treaty.	
	Central and Northern Oregon Coast	Aggregate of natural and hatchery fall and spring stocks in all streams from the Elk River to just south of the Columbia River. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off northern Oregon and Washington.	Non-Target
	Willapa Bay Fall (natural)	Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Willapa Bay Fall (hatchery)	Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Grays Harbor Fall	Natural stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Grays Harbor Spring	Natural stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Quinalt Fall	Hatchery stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Queets Fall	Natural stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Queets Sp/Su	Natural stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Hoh Fall	Natural stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Hoh Spring/Summer	Natural stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Quillayute Fall	Natural stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Quillayute Spring/Summer	Hatchery and natural stocks. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target
	Hoko Summer/Fall	Natural stock. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington.	Non-Target

TABLE 1-1. Chinook stocks and stock complexes identified in the Salmon FMP. (Page 3 of 4)

Stocks and Complexes In The Fishery		Description	Target/Non-Target
Stock or Stock Complex	Component Stocks		
North Lewis River Fall		Natural stock. Component of Lower Columbia Chinook ESU - ESA-listed Threatened. Significant contribution to Alaska and Canada ocean fisheries. Minor contribution to ocean fisheries off Washington and northern Oregon.	Non-Target ESA
Columbia Lower River Hatchery Fall		Significant contribution to ocean fisheries north of Cape Falcon and Canada. Minor contribution to ocean fisheries south of Cape Falcon.	Target
Columbia Lower River Hatchery Spring		Minor contribution to ocean fisheries north of Cape Falcon and Canada.	Non-Target
Upper Willamette Spring		Natural and hatchery stock. ESA-listed Threatened. Minor contribution to ocean fisheries north of Cape Falcon, Canada, and Alaska.	Non-Target ESA
Columbia Mid-River Bright Hatchery Fall		Hatchery stock, Significant contribution to ocean fisheries off Canada and Alaska.	Non-Target
Columbia Spring Creek Hatchery Fall		Significant contribution to ocean fisheries north of Cape Falcon and Canada. Minor contribution to ocean fisheries south of Cape Falcon.	Target
Snake River Fall		Natural and hatchery stock. ESA-listed Threatened. Significant contributions to Alaska and Canada ocean fisheries. Minor contributions to ocean fisheries off Washington and Oregon.	Non-Target ESA
Snake River - Spring/Summer		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Columbia Upper River Bright Fall		Natural and hatchery stock. Significant contribution to Alaska and Canada ocean fisheries. Minor contribution to ocean fisheries off Washington and northern Oregon. Subject to Pacific Salmon Treaty provisions.	Non-Target
Columbia Upper River Summer		Natural and hatchery stock. Significant contribution to Alaska and Canada ocean fisheries. Minor contribution to ocean fisheries off Washington and northern Oregon. Subject to Pacific Salmon Treaty provisions.	Non-Target
Columbia Upper River Spring		Natural and hatchery stock. ESA-listed Endangered. Negligible contributions to ocean fisheries.	Non-Target ESA

TABLE 1-1. Chinook stocks and stock complexes identified in the Salmon FMP. (Page 4 of 4)

Stocks and Complexes In The Fishery		Description	Target/Non-Target
Stock or Stock Complex	Component Stocks		
Eastern Strait of Juan de Fuca Summer/Fall		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Skokomish Summer/Fall		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Nooksack Spring early		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Skagit Summer/Fall		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Skagit Spring		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Stillaguamish Summer/Fall		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Snohomish Summer/Fall		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Cedar River Summer/Fall		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
White River Spring		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Green River Summer/Fall		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA
Nisqually River Summer/Fall		Natural and hatchery stock. ESA-listed Threatened. Negligible contributions to ocean fisheries.	Non-Target ESA

TABLE 1-2. Coho stocks and stock complexes identified in the Salmon FMP. (Page 1 of 2)

Stocks and Complexes In The Fishery		Target/Non-Target
Stock or Stock Complex	Description	
Central California Coast	ESA Endangered. Very minor natural component of OPI area fisheries, limited contribution to ocean and inland fisheries. Current impacts incidental in ocean fisheries off California.	Non-Target ESA
Southern Oregon/Northern California Coast	ESA Threatened. Very minor natural component of OPI area fisheries, minor contribution to ocean fisheries off California and southern Oregon, and inland California fisheries.	Non-Target ESA
Oregon Coast Natural	ESA Threatened. Major natural component of OPI area, significant contribution to ocean fisheries off Oregon, and Washington south of Leadbetter Pt., and freshwater fisheries in Oregon coastal streams.	Non-Target ESA
Lower Columbia Natural	ESA Threatened. Minor natural component of OPI area minor contribution to ocean fisheries off Oregon and Washington, and mainstem Columbia River fisheries.	Non-Target ESA
Oregon Coast Hatchery	Minor component of OPI area; minor contribution to ocean fisheries off Oregon and Washington south of Leadbetter Pt., and freshwater fisheries in Oregon coastal streams.	Target
Columbia River Late Hatchery	Hatchery stock. Major component of ocean fisheries north of Cape Falcon. Significant contribution to ocean fisheries off Oregon north into Canada and Columbia River fisheries	Target
Columbia River Early Hatchery	Hatchery stock. Major component of OPI area fisheries. Significant contributions to ocean fisheries off California and north to Leadbetter Pt., Washington and to Columbia River fisheries.	Target
Willapa Bay - Hatchery	Minor component of ocean fisheries off northern Oregon north into Canada. Significant contribution to inside commercial net and recreational fisheries.	Target
Willapa Bay Natural	Minor component of ocean fisheries off northern Oregon north into Canada.	Target
Grays Harbor	Minor contribution to ocean fisheries off Oregon and north into Canada. Significant contribution to Washington inside tribal fishery, minor contribution to inside recreational fishery.	Target
Quinalt - Hatchery	Contribution to ocean fisheries off Washington and north into British Columbia; present south to central Oregon; significance to Puget Sound and tribal fisheries.	Target
Queets	Contribution to ocean fisheries off Washington north into British Columbia; present south to central Oregon; significance to Puget Sound and tribal fisheries.	Target
Quillayute - Summer Hatchery	Contribution to ocean fisheries off Washington north into British Columbia; present south to central Oregon.	Target
Quillayute - Fall	Contribution to ocean fisheries off Washington north into British Columbia; present south to central Oregon.	Target
Hoh	Contribution to ocean fisheries off Washington north into British Columbia; present south to central Oregon.	Target

Table 1-2. Coho stocks and stock complexes identified in the Salmon FMP. (Page 2 of 2)		
Stocks and Complexes In The Fishery		
Stock or Stock Complex	Description	Target/Non-Target
Strait of Juan de Fuca	Contribution to U.S. ocean fisheries north of Cape Falcon; significant contribution to ocean fisheries off British Columbia, in Puget Sound, and inside tribal fisheries.	Target
Hood Canal	Contribution to U.S. ocean fisheries north of Cape Falcon; significant contribution to ocean fisheries off British Columbia, in Puget Sound, and inside tribal fisheries.	Target
Skagit	Contribution to U.S. ocean fisheries north of Cape Falcon; significant contribution to ocean fisheries off British Columbia, in Puget Sound, and inside tribal fisheries.	Target
Stillaguamish	Contribution to U.S. ocean fisheries north of Cape Falcon; significant contribution to ocean fisheries off British Columbia, in Puget Sound, and inside tribal fisheries.	Target
Snohomish	Contribution to U.S. ocean fisheries north of Cape Falcon; significant contribution to ocean fisheries off British Columbia, in Puget Sound, and inside tribal fisheries.	Target
South Puget Sound Hatchery	Contribution to U.S. ocean fisheries north of Cape Falcon; significant contribution to ocean fisheries off British Columbia, in Puget Sound, and inside tribal fisheries.	Target

TABLE 1-3. Pink salmon stocks and stock complexes identified in the Salmon FMP.

Stocks and Complexes In The Fishery		
Stock or Stock Complex	Description	Target/Non-Target
Puget Sound	Contribution to U.S. ocean fisheries north of Leadbetter Point; significant contribution to ocean fisheries off British Columbia, in Puget Sound, and inside tribal fisheries.	Target

TABLE 1-4. Common and scientific names of EC species shared between all four of the Council's FMPs.

Common Name	Scientific Name
<u>Round herring</u>	<u>Etrumeus teres</u>
<u>Thread herring</u>	<u>Opisthonema libertate, O. medirastre</u>
<u>Mesopelagic fishes</u>	<u>Families: Myctophidae, Bathylagidae, Paralepididae, and Gonostomatidae</u>
<u>Pacific sand lance</u>	<u>Ammodytes hexapterus</u>
<u>Pacific saury</u>	<u>Cololabis saira</u>
<u>Silversides</u>	<u>Atherinopsidae</u>
<u>Smelts</u>	<u>Osmeridae</u>
<u>Pelagic squids</u>	<u>Families: Cranchiidae, Gonatidae, Histioteuthidae, Octopoteuthidae, Ommastrephidae except Humboldt squid (Dosidicus gigas), Onychoteuthidae, and Thysanoteuthidae</u>

2 ACHIEVING OPTIMUM YIELD

"Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery"

Magnuson-Stevens Act, National Standard 1

This chapter explains the Council's means of meeting the requirements of the Magnuson-Stevens Act to achieve the optimum yield from the salmon fishery.

2.1 THEORY

Optimum yield (OY) means the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account protection of marine ecosystems. It is prescribed on the basis of the maximum sustainable yield (MSY) from the fishery, reduced by any relevant economic, social, or ecological factors, and provides for rebuilding of an overfished stock, taking into account the effects of uncertainty and management imprecision.

MSY is a theoretical concept that, for the purposes of the Magnuson-Stevens Act, is defined as the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions and fishery technological characteristics, and distribution of catch among fleets. In Council management of naturally spawning salmon stocks, MSY is usually approached in terms of the number of adult spawners associated with this goal (S_{MSY}). Often, data are insufficient to directly estimate S_{MSY} . In these cases, the Council may use MSY proxies derived from more general estimates of productive capacity and implement harvest strategies that may be expected to result in a long-term average catch approximating MSY.

2.2 IMPLEMENTATION

The optimum yield to be achieved for species covered by this plan is the total salmon catch and mortality (expressed in numbers of fish) resulting from fisheries within the EEZ adjacent to the States of Washington, Oregon, and California, and in the waters of those states (including internal waters), and Idaho, that, to the greatest practical extent within pertinent legal constraints, fulfill the plan's conservation and harvest objectives. On an annual basis, the Council recommends management measures to comply with annual catch limits (ACLs) and to achieve the stock conservation objectives for each stock or stock complex, based on the estimated MSY, MSY proxy, maximum sustainable production (MSP), rebuilding schedule, or ESA consultation standard (Chapter 3), while simultaneously seeking to fulfill, to the extent practicable, the harvest and allocation objectives (Chapter 5) that reflect the Council's social and economic considerations. The subsequent catch and mortality resulting under the Council's management recommendations will embody the optimum yield. The level of total allowable harvest, the relative harvest levels in various management areas, and the species and stock composition of optimum yield will vary annually, depending on the relative abundance and distribution of the various stocks and contingencies in allocation formulas.

The Council's annual Review of Ocean Salmon Fisheries (stock assessment and fishery evaluation; SAFE) document and preseason reports (e.g., PFMC 2021a, 2021b, 2021c, and 2021d) assess and specify the present and historical range of harvests and harvest related mortalities that represent the optimum yield. A similar range of yields can be expected in the future, though further stock declines and listings under the ESA could result in even lower levels than experienced in the past.

3 CONSERVATION

"Conservation and management measures shall be based upon the best scientific information available."

Magnuson-Stevens Act, National Standard 2

Conservation of salmon stocks includes determining and reporting individual stock status and establishing conservation objectives and control rules to manage harvest. To facilitate these processes, reference points, defined by the MSA and/or National Standard 1 (NS1) Guidelines and adapted for salmon stocks are used as benchmarks.

Reference points used in the FMP include:

OFL: Overfishing Limit. Defined in NS1 Guidelines as the annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance, expressed in terms of numbers or weight of fish, and is the catch level above which overfishing is occurring.

MFMT: Maximum Fishing Mortality Threshold. Defined in NS1 Guidelines as the level of fishing mortality (F) on an annual basis, above which overfishing is occurring. MFMT is generally less than or equal to F_{MSY} .

F_{MSY} : MSY fishing mortality rate. The fishing mortality rate that results in MSY over the long term. Generally corresponds to MFMT, which is the basis of the OFL.

S_{MSY} : MSY spawner abundance. The abundance of adult spawners that is expected, on average, to produce MSY.

F_{OFL} : OFL fishing mortality rate. The level of fishing mortality (F) on an annual basis, above which overfishing is occurring; equivalent to the MFMT.

S_{OFL} : OFL spawner abundance. The abundance of adult spawners below which overfishing occurs in a given year.

ABC: Acceptable Biological Catch. Required by the MSA and defined in the NS1 Guidelines as the level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and other scientific uncertainty, and should be specified based on the ABC control rule. ABC may not exceed OFL and should be reduced from OFL to prevent overfishing.

F_{ABC} : ABC fishing mortality rate. The annual exploitation rate associated with the ABC.

ACL: Annual Catch Limit. Required by the MSA and defined in the NS1 Guidelines as the level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures. The ACL cannot exceed the ABC.

F_{ACL} : ACL fishing mortality rate. The annual exploitation rate associated with the ACL; equivalent to F_{ABC}

S_{ACL} : ACL spawner abundance. The annual abundance of adult spawners that achieves the ACL.

MSST: Minimum Stock Size Threshold. Defined in the NS1 Guidelines as level of biomass below which the stock or stock complex is considered to be overfished (see section 3.1.4). The MSST should be no less than one-half of S_{MSY} .

ACT: Annual Catch Target. Defined in the NSI Guidelines as an amount of annual catch of a stock or stock complex that is the management target of the fishery. It should usually be less than its ACL. It is an optional accountability measure that may be adopted to account for management uncertainty in complying with the ACL (see section 3.3.5.3).

3.1 STATUS DETERMINATION CRITERIA

"Any fishery management plan . . . shall . . . specify objective and measurable criteria for identifying when the fishery . . . is overfished . . . and, . . . contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery;"

Magnuson-Stevens Act, '§303(a)(10)

"Overfishing (to overfish) occurs whenever a stock or stock complex is subjected to a level of fishing mortality or annual total catch that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis"

NSIGs (600.310 (e)(2)(i)(B))

"Overfished. A stock or stock complex is considered "overfished" when its biomass has declined below a level that jeopardizes the capacity of the stock or stock complex to produce MSY on a continuing basis."

NSIGs (600.310 (e)(2)(i)(E))

"Approaching an overfished condition. A stock or stock complex is approaching an overfished condition when it is projected that there is more than a 50 percent chance that the biomass of the stock or stock complex will decline below the MSST within two years."

NSIGs (600.310(e)(2)(i)(G))

In establishing criteria by which to determine the status of salmon stocks, the Council must consider the uncertainty and theoretical aspects of MSY as well as the complexity and variability unique to naturally producing salmon populations. These unique aspects include the interaction of a short-lived species with frequent, sometimes protracted, and often major variations in both the freshwater and marine environments. These variations may act in unison or in opposition to affect salmon productivity in both positive and negative ways. In addition, variations in natural populations may sometimes be difficult to measure due to masking by hatchery produced salmon.

3.1.1 General Application to Salmon Fisheries

In establishing criteria from which to judge the conservation status of salmon stocks, the unique life history of salmon must be considered. Chinook, coho, and pink salmon are short-lived species (generally two to six years) that reproduce only once shortly before dying. Spawning escapements of coho and pink salmon are dominated by a single year-class and Chinook spawning escapements may be dominated by no more than one or two year-classes. The abundance of year-classes can fluctuate dramatically with combinations of natural and human-caused environmental variation. Therefore, it is not unusual for a healthy and relatively abundant salmon stock to produce occasional spawning escapements which, even with little or no fishing impacts, may be significantly below the long-term average associated with the production of MSY.

Numerous West Coast salmon stocks have suffered, and continue to suffer, from nonfishing activities that severely reduce natural survival by such actions as the elimination or degradation of freshwater spawning and rearing habitat. The consequence of this man-caused, habitat-based variation is twofold. First, these habitat changes increase large scale variations in stock productivity and associated stock abundances, which in turn complicate the overall determination of MSY and the specific assessment of whether a stock is producing at or below that level. Second, as the productivity of the freshwater habitat is diminished, the benefit of further reductions in fishing mortality to improve stock abundance decreases. Clearly, the failure

of several stocks managed under this FMP to produce at an historical or consistent MSY level has little to do with current fishing impacts and often cannot be rectified with the cessation of all fishing.

To address the requirements of the MSA, the Council has established criteria based on biological reference points associated with MSY exploitation rate and MSY spawning escapement. The criteria are based on the unique life history of salmon and the large variations in annual stock abundance due to numerous environmental variables. They also take into account the uncertainty and imprecision surrounding the estimates of MSY, fishery impacts, and spawner escapements. In recognition of the unique salmon life history, the criteria differ somewhat from the general guidance in the NSI Guidelines (§600.310).

3.1.2 Overfishing

A stock will be considered subject to overfishing when the postseason estimate of F_t exceeds the MFMT, where the MFMT is generally defined as less than or equal to F_{MSY} . Stock-specific estimates of F_{MSY} based on spawner-recruit data will be used if available. Otherwise, a species-specific proxy value of $F_{MSY} = 0.78$ for Chinook based on species-specific meta-analyses, will be used (PFMC and NMFS 2011). Stock-specific overfishing determinations will be made annually and are based on exploitation during a single biological year.

3.1.2.1 Council Action

Because salmon are exploited in multiple fisheries, it is necessary to determine fishery specific contribution to the total exploitation rate to determine the actions necessary to end and prevent future overfishing. As the Council has no jurisdiction over river fisheries and ocean fisheries north of the U.S./Canada border, it also may be necessary for other responsible entities to take action to end ongoing and prevent future overfishing.

The STT will report postseason exploitation rates in the annual SAFE document, and when overfishing occurs, the Council shall:

- 1) notify the NMFS West Coast Regional Administrator of the STT's findings;
- 2) direct the STT to assess the mortality rates in fisheries impacting the stock of concern and report their findings;
- 3) immediately take action to ensure Council area fisheries are not contributing to overfishing, and;
- 4) notify pertinent management agencies of the stock's status and the contribution of various fisheries to the total exploitation rate.

3.1.3 Approaching an Overfished Condition

An approaching overfished determination will be made if the geometric mean of the two most recent postseason estimates of spawning escapement, and the current preseason forecast of spawning escapement, is below the MSST. Stock-specific approaching overfished determinations will be made annually following development of the preseason spawning escapement forecasts.

3.1.3.1 Council Action

When a stock is approaching an overfished condition the Council shall:

- 1) notify the NMFS West Coast Regional Administrator of this situation;
- 2) notify pertinent management entities, and;
- 3) structure Council area fisheries to avoid the stock becoming overfished and to mitigate the effects on stock status.

3.1.4 Overfished

"For a fishery that is overfished, any fishery management plan, amendment, or proposed regulations... for such fishery shall (A) specify a time period for ending overfishing and rebuilding the fishery that

shall:(i) be as short as possible, taking into account the status and biology of any overfished stocks of fish, the needs of the fishing communities, recommendations by international organizations in which the United States participates, and the interaction of the overfished stock within the marine ecosystem; and (ii) not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement in which the United States participates dictate otherwise....”

Magnuson-Stevens Act, §304(e)(4)

A stock will be considered overfished if the 3-year geometric mean of annual spawning escapements falls below the MSST, where MSST is generally defined as $0.5 \times S_{MSY}$ or $0.75 \times S_{MSY}$, although there are some exceptions (Table 3-1). Overfished determinations will be made annually using the three most recently available postseason estimates of spawning escapement.

3.1.4.1 Council Action

When the overfished status determination criteria set forth in this FMP have been triggered, the Council shall:

- 1) notify the NMFS West Coast Regional Administrator of this situation;
- 2) notify pertinent management entities;
- 3) structure Council area fisheries to reduce the likelihood of the stock remaining overfished and to mitigate the effects on stock status;
- 4) direct the STT to propose a rebuilding plan for Council consideration within one year.

Upon formal notification from NMFS to the Council of the overfished status of a stock, a rebuilding plan must be developed and implemented within two years.

The STT’s proposed rebuilding plan shall include:

- 1) an evaluation of the roles of fishing, marine and freshwater survival in the overfished determination;
- 2) any modifications to the criteria set forth in section 3.1.6 below for determining when the stock has rebuilt,
- 3) recommendations for actions the Council could take to rebuild the stock to S_{MSY} , including modification of control rules if appropriate, and;
- 4) a specified rebuilding period.

In addition, the STT may consider and make recommendations to the Council or other management entities for reevaluating the current estimate of S_{MSY} , modifying methods used to forecast stock abundance or fishing impacts, improving sampling and monitoring programs, or changing hatchery practices.

Based on the results of the STT’s recommended rebuilding plan, the Council will adopt a rebuilding plan for recommendation to the Secretary. Adoption of a rebuilding plan will require implementation either through an FMP amendment or notice and comment rule-making process. Subject to Secretarial approval, the Council will implement the rebuilding plan with appropriate actions to ensure the stock is rebuilt in as short a time as possible based on the biology of the stock but not to exceed ten years, while taking into consideration the needs of the commercial, recreational and tribal fishing interests and coastal communities. The existing control rules provide a default rebuilding plan that targets spawning escapement at or above MSY , provided sufficient recruits are available, and targets a rebuilding period of one generation (two years for pink salmon, three years for coho, and five years for Chinook). If sufficient recruits are not available to achieve spawning escapement at or above MSY in a particular year, the control rules provide for the potential use of *de minimis* exploitation rates that allow continued participation of fishing communities while minimizing risk of overfishing. However, the Council should consider the specific circumstances surrounding an overfished determination and ensure that the adopted rebuilding plan addresses all relevant issues.

Even if fishing is not the primary factor in the depression of the stock, the Council must act to limit the exploitation rate of fisheries within its jurisdiction so as not to limit rebuilding of the stock or fisheries. In cases where no action within Council authority can be identified which has a reasonable expectation of contributing to the rebuilding of the stock in question, the Council will identify the actions required by other entities to recover the depressed stock. Due to a lack of data for some stocks, environmental variation, economic and social impacts, and habitat losses or problems beyond the control or management authority of the Council, it is possible that rebuilding of depressed stocks in some cases could take much longer than ten years. The Council may change analytical or procedural methodologies to improve the accuracy of estimates for abundance, harvest impacts, and MSY escapement levels, and/or reduce ocean harvest impacts when it may be effective in stock recovery. For those causes beyond Council control or expertise, the Council may make recommendations to those entities which have the authority and expertise to change preseason prediction methodology, improve habitat, modify enhancement activities, and re-evaluate management and conservation objectives for potential modification through the appropriate Council process.

In addition to the STT assessment, the Council may direct its Habitat Committee (HC) to work with federal, state, local, and tribal habitat experts to review the status of the essential fish habitat affecting the overfished stock and, as appropriate, provide recommendations to the Council for restoration and enhancement measures within a suitable time frame. However, this action would be a priority only if the STT evaluation concluded that freshwater survival was a significant factor leading to the overfished determination. Upon review of the report from the HC, the Council will consider appropriate actions to promote any solutions to the identified habitat problems.

3.1.5 Not Overfished-Rebuilding

After an overfished status determination has been triggered, once the stock's 3-year geometric mean of spawning escapement exceeds the MSST, but remains below S_{MSY} , or other identified rebuilding criteria, the stock status will be recognized as "not overfished-rebuilding". This status level requires no Council action, but rather is used to indicate that stock's status has improved from the overfished level but the stock has not yet rebuilt.

3.1.6 Rebuilt

The default criterion for determining that an overfished stock is rebuilt is when the 3-year geometric mean spawning escapement exceeds S_{MSY} ; the Council may consider additional criteria for rebuilt status when developing a rebuilding plan and recommend such criteria, to be implemented subject to Secretarial approval.

Because abundance of salmon populations can be highly variable, it is possible for a stock to rebuild from an overfished condition to the default rebuilding criterion in as little as one year, before a proposed rebuilding plan could be brought before the Council.

In some cases it may be important to consider other factors in determining rebuilt status, such as population structure within the stock designation. The Council may also want to specify particular strategies or priorities to achieve rebuilding objectives. Specific objectives, priorities, and implementation strategies should be detailed in the rebuilding plan.

3.1.6.1 Council Action

When a stock is determined to be rebuilt, the Council shall:

- 1) notify the NMFS West Coast Regional Administrator of its finding, and;
- 2) notify pertinent management entities.

3.1.7 Changes or Additions to Status Determination Criteria

Status determination criteria are defined in terms of quantifiable, biologically-based reference points, or population parameters, specifically, S_{MSY} , MFMT (F_{MSY}), and MSST. These reference points are generally regarded as fixed quantities and are also the basis for the harvest control rules, which provide the operative guidance for the annual preseason planning process used to establish salmon fishing seasons that achieve OY and are used for status determinations as described above. Changes to how these status determination criteria are defined, such as $MSST = 0.50 * S_{MSY}$, must be made through a plan amendment. However, if a comprehensive technical review of the best scientific information available provides evidence that, in the view of the STT, SSC, and the Council, justifies a modification of the estimated values of these reference points, changes to the values may be made without a plan amendment. Insofar as possible, proposed reference point changes for natural stocks will only be reviewed and approved within the schedule established for salmon methodology reviews and completed at the November meeting prior to the year in which the proposed changes would be effective and apart from the preseason planning process. SDC reference points that may be changed without an FMP amendment include: reference point objectives for hatchery stocks upon the recommendation of the pertinent federal, state, and tribal management entities; and Federal court-ordered changes. All modifications would be documented through the salmon methodology review process, and/or the Council's preseason planning process.

3.2 SALMON STOCK CONSERVATION OBJECTIVES

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

Magnuson-Stevens Act, National Standard 3

To achieve OY, prevent overfishing, and assure rebuilding of salmon stocks whose abundance has been depressed to an overfished level, this plan establishes conservation objectives to perpetuate the coastwide aggregate of salmon stocks covered by the plan (Chapter 1). The Council's stock conservation objectives (to be achieved annually) and other pertinent stock management information are contained in Table 3-1. Specific objectives are listed for natural and hatchery stocks that are part of the Council's preseason fishery alternative development process (Chapter 9), including all relevant stocks listed under the Federal ESA. The objectives may be applicable to a single stock independently or to an indicator stock or stocks for a stock complex. Stocks that are not included in the preseason analyses may lack specific conservation objectives because the stock is not significantly impacted by ocean fisheries or insufficient information is available to assess ocean fishery impacts directly. In the latter case, the stock will be included in a stock complex and the conservation objective for an indicator stock will provide for the conservation of closely related stocks unless, or until, more specific management information can be developed.

3.2.1 Basis

The Council's conservation objectives for natural stocks may (1) be based on estimates for achieving MSY or an MSY proxy, or (2) represent special data gathering or rebuilding strategies to approach MSY and to eventually develop MSY objectives. The objectives have generally been developed through extensive analysis by the fishery management entities with direct management authority for the stock, or through joint efforts coordinated through the Council, or with other state, tribal, or federal entities. Most of the objectives for stocks north of Cape Falcon have been included in U.S. District Court orders. Under those orders for Washington coastal and Puget Sound stocks (*Hoh v. Baldrige* No. 81-742 [R] C and *U.S. v. Washington*, 626 F. Supp. 1405 [1985]), the treaty tribes and WDFW may agree to annual spawner targets or other objectives that differ from the FMP objectives. Details of the conservation objectives in effect at the time the initial framework FMP was approved are available in PFMC (1984), in individual amendment documents (see Table 1 in the Introduction), and as referenced in Table 3-1. Updated conservation objectives and ESA consultation standards are available in Appendix A of the most recent Preseason Report I, and Table 5 of the most recent Preseason Report III produced each year by the STT (PFMC 2021d).

The Council's conservation objectives are generally expressed in terms of an annual fishery or spawning escapement estimated to be optimum for producing MSY over the long-term. The escapement objective may be (1) a specific number or a range for the desired number of adult spawners (spawner escapement), (2) a specific number or range for the desired escapement of a stock from the ocean or at another particular location, such as a dam, that may be expected to result in the target number of spawners, or (3) based on the exploitation rate that would produce MSY over the long-term. Objectives may be expressed as fixed or stepped exploitation or harvest rates and may include spawner floors or substantially reduced harvest rates at low abundance levels, or as special requirements provided in the Pacific Salmon Treaty or NMFS consultation standards for stocks listed under the ESA.

3.2.2 Changes or Additions

Conservation objectives generally are fixed quantities intended to provide the necessary guidance during the course of the annual preseason planning process to establish salmon fishing seasons that achieve OY. Changes or additions to conservation objectives may be made either through a plan amendment or notice and comment rulemaking if a comprehensive technical review of the best scientific information available provides evidence that, in the view of the STT, SSC, and the Council, justifies a modification. Insofar as possible, proposed changes for natural stocks will only be reviewed and approved within the schedule established for salmon estimation methodology reviews completed prior to the preseason planning process. The Council may change conservation objectives for hatchery stocks upon the recommendation of the pertinent federal, state, and tribal management entities. Federal court-ordered changes in conservation objectives will also be accommodated without a plan amendment. The applicable annual objectives of Council-adopted rebuilding programs and the requirements of consultation standards promulgated by NMFS under the ESA may be employed without plan amendment to assure timely implementation. All of these changes will be documented during the Council's preseason planning process.

The Council considers established conservation objectives to be stable and a technical review of biological data must provide substantial evidence that a modification is necessary. The Council's approach to conservation objectives purposely discourages frequent changes for short-term economic or social reasons at the expense of long-term benefits from the resource. However, periodic review and revision of established objectives is anticipated as additional data become available for a stock or stock complex.

TABLE 3-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes in the Pacific Coast salmon FMP. These may change periodically. The most recent values are reported annually in Preseason Reports I and III. (Page 1 of 7)

CHINOOK					
Stocks In The Fishery	Conservation Objective	S _{MSY}	MSST	MFMT (F _{MSY})	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 _{ABC} and annual ocean abundance. F _{ABC} is F _{MSY} reduced by Tier 2 (10%) uncertainty
Central Valley 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. Guidance from NMFS in 2010 and 2011 required implementation of additional closures and/or increased sized limits in the recreational fishery South of Point Arena. The winter-run management framework and consultation standard is an abundance based age-3 impact rate control rule established in 2018 (NMFS 2018) which sets the maximum allowable age-3 impact rate based on the forecast age-3 escapement in the absence of fisheries: above 3,000, the allowable, impact rate is fixed at 20 percent; between 3,000 and 500, the allowable impact rate declines linearly from 20 percent to 10 percent; between 500 and 0, the allowable impact rate declines linearly from 10 percent to 0 percent.	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 _{ABC} and annual ocean abundance. F _{ABC} is F _{MSY} 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)	

TABLE 3-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes in the Pacific Coast salmon FMP. These may change periodically. The most recent values are reported annually in Preseason Reports I and III. (Page 2 of 7)

CHINOOK						
Stocks In The Fishery	Conservation Objective		S _{MSY}	MSST	MFMT (F _{MSY})	ACL
Southern Oregon	41,000 escapement at Huntley Park, Gold Beach, Oregon		34,992	20,500	78% Proxy (SAC 2011a)	Indicator stock is KRFC
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--MSP based on full seeding of spawning and rearing habitat (QDNR & WDFW 2014).	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%	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)	

TABLE 3-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes in the Pacific Coast salmon FMP. These may change periodically. The most recent values are reported annually in Preseason Reports I and III. (Page 3 of 7)					
CHINOOK					
Stocks In The Fishery	Conservation Objective	S _{MSY}	MSST	MFMT (F _{MSY})	ACL
Willapa Bay Fall (hatchery)	8,200 adult return to hatchery. WDFW spawning escapement objective of 9,800 hatchery spawners.	Not applicable to hatchery stocks			
Quinalt Fall (hatchery)	Hatchery production.				
North Lewis River Fall	NMFS consultation standard/recovery plan. Mclsaac (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	12,600 adults for hatchery egg-take.	Not applicable to hatchery stocks			
Columbia Lower River Hatchery Spring	2,700 adults to meet Cowlitz, Kalama, and Lewis Rivers broodstock needs.				
Columbia Mid-River Bright Hatchery Fall	4,700 adults for Bonneville Hatchery and 2,000 for Little White Salmon Hatchery egg-take.				
Columbia Spring Creek Hatchery Fall	7,000 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 3-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes in the Pacific Coast salmon FMP. These may change periodically. The most recent values are reported annually in Preseason Reports I and III. (Page 4 of 7)						
CHINOOK						
Stocks In The Fishery	Conservation Objective		S _{MSY}	MSST	MFMT (F _{MSY})	ACL
Eastern Strait of Juan de Fuca Summer/Fall	NMFS consultation standard/recovery plan. No more than 10.0% Southern U.S. (SUS) Rebuilding Exploitation Rate (RER) for the Elwha River and for the Dungeness River. 2011 comanagers Resource Management Plan (RMP)	Annual natural spawning escapement targets may vary from FMP conservation objectives if agreed to by WDFW and treaty tribes under the provisions of U.S. v. Washington 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. No more than 50.0% total RER. 2011 comanagers RMP		Undefined		Undefined	
Mid Hood Canal Summer/Fall	NMFS consultation standard/recovery plan. No more than 15.0% preterminal SUS CERC. 2011 comanagers RMP		Undefined		Undefined	
Nooksack Spring early	NMFS consultation standard/recovery plan. No more than 7.0% SUS CERC. 2011 comanagers RMP		Undefined		Undefined	
Skagit Summer/Fall	NMFS consultation standard/recovery plan. No more than 50.0% total RER. 2011 comanagers RMP		Undefined		Undefined	
Skagit Spring	NMFS consultation standard/recovery plan. No more than 38.0% total RER. 2011 comanagers RMP		Undefined		Undefined	
Stillaguamish Summer/Fall	NMFS consultation standard/recovery plan. No more than 25.0% total RER. 2011 comanagers RMP		Undefined		Undefined	
Snohomish Summer/Fall	NMFS consultation standard/recovery plan. No more than 15.0% SUS RER. 2011 comanagers RMP		Undefined		Undefined	
Cedar River Summer/Fall	NMFS consultation standard/recovery plan. No more than 20.0% SUS RER. 2011 comanagers RMP		Undefined		Undefined	
White River Spring	NMFS consultation standard/recovery plan. No more than 20.0% total RER. 2011 comanagers RMP		Undefined		Undefined	
Green River Summer/Fall	NMFS consultation standard/recovery plan. No more than 15.0% preterminal SUS RER, at least 5,800 adult spawners.		Undefined		Undefined	
Nisqually River Summer/Fall	NMFS consultation standard/recovery plan. No more than 65.0% total RER. 2011 comanagers RMP		Undefined		Undefined	
Puyallup Summer/Fall	NMFS consultation standard/recovery plan. No more than 50.0% total RER. 2011 comanagers RMP		Undefined		Undefined	

TABLE 3-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes in the Pacific Coast salmon FMP. These may change periodically. The most recent values are reported annually in Preseason Reports I and III. (Page 5 of 7)					
COHO					
Stocks In The Fishery	Conservation Objective	S _{MSY}	MSST	MFMT (F _{MSY})	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 14,200 adults.				
Columbia River Early Hatchery	Hatchery rack return goal of 6,200 adults.				
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 _{ABC} and annual ocean abundance. F _{ABC} is F _{MSY} reduced by Tier 1 (5%) uncertainty

TABLE 3-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes in the Pacific Coast salmon FMP. These may change periodically. The most recent values are reported annually in Preseason Reports I and III. (Page 6 of 7)						
COHO						
Stocks In The Fishery	Conservation Objective		S _{MSY}	MSST	MFMT (F _{MSY})	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 _{MSP} (FMP) *F _{SMY} (SAC 2010b)	18,320 (Johnstone et al. 2011)	MFMT=65% (Johnstone et al. 2011) F _{MSY} =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 (Johnstone et al. 2011)	4,350 (Johnstone et al. 2011)	MFMT=65% (Johnstone et al. 2011) F _{MSY} =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 _{MSY} *0.75	MFMT=65% (Johnstone et al. 2011) F _{MSY} =69% (SAC 2011b)	
Quillayute - Fall	MSY range of 6,300 to 15,800 natural adult spawners (Lestelle et al. 1984)		6,300 (Johnstone et al. 2011)	4,725 (Johnstone et al. 2011)	MFMT=59%; F _{MSY} =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 3-1. Conservation objectives and reference points governing harvest control rules and status determination criteria for salmon stocks and stock complexes in the Pacific Coast salmon FMP. These may change periodically. The most recent values are reported annually in Preseason Reports I and III. (Page 7 of 7)					
PINK (odd-numbered years)					
Stocks In The Fishery	Conservation Objective	S _{MSY}	MSST	MFMT (F _{MSY})	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.

3.3 HARVEST CONTROLS

Control rules are used to manage the harvest of stocks to achieve optimum yield while preventing overfishing. Control rules specify the allowable harvest of stocks based on their abundance and are predicated on meeting conservation objectives in addition to relating those objectives to biological reference points such as MSY, MFMT, OFL, MSST, ABC, and ACL. For stocks with escapement based conservation objectives, the control rule limits exploitation to achieve escapement objectives. For stocks with exploitation rate-based conservation objectives, escapement targets vary annually depending on stock abundance.

Reference points defined by the MSA and/or NS1 Guidelines are used as benchmarks within the control rules. They are useful for evaluating and comparing control rules, and in some cases are triggers for management actions. There are several formulations of control rules for different stocks in the FMP, using various combinations of reference points. These stock-specific control rules are applied consistently from year to year.

3.3.1 Relationship to ESA consultation standards

The ESA requires federal agencies whose actions may adversely affect listed salmon to consult with NMFS. Because NMFS implements ocean harvest regulations, it is both the action and consulting agency for actions taken under the FMP. To ensure there is no jeopardy, NMFS conducts ESA consultations with respect to the effects of ocean harvest on listed salmon stocks. In cases where the biological consultation results in a “no jeopardy” opinion, NMFS issues an incidental take statement which authorizes a limited amount of take of listed species that would otherwise be prohibited under the ESA. In cases where a “jeopardy” opinion is reached, NMFS develops reasonable and prudent alternatives to the proposed action which authorizes a limited amount of take.

The constraints on take authorized under incidental take statements and reasonable, prudent alternatives are collectively referred to as consultation standards. These constraints take a variety of forms including FMP conservation objectives, limits on the time and area during which fisheries may be open, ceilings on fishery impact rates, and reductions from base period impact rates. NMFS may periodically revise consultation standards and the annual NMFS guidance letter reflects the most current information. Consultation standards that were in place in 2011 when Amendment 16 was completed are shown in the table of conservation objectives (Table 3-1), which is reproduced each year in the latest annual addition of Preseason Report I (PFMC 2021b).

ESA consultation standards represent another form of fishery control rule. Although NMFS consultation standards and recovery plans may not by themselves recover listed populations to historic S_{MSY} levels, they are sufficient to stabilize populations until freshwater habitats and their dependent populations can be restored and estimates of MSY consistent with recovered habitat conditions can be developed. As species are delisted, the Council will establish conservation objectives and associated reference points consistent with the MSA.

3.3.2 Relationship to the Pacific Salmon Treaty

Pacific salmon stocks subject to fisheries in both the US and Canada are managed under the provisions of the Pacific Salmon Treaty (PST). Natural stocks managed under the provisions of the PST include: (1) Puget Sound pink salmon stocks, (2) most non-ESA-listed Chinook stocks from the mid-Oregon coast to the US/Canada border, and (3) all non-ESA-listed coho stocks except Willapa Bay natural coho. For these stocks, the PST annually places overall limits on fishery impacts and allocates those impacts between the US and Canada. It allows the US and Canada to each manage their own fisheries to achieve domestic conservation and allocation priorities, while remaining within the overall limits determined under the PST.

The MSA provides an exception to the requirement for a fishery management plan to specify ACLs and Accountability Measures (AMs) for stocks managed under an international agreement in which the United States participates. Because of these provisions of the PST, and the exception provided by the MSA, it is unnecessary for the FMP to specify an ACL or associated reference points for these stocks. The PST also includes measures of accountability which take effect if annual limits established under the Treaty are exceeded, and further reduce these limits in response to depressed stock status. However, it is still necessary to specify MSY and SDC reference points for these stocks.

3.3.3 Acceptable Biological Catch

Specification of ABC is required for all stocks or stock complexes in the fishery that are not managed under an international agreement, listed under the ESA, or designated as hatchery stocks. For salmon, ABC is defined in terms of spawner escapement (S_{ABC}), which is consistent with the common practice of using spawner escapement to assess stock status for salmon. S_{ABC} 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: $F_{ABC} = F_{MSY} \times 0.90$.

The STT will apply the ABC control rule on an annual basis by making preseason forecasts of N , and applying the fixed F_{ABC} . Stock abundance forecasts and the resulting S_{ABC} estimates will be reported in Preseason Report I, and presented to the SSC at the March Council meeting. Following its review, the SSC will recommend stock abundance forecasts and S_{ABC} estimates to the Council in an oral and written statement provided at the March meeting.

The SSC will have an ongoing role in evaluating ABCs through their annual review of stock abundance forecasts and their prerogative to initiate re-evaluation of the ABC control rule. Abundance forecast methods are periodically revised and these revisions are evaluated by the SSC through the salmon methodology review process. The SSC could revisit the ABC control rule as needed during the salmon methodology review.

3.3.4 Annual Catch Limits

ACLs and OFLs, in addition to ABCs, are required for all stocks or stock complexes classified as in the fishery that are not managed under an international agreement, listed under the ESA, or designated as hatchery stocks. For salmon, these reference points are defined in terms of spawner escapement (S_{ACL} , S_{OFL}).

S_{ACL} and S_{OFL} are calculated annually, both as preseason estimates and postseason values. Preseason estimates of these reference points are used for development of annual fishery management measures. Postseason values are used to identify whether accountability measures (AMs) are to be triggered, and to assess management performance.

S_{ACL} and S_{OFL} are determined based on stock abundance, in spawner equivalent units, (N) and the corresponding reference point exploitation rates F_{ACL} and F_{OFL} , where the exploitation rates are fixed values

that do not change on an annual basis. F_{OFL} is defined as being equal to the MFMT, which generally corresponds to and F_{MSY} , and

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

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

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

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

3.3.4.1 Preseason ACLs

During the annual preseason salmon management process, S_{ACL} will be estimated using the fixed F_{ACL} exploitation rate and the preseason stock abundance forecast (N). Fishery management measures must result in an expected spawning escapement greater than or equal to this S_{ACL} estimate. In many years, the targeted exploitation rate will be lower than F_{ACL} as a result of stock-specific conservation objectives and the control rule used to specify F on an annual basis. Under the condition where $F < F_{ACL}$, the forecast escapement would exceed the estimated S_{ACL} .

3.3.4.2 Postseason ACLs

The postseason value of S_{ACL} will be determined annually using the fixed F_{ACL} exploitation rate and the postseason N . The postseason value of S_{ACL} will be compared to the realized spawner escapement for evaluation of whether the realized escapement fell below the S_{ACL} .

Postseason evaluation of S_{ACL} is necessary for determining whether AMs should be triggered and whether the S_{ACL} performance standard is met. AMs will be triggered if the realized escapement is below the S_{ACL} value in any one year. If the realized escapement is below the S_{ACL} value in more than one of four years, the ACL performance standard will not have been met, and a re-evaluation of the ACL framework will be undertaken, consistent with the NSI Guidelines.

3.3.5 Accountability Measures

Accountability measures are required for all stocks and stock complexes in the Salmon FMP that are required to have ACLs. AMs are intended to prevent shortfalls in escapement below the S_{ACL} and to correct or mitigate them if they occur. Some AMs are implemented during the preseason planning process and in-season. Others are implemented postseason through monitoring and reporting requirements. Additional accountability measures will be implemented, as required, if the ACL performance standard is not met as indicated by the realized escapement being below S_{ACL} in more than one in four consecutive years.

3.3.5.1 Preseason and In-season Accountability Measures

The following measures will be implemented during the preseason planning process or in-season to meet the intent of preseason management objectives and to help ensure compliance with ACLs.

- In-season authority to manage quota fisheries (FMP § 10.1) – allows NMFS to close fisheries on short notice when mixed stock quotas are projected to be met. As described above, quotas are designed to ensure that ACLs and conservation objectives for component stocks are met.
- Mixed stock quota monitoring (FMP § 7.1) – collection of data on a daily basis during the season allows projection of when quotas will be met.
- Quota partitioning (FMP § 5.3 and 10.2) – partitioning overall quota among fishery sectors and port areas and time periods allows finer scale management, thereby reducing the chance that overall quota will be exceeded.

- Quota trading (FMP § 5.3 and 10.2) – quota trading allows overages in one sector/time/area to be made up by reductions in others.
- Changes to gear/bag/size/trip limits (FMP § 6 and 10.2) – allow a measure of control over catch rates to reduce the chance of quotas being exceeded.
- Boundary modifications (FMP § 6 and 10.2) – allow limited control over catch composition to limit impacts on constraining stocks.
- Landing restrictions (FMP § 6 and 10.2) - allow better accounting of the location of catches and thus better estimates of catch composition.
- In-season monitoring and reporting requirements. (FMP § 7) – collection of data on a daily basis during the season allows projection of when quotas will be met.
- Annual catch targets - intended to account for management uncertainty.

An ACT may be adopted in any fishing year in which there is uncertainty in the ability to maintain compliance with the ACL or the applicable control rule for a given stock. The ACT would be specified at a level sufficiently above the S_{ACL} to address uncertainty in the ability to constrain catch for ACL compliance and uncertainty in quantifying the true catch amounts (i.e., estimation errors).

3.3.5.2 Post-season Accountability Measures

The following postseason AMs will be implemented through the assessment and review phases of the salmon management process:

- Salmon Methodology Review Process (COP-15; PFMC 2008) - provides a process for re-evaluation of management objectives, reference points, and modification of models that relate mixed-stock impacts to stock-specific objectives and reference points.
- Annual SAFE (Review of Ocean Salmon Fisheries) document (FMP § 8) - allows postseason assessment of objectives and performance.

If the realized escapement is below the postseason S_{ACL} value, an AM will be to report on the escapement shortfall in the annual Council preseason reports and to notify state, tribal, and federal managers. If it is necessary to correct problems in the assessment or management methods, such changes can be considered during the annual Salmon Methodology Review process.

3.3.5.3 Performance and Re-evaluation of the ACLs and AMs System

If the postseason-ACL evaluation for assessing compliance with ACLs determines that spawning escapement was not in compliance with the ACL more than once in four consecutive years, the Council will direct the STT to conduct an assessment of the cause and re-evaluate the ACL and AM system. The assessment will include consideration of the tiered buffers used to account for scientific uncertainty, and may include recommendations for changing the buffers. Any recommendations for changing the buffer between the ABC and OFL (i.e., ABC control rule) should be included, along with supporting analyses, in the annual Salmon Methodology Review process. Recommendations on changes to AMs or adding new AMs, including whether an ACT should be implemented, should also be provided in this report.

Pending the outcome of the STT re-evaluation of the ACLs and AMs system, an ACT could be implemented as an interim measure if it was determined that management uncertainty in the fishery was a substantial cause for non-compliance, and/or to reduce the likelihood of future non-compliance with the ACL until any new or updated measures are approved. For example, an additional 5 percent buffer could be used to establish an ACT control rule and to set an ACT below the ACL. The ACT control rule would be used until either additional measures are adopted to ensure an appropriate compliance with ACLs, or it has been demonstrated that the ACT control rule is not necessary to achieve an appropriate compliance level.

3.3.6 Specific Control Rules for Stocks, Indicator Stocks, and Complexes

3.3.6.1 Klamath River Fall Chinook, Sacramento River Fall Chinook

Klamath River fall Chinook and Sacramento River fall Chinook have the same form of control rule, which is defined in terms of the reference points F_{ABC} , MSST, S_{MSY} , and two levels of *de minimis* exploitation rates, $F = 0.10$ and $F = 0.25$. The maximum allowable exploitation rate, F , in a given year, depends on the pre-fishery ocean abundance in spawner equivalent units, N . At high abundance the rule caps the exploitation rate at F_{ABC} , at moderate abundance the rule specifies an F that results in S_{MSY} spawners, and at low abundance (i.e. when expected escapement is below S_{MSY}) the rule allows for *de minimis* exploitation rates as shown in Figure 3-1 with the abundance breakpoints defined as

$$A = MSST / 2$$

$$B = (MSST + S_{MSY}) / 2$$

$$C = S_{MSY} / (1 - 0.25)$$

$$D = S_{MSY} / (1 - F_{ABC}) .$$

For N between 0 and A , F increases linearly from 0 at $N = 0$, to 0.10 at $N = A$. For N between A and MSST, F is equal to 0.10. For N between MSST and B , F increases linearly from 0.10 at $N = MSST$, to 0.25 at $N = B$. For N between B and C , F is equal to 0.25. For N between C and D , F is the value that results in S_{MSY} spawners. For N greater than D , F is equal to F_{ABC} . The control rule may thus be summarized as follows.

$$F = \begin{cases} 0.10 \times (N / A), & \text{if } 0 \leq N \leq A; \\ 0.10, & \text{if } A < N \leq MSST; \\ 0.10 + (0.15 \times ((N - MSST) / (B - MSST))), & \text{if } MSST < N \leq B; \\ 0.25, & \text{if } B < N \leq C; \\ (N - S_{MSY}) / N, & \text{if } C < N \leq D; \\ F_{ABC}, & \text{if } D < N. \end{cases}$$

The control rule describes maximum allowable exploitation rates at any given level of abundance. The Council may recommend lower exploitation rates as needed to address uncertainties or other year specific circumstances. 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.

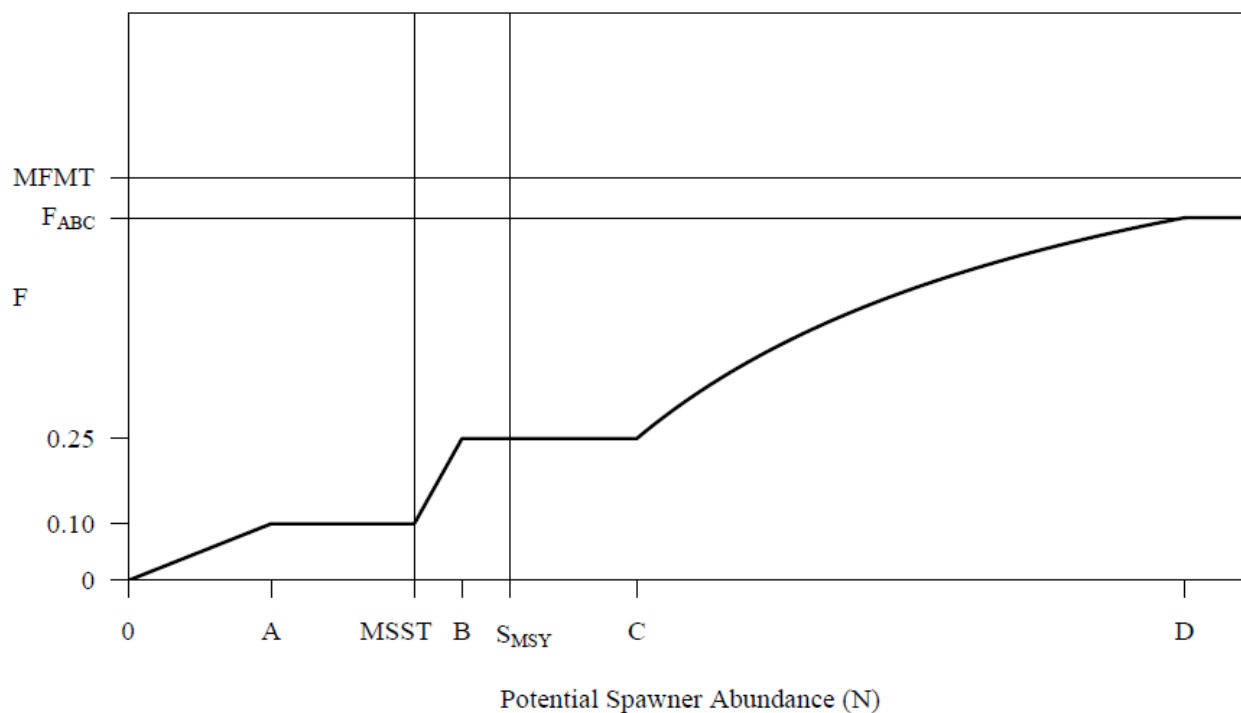


FIGURE 3-1. Control rule for Sacramento River and Klamath River fall Chinook. Abundance is pre-fishery ocean abundance in spawner equivalent units, and F is the exploitation rate. Reference points in the control rule are defined in the text.

3.3.6.2 Washington Coast Chinook and Coho, Columbia River Summer Chinook, Upriver Bright Fall Chinook

Most non-ESA-listed natural stocks originating north of the Elk River, Oregon are managed under the terms of the PST with control rules designed to achieve MSY either by meeting S_{MSY} annually or by controlling fishing rates to achieve MSY over the long term. Chinook and coho stocks from the Washington coast, Columbia River summer Chinook, and upriver bright fall Chinook fall under this category, and share the same form of control rule, which can be negotiated annually through related federal court orders (Figure 3-2). Council area fisheries represent a minority of the harvest impacts on these stocks, with the majority of harvest impacts occurring in northern and/or inside fisheries. At low abundance levels, some *de minimis* level of fishing impacts are allowed by the provisions of the PST, negotiations through federal court orders, or reserved tribal fishing rights. The magnitude of the *de minimis* impacts, and the actual abundance level at which they occur, vary from stock to stock. At high abundance levels, the control rules are such that F may exceed MFMT in some years because management of some of these stocks is focused on attaining S_{MSY} on an annual basis. If the year specific exploitation rate on a stock exceeds MFMT, the Council will report this as overfishing according to the terms of the MSA and NS1 Guidelines.

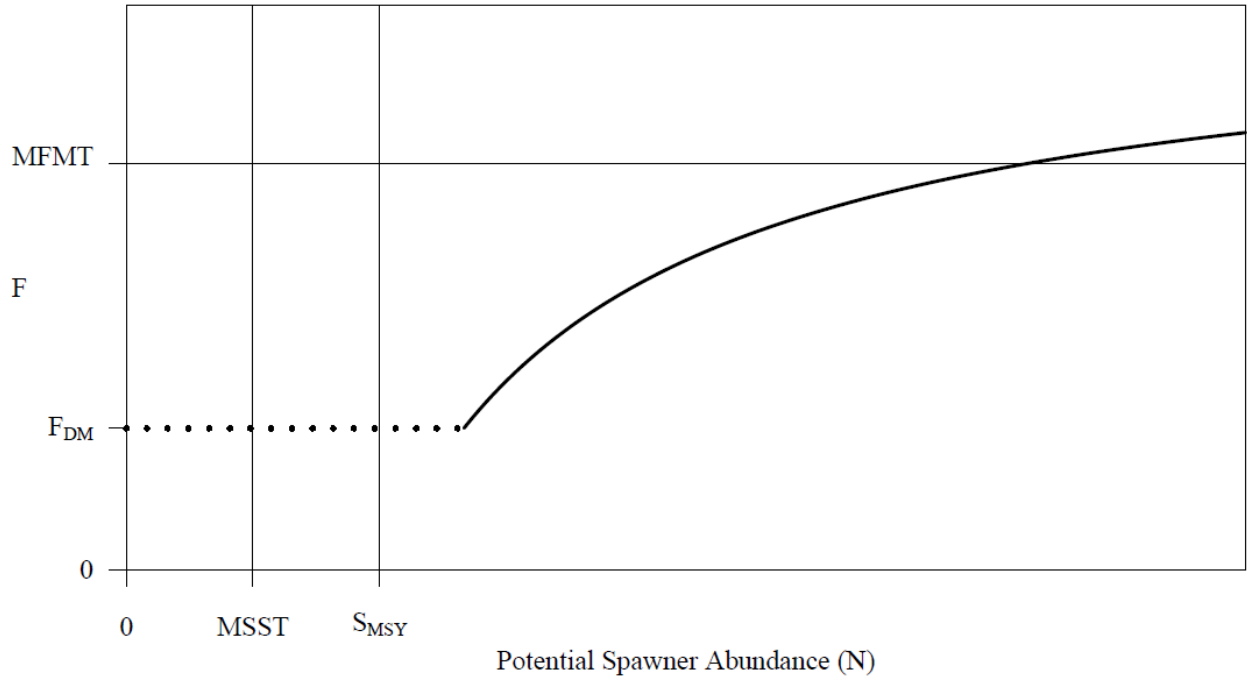


FIGURE 3-2. Control rule for several Chinook and coho stocks managed under the terms of the PST. Abundance is pre-fishery ocean abundance in spawner equivalent units, and F is the exploitation rate. Reference points in the control rule are defined in the text.

3.3.6.3 Puget Sound Coho

Puget Sound coho stocks are managed under the PST using a stepped harvest rate control rule (Figure 3-3) (2019 Southern Coho Management Plan Chapter 5, Annex IV, Article XV, in PST 2020). Under this control rule, exploitation rate ceilings are determined on the basis of abundance, where abundance is divided into three categories defined by two breakpoints defined as

$$A = \frac{MSST}{1-F_{low}}, \quad \text{breakpoint between critical and low abundance,}$$

$$B = \frac{S_{MSY}}{1-MFMT}, \quad \text{breakpoint between low and normal abundance.}$$

The exploitation rate ceiling has a maximum value of $MFMT$ when $N > B$, is reduced to a low exploitation rate (F_{low}) when $A < N < B$, and further reduced to a critical exploitation rate ($F_{critical}$) to allow for *de minimis* impacts not to exceed 0.20 when $N < A$. For all Puget Sound coho stocks, the critical/low spawning escapement breakpoint and low exploitation rate are used to define $MSST$ (Table 3.1).

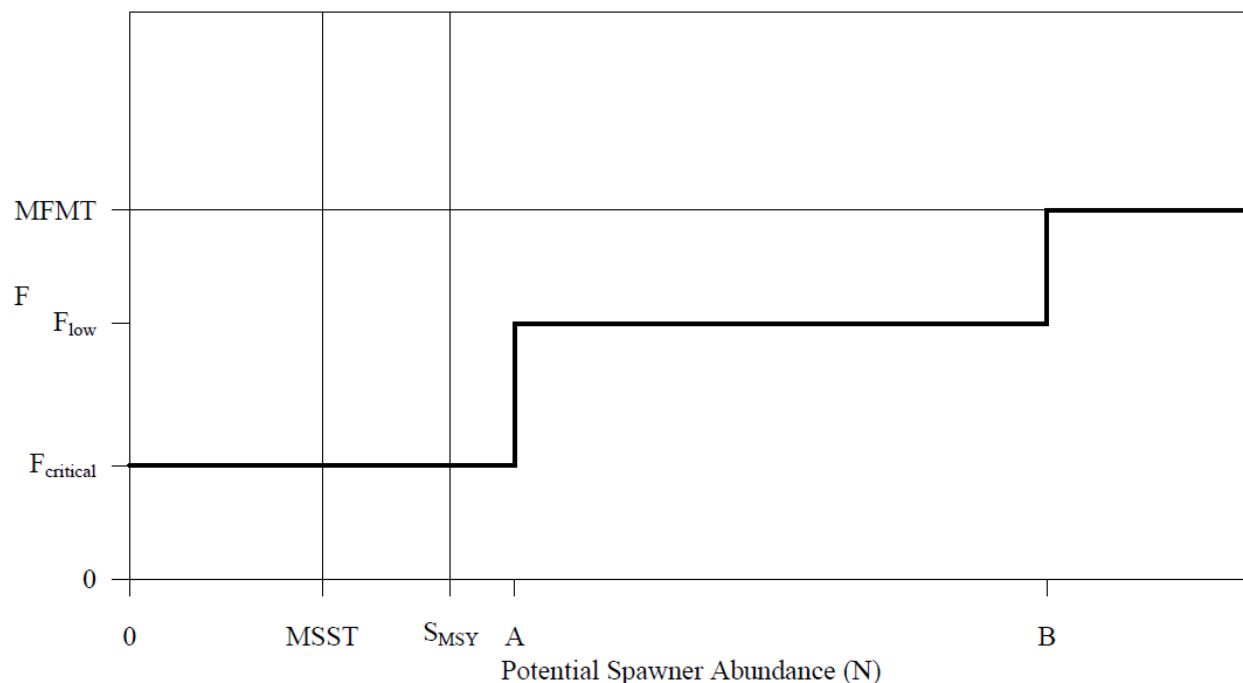


FIGURE 3-3. Control rule for Puget Sound coho. Abundance is pre-fishery ocean abundance in spawner equivalent units, and F is the exploitation rate. Reference points in the control rule are defined in the text.

3.3.6.4 Oregon Coastal Natural Coho

Oregon coastal natural coho (OCN) are currently listed as threatened under the ESA and are therefore managed under ESA consultation standards. Amendment 13 (PFMC 1999) established a recovery and rebuilding plan for OCN coho which (1) defines individual management criteria for four separate stock components, (2) sets overall harvest exploitation rate targets for OCN coho that significantly limit the impact of fisheries on the recovery of depressed stock components, (3) promotes stock rebuilding while allowing limited harvest of other abundant salmon stocks during critical rebuilding periods, (4) is consistent with the Oregon State recovery plan, and (5) has been adopted by NMFS as a consultation standard for OCN coho. Under the rebuilding program, the overall allowable fishery impact rate in any given year for each stock component is determined by the spawning abundance of the parents and grandparents of the returning adults and upon the marine survival expectations for the current maturing brood, as predicted by smolt-to-jack survival rates for hatchery coho.

The assessment of historical parent abundance utilized in Amendment 13 is based on the number of spawners in each of the four stock components that is projected to achieve full seeding of high quality freshwater habitat at low levels of marine survival. The full seeding estimates (in terms of stratified random sampling numbers) are derived from a model based on freshwater habitat assessment which incorporates measures of variability in the quality of the freshwater habitat and estimates of survival between life stages where numerical indicators have been measured (Nickelson and Lawson 1996). The assessment of marine survival status is based on a partitioning of the observed marine survival for Oregon hatchery reared coho from 1970-1996 (PFMC 1999).

Under the rebuilding plan, the allowable overall fishery impact (exploitation rate) for OCN coho represents all fishing related mortality, including marine and freshwater fisheries for both retention and catch-and-release fishing (Table 3-2). The maximum allowable exploitation rates range from less than 10 percent when parent abundance and/or marine survival is especially low, to a high of 35 percent if two generations of spawner rebuilding have occurred and marine survival is sufficient to expect continued improvements in

spawner escapement for a third generation. Regardless of high parental spawning levels or projected favorable ocean conditions, a cap of 35percent in total stock impacts is maintained to provide insight as to the effects of high spawner levels on production. A limitation of 15 percent remains in effect even at the two highest tiers of parent escapement if ocean conditions are not favorable, so as to preserve rebuilding progress achieved to that point. The matrix in Table 3-2 illustrates specifically how spawner abundance and marine survival determine the maximum allowable stock exploitation rate objectives for each OCN coho stock component.

Each of the four OCN coho stock components will be managed in marine fisheries as a separate stock to the extent that the best scientific information allows. Because of apparent similarities in the marine distribution of the four components, little flexibility is expected in marine fishery intensities among the components. If some components begin rebuilding faster than others, but data are not available which allows the marine harvest of OCN coho components at different rates, opportunities for increased ocean harvest may be constrained by the weakest component. Any management flexibility for increased fisheries on any strong OCN coho component will likely be in freshwater or estuarine areas during the initial phase of the rebuilding process. In these areas, the Oregon Department of Fish and Wildlife (ODFW) will base fishing opportunity on the status of populations in individual basins within a stock component, and directed fisheries on natural coho will be allowed only when spawners are expected to be at or above the full seeding level for high quality habitat. Actual seasons would be based on the presence of fin-clipped hatchery fish (e.g., mark-selective fisheries), public comment, and other basin-specific factors. An intensive monitoring program will be implemented by ODFW to measure the overall management effectiveness toward the goal of increasing OCN spawner levels and consequent juvenile and adult progeny. The Environmental Assessment (EA) for Amendment 13 (PFMC 1999) contains further details of the monitoring plan and of the overall OCN coho management criteria and its basis.

Amendment 13 to the Salmon FMP was designed to ensure that fishery related impacts do not act as a significant impediment to the recovery of depressed OCN coho stocks. When the Council first adopted the amendment in November 1997, they stipulated that it should be reviewed and updated periodically with particular attention to the parameters in the matrix that triggered allowable fishery impacts. The OCN work group was formed in 1999 to consider concerns related to persistent observations of low marine survival and low spawner abundance. The work group provided a draft report to the Council in September 2000 (PFMC 2000b). The draft report recommended expanding the harvest matrix to include two new parental abundance categories and one new marine survival category thus expanding the original 3x3 matrix to a 4x5 matrix. The new parental spawner categories occur in the low end of the spawner abundance range and are designated as “Extremely Low” and “Critical.” The new marine survival category, designated as “Extremely Low,” is also in the low end of the range. The work group recommended lower exploitation rates when spawner abundance or marine survival are low and therefore provided a more conservative framework relative to the original Amendment 13 matrix. The recommendations of the work group report were adopted by the Council as expert biological advice for how to implement Amendment 13, and continues to be used by the Council as guidance for implementing Amendment 13.

TABLE 3-2. Allowable fishery impact rate criteria for OCN coho stock components.

PARENT SPAWNER STATUS		MARINE SURVIVAL INDEX (based on return of jacks per hatchery smolt)		
		Low (<0.0009)	Medium (0.0009 to 0.0034)	High (>0.0034)
		Allowable Total Fishery Impact Rate		
High:	Parent spawners achieved Level #2 rebuilding criteria; grandparent spawners achieved Level #1	≤15%	≤30% ^{a/}	≤35% ^{a/}
Medium:	Parent spawners achieved Level #1 or greater rebuilding criteria	≤15%	≤20% ^{a/}	≤25% ^{a/}
Low:	Parent spawners less than Level #1 rebuilding criteria	≤15% ≤10-13% ^{b/}	≤15%	≤15%

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)				
Northern: (Necanicum River to Neskowin Creek)	Nehalem	Tillamook	Nestucca	Ocean Tribs.	
	17,500	2,000	1,800	400	
North-Central: (Salmon River to Siuslaw River)	Siletz	Yaquina	Alsea	Siuslaw	Ocean Tribs.
	4,300	7,100	15,100	22,800	5,700
South-Central: (Siltcoos River to Sixes River)	Umpqua	Coos	Coquille	Coastal Lakes	
	29,400	7,200	5,400	8,000	
Southern: (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.

3.3.7 Changes and Additions to Control Rules

The form of a control rule should only be changed by plan amendment, or as necessary to rebuild overfished stocks. However, the reference point values that define a particular control rule (e.g., S_{MSY}) may be periodically updated. Changes to these reference point values, or specification of reference points for stocks where estimates are currently lacking, may be made through a regulatory process without plan amendment if a comprehensive technical review of the best scientific information available provides evidence that, in the view of the STT, SSC, and the Council, justifies a modification. Insofar as possible, a proposed change to the value of a reference point will only be reviewed and approved within the schedule established for salmon estimation Salmon Methodology Reviews (completed at the November meeting prior to the year in which the proposed change would be effective) and apart from the preseason planning process (PFMC 2008). Federal court-ordered changes will also be accommodated without a plan amendment.

3.4 MANAGEMENT FOR HATCHERY AND ESA-LISTED STOCKS

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

Magnuson-Stevens Act, National Standard 6

The NS1 Guidelines provide flexibility under limited circumstances in the way reference points and management measures are specified. The NS1 Guidelines allow for flexibility in the management of ESA-listed species, hatchery stocks, and stocks with unusual life history characteristics like Pacific salmon. Consistent with these provisions of the NS1 Guidelines, this plan takes an alternative approach to the specification of control rules and status determination criteria and subsequent Council actions for hatchery stocks, and stocks listed under the ESA that are in the fishery.

3.4.1 Hatchery Stocks

Salmon stocks important to ocean fisheries and comprised exclusively of hatchery production generally have conservation objectives expressed as an egg-take or the number of spawners returning to the hatchery to meet program objectives. This plan recognizes these objectives and strives to meet them. However, these artificially produced stocks generally do not need the protection of ACLs, SDC, and special Council rebuilding programs to maintain long-term production. Because hatchery stocks can generally sustain significantly higher exploitation rates than natural stocks, ocean fisheries rarely present a threat to their long-term survival. In addition, it is often possible to make temporary program modifications at hatcheries to assure adequate production to sustain the stock during periods of low abundance (e.g., sharing brood stock with other hatcheries, arranging for trapping at auxiliary sites, etc.). If specialized hatchery programs are approved in the future to sustain ESA-listed salmon stocks, the rebuilding programs would be developed and implemented under the ESA.

3.4.2 Stocks Listed Under the Endangered Species Act

The ESA requires federal agencies whose actions may adversely affect listed salmon to consult with NMFS. Because NMFS implements ocean harvest regulations, it is both the action and consulting agency for actions taken under the FMP. To ensure that ESA standards are met, NMFS conducts internal consultations with respect to the effects of ocean harvest on listed salmon. The Council implements NMFS' guidance as necessary to avoid jeopardy, and conform to the degree possible with recovery plans approved by NMFS. As a result of NMFS' consultation, an incidental take statement may be issued which authorizes take of listed stocks under the FMP that would otherwise be prohibited under the ESA.

The Council believes that the requirements of the ESA are sufficient to meet the intent of the MSA overfishing provisions. Those provisions are structured to maintain or rebuild stocks to levels at or above MSY and require the Council to identify and develop rebuilding plans for overfished stocks. For many fish species regulated under the MSA, the elimination of excess fishing pressure is often the sole action

necessary to rebuild depressed stocks. This is, however, not the case for many salmon stocks and, in particular, for most ESA-listed populations.

Although harvest has certainly contributed to the depletion of West Coast salmon populations, the primary reason for their decline has been the degradation and loss of freshwater spawning, rearing, and migration habitats. The quality and quantity of freshwater habitat are key factors in determining the MSY of salmon populations. The Council has no control over the destruction or recovery of freshwater habitat nor is it able to predict the length of time that may be required to implement the habitat improvements necessary to recover stocks. While the Council could theoretically establish new MSY escapement goals consistent with the limited or degraded habitat available to listed species, adoption of revised goals would potentially result in an ESA-listed stock being classified as producing at MSY and; therefore, not overfished under the MSA. As species are delisted, the Council may establish conservation objectives and associated reference points to manage stocks consistent with the MSA, or alternatively, remove the stock from the FMP through a plan amendment.

Since 1990, West Coast salmon fisheries have been modified to accommodate special requirements for the protection of salmon species listed under the federal ESA. The ESA listing of a salmon population may have profound consequences for the management of Council mixed-stock ocean fisheries since listed populations are often incidentally harvested with more abundant healthy populations. As additional stocks of salmon have been listed, the Council's preseason process has increasingly focused on protecting listed stocks. In applying the ESA to Pacific salmon, NMFS determined that a population segment of a salmon species must represent an evolutionarily significant unit (ESU) of that species in order to be eligible for listing. ESUs are characterized by their reproductive isolation and contribution to the genetic diversity of the species as a whole. NMFS establishes consultation standards for listed ESUs, which specify levels of incidental take that are not likely to jeopardize the continued existence of the ESU.

The Council must meet or exceed the requirements of the ESA, which is other applicable law. In addition to the stocks and conservation objectives in Table 3-1, the Council will manage all species listed under the ESA consistent with NMFS consultation standards or recovery plans to meet immediate conservation needs and to achieve the long-term recovery of the species. These standards are provided annually to the Council by NMFS at the start of the preseason planning process. In so far as is practical, while not compromising its ability to meet the requirements of the ESA, NMFS will endeavor to provide opportunity for Council and peer review of any proposed consultation standards, or the objectives of recovery plans, well prior to their implementation. Such review would ideally commence no later than the last Council meeting in the year immediately preceding the first salmon season in which the standards would be implemented.

Table 3-3 summarizes the relationships of the individual stocks and stock units managed under the FMP to the ESUs identified by NMFS in the course of ESA status reviews. With the exception of some hatchery stocks, the stocks managed under the FMP are generally representative of the range of life history features characteristic of most ESUs. The managed stocks therefore serve as indicators for ESUs and provide the information needed to monitor fishery impacts on ESUs as a whole. In some cases, the information necessary for stock specific management is lacking, leaving some ESUs without adequate representation. For these ESUs, it will be necessary in the immediate future to use conservative management principles and the best available information in assessing impacts in order to provide necessary protection. In the meantime, the responsible management entities should implement programs to ensure that data are collected for at least one stock representative of each ESU. Programs should be developed within five years of any ESA listing to provide the information that will permit the necessary stock specific management.

TABLE 3-3. Listing of evolutionarily significant units, their ESA status, and associated stocks managed under the FMP.
(Page 1 of 2).

ESU ^{a/}	ESA Status Month and Year of Initial Listing	Stock Representation in FMP
--- CHINOOK ---		
Central Valley Fall and Late Fall-run	Candidate Species Sept. 1999	! Sacramento River Fall
Central Valley Spring-run	Listed Threatened Sept. 1999	! Sacramento River Spring
Sacramento River Winter-run	Listed Endangered Aug. 1989	! Sacramento River Winter
California Coast	Listed Threatened Sept. 1999	! Eel, Mattole, and Mad Rivers
Southern Oregon/Northern California Coast	Not Warranted Sept. 1999	! Southern Oregon ! Smith River ! Klamath River Fall
Upper Klamath and Trinity Rivers	Not Warranted	! Klamath River Fall ! Klamath River Spring
Oregon Coast	Not Warranted	! Central and Northern Oregon
Washington Coast	Not Warranted	! Willapa Bay Fall ! Grays Harbor Fall ! Grays Harbor Spring ! Queets Fall ! Queets Spring/Summer ! Hoh Fall ! Hoh Spring/Summer ! Quillayute Fall ! Quillayute Spring/Summer ! Hoko Summer/Fall (Western Strait of Juan de Fuca)
Puget Sound	Listed Threatened May 1999	! Elwha Summer/Fall (Eastern Strait of Juan de Fuca) ! Skokomish Summer/Fall (Hood Canal) ! Nooksack Spring (early) ! Skagit Summer/Fall ! Skagit Spring ! Stillaguamish Summer/Fall ! Snohomish Summer/Fall ! Cedar River Summer/Fall (Lake Washington) ! White River Spring ! Green River Summer/Fall ! Nisqually River Summer/Fall (South Puget Sound)
Lower Columbia River	Listed Threatened May 1999	! Sandy, Kalama, and Cowlitz (fall and spring) ! North Lewis River Fall
Upper Willamette River	Listed Threatened May 1999	! Upper Willamette River
Upper-Columbia River Summer/Fall	Not Warranted	! Upper River Bright ! Upper River Summer
Upper Columbia River Spring	Listed Endangered May 1999	! Upper River Spring
Snake River Fall	Listed Threatened May 1992	! Snake River Fall
Snake River Spring/Summer	Listed Threatened May 1992	! Snake River Spring/Summer

TABLE 3-3. Listing of evolutionarily significant units, their ESA status, and associated stocks managed under the FMP. (Page 2 of 2).

ESU ^{a/}	ESA Status Month and Year of Initial Listing	Stock Representation in FMP
--- COHO ---		
Central California Coast	Listed Endangered June 2005	! By proxy - Rogue/Klamath hatchery coho
Southern Oregon/Northern California Coast	Listed Threatened May 1997	! Southern Oregon Coastal Natural ! Northern California
Oregon Coast	Listed Threatened Oct. 1998	! South Central Oregon Coast ! North Central Oregon Coast ! Northern Oregon Coastal
Lower Columbia River	Listed Threatened June 2005	! Columbia River Natural
Southwest Washington Coast	Candidate Species July 1995	! Grays Harbor
Olympic Peninsula	Not Warranted	! Queets ! Hoh ! Quillayute Fall ! Strait of Juan de Fuca (Western)
Puget Sound/Strait of Georgia	Candidate Species	! Strait of Juan de Fuca (Eastern) ! Hood Canal ! Skagit ! Stillaguamish ! Snohomish
--- PINK ---		
Puget Sound, Odd Numbered Years	Not Warranted	! Puget Sound

a/ A description of the ESU boundaries may be found at 63 FR 11486 (March 9, 1998) for Chinook and 60 FR 38016 (July 25, 1995) for coho.

3.5 BYCATCH

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

Magnuson-Stevens Act, National Standard 9

"...Establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priorityB

(A) minimize bycatch; and

(B) minimize the mortality of bycatch which cannot be avoided;"

Magnuson-Stevens Act , § 303(a)(11)

3.5.1 Definition and Management Intent

"Bycatch" for the purposes of this fishery management plan is defined as fish caught in an ocean salmon fishery which are not sold or kept for personal use and includes economic discards, regulatory discards, and fishery mortality due to an encounter with fishing gear that does not result in capture of fish. Bycatch does not include any fish that legally are retained in a fishery and kept for personal, tribal, or cultural use, or that

enter commerce through sale, barter, or trade. In addition, under the provisions of the MSA, bycatch does not include salmon released alive under a recreational catch-and-release fishery management program.

Under the salmon FMP, the primary bycatch that occurs is bycatch of salmon species. Therefore, the Council's conservation and management measures shall seek to minimize salmon bycatch and bycatch mortality (drop off and hooking mortality) to the greatest extent practical in all ocean fisheries. When bycatch cannot be avoided, priority will be given to conservation and management measures that seek to minimize bycatch mortality and ensure the extended survival of such fish. These measures will be developed in consideration of the biological and ecological impacts to the affected species, the social and economic impacts to the fishing industry and associated communities, and the impacts upon the fishing, management, and enforcement practices currently employed in ocean salmon fisheries (see also Section 6.5.3).

Shared EC Species, identified in Table 1-4, could continue to be taken incidentally without violating Federal regulations, unless regulated or restricted for other purposes, such as with bycatch minimization regulations. The targeting of Shared EC Species is prohibited.

3.5.2 Occurrence

The present bycatch and bycatch mortality estimates and methodologies for salmon in salmon fisheries are documented by the STT annually in the SAFE and Preseason Report III documents. Bycatch of salmon in Pacific Coast trawl fisheries is documented in Amendment 12 (PFMC 1997a). More recent information is reported in a Section 7 biological opinion regarding salmon bycatch in the groundfish fishery (NMFS 2006), and a subsequent report that summarizes the bycatch of salmon in recent years (Bellman et al. 2011). Salmon fisheries or fishery practices that lack or do not have recent observation data or estimates of bycatch composition and associated mortality rates will be identified by the Council for future research priority in their biannual Research and Data Needs Report to NMFS. Future changes in the procedures and methodologies will occur only if a comprehensive technical review of existing biological data justifies a modification and is approved by the STT, SSC, and Council. All of these changes will occur within the schedule established for Salmon Methodology Review and apart from the preseason planning process (PFMC 2008).

Bycatch of fish other than salmon in salmon fisheries is generally very limited. Only hook-and-line gear is allowed in ocean salmon fisheries and regulations allow for retention of most groundfish species and limited numbers of Pacific halibut that are caught incidentally while salmon fishing.

3.5.3 Standard Reporting Methodology

Within the salmon preseason planning process, management alternatives will be assessed for the effects on the amount and type of salmon bycatch and bycatch mortality. Estimates of salmon bycatch and incidental mortalities associated with salmon fisheries will be included in the modeling assessment of total fishery impact and assigned to the stock or stock complex projected to be impacted by the proposed management measures. The resultant fishery impact assessment reports for the ocean salmon fisheries will specify the amount of salmon bycatch and bycatch mortality associated with each accompanying management alternative. The final analysis of Council-adopted management measures will contain an assessment of the total salmon bycatch and bycatch mortality for ocean salmon fisheries, and include the percentage that these estimates represent compared to the total harvest projected for each species, as well as the relative change from the previous year's total bycatch and bycatch mortality levels.

4 HABITAT AND PRODUCTION

"Any fishery management plan . . . shall . . . protect, restore, and promote the long-term health and stability of the fishery."

Magnuson-Stevens Act, §303(a)(1)

The Council will be guided by the principle that there should be no net loss of the productive capacity of marine, estuarine, and freshwater habitats that sustain commercial, recreational, and tribal salmon fisheries beneficial to the nation. Within this policy, the Council will assume an aggressive role in the protection and enhancement of anadromous fish habitat, especially essential fish habitat (EFH).

4.1 ESSENTIAL FISH HABITAT

"...Describe and identify essential fish habitat for the fishery . . . minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;"

Magnuson-Stevens Act, §303(a)(7)

Protecting, restoring, and enhancing the natural productivity of salmon habitat, especially the estuarine and freshwater areas, is an extremely difficult challenge that must be achieved if salmon fisheries are to remain healthy for future generations. Section 3(10) of the MSA defines EFH as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The following interpretations have been made by NMFS to clarify this definition: waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include historical areas if appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem; and spawning, breeding, feeding, or growth to maturity covers a species full life cycle.

4.1.1 Identification and Description

Appendix A to the *Pacific Coast Salmon Fishery Management Plan* contains the Council's complete identification and description of Pacific coast salmon EFH, along with a detailed assessment of adverse impacts and actions to encourage conservation and enhancement of EFH. Pacific coast salmon EFH includes those waters and substrate necessary for salmon production needed to support a long-term sustainable salmon fishery and salmon contributions to a healthy ecosystem. In the estuarine and marine areas, salmon EFH extends from the extreme high tide line in nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (200 nautical miles or 370.4 km) offshore of Washington, Oregon, and California north of Point Conception. Foreign waters off Canada, while still salmon habitat, are not included in salmon EFH, because they are outside U.S. jurisdiction. Pacific coast salmon EFH also includes the marine areas off Alaska designated as salmon EFH by the North Pacific Fishery Management Council for stocks also managed by the Pacific Fishery Management Council. The geographic extent of freshwater EFH is identified as all water bodies currently or historically occupied by Council-managed salmon in Washington, Oregon, Idaho, and California as identified in Table 1 of Appendix A. Salmon EFH includes aquatic areas above all artificial barriers except the impassible barriers (dams) listed in Table 1 of Appendix A. However, activities occurring above impassible barriers that are likely to adversely affect EFH below impassible barriers are subject to the EFH consultation provisions of the MSA. The identification and description of EFH may be modified in the future through the process outlined in 4.1.4 below, or through salmon FMP amendments as new or better information becomes available.

4.1.2 Adverse Effects of Fishing on Essential Fish Habitat

To the extent practicable, the Council must minimize adverse impacts of fishing activities on salmon EFH. Fishing activities may adversely affect EFH if the activities cause physical, chemical, or biological alterations of the substrate, and loss of or injury to benthic organisms, prey species and their habitat, and other components of the ecosystem. The marine activities under Council management authority or influence that may impact EFH are fishing activities and the use of fishing gear, prey removal by other fisheries, and salmon fishing that reduces stream nutrients due to fewer salmon carcasses on the spawning grounds. Within its fishery management authority, the Council may use fishing gear restrictions, time and area closures, or harvest limits to reduce negative impacts on EFH. Section 4.1 of Appendix A provides descriptions of the potential impacts on EFH from fishing activities. The descriptions include both fisheries within Council management authority and those under other management jurisdictions.

In determining actions to take to minimize any adverse effects from fishing, the Council will consider the nature and extent of the impact and the practicality and effectiveness of management measures to reduce or eliminate the impact. The consideration will include long- and short-term costs and benefits to the fishery and EFH along with other appropriate factors consistent with National Standard 7 ("Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.").

4.1.3 Adverse Effects of Non-Fishing Activities on Essential Fish Habitat

"Each Council shall comment on and make recommendations to the Secretary and any Federal or State agency concerning any such activity (authorized, funded, or undertaken, or proposed to be undertaken by any Federal or State agency) that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under its authority." . . . "Within 30 days . . . a Federal agency shall provide a detailed response in writing"

Magnuson-Stevens Act, §305(b)

The Council will strive to assist all agencies involved in the protection of salmon habitat. This assistance will generally occur in the form of Council comments endorsing protection, restoration, or enhancement programs; requesting information on, and justification for, actions which may adversely impact salmon production; and in promoting salmon fisheries' needs among competing uses for the limited aquatic environment. In commenting on actions which may affect salmon habitat, the Council will seek to ensure implementation of consistent and effective habitat policies with other agencies having environmental control and resource management responsibilities over production and harvest in inside marine and fresh waters.

Specific recommendations for conservation and enhancement measures for EFH are listed in Appendix A. In implementing its habitat mandates, the Council will seek to achieve the following overall objectives:

1. Work to assure that Pacific salmon, along with other fish and wildlife resources, receive equal treatment with other purposes of water and land resource development.
2. Support efforts to restore Pacific salmon stocks and their habitat through vigorous implementation of federal, tribal, and state programs.
3. Work with fishery agencies, tribes, land management agencies, and water management agencies to assess habitat conditions and develop comprehensive restoration plans.

4. Support diligent application and enforcement of regulations governing ocean oil exploration and development, timber harvest, mining, water withdrawals, agriculture, or other stream corridor uses by local, state, and federal authorities. It is Council policy that approved and permitted activities employ the best management practices available to protect salmon and their habitat from adverse effects of contamination from domestic and industrial wastes, pesticides, dredged material disposal, and radioactive wastes.
5. Promote agreements between fisheries agencies and land and water management agencies for the benefit of fishery resources and to preserve biological diversity.
6. Strive to assure that the standard operation of existing hydropower and water diversion projects will not substantially reduce salmon productivity.
7. Support efforts to identify and avoid cumulative or synergistic impacts in drainages where Pacific salmon spawn and rear. The Council will assist in the coordination and accomplishment of comprehensive plans to provide basin-wide review of proposed hydropower development and other water use projects. The Council encourages the identification of no-impact alternatives for all water resource development.
8. Support and encourage efforts to determine the net economic value of conservation by identifying the economic value of fish production under present habitat conditions and expected economic value under improved habitat conditions.

4.1.4 Procedures for Amending Salmon EFH

The EFH regulations (600.815(a)(10)) require periodic review and revision of EFH provisions, as appropriate. The regulations also require FMPs to outline the procedures the Council will follow to review and revise EFH information. The following process provides a mechanism for the Council to update certain EFH provisions. Potential changes to EFH provisions can result from periodic EFH reviews, or in response to any other information that becomes available and warrants consideration of changes to EFH. Amending the FMP may not be required to make these changes, as long as the changes are consistent with the overall identification and description of EFH contained in the FMP itself.

Process for Making Changes to EFH

Revisions to Pacific salmon EFH can be made when the Council determines that such action is warranted by new information that has become available. Such new information is typically generated during the periodic reviews, but can come before the Council through other established Council avenues. The process is as follows, and can typically be accomplished via a three-meeting Council process:

1. Council advisory bodies, particularly the Habitat Committee (HC), should develop an assessment of potential revisions to the provisions in Appendix A after relevant new information becomes available that indicates a change is warranted.
2. The HC will present a report of their assessment and make recommendations to the Council. Other Advisory Bodies may comment on proposed changes.
3. The Council will review the report and, if appropriate, direct staff to revise Appendix A.

At a subsequent meeting, the Council will adopt the revised Appendix A and based on guidance from the Secretary, will either submit it to the Secretary for the appropriate review process or implement the revisions without further review. Upon completion of the appropriate review process by the Secretary, or immediately if no review process is required, the revised Appendix A will supersede the previous version and will be posted on the Council's website in a format that allows the reader to identify changes.

Examples of the type of changes to Pacific salmon EFH that may not need an FMP amendment are:

1. Changes to the 4th field HUs that are designated as EFH for any of the three species of salmon managed under the plan (this could result from new information on current or historic distribution, newly accessible habitat, removal/addition of stocks from/to the FMP, or other information);
2. Modifications, additions, or removals of HAPCs;
3. Changes to the impassable dams that represent the upstream extent of EFH (this could result from new information on fish passage, or a Council determination that upstream habitat should be designated as EFH);
4. Changes to the detailed EFH descriptions for any of the three species of salmon managed under the plan (this could be based on new information regarding habitat requirements by life stage, prey species, or other information);
5. Changes to recommended conservation or enhancement measures;
6. Changes to the descriptions of non-fishing activities that may adversely affect EFH, and the conservation measures to avoid, minimize, mitigate, or otherwise offset those adverse effects;
7. Changes to the descriptions of fishing activities that may adversely affect EFH; and
8. Changes to the research and information needs.

Some changes to Pacific salmon EFH would still require an FMP amendment, for example:

1. Changes to the overall identification and description of Pacific salmon EFH that is in the FMP; and
2. Inclusion of fishing management measures designed to minimize, avoid, or mitigate adverse impacts to salmon EFH.

4.2 COMPENSATION FOR NATURAL PRODUCTION LOSSES

Whenever unavoidable fish population losses occur as a result of various development programs or other action, the Council will recommend compensatory measures that, to the extent practicable, meet the following guidelines:

1. Replacement of losses will be by an equivalent number of fish of the appropriate stock of the same fish species or by habitat capable of producing the equivalent number of fish of the same species that suffered the loss.
2. Mitigation or compensation programs will be located in the immediate area of loss.
3. In addition to direct losses of fish production, compensation programs will include consideration of the opportunity to fish and potential unrealized production at the time of the project.
4. Measures for replacement of runs lost due to construction of water control projects should be completed in advance of, or concurrent with, completion of the project.

4.3 ARTIFICIAL PRODUCTION

Artificial production programs can be an important component of healthy salmon fisheries. They may fall under one of four general categories: fishery enhancement, natural stock recovery, coded-wire tag indicator stock, or mitigation. To assure the effectiveness and maximize the benefits of artificial production programs, the Council recommends meeting the following objectives:

1. Maximize the continued production of hatchery stocks consistent with harvest management and stock conservation objectives.
2. Ensure that mitigation and enhancement programs, with a primary objective of producing hatchery origin salmon for harvest, minimize adverse ecological and genetic impacts to naturally producing populations (e.g., straying and mixing on the spawning grounds, unbalanced exploitation rates, loss of genetic diversity). Further, the methods employed to produce salmon for harvest should ensure high survival and high contribution rates to the fisheries targeting the enhanced stock while meeting natural stock objectives.
3. Ensure that artificial production programs designed to perpetuate and/or rebuild depressed natural populations are designed to be short-term in duration, boost the abundance of targeted natural populations over a few generations, and terminate when the population is able to sustain itself naturally.
4. Support efforts to continually review and improve the effectiveness of artificial propagation.

5 HARVEST

“Conservation and management measures shall, consistent with the conservation requirements of this Act, ... 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.”

Magnuson-Stevens Act, National Standard 8

The Council process for determining the allowable ocean fishery harvest centers primarily around protecting weak or listed natural salmon stocks, while providing harvest opportunity on stronger natural and hatchery stocks in ways that conform to the plan’s harvest allocation objectives. Achieving these multiple objectives is complicated by natural variability in annual stock abundance, variability in the ocean migratory routes and timing, the high degree of mixing of different salmon species and stocks in ocean fisheries, and imprecision in the estimation of these important parameters. Within this complexity and uncertainty, the Council attempts to achieve its fishery harvest objectives by using the various management tools described in Chapter 6.

Procedures for determining allowable ocean harvest vary by species, fishery complexity, available data, and the state of development of predictive tools. Descriptions of the various procedures in effect in 1984 have been documented (PFMC 1984). These procedures have and will change over time to incorporate the best science. Specific changes resulting from improvements in forecasting techniques or changes in outside/inside allocation procedures due to treaty or user-sharing revisions are anticipated by the plan’s framework mechanism. Such technical changes may be adopted without formal amendment. Changes in procedures and the rationale for such changes are described in Council documents developed during the preseason regulatory process (see Chapter 9), in pertinent plan amendment documents, and in various Salmon Methodology Reviews by the SSC.

5.1 OVERALL FISHERY OBJECTIVES

The following objectives guide the Council in establishing fisheries against a framework of ecological, social, and economic considerations.

1. Establish ocean exploitation rates for commercial and recreational salmon fisheries that are consistent with requirements for stock conservation objectives and ACLs within Section 3, 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 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.¹

¹ In its effort to maintain the continuance of established ocean fisheries, the Council includes consideration of maintaining established fishing communities. In addition, a significant factor in the Council’s allocation objectives in Section 5.3 is aimed at preserving the economic viability of local ports and/or specific coastal communities (e.g., recreational port allocations north of Cape Falcon). Chapter 6 in

4. Minimize fishery mortalities for those fish not landed from all ocean salmon fisheries as consistent with achieving OY and the bycatch management specifications of Section 3.5.
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 Pacific Salmon Treaty and other international treaty obligations.
9. In recommending seasons, to the extent practicable, promote the safety of human life at sea.

5.2 MANAGEMENT CONSIDERATIONS BY SPECIES AND AREA

Following, are brief descriptions of the stock management considerations which guide the Council in setting fishing seasons within the major subareas of the Pacific Coast.

5.2.1 Chinook Salmon

5.2.1.1 South of latitude 40°10' N

Within this area, considerable overlap of Chinook originating in Central Valley and northern California coastal rivers occurs between Point Arena and lat. 40°10' N. Ocean commercial and recreational fisheries are managed to address impacts on Chinook stocks originating from the Central Valley, California Coast, Klamath River, Oregon Coast, and the Columbia River. With respect to California stocks, ocean commercial and recreational fisheries operating in this area are managed to maximize natural production consistent with meeting the U.S. obligation to Indian tribes with federally recognized fishing rights, and recreational needs in inland areas. Special consideration must be given to meeting the consultation or recovery standards for threatened California Coastal Chinook, for threatened Sacramento River spring Chinook and endangered Sacramento River winter Chinook in the area south of Point Arena, and for threatened Snake River fall Chinook north of Pigeon Point.

5.2.1.2 Latitude 40°10' N to Humbug Mountain (Klamath Management Zone)

Major Chinook stocks contributing to this area originate in streams located along the southern Oregon/California coasts as well as California's Central Valley. The primary Chinook run in this area is from the Klamath River system, including its major tributary, the Trinity River. Ocean commercial and recreational fisheries operating in this area are managed to maximize natural production of Klamath River fall and spring Chinook consistent with meeting the U.S. obligations to Indian tribes with federally recognized fishing rights, and recreational needs in inland areas. Ocean fisheries operating in this area must

Appendix B and the tables it references provides additional specific information on the fishing communities.

balance management considerations for stock-specific conservation objectives for Klamath River, Central Valley, California coast, Oregon coast, and Columbia River Chinook stocks.

5.2.1.3 Humbug Mountain to Cape Falcon

The major Chinook stocks contributing to this area primarily originate in Oregon coastal rivers located north of Humbug Mountain, as well as from the Rogue, Klamath, and Central Valley systems. Allowable ocean harvests in this area are an annual blend of management considerations for impacts on Chinook stocks originating from the Central Valley, California Coast, Klamath River, Oregon Coast, Columbia River, and the Washington Coast.

5.2.1.4 North of Cape Falcon

The majority of the ocean Chinook harvest in this area primarily originates from the Columbia River, with additional contributions from Oregon and Washington coastal areas, Puget Sound and some California stocks. Bonneville Pool (Spring Creek hatchery tule) fall and lower Columbia River (lower river hatchery tule) fall and spring (Cowlitz) Chinook, all primarily of hatchery-origin, comprise a majority of the ocean Chinook harvest between Cape Falcon, Oregon and the U.S.-Canada border. Hatchery production escapement goals of these stocks are established according to long-range production programs and/or mitigation requirements associated with displaced natural stocks. Allowable ocean harvest in this area is directed at Columbia River stocks with contributions from the Oregon Coast, Washington Coast, and Puget Sound.

5.2.2 Coho Salmon

5.2.2.1 South of Cape Falcon

Columbia River, Oregon, and California coho are managed together within the framework of the Oregon Production Index (OPI) since these fish are intermixed in the ocean fishery. These coho contribute primarily to ocean fisheries off the southern Washington coast and Oregon coast; coho fisheries are prohibited off the California coast. Ocean fishery objectives for the OPI area address the following (1) conservation and recovery of Oregon and California coastal coho, including consultation or recovery standards for LCN, OCN, SONCC and California Central coast coho; (2) providing viable fisheries inside the Columbia River, and; (3) impacts on conservation objectives for other key stocks.

Until 2010, the OPI was used as a measure of the annual abundance of adult three-year-old coho salmon resulting from production in the Columbia River and Oregon and California coastal basins. The index itself was simply the combined number of adult coho that can be accounted for within the general area from Leadbetter Point, Washington to as far south as coho are found. Starting in 2010 a new method has been used to estimate ocean abundance. A "Mixed Stock Model" (MSM) uses hatchery returns, spawning escapements, and coded-wire-tag (CWT) data (recoveries and hatchery mark rates) and estimates of catch and incidental mortalities in all fisheries for OPI origin stocks. The primary difference between the traditional OPI and the MSM system is in the accounting of OPI origin stocks in ocean fisheries. In the traditional OPI accounting system, all coho in ocean fisheries south of Leadbetter Point, Washington were treated as OPI origin stocks. None of the coho caught in fisheries north of Leadbetter Point, Washington were counted in the OPI. The general assumption--backed by CWT data--was that the number of non-OPI coho caught South of Leadbetter Point equaled the number of OPI coho caught North of Leadbetter Point. This was a good assumption until 1996, when all coho fisheries in the OPI area were closed. Since then, OPI Area fisheries have been more restricted than northern fisheries. In the MSM system, CWT data are used to estimate the harvest of OPI area stocks regardless of where they were caught. Thus, the MSM method takes into account changing harvest patterns in ocean fisheries that were assumed to be static in the original index.

The methodology used to estimate ocean abundance of OPI-area coho stocks may continue to evolve and any changes will be approved by the SSC in order to ensure the use of the best available science.

5.2.2.2 North of Cape Falcon

Management of ocean fisheries for coho north of Cape Falcon is complicated by the overlap of OCN stocks and other stocks of concern. Allowable harvests in the area between the U.S./Canada border and Cape Falcon, Oregon will be determined by an annual blend of LCN, OCN, Washington, and Canadian coho management considerations including:

1. Abundance of contributing stocks.
2. Stock-specific conservation objectives (as found in Table 3-1).
3. Consultation standards of the Endangered Species Act.
4. Relative abundance of Chinook and coho.
5. Obligations under the PST.
6. Allocation considerations of concern to the Council.

Coho occurring north of Cape Falcon, Oregon are comprised of a composite of coho stocks originating in Oregon, Washington, and southern British Columbia. Ocean fisheries operating in this area must balance management considerations for stock-specific conservation objectives for Southern Oregon/Northern California, Oregon Coast, Southwest Washington, Olympic Peninsula, Puget Sound, Columbia River, and southern British Columbia stocks.

5.2.3 Pink Salmon

Ocean pink salmon harvests occur off the Washington coast and are predominantly of Fraser River origin. Pink salmon of Puget Sound origin represent a minor portion of the ocean harvest. Ocean impacts are generally negligible in relation to the terminal return during years of very low abundance.

The Fraser River Panel of the PSC manages fisheries for pink salmon in the Fraser River Panel Area (U.S.) north of 48° N latitude to meet Fraser River natural spawning escapement and U.S./Canada allocation requirements. The Council manages pink salmon harvests in that portion of the EEZ which is not in the Fraser River Panel Area (U.S.) waters consistent with Fraser River Panel management intent and in accordance with the conservation objectives for Puget Sound pink salmon.

Pink salmon management objectives must address meeting natural spawning escapement objectives, allowing ocean pink harvest within fixed constraints of coho and Chinook harvest ceilings and providing for treaty allocation requirements.

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.

Coho			Chinook		
Harvest (thousands of fish)	Percentage ^{a/}		Harvest (thousands of fish)	Percentage ^{a/}	
	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.^{a/}

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 ^{a/}					
	Columbia River	Westport	La Push	Neah Bay	Columbia River	Westport	La Push	Neah Bay		
								Ocean	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 West Coast 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.^{a/}

Total Allowable Ocean Harvest	Recreational Allocation		Commercial Allocation	
	Number	Percentage	Number	Percentage
#100	#100 ^{b/c/}	100 ^{b/}	b/	b/
200	167 ^{b/c/}	84 ^{b/}	33 ^{b/}	17 ^{b/}
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

a/ 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).

b/ 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.

c/ 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 significant 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%
 - b. South of Humbug Mountain - 30%

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. In 2008, a new 10 year management agreement was negotiated through the U.S. v. Oregon process, which included revisions to some in-river objectives. A second 10-year plan was negotiated and is in effect for 2018-2027. The 2018-2027 U.S. v Oregon 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.

5.4 U.S. HARVEST AND PROCESSING CAPACITY AND ALLOWABLE LEVEL OF FOREIGN FISHING

“... Assess and specify . . . (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield . . . (B) the portion of such optimum yield which, on an annual basis, will not be harvested by fishing vessels of the United States and can be made available for foreign fishing, and (C) the capacity and extent to which United States processors, on an annual basis, will process that portion of such optimum yield that will be harvested by fishing vessels of the United States.”

Magnuson-Stevens Act, §303(a)(4)

At the highest conceivable level of recent past, present, or expected future abundance, the total allowable harvest of salmon stocks can be fully taken by U.S. fisheries. There is no recent record of processors in the Council area refusing fish from fishermen because of inadequate processing capacity. Because shore-based processors can fully utilize all the salmon that can be harvested in marine waters, joint venture processing is fixed as zero.

In view of the adequacy of the domestic fisheries to harvest the highest conceivable level of abundance, the total allowable level of foreign fishing also is fixed as zero. The United States allowed Canadian fishing in U.S. waters under a reciprocal agreement until 1978. Negotiations between the two governments, including those within the context of the PSC, continue to seek a resolution of all transboundary salmon issues. These negotiations are aimed at stabilizing and reducing, where possible, the interception of salmon originating from one country by fishermen of the other. No U.S./Canada reciprocal salmon fishing is contemplated in the foreseeable future.

6 MEASURES TO MANAGE THE HARVEST

A number of management controls are available to manage the ocean fisheries each season, once the allowable ocean harvests and the basis for allocation among user groups have been determined. Among these are management boundaries, seasons, quotas, minimum harvest lengths, fishing gear restrictions, and recreational daily bag limits. Natural fluctuations in salmon abundance require that annual fishing periods, quotas, and bag limits be designed for the conditions of each year. What is suitable one year probably will not be suitable the next. New information on the fisheries and salmon stocks also may require other adjustments to the management measures. The Council assumes these ocean harvest controls also apply to territorial seas or any other areas in state waters specifically designated in the annual regulations.

Some of the more common measures that have been applied to manage ocean salmon fisheries since 1977 under the MSA are described below, along with a clarification of the process and flexibility in implementing the measures. The Framework Amendment (PFMC 1984) provides a more detailed history of salmon harvest controls and rationale for their designation as fixed or flexible elements of the salmon FMP.

6.1 MANAGEMENT BOUNDARIES AND MANAGEMENT ZONES

Management boundaries and zones will be established during the preseason regulatory process or adjusted inseason (Section 10.2) as necessary to achieve a conservation or management objective. A conservation or management objective is one that protects a fish stock, simplifies management of a fishery, or results in the sustainable use of the resources. For example, management boundaries and management zones can be used to separate fish stocks, facilitate enforcement of regulations, separate conflicting fishing activities, or facilitate harvest opportunities. Management boundaries and zones will be described in the annual regulations by geographical references, coordinates (latitude and longitude), depth contours, distance from shore, or similar criteria. Figure 6-1 displays management boundaries in common use in 2000-2010.

While there are many specific reasons for utilizing management boundaries or zones, which may change from year to year, some boundaries or zones have purposes that remain relatively constant. The boundary used to separate management of Columbia River Chinook from those stocks to the south and to divide the Council's harvest allocation schedules has always been at or near Cape Falcon, Oregon. The Klamath management zone (KMZ) has been used to delineate the area where primary concern is the management of Klamath River fall Chinook. The KMZ boundary is from Humbug Mountain, Oregon, south to lat. 40°10' N.² A closed control zone at the mouth of the Columbia River has been used for many years to eliminate fishing in an area believed to generally contain a high percentage of sublegal "feeder" Chinook. A similar control zone has been established at the mouth of the Klamath River to allow fish undisturbed access to the river. Changes to these boundaries or zones may require special justification and documentation; however, the basis of establishing most other management boundaries and zones depends on the annual management needs as determined in the preseason process.

² The southern boundary of the KMZ was changed through FMP Amendment 20, effective in 2021, and previously extended five nautical miles further south to Horse Mountain, CA (lat. 40°05' N).

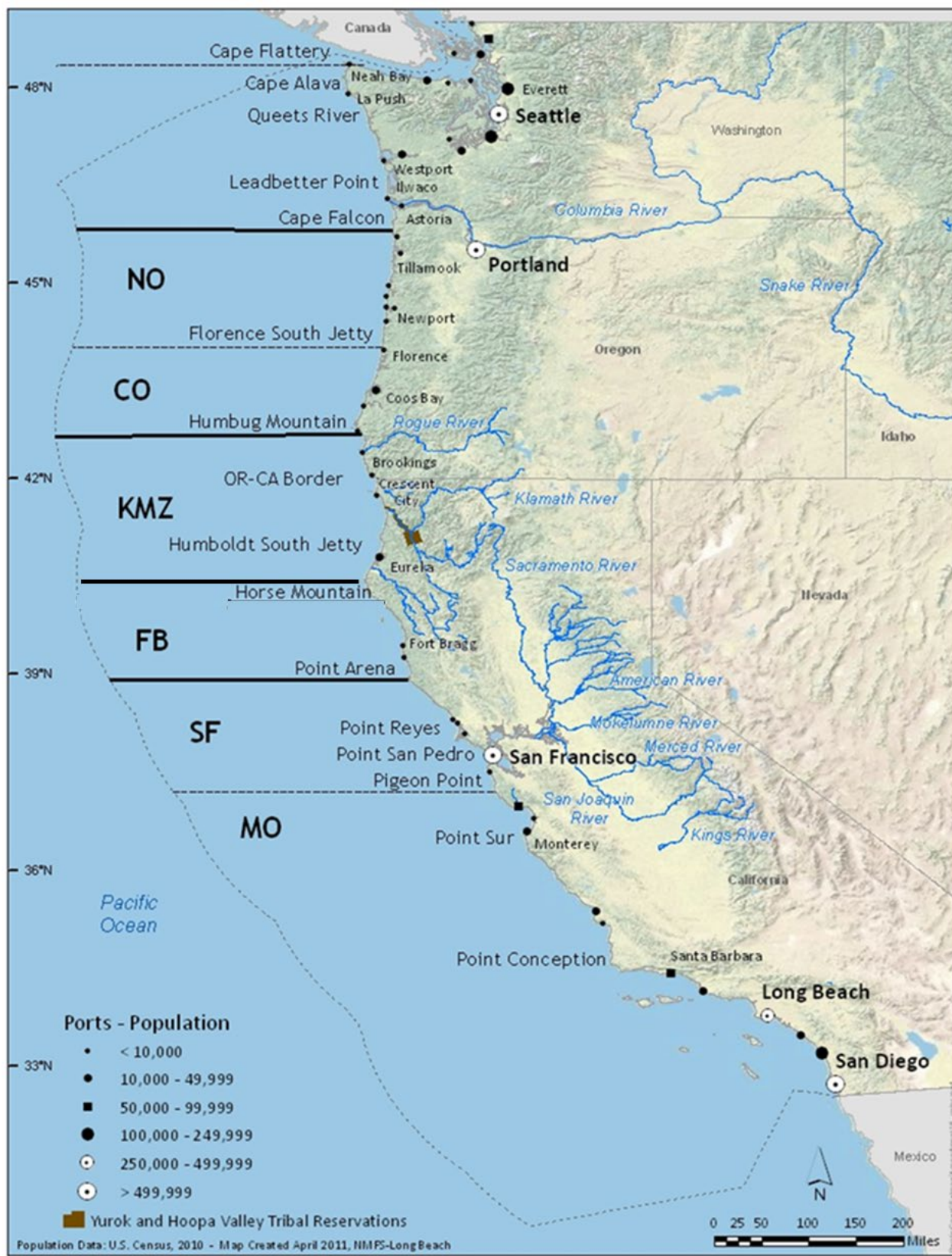


FIGURE 6-1. Management boundaries in common use beginning in 2021.

6.2 MINIMUM HARVEST LENGTHS FOR OCEAN COMMERCIAL AND RECREATIONAL FISHERIES

Minimum size limits for ocean commercial and recreational fisheries may be changed each year during the preseason regulatory process or modified inseason under the procedures of Section 10.2. Recommended changes must serve a useful purpose which is clearly described and justified, and projections made of the probable impacts resulting from the change.

Chinook minimum size limits are set annually to address several specific issues, including but not limited to: targeting/avoiding specific stocks (Sacramento Winter Chinook) or broods (age-3/4 Klamath fall Chinook), market demand (preference for larger fish), enforcement (regional consistency), season length (slower quota attainment) bycatch reduction, and data collection (CWT recovery of smaller fish). Commercial size limits for Chinook are generally between 26 and 28 inches total length, and recreational size limits are generally between 20 and 24 inches total length, and may vary within the year. Coho minimum size limits are consistently set at 16 inches total length for both commercial and recreational fisheries. In Oregon and Washington, where pink salmon are available, there are no minimum size limits for pink salmon.

6.3 RECREATIONAL DAILY BAG LIMIT

Recreational daily bag limits for each management area may be set during the preseason regulatory process or modified inseason (Section 10.2). They will be set to maximize the length of the fishing season consistent with the allowable level of harvest. In recent years, bag limits of one or two salmon have been commonplace.

In general, for every fishing area the level of allowable ocean harvest will be determined for the recreational fishery; next, the fishing season will be set to be as long as practicable, including the Memorial Day and/or Labor Day weekends if feasible, consistent with the allowable level of harvest. Bag limits will be simultaneously set to accommodate that fishing season. In years of low salmon abundance, the season will be short and the bag limits will be low; in years of high salmon abundance, the season will be long and the bag limits will be higher.

6.4 FISHING GEAR RESTRICTIONS

Gear restrictions may be changed annually during the preseason regulatory process and inseason as provided in Section 10.2. Recommended changes must serve one or more useful purposes while being consistent with the goals of the plan. For example, changes could be made to facilitate enforcement, reduce hooking mortality, or reduce gear expenses for fishermen. Annual gear restriction changes in previous years have included the requirement for barbless hooks in both the troll and recreational fisheries, and a limit to the number of spreads per line in the troll fishery. Both of these gear changes were instituted to reduce total hook-and-release mortality. Other restrictions have included bait size, number of rods per recreational fisher, and requirements for the number of lines or the attachment of lines to the vessel in the commercial fishery.

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.

6.6 OTHER MANAGEMENT MEASURES

6.6.1 Treaty Indian Ocean Fishing

Since 1977 the Council has adopted special measures for the treaty Indian ocean troll fisheries off the Washington Coast. The Makah, Quileute, Hoh, and Quinault tribes are entitled by federal judicial determination to exercise their treaty rights in certain ocean areas. In addition, Lower S'Klallam, Jamestown S'Klallam, and Port Gamble S'Klallam tribes are entitled by federal judicial determination to exercise their treaty rights in ocean salmon Area 4B, the entrance to the Strait of Juan de Fuca.

The treaty Indian ocean salmon fishing regulations will be established annually during the preseason regulatory process. The affected tribes will propose annual treaty Indian ocean fishing alternatives at the March meeting of the Council. After a review of the proposals, the Council will adopt treaty Indian regulations along with non-Indian ocean fishing regulations for submission to the Secretary of Commerce at the April Council meeting.

The specific timing and duration of the treaty Indian ocean salmon season varies with expected stock abundance and is limited by quotas for both Chinook and coho. Within these constraints, the general season

structure has been a Chinook-directed fishery in May and June, followed by an all-salmon season from July through the earliest of quota attainment or October 31.

6.6.1.1 Seasons

Given that the traditional tribal ocean season has changed in recent years and because it is largely up to the tribes to recommend annual ocean management measures applicable to their ocean fishery, a flexible mechanism for setting fishing seasons is proposed so that desired changes can be made in the future without the need for plan amendment.

The treaty Indian troll season will be established based upon input from the affected tribes, but would not be longer than that required to harvest the maximum allowable treaty Indian ocean catch. The maximum allowable treaty Indian ocean catch will be computed as the total treaty harvest that would occur if the tribes chose to take their total entitlement of the weakest stock in the ocean, assuming this level of harvest did not create conservation or allocation problems on other stocks.

6.6.1.2 Quotas

Fixed or adjustable quotas by area, season, or species may be employed in the regulation of treaty Indian ocean fisheries, provided that such quotas are consistent with established treaty rights. The maximum size of quotas shall not exceed the harvest that would result if the entire treaty entitlement to the weakest run were to be taken by treaty ocean fisheries. Any quota established does not represent a guaranteed ocean harvest, but a maximum ceiling on catch. Catches in ocean salmon Area 4B are counted within the tribal ocean harvest quotas during the May 1-September 30 ocean management period.

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

1. Unanticipated shaker loss during the season.
2. Catches by treaty ocean fisheries that are inconsistent with federal regulations in the EEZ.
3. If an ability to update inseason stock abundance is developed in the future, adjustments to quotas could be made where appropriate.
4. Ability to redistribute quotas between subareas depending upon performance toward catching the overall quota for treaty ocean fisheries in the area.

Procedures for the above inseason adjustments will be made in accordance with Section 10.2.

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

Harvest guidelines may be used within overall quotas to trigger inseason management actions established during the preseason regulatory process.

6.6.1.3 Areas

Boundaries of a tribe's fishing area may be revised as ordered by a Federal court. Current tribal ocean fishing areas are as follows:

Makah - The area north of 48°02.25' N. lat. (Norwegian Memorial) and east of 125°44' W. long .

Quileute - The area commencing at Cape Alava, located at 48°10'00" N lat., 124°43'56.9" W long.; then proceeding west approximately forty nautical miles at that latitude to a northwestern point located at 48°10'00" N lat., 125°44'00" W long.; 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 47°31'42" N lat., 125°20'26" W long.; then proceeding east along that line of latitude to the Pacific coast shoreline at 47°31'42" N lat., 124°21'9.0" W long.

Hoh - The area between 47°54.30' N. lat. (Quillayute River) and 47°21.00' N. lat. (Quinault River) and east of 125°44.00' W. long.

Quinault - The area commencing at the Pacific coast shoreline near Destruction Island, located at 47°40'06" N lat., 124°23'51.362" W long.; then proceeding west approximately thirty nautical miles at that latitude to a northwestern point located at 47°40'06" N lat., 125°08'30" W long.; 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 46°53'18" N lat., 124°53'53" W long.; then proceeding east along that line of latitude to the Pacific coast shoreline at 46°53'18" N lat., 124°7'36.6" W long..

In addition, a portion of the usual and accustomed fishing areas for the Lower Elwha, Jamestown, and Port Gamble S'Klallam tribes is in ocean salmon Area 4B at the entrance to the Strait of Juan de Fuca (Bonilla-Tatoosh line east to the Sekiu River).

Area restrictions may be employed in the regulation of treaty Indian ocean fisheries, consistent with established treaty rights. For example, in 1982 treaty Indian fishing was prohibited within a six-mile radius around the Queets and Hoh River mouths when the area was closed to non-Indian salmon fishing.

6.6.1.4 Size Limits and Gear Restrictions

Regulations for size limits and gear restrictions for treaty ocean fisheries will be based on recommendations of the affected treaty tribes.

6.6.2 Net Prohibition

No person shall use nets to fish for salmon in the EEZ except that a hand-held net may be used to bring hooked salmon on board a vessel. Salmon caught incidentally in trawl nets while legally fishing under the groundfish FMP are a prohibited species as defined by the groundfish regulations (50 CFR Part 660, Subpart G). However, in cases where the Council determines it is beneficial to the management of the groundfish and salmon resources, salmon bycatch may be retained under the provisions of a Council-approved program that defines the handling and disposition of the salmon. The provisions must specify that salmon remain a prohibited species and, as a minimum, include requirements that allow accurate monitoring of the retained salmon, do not provide incentive for fishers to increase salmon bycatch, and assure fish do not reach commercial markets. In addition, during its annual regulatory process for groundfish, the Council must consider regulations that would minimize salmon bycatch in the monitored fisheries.

6.6.3 Prohibition on Removal of Salmon Heads

No person shall remove the head of any salmon caught in the EEZ, nor possess a salmon with the head removed if that salmon has been marked by removal of the adipose fin to indicate that a coded-wire tag has been implanted in the head of the fish.

6.6.4 Steelhead Prohibition

Persons, other than Indians with judicially-declared rights to do so and legally licensed recreational fishermen, may not take and retain, or possess any steelhead within the EEZ.

6.6.5 Prohibition on Use of Commercial Troll Fishing Gear for Recreational Fishing

No person shall engage in recreational fishing for salmon while aboard a vessel engaged in commercial fishing.

6.6.6 Experimental Fisheries

The Council may recommend that the Secretary allow experimental fisheries in the EEZ for research purposes that are proposed by the Council, federal government, state government, or treaty Indian tribes having usual and accustomed fishing grounds in the EEZ.

The Secretary may not allow any recommended experimental fishery unless he or she determines that the purpose, design, and administration of the experimental fishery are consistent with the goals and objectives of the Council's fishery management plan, the national standards of the MSA, and other applicable law. Each vessel that participates in an approved experimental fishery will be required to carry aboard the vessel the letter of approval, with specifications and qualifications (if any), issued and signed by the Regional Administrator of NMFS. EFP proposals targeting EC species shared between all four FMPs, including the Salmon FMP, will be subject to the protocol for Shared EC Species (Council Operating Procedure 24).

6.6.7 Scientific Research

This plan neither inhibits nor prevents any scientific research in the EEZ by a scientific research vessel. The Secretary will acknowledge any notification received regarding scientific research on salmon being conducted by a research vessel. The Regional Administrator of NMFS will issue to the operator/master of that vessel a letter of acknowledgment, containing information on the purpose and scope (locations and schedules) of the activities. Further, the Regional Administrator will transmit copies of such letters to the Council and to state and federal fishery and enforcement agencies to ensure that all concerned parties are aware of the research activities.

6.6.8 Southern Resident Killer Whale Management Measures

The following management measures are intended to limit impacts of the Council-managed salmon fisheries on Southern Resident Killer Whales (SRKW) by limiting the extent to which they reduce Chinook salmon prey availability for SRKW.

Below a defined threshold for pre-fishing Chinook salmon abundance in the north of Cape Falcon area (defined in Section 5.2.1.4), management actions will be implemented through the annual management measures for the fishery. The threshold is defined as the arithmetic mean of the seven lowest years (specifically, 1994 – 1996, 1998 – 2000 and 2007) of October 1 projections of Chinook salmon abundance in the NOF area prior to fisheries occurring in the EEZ (referred to as time step 1 (TS1)) during the reference time period of 1992-2016. Based on the best scientific information available in 2021, the threshold is 966,000 Chinook. If a technical review of the best scientific information available provides evidence that, in the view of the STT, SSC, and the Council, a modification of the estimated value of the TS1 starting abundance estimates for the seven lowest years is necessary to be consistent with the best available scientific information, the Council may adopt an updated value for the threshold, which will be reported in the preseason process. The annual projected TS1 Chinook abundance will be reported by the STT in the preseason process to determine if projected abundance is below the threshold.

If the annual forecast for this abundance is less than the threshold, the Council will implement the following management measures through the annual management measures:

- 1) Quota Restrictions
 - a) Limit the overall Chinook quota for non-Indian fisheries in the north of Cape Falcon area based on a regression analysis of historic TS1 starting Chinook salmon abundances and non-Indian Chinook quotas for the years 1992 through 2016 in this area. The Chinook quota limit for non-Indian fisheries north of Cape Falcon will be provided by the STT and is defined by applying regression equation to the projected TS1 Chinook abundance in that year in the north of Cape Falcon area. If a technical review of the best scientific information available provides evidence that, in the view of the STT, SSC, and the Council, justifies a modification of the estimated values of the TS1 starting abundance estimates for 1992-2016 in the north of Cape Falcon area, the modified values will be used in the regression analysis.
 - b) Assign no more than 50 percent of the non-Indian commercial troll Chinook salmon quota to the spring period (May-June).
- 2) Time/Area Closures
 - a) Close north of Cape Falcon area Control Zones –The control zones, as set forth in Table 6-1, include areas in state waters. The Council would implement only those portions of the Control Zones in the EEZ.
 - i) Close the Cape Flattery Control Zone (defined in Table 6-1) to non-Indian commercial troll salmon fisheries year-round.
 - ii) Close the Columbia River Control Zone (defined in Table 6-1) to non-Indian commercial troll and recreational salmon fisheries year-round. Close the expanded area of the Columbia River Control Zone (as defined in Table 6-1) to salmon retention from the start of non-Indian ocean salmon fisheries until June 15.
 - iii) Close the Grays Harbor Control Zone (defined in Table 6-1) to salmon retention from the start of non-Indian ocean salmon fisheries from January 1-June 15, and from the second Monday in August to the end of the year.
 - b) Delay the start of the commercial troll fishery between Cape Falcon and the Oregon/California border until April 1.
 - c) Close the Klamath Management Zone seaward of Oregon (KMZ, defined in section 5.2.1.2) beginning October 1 through March 31 of the following year in the EEZ.
 - d) Close commercial and recreational salmon fisheries in the Monterey management area (Pigeon Point south to the U.S./Mexico Border) and the KMZ seaward of California, which extends from the Oregon/California border to 40°10'00'' from October 1 through March 31 of the following year in the EEZ.
 - e) Close the Klamath River Control Zone and expand the area closed (defined in Table 6-1) beginning September 1 through March 31 of the following year in the EEZ.

In addition to the measures taken by the Council, the states have committed to implementing these closures, described above and in Table 6-1, in state waters through state regulatory processes in years when the projected TS1 Chinook abundance in the north of Cape Falcon area is below the low abundance threshold. In addition, California would close the Smith, Eel, and Klamath river mouth areas (defined in Table 6-1).

TABLE 6-1. Council- and State-managed control zones and river mouth areas used in managing ocean salmon fisheries, listed north to south.

Control Zone	Geographic Boundaries
Cape Flattery Control Zone	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.
Grays Harbor Control Zone	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 River Control Zone	The area bounded on the west by a line running northwest/southeast between green entrance lighted bell buoy #1 (46°13'24" N. lat., 124°11'00" W. long.) and red entrance lighted whistle buoy #2 (46°12'46" N. lat., 124°08'03" 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 from green entrance lighted bell buoy #1 to the green lighted Buoy #7 (46°15'09" N. lat., 124°06'16" W. long.) 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; on the south, by a line running northeast/southwest from red entrance lighted whistle buoy #2 to the red lighted Buoy #4 (46°13'35" N. lat., 124°06'50" W. long.) to the 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.
Columbia Control Zone Expansion	A line running northeast/southwest between Lighted Bell Buoy#1 (46°13'23.933" N. Lat., 124°10'59.921" W. long.) and Lighted Whistle Buoy #2 (46°12'45.840" N. lat., 124°08'03.462" W. long.).
Smith River mouth	Bounded on the north by 41°59'36" N. lat. (approximately 3 nautical miles north of the Smith River mouth), on the west by 124°16'24" W. long. (approximately 3 nautical miles offshore), and on the south by 41°53'30" N. lat. (approximately 3 nautical miles south of the Smith River mouth).
Klamath Control Zone	The area of the ocean 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 offshore); and on the south by 41°26'48" N. lat. (approximately 6 nautical miles south of the Klamath River mouth).
Klamath Control Zone Expansion	Would expand the definition of the Klamath Control Zone to 6 miles beyond the northern and southern boundaries and 12 miles seaward of the western boundary.
Klamath River mouth	Bounded on the north by 41°35'30" N. lat. (approximately 3 nautical miles north of the Klamath River mouth), on the west by 124°08'54" W. long. (approximately 3 nautical miles offshore), and on the south by 41°29'24" N. lat. (approximately 3 nautical miles south of the Klamath River mouth).
Eel River mouth	Bounded on the north by 40°40'24" N. lat. (approximately 2 nautical miles north of the Eel River mouth), on the west by 124°21'24" W. long. (approximately 2 nautical miles offshore), and on the south by 40°36'24" N. lat. (approximately 2 nautical miles south of the Eel River mouth).

7 DATA NEEDS, DATA COLLECTION METHODS, AND REPORTING REQUIREMENTS

Successful management of the salmon fisheries requires considerable information on the fish stocks, the amount of effort for each fishery, the harvests by each fishery, the timing of those harvests, and other biological, social, and economic factors. Much of the information must come from the ocean fisheries; other data must come from inside fisheries, hatcheries, and spawning grounds. Some of this information needs to be collected and analyzed daily, whereas other types need to be collected and analyzed less frequently, maybe only once a year. In general, the information can be divided into that needed for inseason management and that needed for annual and long-term management. The methods for reporting, collecting, analyzing, and distributing information can be divided similarly.

7.1 INSEASON MANAGEMENT

7.1.1 Data Needs

Managers require certain information about the fisheries during the season if they are to control the harvests to meet established quotas and goals. If conditions differ substantially from those expected it may be necessary to modify the fishing seasons, quotas, or other management measures. The following information is useful for inseason management:

- a. harvest of each species by each fishery in each fishing area by day and by cumulative total;
- b. number of troll day boats and trip boats fishing;
- c. estimated average daily catch for both day and trip boats;
- d. distribution and movement of fishing effort;
- e. average daily catch and effort for recreational fishery;
- f. estimates of expected troll fishing effort for the remainder of the season;
- g. information on the contribution of various fish stocks, determined from recovered coded-wire tags, scales, or other means.

7.1.2 Methods for Obtaining Inseason Data

Inseason management requires updating information on the fisheries daily. Thus, data will be collected by sampling the landings, exit/trailer counts, radio reports, electronic media reports, and telephone interviews.

In general, data necessary for inseason management will be gathered by one or more of the following methods. Port exit counts, radio or electronic media reports, and processor reports will be used to obtain information on the distribution, amount, and type of commercial fishing effort. Data on the current harvests by commercial and treaty Indian ocean fishermen will be obtained by telephoning selected (key) fish buyers, by sampling the commercial landings on a daily basis, and from radio or electronic media reports. Data on the current effort of, and harvests by, the recreational fisheries will be obtained by port exit counts, trailer counts, contacting selected charter boat and boat rental operators and by sampling landings at selected ports. Analyses of fish scales, recovered fish tags, genetic stock identification samples, and other methods will provide information on the composition of the stocks being harvested.

7.2 ANNUAL AND LONG-TERM MANAGEMENT

7.2.1 Data Needs

In addition to the data used for inseason management, a considerable amount of information is used for setting the broad measures for managing the fishery, evaluating the success of the previous year's management, and evaluating the effectiveness of the plan in achieving the long-term goals. Such data include landings, fishing effort, dam counts, smolt migration, returns to hatcheries and natural spawning areas, stock contribution estimates, and economic information.

The Council also produces a periodic research and data needs document, which identifies current priorities for information collection needs and contemporary management strategies.

7.2.2 Methods for Obtaining Annual and Long-Term Data

In addition to those methods used for collecting data for in-season management, the longer term data will be collected by the use of (a) fish tickets (receipts a fish buyer completes upon purchasing fish from a commercial fisherman), (b) log books kept by commercial fishermen and submitted to the state fishery management agencies at the end of the season, and (c) catch record cards completed by a recreational fisherman each time he catches a fish to show location, date, and species and submitted to the state agency, either when the whole card is completed or at the end of the season.

The local fishery management authorities (states, Indian tribes) will collect the necessary catch and effort data and will provide the Secretary with statistical summaries adequate for management. The local management authorities, in cooperation with the National Marine Fisheries Service, will continue the ongoing program of collecting and analyzing data from salmon processors.

Data on spawning escapements and jack returns to public and private hatcheries, other artificial production facilities, and natural spawning grounds will be collected by the accepted methods now being used by those authorities. The methods used to collect these data should be identified and available to the public.

7.3 REPORTING REQUIREMENTS

This plan authorizes the local management authorities to determine the specific reporting requirements for those groups of fishermen under their control and to collect that information under existing state data-collection provisions. With one exception, no additional catch or effort reports will be required of fishermen or processors as long as the data collection and reporting systems operated by the local authorities continue to provide the Secretary with statistical information adequate for management. The one exception would be to meet the need for timely and accurate assessment of inseason management data. In that instance the Council may annually recommend implementation of regulations requiring brief radio, phone, or electronic media reports from commercial salmon fishermen who leave a regulatory area in order to land their catch in another regulatory area. The federal or state entities receiving these reports would be specified in the annual regulations.

8 SCHEDULE AND PROCEDURES FOR ANALYZING THE EFFECTIVENESS OF THE SALMON FMP

To effectively manage the salmon fisheries, the Council must monitor the status of the resource and the fisheries harvesting that resource to make sure that the goals and objectives of the plan are being met. Fishery resources vary from year to year depending on environmental factors, and fisheries vary from year to year depending on the state of the resource and social and economic factors. The Council must ensure that the plan is flexible enough to accommodate regulatory changes that will allow the Council to achieve its biological, social, and economic goals.

Annually, the STT will review the previous season's commercial, recreational, and tribal Indian fisheries and evaluate the performance of the plan with respect to achievement of the framework management objectives (Chapters 2, 3, and 5). Consideration will be given by the STT to the following areas:

1. Allowable harvests
2. Escapement goals, natural and hatchery
3. Mixed-stock management
4. Federally recognized tribal fishing rights
5. Allocation goals
6. Mortality factors, including bycatch
7. Achievement of optimum yield
8. Effort management systems
9. Coordination with all management entities
10. Consistency with international treaties
11. Comparison with previous seasons
12. Progress of any Council-adopted recovery plan
13. ESA consultation standards
14. Annual catch limits
15. Stock status based on the SDC identified in this FMP

This evaluation will be submitted annually for review by the Salmon Advisory Subpanel, SSC, and the Council.

Additionally, at various Council meetings, the Habitat Committee and state and tribal management entities will help keep the Council apprised of achievements and problems with regard to the protection and improvement of the environment (i.e., EFH) and the restoration and enhancement of natural production.

During the Council's annual preseason salmon management process, issues may arise that indicate a need to consider changes to the fixed elements of the FMP. Such issues may be considered in FMP amendments on an as needed basis under the guidelines of Chapter 11.

9 SCHEDULE AND PROCEDURES FOR PRESEASON MODIFICATION OF REGULATIONS

The process for establishing annual or preseason management measures under the framework FMP contains a nearly equivalent amount of analysis, public input, and review to that provided under the former annual amendment process and will not require annual preparation of a supplemental environmental impact statement (SEIS) and regulatory impact review/regulatory flexibility analysis (RIR/RFA). This allows the STT to wait to prepare its report until all of the data are available, thus eliminating the need to discuss an excessively broad range of alternatives as presented prior to the framework plan.

The process and schedule for setting the preseason regulations will be approximately as follows:

Approximate Date	Action
First week of March	Notice published in the <u>Federal Register</u> announcing the availability of team and Council documents, the dates and location of the two Council meetings, the dates and locations of the public hearings, and publishing the complete schedule for determining proposed and final modifications to the management measures. Salmon Technical Team reports which review the previous salmon season, project the expected salmon stock abundance for the coming season, and describe any changes in estimation procedures, are available to the public from the Council office.
First or second full week of March ^{a/}	Council and advisory entities meet to adopt a range of season regulatory alternatives for formal public hearing. Proposed options are initially developed by the Salmon Advisory Subpanel and further refined after analysis by the STT, public comment, and consideration by the Council.
Following March Council meeting	Council newsletter, public hearing announcement, and STT/Council staff report are released which outline and analyze Council-adopted alternatives. The STT/staff report includes a description of the alternatives, brief rationale for their selection, and an analysis of expected biological and economic impacts.
Last week of March or first week of April	Formal public hearings on the proposed salmon management alternatives.
First or second full week of April ^{a/}	Council and advisory entities meet to adopt final regulatory measure recommendations for implementation by the Secretary of Commerce.
Second or third week of May	Final notice of Secretary of Commerce decision and final management measures in <u>Federal Register</u> .

a/ Scheduling of the March and April Council meetings is determined by the need to allow for complete availability of pertinent management data, provide time for adequate public review and comment on the proposed alternatives, and afford time to process the Council's final recommendations into federal regulations by May 16. Working backward from the May 16 implementation date, the April Council meeting is generally set as late as possible while not extending past April 15 for approval of final salmon management recommendations. The March Council meeting is set as late as possible while ensuring no less than three to four weeks between the end of the March meeting and beginning of the April meeting.

The actions by the Secretary after receiving the preseason regulatory modification recommendations from the Council will be limited to accepting or rejecting in total the Council's recommendations. If the Secretary rejects such recommendations he or she will so advise the Council as soon as possible of such action along with the basis for rejection, so that the Council can reconsider. Until such time as the Council and the Secretary can agree upon modifications to be made for the upcoming season, the previous year's regulations will remain in effect. This procedure does not prevent the Secretary from exercising his authority under Sections 304(c) or 305(c) of the MSA and issuing emergency regulations as appropriate for the upcoming season.

Preseason actions by the Secretary, following the above procedures and schedule, would be limited to the following:

1. Specify the annual abundance, total allowable harvest, and allowable ocean harvest.

2. Allocate ocean harvest to commercial and recreational fishermen and to treaty Indian ocean fishermen where applicable.
3. Review ocean salmon harvest control mechanism from previous year; make changes as required in:
 - a. Management area boundaries
 - b. Minimum harvest lengths
 - c. Recreational daily bag limits
 - d. Gear requirements (i.e., barbless hooks, etc.)
 - e. Seasons and/or quotas
 - f. Ocean regulations for treaty Indian fishermen
 - g. Inseason actions and procedures to be employed during the upcoming season
 - h. annual catch limits

Because the harvest control measures and restrictions remain in place until modified, superseded, or rescinded, changes in all of the items listed in "3" above may not be necessary every year. When no change is required, intent not to change will be explicitly stated in preseason decision documents.

The Framework Amendment (1984) provides further rationale for the current preseason procedures and the replacement of the old process of annual plan amendments to establish annual regulations.

10 INSEASON MANAGEMENT ACTIONS AND PROCEDURES

Inseason modifications of the regulations may be necessary under certain conditions to fulfill the Council's objectives. Inseason actions include "fixed" or "flexible" actions as described below.

10.1 FIXED INSEASON ACTIONS

Three fixed inseason actions may be implemented routinely as specifically provided in the subsections below.

10.1.1 Automatic Season Closures When the Quotas Are Reached

The STT will attempt to project the date a quota will be reached in time to avoid exceeding the quota and to allow adequate notice to the fishermen. The State Directors and the Council Chairman will be consulted by the NMFS Regional Administrator before action is taken to close a fishery. Closures will be coordinated with the states so that the effective time will be the same for EEZ and state waters. A standard closure notice will be used and will specify areas that remain open as well as those to be closed. To the extent possible, all closures will be effective at midnight and a 48-hour notice will be given of any closure. When a quota is reached, the Regional Administrator will issue a notice of closure of the fishery on the telephone hotline and via USCG Notice to Mariners radio broadcast. Other means of notification may include posting on the NMFS West Coast Region website, email, or other electronic media. Notice of fishery closure is published in the Federal Register as soon as is practicable.

10.1.2 Rescission of Automatic Closure

If, following the closing of a fishery after a quota is reached, it is discovered that the actual catch was over-estimated and the season was closed prematurely, the Secretary is authorized to reopen the fishery if:

1. The shortfall is sufficient to allow at least one full day's fishing (24 hours) based on the best information available concerning expected catch and effort; and
2. The unused portion of the quota can be taken before the scheduled season ending.

10.1.3 Adjustment for Error in Preseason Estimates

The Secretary may make changes in seasons or quotas if a significant computational error or errors made in calculating preseason estimates of salmon abundance have been identified, provided that such correction to a computational error can be made in a timely fashion to affect the involved fishery without disrupting the capacity to meet the objectives of the management plan. Such correction and adjustments to seasons and quotas will be based on a Council recommendation and STT analysis.

10.2 FLEXIBLE INSEASON ACTIONS

Fishery managers must determine that any inseason adjustment in management measures is consistent with escapement goals, conservation of the salmon resource, any federally recognized Indian fishing rights, and the ocean allocation scheme in the Section 5.3. In addition, all inseason adjustments must be based on consideration of the following factors:

- Predicted sizes of salmon runs
- Harvest quotas and hooking mortality limits for the area and total allowable impact limitations if applicable
- Amount of the recreational, commercial, and treaty Indian fishing effort and catch for each species in the area to date

- Estimated average daily catch per fisherman
- Predicted fishing effort for the area to the end of the scheduled season
- Other factors as appropriate (particularly, fisher safety affected by weather or ocean conditions as noted in Amendment 8)

Flexible inseason provisions must take into consideration the factors and criteria listed above and would include, but not be limited to, the following.

1. Modification of quotas and/or fishing seasons would be permitted. Redistribution of quotas between recreational and commercial fisheries would be allowed if the timing and procedure are described in preseason regulations. If total quotas or total impact limitations by fishery are established, subarea quotas north and south of Cape Falcon, Oregon can be redistributed within the same fishery (north or south of Cape Falcon). Other redistributions of quotas would not be authorized. Also allowable would be establishment of, or changes to, hooking mortality and/or total allowable impact limitations during the season. Action based on revision of preseason abundance estimates during the season would be dependent on development of a Council approved methodology for inseason abundance estimation.
2. Modifications in the species that may be caught and landed during specific seasons and the establishment or modification of limited retention regulations would be permitted (e.g., changing from an all-species season to a single-species season, or requiring a certain number of one species to be caught before a certain number of another species can be retained).
3. Changes in the recreational bag limits and recreational fishing days per calendar week would be allowed.
4. Establishment or modification of gear restrictions would be authorized.
5. Modification of boundaries, including landing boundaries, and establishment of closed areas would be permitted.
6. Temporary adjustments for fishery access due to weather, adverse oceanic conditions, or other safety considerations (see Council policy of September 18, 1992 regarding implementation of this action).

The flexibility of these inseason management provisions imposes a responsibility on the Regional Administrator to assure that affected users are adequately informed and have had the opportunity for input into potential inseason management changes.

10.3 PROCEDURES FOR INSEASON ACTIONS

1. Prior to taking any inseason action, the Regional Administrator will consult with the Chairman of the Council and the appropriate State Directors.
2. As the actions are taken by the Secretary, the Regional Administrator will compile, in aggregate form, all data and other information relevant to the action being taken and shall make them available for public review upon request, contact information will be published annually in the Federal Register and announced on the telephone hotline.
3. Inseason management actions taken under both the "fixed" and "flexible" procedures will become effective by announcement in designated information sources (rather than by filing with the Office of the Federal Register [OFR]). Notice of inseason actions will still be filed with the OFR as soon as is practicable.

The following information sources will provide actual notice of inseason management actions to the public: (1) the U.S. Coast Guard "Notice to Mariners" broadcast (announced over Channel 16 VHF-FM

and 2182 KHZ); (2) state and federal telephone hotline numbers specified in the annual regulations and (3) filing with the *Federal Register*, email or other electronic forms of notification. Identification of the sources will be incorporated into the preseason regulations with a requirement that interested persons periodically monitor one or more source. In addition, all the normal channels of informing the public of regulatory changes used by the state agencies will be used.

11 SCHEDULE AND PROCEDURES FOR FMP AMENDMENT AND EMERGENCY REGULATIONS

Modifications not covered within the framework mechanism will require either an FMP amendment, rulemaking, or emergency Secretarial action. Depending on the required environmental analyses, the amendment process generally requires at least a year from the date of the initial development of the draft amendment by the Council. In order for regulations implementing an amendment to be in place at the beginning of the general fishing season (May 16), the Council will need to begin the process by no later than April of the previous season. It is not anticipated that amendments will be processed in an accelerated December-to-May schedule and implemented by emergency regulations.

Emergency regulations may be promulgated without an FMP amendment. Depending upon the level of controversy associated with the action, the Secretary can implement emergency regulations within 20 days to 45 days after receiving a request from the Council. Emergency regulations remain in effect for no more than 180 days after the date of publication in the Federal Register. A 186-day extension by publication in the *Federal Register* is possible if the public has had an opportunity to comment on the emergency regulation and the Council is actively preparing a plan amendment or proposed regulations to address the emergency on a permanent basis.

12 LITERATURE CITED

- Ames, J., and D. E. Phinney. 1977. 1977 Puget Sound summer-fall Chinook methodology: escapement estimates and goals, run-size forecasts, and in-season run size updates. WDF, Technical Report No. 29. 71 p.
- ASETF. 1979. Freshwater habitat, salmon produced and escapements for natural spawning along the Pacific Coast of the U.S. PFMC, Portland, Oregon. 68 p.
- Bellman, M., J. Jannot, and J. Majewski. 2011. Observed and estimated total bycatch of salmon in the 2009 US west coast groundfish fisheries. West Coast Groundfish Observer Program. National Marine Fisheries Service, NWFSC, 2725 Montlake Blvd., Seattle, WA 98112. 32 p.
- Bowhay, C. and P. Pattillo. 2009. Letter to Chuck Tracy, Staff Officer PFMC. September 30, 2009.
- Chinook Technical Team (CTC). 1999. Pacific Salmon Commission Joint Chinook Technical Committee Report TCCHINOOK 99-3: Maximum sustainable yield or biologically based escapement goals for selected Chinook salmon stocks used by the Pacific Salmon Commission's Chinook Technical Committee for escapement assessment. Vancouver, British Columbia, Canada. 108 p.
- Clark, W. G. 1983. FAB 83-39: Report of William G. Clark, Co-Chairman FAB, to the Honorable Walter E. Craig, U.S. District Judge. U.S. v. Washington #9213.
- Cooney, T. D. 1984. A probing approach for determining spawning escapement goals for fall Chinook salmon on the Washington North coast. Pp. 205-213. In: J. M. Walton, and D. B. Houston, eds. Proceedings of the Olympic Wild Fish Conference. Peninsula College, Port Angeles, Washington, 1984. 308 p.
- Hage, P., R. Hatch, and C. Smith. 1994. Memorandum entitled: Interim escapement goal for Lake Washington Chinook. WDFW Memorandum, March 28, 1994.
- Hallock, R.J. 1977. Status of Sacramento River system salmon resource and escapement goals. California Department of Fish and Game. Prepared for PFMC, Portland, OR. 26 p.
- Hubbell, P. M. and LB Boydston. 1985. An assessment of the current carrying capacity of the Klamath River Basin for adult fall Chinook salmon. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California. 17 p.
- Johnstone, E., L. Foster, P. Pattillo. 2011. Letter to Pacific Fishery Management Council Chair Mark Cedergreen RE Amendment 16 Comments. May 31, 2011. 4 pp.
- KRTT. 1986. Recommended spawning escapement policy for Klamath River fall run Chinook. Southwest Region, NMFS, Terminal Island, California. 73 p.
- Lestelle, L. C., G.S. Morishima, and T.D. Cooney. 1984. Determining spawning escapement goals for wild coho salmon on the Washington north coast. Pp. 243-254. In: J.M. Walton, and D.B. Houston, eds. Proceedings of the Olympic Wild Fish Conference. Peninsula College, Port Angeles, Washington, 1984. 308 p.

- McGie, A. M. 1982. Stock-recruitment relationships for Oregon coastal fall Chinook salmon stocks. ODFW, Research and Development Section, draft report. 33 p.
- McIsaac, D. O. 1990. Factors affecting the abundance of 1977-1979 brood yield of fall Chinook salmon (*Oncorhynchus tshawytscha*) in the Lewis River, Washington. Ph.D. dissertation. University of Washington, Seattle, WA.
- Nickelson, T. and P. Lawson. 1996. Population dynamics of Oregon coastal coho salmon: application of a habitat based life cycle model. Pp. 1-33. *In*: Appendix III of the Oregon coastal salmon restoration initiative. ODFW. Corvallis, Oregon.
- NMFS. 2006. Endangered Species Act Section 7 Consultation – Supplemental Biological Opinion. Reinitiation of Section 7 Consultation Regarding the Pacific Fisheries Management Council’s Groundfish Fishery Management Plan. March 11, 2006. 34 p.
- NMFS. 2018. Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Response. Effects on the Pacific Coast Salmon Plan Fisheries on the Sacramento River Winter-run Chinook Salmon Evolutionarily Significant Unit. NMFS West Coast Region. March 30, 2018. WCR-2017-8012.
- PFMC. 1984. Framework amendment for managing the ocean salmon fisheries off the coasts of Washington, Oregon and California commencing in 1985. PFMC, Portland, Oregon. 145 p.
- PFMC. 1988. Amendment issue 1 - Klamath River fall Chinook salmon escapement goal. Pp. 2-13. *In*: Ninth Amendment to the fishery management plan for commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California commencing in 1978. PFMC, Portland, Oregon.
- PFMC. 1993. Final Amendment 11 to the fishery management plan for commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California commencing in 1978. PFMC, Portland, Oregon. 24 p.
- PFMC. 1997a. Amendment 12 to the fishery management plan for commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California commencing in 1978. PFMC, Portland, Oregon. 19 p.
- PFMC. 1997b. The Pacific coast salmon plan. PFMC, Portland, Oregon. 41 p.
- PFMC. 1997c. Salmon methodology review and updates, March 1985 through June 1997. PFMC, Portland, Oregon. 73 p.
- PFMC. 1999. Final amendment 13 to the Pacific Coast salmon plan. PFMC, Portland, Oregon. 75 p.
- PFMC. 2000a. Amendment 14 to the Pacific coast salmon plan (1997). PFMC, Portland Oregon. 133 p.
- PFMC. 2000b. 2000 Review of Amendment 13 to the Pacific Coast Salmon Plan. Portland, Oregon. 42 p.
- PFMC. 2008. Council operating procedure 15 salmon estimation methodology updates and reviews, in: Council Operating Procedures (COP). PFMC, Portland, Oregon.

- PFMC. 2021a. Review of 2020 ocean salmon fisheries-stock assessment and fishery evaluation document for the Pacific Coast Salmon Fishery Management Plan. PFMC, Portland, Oregon. 352 p. Available at: www.pcouncil.org.
- PFMC. 2021b. Preseason report I-stock abundance analysis and environmental assessment part 1 for 2021 ocean salmon fishery regulations. PFMC, Portland, Oregon. 126 p. Available at: www.pcouncil.org.
- PFMC. 2021c. Preseason report II-Proposed alternatives and environmental assessment part 2 for 2021 ocean salmon fishery regulations. PFMC, Portland, Oregon. 67 p. Available at: www.pcouncil.org.
- PFMC. 2021d. Preseason report III- Council adopted management measures and environmental assessment part 3 for 2021 ocean salmon fishery regulations. PFMC, Portland, Oregon. 40 p. Available at: www.pcouncil.org.
- PFMC and NMFS. 2007. Final environmental assessment for Pacific coast salmon plan Amendment 15: an initiative to provide *de minimis* ocean fishing opportunity for Klamath River fall Chinook. PFMC, Portland Oregon. 219 p.
- PFMC and NMFS. 2011. Environmental assessment for Pacific coast salmon plan amendment 16: classifying stocks, revising status determination criteria, establishing annual catch limits and accountability measures, and *de minimis* fishing provisions. PFMC, Portland, Oregon. 525 p.
- Pacific Salmon Treaty (PST). 2020. Treaty Between The Government of Canada and the Government of the United States of America Concerning Pacific Salmon, (Pacific Salmon Treaty), January 28, 1985, at Annex IV, Chapter 5, as revised January 1, 2020. Available at: www.psc.org
- PSSSRG. 1997. Puget Sound Salmon Stock Review Group report 1997. PFMC, Portland, Oregon. 67 p.
- QDNR (Quinalt Department of Natural Resources) and WDFW. 2014. Development of escapement goals for Grays Harbor fall Chinook using stock-recruitment models. WDFW, Olympia, WA. 53 p.
- Reisenbichler, R.R. 1986. Use of spawner-recruit relations to evaluate the effect of degraded environment and increased fishing on the abundance of fall-run Chinook salmon, *Oncorhynchus tshawytscha*, in several California streams. Ph.D. dissertation. University of Washington, Seattle, WA. 175 p.
- Sacramento River Fall Chinook Review Team (SRFCRT). 1994. An assessment of the status of the Sacramento River fall Chinook stock. PFMC, Portland, Oregon. 44 p.
- STT. 1997. Appendix A biological evaluation of 1997 Council ocean salmon fishery impacts on fish species listed under the Endangered Species Act. Pp. A-1 through A-6. *In*: Preseason report III analysis of Council adopted management measures for 1997 ocean salmon fisheries. PFMC, Portland, Oregon.
- Salmon Amendment Committee (SAC). 2011a. Appendix C: Chinook F_{MSY} proxy development. *In*: environmental assessment for Pacific coast salmon plan amendment 16: classifying stocks, revising status determination criteria, establishing annual catch limits and accountability measures, and *de minimis* fishing provisions. PFMC, Portland, Oregon.
- SAC. 2011b. Appendix E: Development of reference points for Washington coastal coho stocks. *In*: environmental assessment for Pacific coast salmon plan amendment 16: classifying stocks, revising status determination criteria, establishing annual catch limits and accountability measures, and *de minimis* fishing provisions. PFMC, Portland, Oregon.

STT. 2005. Klamath River fall Chinook stock recruitment analysis. PFMC, Portland, Oregon. 31 p.

Smith, C. and B. Sele. 1994. Memorandum entitled: Dungeness River Chinook escapement goal. WDFW and Jamestown S'Klallam Tribe Memorandum. July 12, 1994.

Thompson, J. 1977. Estimate of salmon escapement goals and runs for Oregon coastal streams. Memorandum to John Harville. Dec. 2, 1977, with attachments.

WDF. 1979. Salmon spawning escapement objectives for Grays Harbor tributaries. WDF, Attachment to Memorandum from Bill Hopley to all concerned coastal Indian tribes. Oct. 5, 1979. 7 p.

Zillges, G.F. 1977. Methodology for Determining Puget Sound Coho Escapement Goals, Escapement Estimates, 1977 Preseason Run Size Prediction and In-season Run Assessment. Washington. Department of Fisheries Technical Report 28. 65 p.