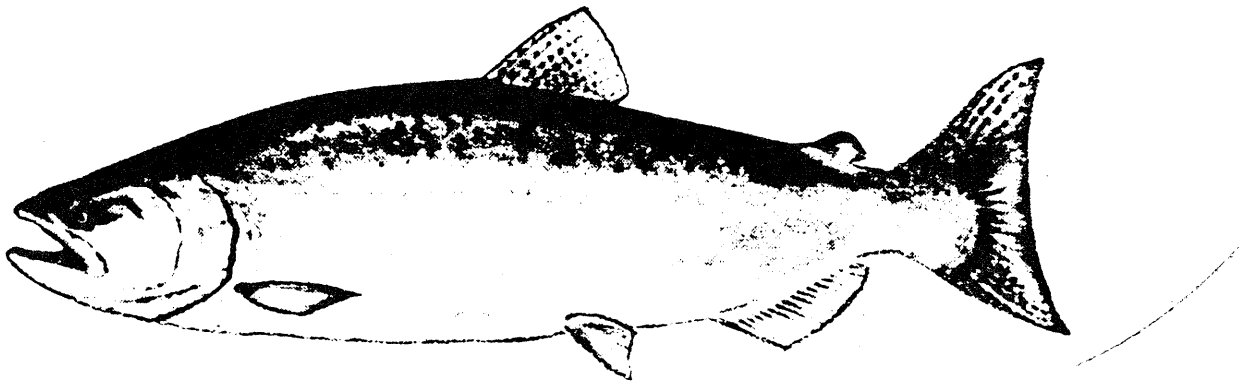


REVIEW OF 1987

OCEAN SALMON FISHERIES



**Pacific Fishery Management Council
Metro Center, Suite 420
2000 SW. First Avenue
Portland, Oregon 97201**

February 1988

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
I. SUMMARY OF 1987 OCEAN SALMON MANAGEMENT.....	I-1
Troll Fishing Regulations.....	I-1
California South of Point Delgada.....	I-1
Point Delgada to Cape Blanco.....	I-1
Cape Blanco to Cape Falcon.....	I-1
North of Cape Falcon.....	I-1
Nontreaty.....	I-1
Treaty Indian.....	I-5
Recreational Fishing Regulations.....	I-5
South of Point Delgada.....	I-5
Point Delgada to Cape Blanco.....	I-5
Cape Blanco to Cape Falcon.....	I-5
North of Cape Falcon.....	I-5
Fishing Effort and Harvest.....	I-8
Coastwide Summary.....	I-8
Quota Attainment.....	I-8
California Troll Fishery.....	I-15
California Recreational Fishery.....	I-15
Oregon Troll Fishery.....	I-15
Oregon Recreational Fishery.....	I-15
Washington Troll Fishery.....	I-16
Nontreaty.....	I-16
Treaty Indian.....	I-16
Washington Recreational Fishery.....	I-16
Pacific Salmon Commission.....	I-17
II. CHINOOK MANAGEMENT ASSESSMENT.....	II-1
South of Point Delgada.....	II-1
Management Goals and Preseason Expectations.....	II-1
Ocean Fisheries.....	II-1
Troll.....	II-1
Recreational.....	II-1
Inside Fisheries and Spawning Escapement.....	II-1
Sacramento River Fall Chinook.....	II-1
Upper Sacramento River Late-Fall, Winter, and Spring Chinook.....	II-5
San Joaquin River Chinook.....	II-5
Goal Assessment.....	II-5
Point Delgada to Cape Blanco.....	II-9
Management Goals and Preseason Expectations.....	II-9
Ocean Fisheries.....	II-10
Troll.....	II-10

	<u>Page</u>
Recreational.....	II-14
Inside Fisheries and Spawning Escapement.....	II-14
Klamath River.....	II-14
Other Northern California Streams.....	II-18
Southern Oregon Chinook.....	II-18
Goal Assessment.....	II-19
Klamath River Chinook.....	II-19
Southern Oregon Chinook.....	II-20
 Cape Blanco to Cape Falcon.....	 II-20
Management Goals and Preseason Expectations.....	II-20
Ocean Fisheries.....	II-21
Troll.....	II-21
Recreational.....	II-21
Inside Fisheries.....	II-21
Spawning Escapement.....	II-23
Goal Assessment.....	II-23
 North of Cape Falcon.....	 II-23
Management Goals and Preseason Expectations.....	II-23
Ocean Fisheries.....	II-24
Nontreaty Troll.....	II-24
Treaty Indian Troll.....	II-25
Recreational.....	II-25
Columbia River Fall Chinook.....	II-27
Inside Fisheries.....	II-27
Escapement.....	II-27
Goal Assessment.....	II-28
Upper Columbia River Spring and Summer Chinook.....	II-28
Inside Fisheries.....	II-28
Escapement.....	II-29
Goal Assessment.....	II-29
Lower Columbia River Spring Chinook.....	II-29
Inside Fisheries and Spawning Escapement.....	II-29
Goal Assessment.....	II-30
Willapa Bay Chinook.....	II-30
Inside Fisheries and Spawning Escapement.....	II-30
Goal Assessment.....	II-30
Grays Harbor.....	II-30
Inside Fisheries and Spawning Escapement.....	II-30
Goal Assessment.....	II-31
Washington North Coastal Chinook.....	II-31
Inside Fisheries and Spawning Escapement.....	II-31
Quinault River.....	II-31
Queets River.....	II-31
Hoh River.....	II-32
Quillayute River.....	II-32
Goal Assessment.....	II-33
Puget Sound.....	II-33
Inside Fisheries and Spawning Escapement.....	II-33
Goal Assessment.....	II-33

	<u>Page</u>
Coastwide Goal Assessment Summary.....	II-34
III. COHO SALMON MANAGEMENT ASSESSMENT.....	III-1
OPI Area Coho Management.....	III-1
Management Goals and Preseason Expectations.....	III-1
Ocean Fisheries.....	III-2
Troll.....	III-2
Recreational.....	III-3
Ocean Catch of Private Hatchery Stock.....	III-5
Inside Fisheries.....	III-5
Spawning Escapement.....	III-7
Public Hatchery Escapements.....	III-7
Private Hatchery Escapements.....	III-7
OCN Escapement.....	III-7
Goal Assessment.....	III-7
Coho and Pink Salmon Management North of Cape Falcon.....	III-7
Management Goals and Preseason Expectations.....	III-7
Ocean Fisheries.....	III-11
Nontreaty Troll.....	III-11
Treaty Indian Troll.....	III-12
Recreational.....	III-12
Columbia River Coho.....	III-13
Inside Fisheries.....	III-13
Ocean Escapement.....	III-13
Goal Assessment.....	III-13
Washington Coastal Coho.....	III-13
Inside Fisheries and Spawning Escapements.....	III-13
Willapa Bay.....	III-13
Grays Harbor.....	III-13
Quinault River.....	III-14
Queets River.....	III-14
Hoh River.....	III-14
Quillayute River.....	III-14
Goal Assessment.....	III-15
Puget Sound Coho.....	III-15
Inside Fisheries.....	III-15
Commercial Fishery.....	III-15
Recreational Fishery.....	III-15
Spawning Escapement.....	III-16
Goal Assessment.....	III-16
Coastwide Summary for Coho.....	III-16
IV. SOCIO-ECONOMIC ASSESSMENT OF THE 1987 OCEAN SALMON FISHERIES....	IV-1
Overview of 1987 Market Conditions.....	IV-1
Imports and Competition from Pen-Reared Atlantic Salmon.....	IV-1
Exports and Strength of the U.S. Dollar Relative to Foreign Currencies.....	IV-1
Competition from Alaskan Salmon.....	IV-4

	<u>Page</u>
Ex-vessel Prices and Values for the 1987 Ocean	
Troll Fishery.....	IV-4
Seasonal Trends.....	IV-4
California.....	IV-4
Oregon.....	IV-4
Washington.....	IV-4
Annual Trends.....	IV-4
California.....	IV-12
Oregon.....	IV-12
Washington.....	IV-12
Trends in Ocean Troll Effort.....	IV-12
Total Effort Employed in the Troll Fishery.....	IV-12
Other Effort Related Information.....	IV-13
Columbia River Fishery.....	IV-13
Ex-vessel Prices.....	IV-13
Ex-vessel Value.....	IV-13
Assessment of 1987 Ocean Recreational Fishery.....	IV-13
California.....	IV-13
Oregon.....	IV-18
Washington.....	IV-18
Assessment of the 1987 Buoy 10 Fishery.....	IV-18
Community Impacts of the 1987 Ocean Troll and Recreational Fisheries on Coastal Communities.....	IV-20
I/O Models.....	IV-20
Sales and Local Income Multipliers.....	IV-21
Fisheries Economic Assessment Model for Communities on the West Coast.....	IV-21
Commercial Ocean Troll Landings and Ocean Recreational Fishing Impacts by Areas on the West Coast.....	IV-26
California.....	IV-26
Oregon.....	IV-26
Washington.....	IV-27
Sectoral Analysis of Impacts.....	IV-29
V. ASSESSMENT OF ABUNDANCE ESTIMATES.....	V-1
California Chinook Estimates.....	V-1
Sacramento River.....	V-1
Klamath River.....	V-1
Oregon Coastal Chinook Estimates.....	V-4

	<u>Page</u>
Columbia River Chinook Estimates.....	V-4
OPI Area Coho Estimates.....	V-6
Postseason Evaluation.....	V-7
OCN Coho.....	V-13
Private Hatchery.....	V-13
Washington Coastal and Puget Sound Coho Estimates.....	V-13
VI. MANAGEMENT CONCERNS.....	VI-1
Increasing Catch Trends in the Strait of Juan de Fuca Fisheries.....	VI-1
Complexity of the 1987 Regulations.....	VI-1
Ratio Fisheries	VI-4
Late Reporting of Landings for Treaty Indian Troll Fisheries..	VI-4

APPENDICES

APPENDIX A Historical Record of Ocean Salmon Fishery Effort and Landings.....	A-1
APPENDIX B Historical Record of Escapements to Inland Fisheries and Spawning Areas.....	B-1
APPENDIX C Historical Record of Ocean Salmon Fishery Regulations and a Chronology of 1987 Management Events.....	C-1
APPENDIX D Historical Economic Data.....	D-1

LIST OF TABLES

	<u>Page</u>
I-1. Summary of actual ocean nontreaty troll salmon fishing regulations for 1987.....	I-2
I-2. Summary of actual treaty Indian troll salmon seasons for 1987.....	I-4
I-3. Summary of actual ocean recreational salmon fishing regulations for 1987.....	I-6
I-4. Coastwide chinook landings in thousands of fish for the ocean troll and sport fisheries, 1971-1987 with five-year averages..	I-9
I-5. Coastwide coho landings in thousands of fish for the ocean troll and sport fisheries, 1971-1987 with three-year averages.....	I-10
I-6. Coastwide pink salmon landings in thousands of fish for the ocean troll and sport fisheries, 1971-1987.....	I-11
I-7. Ocean salmon troll effort and landings for California, Oregon, and Washington for 1981-1987 with 1971-1975 and 1976-1980 averages.....	I-12
I-8. Ocean salmon recreational effort and catch off California, Oregon, and Washington for 1981-1987 with 1971-1975 and 1976-1980 averages.....	I-13
I-9. Coho and chinook quotas for 1987 compared with actual harvest in thousands of fish by management area and fishery...	I-14
I-10. Preliminary catches in thousands of fish compared to PSC harvest ceilings for 1987.....	I-18
II-1. Sacramento River natural and hatchery fall chinook escapements in thousands of fish from 1984-1987 compared with the 1971-1975 averages.....	II-3
II-2. Indices of annual abundance and ocean fishery impacts on California Central Valley chinook, 1970-1987 in thousands of fish.....	II-6
II-3. Summary of 1987 chinook landings and sport effort in the KMZ.....	II-11
II-4. Worksheet from 1987 inseason evaluation of Klamath River fall chinook landings.....	II-13
II-5. Klamath River adult inriver fall chinook run size, spawning escapement, sport catch, and Indian net harvest in numbers and percent of the total inriver run size, 1978-1987.....	II-16

	<u>Page</u>
II-6. Summary of Klamath River inriver quotas and landings in numbers of fall-run adults, 1987 season.....	II-17
II-7 Number of salmon returned to Oregon private hatchery facilities, 1978-1987.....	II-22
II-8. Preliminary summary of 1987 performance for chinook salmon by river system and stock in relation to escapement goals.....	II-35
III-1. Ocean harvest and hooking mortality impacts for coho salmon by all fisheries in the OPI area during the 1987 season with comparable catches for 1986, 1985, and 1984 in thousands of fish.....	III-4
III-2. Estimated weekly effort in angler trips and catches of chinook and coho in the 1987 Buoy 10 sport fishery.....	III-6
III-3. Preliminary 1987 adult salmon escapements in thousands of fish to ODFW salmon hatcheries on the Columbia River and Oregon coastal streams and CDFG hatcheries on the Klamath River compared with recent escapements since 1973 and the 1987 management goal.....	III-8
III-4. Estimated escapement in thousands of Oregon coastal public hatchery and natural adult coho stocks, 1971-1987.....	III-9
III-5. OPI adult coho catch and escapement in thousands of fish, 1970-1987.....	III-10
III-6. Summary of 1987 performance for coho salmon by river system and stock in relation to escapement goals.....	III-17
IV-1. Major U.S. imports of fresh salmon by country, prior and current year through October 1987.....	IV-2
IV-2. Major U.S. exports of fresh salmon, by country and Japan, prior and current year through 1987.....	IV-3
IV-3. Average monthly ex-vessel salmon price, for 1987, California..	IV-5
IV-4. Average monthly ex-vessel salmon price, for 1987, Oregon.....	IV-6
IV-5. Average monthly nontreaty troll salmon prices, for 1987, Neah Bay; Westport; and Ilwaco, Washington.....	IV-7
IV-6. California estimates of salmon ex-vessel value troll landings and average price, 1979-1987.....	IV-8
IV-7. Oregon estimates of salmon ex-vessel value troll landings and average price in 1971-1987.....	IV-9

	<u>Page</u>
IV-8. Washington estimates of salmon ex-vessel value nontreaty troll landings and average price, 1971-1987.....	IV-10
IV-9. Ex-vessel values of inriver harvest of Columbia River salmon, 1987.....	IV-14
IV-10. California ocean recreational salmon catch in thousands of fish and effort in thousands of angler trips by boat type, 1976-1987 with 1971-1975 average.....	IV-15
IV-11. Oregon ocean recreational catch in thousands of fish and effort in thousands of angler trips by boat type, 1979-1987.....	IV-16
IV-12. Washington ocean recreational salmon catch in thousands of fish and effort in thousands of angler trips by boat type, 1979-1987.....	IV-17
IV-13. Washington recreational salmon, bottomfish, and sturgeon angler trips by port and boat type for 1984-1987.....	IV-19
IV-14. California local personal income impacts of commercial and recreational ocean salmon fishery for major areas, 1986, 1987, and average for years, 1976-1986.....	IV-23
IV-15. Oregon local personal income impacts of commercial and recreational ocean salmon fishery for major areas, 1986, 1987, and average for years, 1976-1986.....	IV-24
IV-16. Washington local personal income impacts of nontreaty commercial and recreational ocean salmon fishery for major areas, 1986, 1987, and average for years, 1976-1986.....	IV-25
IV-17. Local personal income impacts of the commercial salmon gillnet fishery by Oregon and Washington Columbia River communities, 1987.....	IV-28
V-1. Assessment of 1987 preseason stock estimates for California chinook.....	V-2
V-2. Postseason evaluation of July 29 action to further limit commercial chinook fishing in the KMZ.....	V-3
V-3. Assessment of 1987 preseason inriver escapement estimates for Columbia River chinook stocks.....	V-5
V-4. Relationship of Columbia River and Oregon actual public hatchery coho jack index to adult coho abundance for the OPI area in thousands of fish, 1970-1987. This data represents the data set used preseason to predict 1987 OPI abundance.....	V-8

	<u>Page</u>
V-5. Adult escapement of natural spawning stocks of Oregon coastal coho in thousands of fish.....	V-10
V-6. Comparison of preseason projection and actual ocean contribution and return of Oregon private hatchery adult coho in thousands of fish 1981-1987.....	V-11
V-7. OPI area abundance and ocean and Buoy 10 coho catch and impact estimates for 1987. All postseason data are preliminary.....	V-12
V-8. Skagit River coho predicted and observed run sizes, 1980-1986.....	V-14
V-9. Puget Sound coho predicted and observed total run sizes, 1980-1986.....	V-15
V-10. Preseason expected and preliminary postseason estimates of escapement for critical coho stocks originating north of Cape Falcon in 1987 in thousands of fish.....	V-16
VI-1. Salmon catches in numbers of fish from the Cape Flattery and Strait of Juan de Fuca areas, by gear and species, 1979-1987.	VI-2

LIST OF FIGURES

	<u>Page</u>
II-1. Ocean chinook salmon landings south of Point Delgada by fishery, 1952-1987.....	II-2
II-2. Sacramento River adult fall-run chinook salmon spawning escapements, 1970-1987.....	II-4
II-3. Central Valley chinook salmon annual abundance index, 1970-1987.....	II-7
II-4. Central Valley chinook salmon harvest rate index, 1970-1987...	II-8
II-5. Ocean chinook harvest from the KMZ, 1952-1987.....	II-12
II-6. Klamath River adult fall-run chinook salmon inriver and spawning escapements, 1978-1987.....	II-15
IV-1. Ex-vessel value of troll landings.....	IV-11
V-1. Relationship of the OPI area coho stock abundance to the Columbia River and Oregon-California coastal coho jack index for the base years 1970-1982 plus 1984-1986.....	V-9

LIST OF ACRONYMS AND ABBREVIATIONS

BPH	Bonneville Pool Hatchery (fall chinook returning to hatcheries located on the Bonneville Pool)
CDFG	California Department of Fish and Game
Council	Pacific Fishery Management Council
CVI	Central Valley Index
CWT	coded-wire tag
EEZ	exclusive economic zone
FMP	fishery management plan
GSI	Genetic Stock Identification
I/O	input/output (economic model)
KFMC	Klamath Fishery Management Council
KMZ	Klamath River management zone (ocean zone between Cape Blanco and Point Delgada where management emphasis is on Klamath River fall chinook)
LRH	Lower River Hatchery (fall chinook returning to hatcheries below Bonneville Dam)
LRW	Lower River Wild (fall chinook spawning naturally below Bonneville Dam)
NA	not available
NBS	National Bureau of Standards
NMFS	National Marine Fisheries Service
ODFW	Oregon Department of Fish and Wildlife
OCN	Oregon coastal natural (coho)
OPI	Oregon production index (coho salmon stock index south of Leadbetter Point)
OY	optimum yield
PSC	Pacific Salmon Commission
SCH	Spring Creek Hatchery (fall chinook returning to Spring Creek Hatchery)
SPDT	Salmon Plan Development Team
STEP	Salmon Trout Enhancement Program
TRH	Trinity River Hatchery
URB	Upper River Brights (fall chinook normally migrating past McNary Dam)
WDF	Washington Department of Fisheries
USFWS	U.S. Fish and Wildlife Service

INTRODUCTION

This postseason review of the 1987 ocean salmon fisheries off the coasts of Washington, Oregon, and California has been prepared in accordance with Section 3.10 of the Council's salmon framework amendment which became effective in 1985. The 1987 review provides a summary of important biological and socio-economic data from which the Council can assess the impacts of its past management actions, determine how well management objectives are being met, and improve regulations for 1988. The Council will formally review this report at its March meeting in Seattle, Washington prior to the development of management recommendations for the 1988 fishing season. To further assist the Council in its development of management recommendations, the SPDT will produce three preseason reports for 1988. These reports will provide estimates of stock abundance and analyses of the impacts of the Council's proposed and adopted management recommendations.

Chapter I of this review describes the ocean salmon fishery regulations implemented in 1987, provides a summary of the ocean troll and recreational salmon fishing effort and harvests, and discusses pertinent actions of the PSC. Chapters II and III provide a stock-by-stock assessment of the impacts of the 1987 management measures on chinook and coho salmon stocks with regard to management objectives and preseason expectations, ocean and inland harvests, spawning escapements, and management goal assessment. Socio-economic impacts of the regulations are discussed in Chapter IV. Chapter V contains an assessment of the abundance estimation procedures used by the SPDT and Chapter VI discusses special management problems and concerns which were important to salmon management in 1987 and may need further resolution in 1988. Four appendices (A through D) provide historical data on ocean landings, inland landings and escapements, regulations, and fishery related socio-economics.

