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DATE: July 20, 1982

TO: Interested Persons

FROM: Joseph C. Greenley, Executive Director



Attached is the "Proposed Plan for Managing the 1982 Salmon Fisheries off the Coasts of California, Oregon, and Washington" (Amendment). The portion of the Amendment which governs the recreational fishery coastwide and the troll fishery north of Cape Blanco was approved and implemented by the Secretary of Commerce on May 14, 1982. The remainder of the Amendment has been disapproved.

On June 1, a Secretarial Amendment was implemented for the troll fishery south of Cape Blanco including California.

Copies of the Secretary's regulations are available from the National Marine Fisheries Service, 7600 Sand Point Way N. E., BIN C15700, Seattle, WA 98115.

JCG/ld

PROPOSED PLAN FOR MANAGING THE 1982 SALMON FISHERIES OFF THE
COASTS OF CALIFORNIA, OREGON, AND WASHINGTON

An Amendment to the "Fishery Management Plan for
Commercial and Recreational Salmon Fisheries off the
Coasts of Washington, Oregon, and California Commencing in 1978."

Pacific Fishery Management Council
526 S. W. Mill Street
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ACKNOWLEDGMENTS

This plan was prepared by a team of scientists with special expertise in the salmon resources and with the advice of a panel representing the various interests in the salmon fisheries.

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AMENDMENT TO THE FISHERY MANAGEMENT PLAN FOR
COMMERCIAL AND RECREATIONAL SALMON FISHERIES OFF THE COASTS
OF WASHINGTON, OREGON AND CALIFORNIA

1. Section 9.4.4 and page ii through V of the summary of the 1978 FMP (as previously amended) is amended as follows:

The 1981 ocean salmon regulations are superseded to provide seasons and bag limits for commercial and recreational fisheries in 1982 and to provide for inseason modifications to these as set forth below:

COMMERCIAL TROLL FISHERY MANAGEMENT MEASURES
(except treaty Indian)

Season	Species	Size Limit	Quota
<u>North of Leadbetter Point</u>			
May 1-31	all species except coho	28" chinook	204,000 coho
July 15-coho quota	all species	16" coho	
<u>Cape Falcon to Leadbetter Point</u>			
May 1-31	all species except coho	28" chinook	89,000 coho
July 1-coho quota	all species	16" coho	
<u>Cape Blanco to Cape Falcon</u>			
May 1-May 31	all species except coho	26" chinook	488,000 ^{a/}
June 1-June 15	all species except coho	26" chinook (special gear) ^{e/}	
July 1-coho quota ^{b/e/}	all species	16" coho	
Sept. 6-Oct. 31	all species except coho	26" chinook	
<u>OR/CA Border to Cape Blanco</u>			
May 1-May 31	all species except coho	26" chinook	140,000 ^{d/}
June 1-June 15	all species except coho	26" chinook (special gear) ^{e/}	
July 1-coho quota ^{c/e/}	all species	16" coho	
Sept. 6-Oct. 31	all species except coho	26" chinook	
<u>Point Arena to OR/CA Border</u>			
May 1-May 24	all species except coho	26" chinook	
May 25-June 15 ^{d/}	all species	22" coho	
July 1-August 22	all species		
Sept. 6-Sept. 30	all species		

3 miles each side - 6 miles to sea, closure off Klamath mouth, July 1-15

South of Point Arena

April 22-May 24	all species except coho	26" chinook	
May 25-June 15	all species	22" coho	
July 1-Sept. 30	all species		

- a/ Coho quota for total area south of Cape Falcon including California.
b/ Chinook-only fishing to September 5, with special gear, after reaching coho quota.
c/ Chinook-only fishery to August 22, with special gear, after reaching coho quota.
d/ Chinook quota for area between Point Arena, California and Cape Blanco, Oregon until June 15. If quota is reached before June 15, season will be closed to all species.
e/ Special gear: barbless hooks or whole natural bait or plugs at least 5 inches in length.

The 1981 regulation requiring troll vessels of 26 or more feet to have California hold inspection documentation on board between May 15 and May 24 when operating south of the Oregon/California border is deleted for 1982.

Other than as specified in the table above, and for 1982 quotas, regulations for the non-treaty ocean commercial troll fishery are the same as 1981. It should be noted that with the limited exception of adjustments to the OPI on the basis of private hatchery fish, and coho hooking mortality in the late troll season for species other than coho, there will be no inseason adjustments to quotas in 1982. When the quotas are reached, the relevant fishery will close.

RECREATIONAL FISHERY MANAGEMENT MEASURES

Season	Species	Size Limit	Bag Limit	Quota
<u>North of Leadbetter Point</u>				
May 29-June 11	all species except coho	24" chinook	2 fish	115,000 coho
June 12-coho quota	all species	16" coho	2 fish	
<u>Cape Falcon to Leadbetter Point</u>				
June 12-coho quota	all species	16" coho 24" chinook	2 fish	100,000 coho
<u>Cape Blanco to Cape Falcon</u>				
June 12-coho quota	all species	no size	1st 2 fish	114,000 ^{a/}
<u>OR/CA Border to Cape Blanco</u>				
May 29-coho quota	all species	no size	1st 2 fish	
Coho quota- Oct. 31	all species except coho	no size	1st 2 fish	
<u>Point Arena to OR/CA Border</u>				
Feb. 13-Nov. 14	all species	22" chinook ^{b/} 22" coho ^{b/}	2 fish	
<u>South of Point Arena</u>				
Feb. 13-Nov. 14	all species	22" chinook ^{b/} 22" coho ^{b/}	2 fish	

a/ Coho quota for total area south of Cape Falcon including California.

b/ There is a 22-inch minimum size limit on chinook and coho in California, except that one chinook or coho may be less than 22" but not less than 20".

Figures 1 and 2 compare the 1982 seasons, bag limits, and size restrictions with those in effect in 1981. Figure 3 shows the coastal landmarks that depict the Council's ocean fishery management area off California, Oregon, and Washington.

Figure 1.

TROLL

DATES	1981					1982						
	CA	OR ^{g/}		WA ^{g/}		CA	OR		WA			
	g/ All California	OR/CA Border to Cape Sebastian	Cape Sebastian to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.	So. of Pt. Arena	Pt. Arena to OR/CA Border	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.
April 15 -30												
May 1-15												
May 16-31							a/					
June 1-15 ^{e/}						a/						
June 16-30 ^{e/}												
July 1-15						b/						
July 16-31												
August 1-15				f/			c/	d/				
August 16-31												
September 1-15												
September 16-30												
October 1-15												
October 16-31												
November 1-15												

- All salmon
- All salmon except coho
- Closed
- All salmon except coho, with gear restrictions
- Coho only (out to 12 miles only, maximum 10 boats, coho gear only).

- a/ Chinook quota of 140,000 up to June 16.
- b/ Closure 3 miles each side and 6 miles seaward of Klamath River mouth from July 1-July 15.
- c/ Chinook-only fishing to August 22, with special gear, after reaching coho quota.
- d/ Chinook-only fishing to September 5 with special gear, after reaching coho quota.
- e/ California State waters remained open for all species.
- f/ Closed August 22; State waters closed August 25.
- g/ Troll harvest guidelines:
 California south of Point Arena: 265,000 chinook
 California north of Point Arena: 300,000 chinook
 Oregon and California south of Cape Falcon: 548,000 coho
 Oregon and Washington north of Cape Falcon: 372,000 coho

Figure 2. RECREATION

DATES		1981 (Actual)					1982					
		CA	OR		WA		CA	OR		WA		
		All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Queets	No. of Queets	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.
February 13- May 15			■	■	■	■		■	■	■	■	■
May 16-31					■	■		■	■	■	■	■
June 1-15								■	■	■	■	■
June 16-30												
July 1-15								a/				
July 16-31								Coho Quota Closure				
August 1-15								Coho Quota Closure				
August 16-31					■	■		Coho Quota Closure				
September 1-15					■	■		Coho Quota Closure				
September 16-30			■	■	■	■		Coho Quota Closure				
October 1-15			■	■	■	■		Coho Quota Closure				
October 16-31			■	■	■	■		Coho Quota Closure				
November 1-15			■	■	■	■		Coho Quota Closure				
BAG LIMIT		2	2b/		2	2c/	2	2		2		
SIZE LIMIT	Coho	d/	16"	16"	16"		d/	None	16"	16"		
	Chinook	d/	22"	24"	24"		d/	None	24"	24"		

a/ All salmon except coho after coho fishery reaches quota.

b/ Increase in bag limit to 3 fish after August 14, south of Cape Falcon.

c/ North of Queets 1 additional salmon (other than chinook or coho) was permitted in the bag limit.

d/ A 22-inch minimum size limit on chinook and coho in California, except that one may be less than 22 inches but not less than 20 inches.

All salmon
 All salmon except coho
 Closed



Figure 3. Geographic reference points for management boundaries.

COHO QUOTAS

Because of the shortness of fishing seasons, an adequate data base on which to base inseason management decisions is not likely to be available in 1982. As a result, many of the 1982 seasons will be based on fixed quotas except for the OPI where inseason modifications to increase or decrease the quota may be made on the basis of the contribution of private hatchery fish to the fishery and to account for coho hooking mortality in the troll fishery for species other than coho which occurs after the coho quota is reached.

A. U. S./Canada Border to Cape Falcon

The total allowable ocean coho harvest for 1982 by other than treaty fishermen north of Cape Falcon, Oregon is 508,000 coho. The treaty Indian ocean harvest of coho in the same area is estimated to be an additional 30,000 fish in 1982. Of the 508,000 coho, 189,000 have been allocated to the area from Cape Falcon to Leadbetter Point, of which 89,000 (47%) are intended for the commercial fishery and 100,000 (53%) for the recreational fishery. The remaining 319,000 coho have been allocated to the area from Leadbetter Point to the U.S./Canada border. Of this amount, 204,000 (64%) are allocated to the commercial fishery and 115,000 (36%) to the recreational fishery. See Figure 1 of Appendix C to this Amendment. Except as noted in Section C below, no adjustments to these quotas will be made during the season; when they are reached, the fishery involved will close.

B. South of Cape Falcon

The total allowable ocean harvest of coho south of Cape Falcon for 1982 is 602,000 fish of which 488,000 (81%) are allocated to the commercial fishery and 114,000 (19%) to the recreational fishery. Except as noted in Section C below, no adjustments to these quotas will be made during the season; when they are reached, the fishery involved will close.

C. Inseason Adjustments to Coho Quotas

1. Contribution of Aquaculture Fish to the Oregon Production Index (OPI)

When 75% of the coho quota for any fishery south of Leadbetter Point is reached, the contribution of private hatchery fish to the OPI will be reviewed. Original estimates of this contribution were:

Leadbetter Point to Cape Falcon

Troll estimate - 10,000
Recreational estimate - 11,000

South of Cape Falcon

Troll estimate - 139,000
Recreational estimate - 33,000

If the review indicates that private hatchery contribution to a fishery in any management subarea departs significantly from the original estimates, quotas for the fisheries in that area south of Leadbetter Point will be decreased or increased accordingly.

2. Coho Hooking Mortality During Chinook-Only Fishery South of Cape Falcon

A chinook-only fishery will be allowed in the area south of Cape Falcon from the time that the coho quota is met through September 5, with gear restrictions (5" plugs and whole bait). Since the troll quota could be met as early as August 2, there could be an extended period of chinook fishing with associated coho losses. Depending upon when the troll coho quota is met, these losses are estimated to be as much as 18,100 coho. As soon as practicable before the troll coho quota is reached, an estimate will be made of the coho that will be taken in the chinook-only troll fishery and the troll coho quota will be reduced accordingly.

CHINOOK QUOTA

To provide adequate protection for Klamath River and Sacramento River chinook stocks, the Council also adopted a quota for the troll fishery north of Point Arena, California to Cape Blanco, Oregon. A quota of 140,000 chinook for the troll fishery in this area has been chosen to apply to the May 1-June 15 period. No adjustments will be made to this quota during the season; if it is reached before June 15, all troll fishing in the area will cease.

TREATY INDIAN FISHING

Quotas do not apply to those treaty Indians exercising their right to take fish at their adjudicated usual and accustomed fishing grounds in the ocean. Seasons and size limits for the treaty Indian ocean fishery are:

Makah Area

All salmon	May 1-October 31
Chinook minimum size limit:	24 inches
Coho minimum size limit:	16 inches

Quileute, Hoh, Quinault Tribal Areas

All salmon	May 1-September 7
Chinook minimum size limit:	26 inches
Coho minimum size limit:	16 inches

For the Quileute, Hoh, and Quinault areas, during the time all non-Indian ocean fisheries off Washington north of Leadbetter Point are closed, there shall be a tribal fishing closed area within a six-mile radius around the mouth of the Queets and Hoh Rivers. Any fishing within these closed areas shall be considered a violation of the Commerce Secretary's regulations and of tribal law. The purpose of these closures is conservation of the Hoh and Queets chinook and coho runs and protection of allocations of the treaty share of those runs to tribes fishing on those rivers. All fishing poles or lines used from vessels may be considered commercial troll gear.

Except as noted above, regulations for the 1982 treaty Indian ocean fishery are the same as for non-Indians fishing in the same Council subarea.

2. The last sentence in paragraph 1 of Section 1.0 of the FMP (as amended) is amended to read as follows: "The Secretary of Commerce, upon approval of this fishery management plan, will issue regulations implementing the Plan in the Fishery Conservation Zone for 1982, which regulations shall remain in effect unless and until superseded or otherwise modified."
3. Section 9.5 of the 1978 FMP is amended by substituting the existing first paragraph with the following:

"The optimum yield of chinook, coho, pink, chum, and sockeye salmon is that amount of fish (in numbers or weight) caught by United States fishermen in the FCZ adjacent to the States of Washington, Oregon, and California, and in the waters (including internal waters) of those States, which will, to the greatest extent practicable, fulfill the following:

- (1) the annual spawning escapement goals for natural and hatchery stocks, as recommended by the various States and adopted by the Council;
- (2) the obligations to provide for treaty Indian harvest opportunity, as mandated by applicable decisions of the Federal courts;
- (3) the requirements of the Indian subsistence fishery for chinook on the Klamath River;
- (4) the allocation goals between or among ocean fisheries as adopted by the Council;
- (5) the allocation goals between non-treaty ocean and non-treaty "inside" fisheries, as recommended by the various States;
- (6) other socio-economic goals of the FMP and its amendments.

For the 1982 season only, it is estimated that OY will fall somewhere in the range of 5,000,000 to 7,000,000 fish (including coho, chinook, pink, sockeye, and chum)."

4. Section 10.5 of the 1978 FMP is amended by renumbering the second paragraph therein as 10.5.1 and adding a new section 10.5.2 after paragraph 4 of Section 10.5.1 to read as follows:

"10.5.2 PROGRESS OF STATE PROGRAMS TO LIMIT ENTRY TO THE FISHERIES

In August 1978, the Council urged members of the fishing industry and fishery management agencies to work through their state legislatures to limit entry into the ocean salmon fisheries. For informational purposes, the following summary of the programs resulting from their efforts is provided:

The three coastal states independently have acted to curb growth of participation in the commercial salmon fisheries by issuing licenses only to previous participants or to replacements for those leaving the fisheries. The states of Washington and Oregon control entry by vessel licenses, and California, by personal licenses.

Washington enacted its moratorium in 1974 and licensed all commercial fishing vessels that held a valid license and landed salmon in the state any time between January 1, 1970 and May 6, 1974. Vessels under construction for salmon fishing at the time this law was enacted were exempted from the required previous participation and were issued licenses. Commercial vessels were licensed by gear type (e.g., troller, gillnet, or purse seine). These licenses were allowed to be transferred from a vessel to a replacement vessel. To qualify for a license in subsequent years, a licensed commercial salmon vessel must renew its license and land at least one food fish for sale each year.

Vessels without a Washington salmon license can fish for salmon beyond three miles from that state's coast and land their catch in another state or, by obtaining a \$100 single delivery permit, in Washington ports.

Washington is the only state of the three which has limited its charterboat fleet. In 1977, the legislature enacted a moratorium on issuance of additional numbers of charter vessel licenses for salmon fishing. This moratorium was made permanent in 1981. Licenses were issued to vessels that were licensed as charter vessels in Washington in any year between January 1, 1974 and January 1, 1977 and used to fish for salmon. A 1979 amendment established a ceiling for the total passenger carrying capacity of the charter fleet and apportioned that capacity among the licensed vessels based on length of the vessel. This ceiling was maintained by means of rod-holder permits which may be transferred freely among licensed vessels.

Washington state has a buy-back program for troll and charterboats licensed in the salmon fishery. This program received \$2.5 million in October of 1981 from the Federal Government. Through this program, the charter fleet has been reduced from 510 in 1980 to 441 in 1981. Washington state has recently requested an additional \$2.5 million from the 1982 federal budget for the buy-back program.

In 1979, Oregon enacted a moratorium on new commercial salmon vessel permits. Initially, permits were issued only to vessels that had been licensed for commercial fishing in Oregon and had landed at least one salmon for sale in any season between 1974 and 1978 or were contracted for construction or purchase during that period and intended for

use in the commercial salmon fishery. To maintain eligibility for a permit in subsequent years, a vessel must obtain a permit each year and land at least one salmon for sale. Permits which previously could only be transferred by the vessel owner to a replacement vessel or sold with the vessel to a new owner are as of November 1981 freely transferable. Individuals whose vessels do not have an Oregon salmon permit may not land salmon for sale in that state, except in an emergency. This moratorium has been extended through 1983.

Like Washington, Oregon also has a buy-back program. This buy-back plan is limited to gillnetters on the Columbia River. The funding for the program comes under contract from Washington and is part of the \$2.5 million which that state was granted. Due to a delay stemming from contractual negotiations with Washington, Oregon has not yet spent any of its allotted \$250,000. Should Washington be granted additional funds from the 1982 budget, Oregon would receive a share of that as well.

The salmon license moratorium enacted by the California state legislature in 1979 differs from those in the two other states in that non-transferable personal licenses were issued to individuals who qualified by holding a commercial fishing license and landing at least one salmon for sale in California in any year from 1974 through 1979 or who could prove substantial investment in a vessel under construction for use in the salmon fishery. This license moratorium which was due to expire in 1981 has been extended through 1984. Individuals who do not hold this salmon fishing license but are duly licensed in another state, which allows California fishermen to fish and land salmon commercially, may purchase a special permit to fish in California. Currently, California is looking into a limited entry plan for its salmon fishery. No buy-back program is in effect in that state."

5. Section 10.10 of the 1978 FMP is amended by substituting the existing text of that section with the following:

"10.10 Experimental Fisheries. The Northwest Regional Director of the National Marine Fisheries Service may, upon recommendation of the Pacific Fishery Management Council, allow in the Council's Management Area such experimental fisheries for research purposes as may be proposed by the Pacific Council, the Federal Government, State Governments, or Treaty Tribes having usual and accustomed fishing grounds in the Pacific Council Management Area."

6. Section 13.5 and 13.6 of the FMP (as amended) are replaced with the following:

"13.5 Capacity and Extent of U. S. Harvest and Processing. At the highest conceivable level of present or future abundance, the salmon stocks can be harvested by U.S. fisheries. The domestic harvesting and processing capacity is sufficient to handle the entire anticipated allowable domestic salmon harvest in 1982. There is no recent record of processors refusing fish from fishermen due to inadequate processing capacity."

"13.6 Allowable Level of Foreign Fishing. In view of the adequacy of the domestic fishing industry to harvest the highest conceivable level of abundance, the total allowable level of foreign fishing is zero. The United States historically has allowed Canadian fishing in U.S. waters under a reciprocal agreement until 1978. Negotiations between the two governments are continuing to seek a resolution of all salmon issues. These negotiations are aimed at stabilizing and reducing, where possible, the interception by fishermen of one country of salmon originating from the other country. No U.S./Canada reciprocal salmon fishing is presently contemplated for 1982."

7. Appendices are added as follows:

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INTRODUCTION

The Fishery Management Plan Amendment for 1982 continues the basic plan approved by the Council in March 1978 entitled "Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California, Commencing in 1978" (FMP) as amended. This report includes a review of the harvest and management of the 1981 fisheries, 1982 projected status of the resources, a presentation of the goals for 1982, and management options for achieving these goals.

Time constraints to allow for adequate review and input into the proposed plan are fixed by administrative and legal processes. These requirements and the absence of complete fall spawning data prevent complete assessment of the 1981 fishery at this time. The spawning stock assessment for 1981, although based on incomplete data, is the best available. As additional information becomes available, supplemental reports will be provided to the Council. If analysis of additional data collected at a later date indicates that other regulatory changes are needed to preserve the resource and to meet management objectives for 1982, changes may be proposed prior to or during the 1982 season.

A performance evaluation of the salmon plan and amendments from 1977 through 1980 became available in March 1982. This evaluation reviews past fishing regulations, management goals, natural escapements and hatchery returns and attempts to evaluate the effectiveness of each year's regulations. The performance evaluation supplements the information in this 1982 Salmon Plan Amendment.

I. DESCRIPTION OF 1982 SALMON FISHERY MANAGEMENT PROBLEMS AND OBJECTIVES

PROBLEMS

The problems facing the Pacific salmon fisheries in 1982 are similar in many ways to problems that have been present in the fisheries for the past three or four years, except that the California fisheries will no longer be directly impacted by the drought in that area.

This Amendment addresses two fundamental and interrelated problems: conservation of the salmon resource and allocation of the resource among fishery participants. Habitat degradation, overharvest, and other problems have greatly reduced salmon stocks over the past 50 years so that many stocks now require strict conservation. Resolution of the conservation problem determines the size of the resource available for use by all participants. Allocation decisions divide up the resource (or the opportunity to harvest the resource) among groups of fishery participants. However, since resolution of conservation and allocation problems takes place simultaneously, the two problem areas affect each other. Management strategies designed to protect salmon stocks and promote conservation of the resource have allocation implications. Allocation strategies may be constrained by or affect conservation decisions.

Numerous specific problems arise within the broad problem areas of resource conservation and allocation. These can be divided into four categories: (A) Biological; (B) Legal; (C) Economic and Social; (D) Institutional. In addition, habitat and environmental problems still plague the salmon resource. These are discussed in greater detail in Appendix A of the 1981 Salmon Plan Amendment.

(A) Biological

The spatial distribution of many salmon stocks overlap. The term "stock" in this case may be based on differences in the following parameters:

- (1) Species (coho, chinook or pink)
- (2) Spawning habitat (natural or hatchery-produced)
- (3) Origin (smaller coastal rivers, Puget Sound rivers, Columbia River system, Klamath River system or Sacramento River system)
- (4) Timing of entry into the river system (spring, summer or fall runs)
- (5) Distance upriver of spawning site (e.g., upper and lower Columbia River fall chinook)

The ocean distribution and abundance of these stocks may vary from year to year. Hatchery runs generally can support higher harvest rates than natural runs. Weaker and stronger runs occur simultaneously in offshore areas.

In California, there are habitat and environmental problems in both the Klamath and upper Sacramento River systems. However, the long-term escapement goals listed in this Plan reflect the current carrying capacity of these river systems. In 1981, Klamath River chinook

escapements remained well below 1981 goals as well as long-term goals. The lower Sacramento River escapements improved in 1981, with two tributaries, the Feather and American, exceeding their escapement goals. The upper Sacramento River escapement showed improvement but the 1981 escapement goal was not achieved. The only fisheries on the Sacramento River salmon are the ocean fisheries and a minor in-river sport fishery.

Depressed Klamath River chinook stocks are present in southern Oregon coastal waters at the same time as depressed Oregon coastal coho stocks. Oregon coastal chinook stocks also present at this time are in relatively good condition. Management strategies must therefore attempt to provide additional protection to these depressed stocks while allowing harvest of healthier stocks.

Upper Columbia River spring and summer chinook stocks still are in a depressed state. They contribute a relatively small proportion of the current chinook catches off Washington and Oregon. Thus, little additional protection can reasonably be given to these stocks by additional curtailment of ocean harvest in those areas.

The upper Columbia fall chinook run entering the river continues a downward trend in abundance, reaching an all-time low in 1981 (158,000 adults). This decline has occurred in spite of increased restrictions on the ocean fisheries in recent years off northern Oregon and Washington. The total mixed stock chinook catch off Washington increased from 181,800 fish in 1980 to 197,900 fish in 1981 but was well below the annual average Washington catch of 482,900 from 1971-75.

Another mixed stock harvest problem occurs off the Washington coast. Puget Sound coho stocks are generally more abundant and productive than Washington coastal coho stocks, although both occur simultaneously off the Washington coast. In 1981, management restrictions on Washington ocean fishing effort were instituted to protect coastal and certain weaker Puget Sound coho stocks. As a result, large numbers of Puget Sound coho that would otherwise have been harvested in the ocean reached Puget Sound where harvest by both treaty Indian and non-Indian net fisheries occurred. The problem of the mixture of weak and strong coho stocks in the Washington ocean fishery will continue in 1982.

(B) Legal

Judicial decisions afford specified Northwest treaty Indian tribes the opportunity to take up to 50% of the harvestable portion of certain stocks, which, absent prior interception by Washington fishermen, would pass through the treaty tribes' usual and accustomed fishing grounds. Currently, the rights have been expressly held to apply to Washington salmon stocks originating from Grays Harbor northward plus other salmon stocks passing through the usual and accustomed fishing areas. For some tribes, the usual and accustomed fishing places are in the ocean, though for most tribes they are in internal waters of the state.

Two decisions which may have a significant impact on 1982 ocean fisheries management were issued by the U. S. District Court in 1981. As a result of litigation brought by three Washington coastal treaty tribes, a long-

term, comprehensive management plan for Washington coastal stocks is being developed by representatives of the Department of Commerce, the State of Washington, and the Hoh, Quileute and Quinault tribes. In a second, related case initiated by the Columbia River treaty tribes, the court directed tribal, federal and state representatives to examine alternative measures for the regulation of ocean fisheries to increase returns of upriver Columbia River fall chinook stocks.

Other factors which may influence development of the 1982 Plan are the potential for rescission of the Columbia River Management Plan^{1/} and the expiration of the Puget Sound Management Plan, in February and May of 1982, respectively.

California state courts have upheld Indian rights to fish on the Klamath River for subsistence purposes. An environmental impact statement analyzing the impacts of a commercial fishery on the Klamath River is currently being prepared by the Bureau of Indian Affairs.

The Council recognizes its legal responsibility to provide for treaty Indian fisheries. This presents a complex management problem, especially given the multitude of "usual and accustomed fishing areas" involved, the mixed distribution of stocks in the ocean and the fact that Indian river fishermen are usually among the last in the progression of harvesters to have access to the fish.

In addition to the legal responsibilities of the Indian treaties, the Council is legally required under the MFCMA to manage the salmon resource according to optimum yield. A discussion of the biological problems associated with this legal mandate are contained in Chapters I, II, III and IV of this Plan; some social and economic problems are discussed in Chapters I, II and V.

During the 1981 salmon season, the California State Superior Court again voided a State statute which authorized the Director of the California Department of Fish and Game to suspend any state statute or regulation in order to conform California law to the Salmon FMP approved by the Secretary of Commerce. As a result, California territorial waters were open for troll salmon fishing for the entire month of June while the FCZ off California was closed. Troll landings during June were 52,100 chinook of which 35,500 (68%) were landed in the North Coast area.

Both the State appellate and Supreme courts recently overruled the lower court and upheld the statute that gives the Director of the Department of Fish and Game the authority to conform California State law to Secretarially approved FMPs.

1/ "A Plan for Managing Fisheries on Stocks Originating from the Columbia River and Its Tributaries above Bonneville Dam," February 1977.

(C) Economic and Social

The unique economic and community characteristics associated with the Pacific salmon fisheries create another set of management problems. Market prices, consumer preference and the array of interested fishery participants vary by stock, location and time period.

The market system for salmon is complex. It includes daily and seasonal price fluctuations and competition among products of different types, species and origins. In general, troll- and net-caught salmon have specific market demands. For example, large west coast troll-caught chinook are in high demand in the Los Angeles smoked fish market, while other fish may be considered preferable for the restaurant or supermarket trades. In some cases, troll- and net-caught salmon markets may be interchangeable; often they are not.

Numerous fishery participants have substantial investments in salmon fishing and processing. Many of them are highly dependent on the fishery and are greatly impacted by regulatory decisions. The mobility of many of the commercial salmon vessels and the multi-species nature of many of the processing facilities make it difficult to estimate these impacts. For instance, while some troll vessels are completely dependent on salmon, other troll vessels may operate from California to Alaska and may fish albacore, crab, sablefish, halibut, and other species in addition to salmon. Each of these fisheries is important to the economic viability of these small businesses. This mobility introduces an element of flexibility into the salmon fisheries which may lessen the economic impact of management decisions but also makes fisherman behavior and economic impacts more difficult to predict. Fishery managers can attempt to coordinate salmon regulatory measures with fishing opportunities in other fisheries. At the same time, economic problems in the salmon fisheries may be compounded by poor economic returns from other fisheries.

In contrast to the highly mobile commercial troll and recreational fisheries which occur in the ocean, treaty Indian fisheries are primarily place-oriented, targeting on the individual runs of fish that return to or pass through the usual and accustomed fishing places of each treaty tribe. Fishing is the economic and cultural cornerstone of many Indian communities and treaty fishermen depend upon the various runs of fish that return to their tribal fishing grounds at different times of year for commercial, subsistence and religious use.

Many commercial and recreational salmon fishermen also have strong social, as well as economic, ties to the fisheries. A strong sense of community identity associated with the salmon fisheries frequently influences the behavior of salmon fishermen and contributes a significant, though unquantified, component to the value of the fisheries.

As is the case with many treaty Indian communities, salmon is the social and economic cornerstone of many coastal communities in California, Oregon, and Washington. Processing, marine trade, and support industries (such as grocery stores, gas stations, motels, and restaurants) depend to a great extent on the activity generated by the salmon fisheries.

Another social and economic management consideration is the difference between commercial and recreational salmon fisheries with regard to length of season and catch. Time on the water and number of fish caught are important elements for both commercial and sport fisheries, but the degree of importance of each element varies. The primary goal of commercial fishing is to catch fish. To the commercial fisherman, fishing time is also important, primarily in order to ensure that he can catch an adequate number of fish. This is particularly true of trolling, in which catch per unit of time is low relative to other commercial gear types. Commercial fishing time is also important in terms of providing a continuous flow of fresh fish to market over a long period of time.

In the recreational salmon fisheries, where much of the value of the fisheries involves the fishing "experience," time is the primary factor. Although number of fish caught is important, the significance of its contribution to the value of the recreational salmon fisheries is difficult to quantify.

Management strategies must take account of these economic and social considerations.

(D) Institutional

A multitude of agencies is involved in the management of Pacific salmon. The goals and viewpoints of these agencies may conflict while their jurisdictions overlap. The Pacific Fishery Management Council, in conjunction with the Secretary of Commerce, has management responsibility over the offshore salmon fisheries. The states of California, Oregon, Washington, and Idaho and several Indian tribes manage salmon within their waters. The Council depends on the states and the treaty tribes for the majority of its salmon data. Each management authority has its own system of data collection and decision-making, involving management agencies, the state legislatures, and other bodies. Coordination of policies within states, and between the states and the Council is necessary.

Other federal agencies, i.e., U. S. Coast Guard, U. S. Fish & Wildlife Service, Bureau of Indian Affairs, and the International Pacific Salmon Fishery Commission, are also involved. For the Klamath River region, for example, the U. S. Fish and Wildlife Service (Department of the Interior) monitors Indian salmon catches. The Bureau of Indian Affairs (Department of the Interior) is involved in salmon management in Washington.

The movement of salmon and fishermen along the coast adds to the institutional problem. Pacific salmon also migrate out of the jurisdiction of the three states and the Pacific Council into Canadian and Alaskan waters. Similarly, some Washington and Oregon salmon fishermen fish off Alaska. Alaskan and Canadian interceptions of West Coast salmon require management coordination between the Pacific Council and Alaskan fishery agencies, the North Pacific Fishery Management Council (NPFMC) and Canadian fishery agencies.

Coordination among all these management bodies is often difficult to achieve, requiring long-term planning and negotiation. In the meantime, the salmon fisheries must continue to be managed.

The biological, legal, economic, social and institutional problems described above fundamentally stem from a problem of magnitudes: more and more participants with greater economic and social needs are putting more pressure on smaller salmon populations. Many of the complexities, however, derive from peculiarities of timing. Examples of the importance of the time element include:

- The value of "time on the water" to recreational fishermen.
- The need of trollers to be present on the fishing grounds when the fish are "biting".
- The influence of the timing of weather patterns on the fisheries.
- Time overlaps of salmon stocks passing through a given ocean area.
- The timing of the growth period for harvestable coho (i.e., rapid growth occurs during the spring and early summer, which has implications for potential poundage yield of coho at different points in the season).
- The time sequence of harvest by different fishery participants (e.g., for a given run, harvest by the ocean fisheries occurs before harvest by the "inside" fisheries).
- The timing of fishing opportunities for other species.
- The timing of data availability for inseason assessments to achieve conservation and allocation goals.
- The timing of the administrative review and public comment processes.
- The timing and intensity of Canadian and Alaskan offshore salmon fisheries.
- The timing of Court orders and inside fishery management plan development.

MANAGEMENT OBJECTIVES

In recognition of these interrelated and complex management problems and the overall complexity of the total salmon management picture, the Council has developed general management objectives. Although many of these objectives are as relevant to inside fisheries and international fisheries management as they are to the FCZ, the Council has defined the management unit that its planning will address as follows:

The management unit shall be the salmon stocks and fisheries that occur off the coasts of Washington, Oregon, and California, including consideration of problems with interrelated anadromous salmonid species.

The management regimes in 1982 and future years will attempt to address all the biological, legal, economic and social problems described above, while recognizing the constraints imposed by data gaps and the institutional structure of salmon management. These management regimes will be designed to achieve the following general management objectives:

1. Establish ocean harvest rates for commercial and recreational fisheries that are consistent with requirements for optimum spawning escapements and treaty obligations and continuance of established recreational and commercial fisheries. Achievement of this objective requires that:
 - a. Escapements of natural spawning stocks of salmon which are deemed important by the Council shall be sufficient to maintain or restore the production of such stocks at optimal levels.
 - b. Escapement of hatchery stocks shall be sufficient to maintain production goals.
 - c. In managing mixed-stock salmon fishing, the level of exploitation that can be sustained by important natural-spawning stocks will be used by the Council to establish maximum fishing rates.
 - d. Harvest allocations of salmon stocks between ocean and inside recreational and commercial fisheries shall be fair and equitable and fishing interests shall equitably share the obligation of fulfilling any treaty or other legal requirements for harvest opportunities.
2. Minimize fishery and other related mortalities for those fish not landed from all salmon fisheries, both ocean and inside, as consistent with OY.
3. Manage and regulate the fisheries so that optimum yield encompasses the quantity and value of food produced, recreational value, and social and economic values of the fisheries.
4. Develop fair and creative approaches to managing fishing effort and evaluate and apply effort management systems as appropriate to achieve these management objectives.
5. Achieve, for the long term, coordination with member states on the Council, the treaty tribes, Canada, the North Pacific Fishery Management Council, Alaska, and other management entities responsible for salmon habitat or production in the development of a coastwide salmon management plan.

HABITAT AND ENVIRONMENTAL OBJECTIVES

The management objectives of the Pacific Fishery Management Council can best be achieved if the following habitat and environmental objectives are also pursued by the agencies having environmental control and resource management responsibilities over production and harvest in inside marine and fresh waters. These objectives should be consistent with the habitat and production objectives of the California Department of Fish and Game, Idaho Department of

Fish and Game, Oregon Department of Fish and Wildlife, and the Washington Department of Fisheries. However, full responsibility for achievement of these objectives does not lie solely within the jurisdiction of these four agencies, but is shared through a complex maze of overlapping jurisdictions at least as complicated as that which manages the salmon resource. This maze must be identified, and when called upon for support, the Council must be prepared to assist the four agencies. This assistance will most likely occur in the form of support for enhancement programs and in defending salmon needs among competing uses for the limited aquatic environment. This should be an ongoing program of assistance which should occur as long as the MFCMA exists.

A major problem of concern to the PFMC, but outside its jurisdiction, is maintaining and maximizing the production potential of the aquatic environment. This concern has led the Council to adopt several environmental and production objectives which are stated as follows:

Environmental Objectives

1. All available or potential natural habitat for anadromous salmonids should be preserved by encouraging management of conflicting uses to assure no obstruction to access, and a maintenance of high standards to protect water quality and quantity for migration, spawning, and rearing of salmon and steelhead.
2. Adequate water should be allocated for anadromous salmonid uses.
3. Improvement of provisions for safe passage of anadromous salmonids at existing or future obstructions, dams, and pump intakes will be advocated, supported, and carried out.

Production Objectives

1. Restore and enhance the natural production of salmon.
2. Whenever fish habitat or population losses occur as a result of various development programs or other action, the fishery agencies should actively seek full mitigation of and compensation for these losses under the following guidelines:
 - a. Restoration of lost habitat, where possible, or provision of additional facilities for production of fish, at least equal to that lost.
 - b. Replacement of losses, where possible, will be by an appropriate stock of the same fish species or by habitat capable of producing the same species that suffered the loss; mitigation or compensation programs will be located in the immediate area of loss, where possible.
 - c. Compensation levels will be based on loss of habitat, production and opportunity to fish. Potential production of the habitat will be considered in measuring needed compensation.

- d. 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.
3. Maximize the continued production of hatchery stocks consistent with the management objectives 1 through 5.
4. In advance of enhancement programs which include increased artificial production of anadromous fish, assess the potential impact on the carrying capacity of the habitat and avoid negative effects on other stocks.
5. Improve the effectiveness of artificial propagation.

II. REVIEW OF THE 1981 COMMERCIAL AND RECREATIONAL SALMON FISHERIES

Section II of this report summarizes the ocean salmon catches off the coasts of California, Oregon and Washington for the 1981 season and includes comparisons with certain years since 1971. In addition, catch estimates for the 1981 inside fisheries and some comments on escapement to certain areas are included. Totals in tables throughout this report are rounded to the nearest hundred and may not agree due to rounding.

OCEAN FISHERIES

CALIFORNIA

Troll Fishery

This summary of the 1981 California troll fishery is preliminary and is based on commercial fish receiving tickets. Final figures are expected to vary by no more than 5 percent. Catch statistics are reported by port-area of landing, not actual catch area.

1981 Regulations - The 1981 commercial troll season off California in the FCZ was as follows:

All salmon except coho	May 1 through May 15
All salmon	May 16 through May 31
All salmon	July 1 through Sept. 30

In state waters (0-3 miles) the all-species season remained open during June. This was due to a state Superior Court decision that invalidated the state Fish and Game Director's authority to conform state salmon regulations to federal regulations (Section 7652 of the California Fish and Game Code). After the 1981 salmon season, the California state Appellate and Supreme Courts recently overruled the lower court decision. It should be pointed out that in California, all changes in regulations, including emergency changes, have to be approved by the State Office of Administrative Law (OAL). To enact emergency regulations through OAL, a danger to the resource and to the people of the state has to be clearly demonstrated.

Effort - Specific estimates of effort are not available for California; however, number of deliveries provide a rough measure of effort, even though deliveries do not precisely measure days of fishing (Table II-1). There were 46,700 deliveries to California ports in 1981. This represents a 7% decrease from 1980 deliveries of 50,400. However, deliveries were still 3% higher than the 1971-75 average of 45,200 deliveries, in spite of a large reduction of the season in 1981.

Effort by area, for 1981, when compared to 1980 was similar in the Eureka and San Francisco areas. However, in the Crescent City area, deliveries increased from 6,200 in 1980 to 7,900, a 27% increase in 1981. In the Monterey area deliveries decreased from 11,200 in 1980 to 8,800 in 1981, a 21% decline (Table II-2).

Table II-1. Commercial troll catch and effort off California, 1971-81.

Year	Effort ^{a/}	Numbers			Pounds Dressed		
		Chinook	Coho	Pink	Chinook	Coho	Pink
1971	38,600	433,900	442,100	1,200	4,925,800	3,183,800	7,200
1972	37,800	492,200	158,000	0	5,371,800	1,050,400	200
1973	55,600	817,000	348,100	19,000	7,586,800	1,993,900	88,300
1974	51,100	491,600	655,900	300	5,048,500	3,700,100	900
1975	43,000	578,700	204,000	3,100	5,781,300	1,128,400	15,500
1971-75 Average	45,200	562,700	361,600	4,700	5,742,800	2,211,300	-
1976	60,000	539,900	621,800	c/	4,943,900	843,900	c/
1977 ^{b/}	61,500	562,800	35,000	1,000	5,728,000	204,000	6,000
1978 ^{b/}	NA	518,600	238,400	NA	5,260,000	1,277,000	NA
1979 ^{b/}	47,800	658,800	164,100	c/	6,860,000	1,050,000	c/
1980 ^{b/}	50,400	575,000	49,600	c/	5,607,000	300,000	c/
1981 ^{b/}	46,700	549,300	78,000	7,000	5,471,000	466,000	27,000

a/ Number of deliveries.

b/ Preliminary.

c/ Under 50.

Table II-2. Summary of California commercial troll effort (deliveries) and catch (numbers of fish) by area of landing, 1976-81 and 1971-75 average.

Year	Area of Landing							Total
	North Coast				South Coast			
	Crescent City	Eureka	Fort Bragg	Subtotal	San Francisco	Monterey	Subtotal	
<u>EFFORT</u>								
<u>Deliveries</u>								
1971-75 Ave.	3,800	8,300	10,600	22,700	14,400	8,200	22,600	45,200
1979 ^{a/}	8,000	7,000	12,600	27,700	12,800	7,300	20,100	47,800
1980 ^{a/}	6,200	7,400	12,400	26,000	13,200	11,200	24,400	50,400
1981 ^{a/}	7,900	7,000	10,100	25,000	12,900	8,800	21,700	46,700
<u>CATCH</u>								
<u>Chinook</u>								
1971-75 Ave.	35,700	142,100	120,800	298,600	188,200	75,900	264,000	562,700
1976	21,000	165,400	115,700	302,100	138,200	99,600	237,900	539,900
1977 ^{a/}	44,100	157,700	118,000	319,700	169,800	73,300	243,100	562,800
1978 ^{a/}	62,400	130,700	98,700	291,800	125,500	101,300	226,800	518,600
1979 ^{a/}	70,800	193,000	174,300	438,200	169,900	50,700	220,600	658,800
1980 ^{a/}	34,600	134,500	129,900	299,000	201,800	74,300	276,100	575,100
1981 ^{a/}	80,900	97,900	113,700	292,600	191,600	65,200	256,800	549,300
<u>Coho</u>								
1971-75 Ave.	84,000	133,900	100,400	318,300	35,500	7,800	43,300	361,600
1976	133,100	204,800	159,300	497,100	83,200	41,400	124,600	621,800
1977 ^{a/}	14,900	16,900	2,000	33,800	1,000	200	1,200	35,000
1978 ^{a/}	99,900	95,200	31,900	226,900	10,100	1,300	11,500	238,400
1979 ^{a/}	72,500	55,000	25,900	153,400	8,900	1,800	10,700	164,100
1980 ^{a/}	15,100	17,900	12,900	45,900	3,400	300	3,700	49,600
1981 ^{a/}	28,800	36,700	11,100	76,600	1,400	b/	1,500	78,000

a/ Preliminary.

b/ Under 50.

Chinook - In 1981, chinook quotas were adopted along with midseason closures to assist in achieving spawning escapement objectives. The troll quota north of Point Arena was 300,000 chinook and for south of Point Arena it was 265,000 chinook.

Chinook landings of 549,300 chinook in 1981 were down slightly (4%) from 1980 landings of 575,000 chinook and were down 2.5% from the 1971-75 average of 562,700 chinook.

North Coast landings were 292,600 chinook which amounted to 98% of the 300,000 fish quota. They were down slightly (2%) from 1980 landings of 299,000 chinook. The greatest increase in North Coast landings in 1981 was in Crescent City where landings of 80,900 chinook were 234% of 1980 landings of 34,600 fish. Eureka had the largest decline where 1981 chinook landings of 97,900 fish were only 73% of 1980 landings of 134,000 fish (Table II-2).

The 1981 South Coast chinook landings of 256,800 fish amounted to 97% of the 265,000 fish quota. Landings amounted to 93% of 1980 South Coast landings of 276,100 chinook. Monterey area landings showed the greatest change, with 1981 landings of 65,200 chinook amounting to 88% of 1980 landings of 74,300 chinook.

The midseason closures in 1981 resulted in a shifting of the bulk of the chinook landings to later in the season as it did in 1980. The 1971-75 average shows that 61% of the statewide chinook catch of 562,700 fish was taken before July 1. In 1981, only 43% of the chinook was landed before July 1, and in 1980 the figure was 42% (Table II-3). Landings in state waters during June, when the FCZ was closed, were 52,100 chinook. A significant portion of the catch was off Ft. Bragg where trollers landed 21,000 chinook during the third week in June.

Coho - The 1981 troll coho landings of 78,000 fish were the third lowest in 20 years, but were 157% of 1980 landings of only 49,600 coho. However, they amounted to only 22% of the 1971-75 average of 361,600 coho (Table II-2). Coho landings in state waters during June totaled 6,700. As is usually the case, the North Coast area landed virtually all (98%) of the catch. Two major factors influenced the exceptionally poor 1980 and 1981 coho landings. These were:

- (1) The June closure of the coho season, which was the peak month during the 1971-75 period.
- (2) The low abundance of coho in the OPI. Approximately 80% to 90% of the California coho catch, during the 1960s through the mid-1970s, originated from the Oregon coast and Columbia River area.

Recreational Fishery

Recreational catch and effort data were obtained from sampling surveys at all major California ports. In addition, charterboat statistics were obtained from logs.

1981 Regulations - Sport salmon bag limits and size limits were identical to 1980. The 1981 season ran from February 14 to November 15. The bag limit was two fish, of which one fish could be less than 22 inches but not less than 20 inches.

Table II-3. California commercial troll chinook and coho landings, in numbers of salmon by month, for 1978-81, with average of 1971-75. a/

	April	May	June	July	August	September	Season
<u>CHINOOK</u>							
1971-75 Average	38,800	148,200	154,000	135,100	60,900	25,600	562,700
	38,800	187,000	341,000	476,200	537,000	562,700	562,700
1978	20,900	212,500	166,200	90,200	21,700	7,100	518,600
	20,900	233,400	399,400	489,800	511,400	518,600	518,600
1979b/	Closed	205,600	91,200	201,300	115,200	45,500	658,800
	Closed	205,600	296,800	498,100	613,300	658,800	658,800
1980b/	Closed	231,700	8,300	248,000	50,200	36,800	575,100
	Closed	231,700	240,100	488,100	538,300	575,100	575,100
1981b/	Closed	182,600	52,100	169,000	108,200	37,500	549,300
	Closed	182,600	234,700	403,700	511,900	549,300	549,300
<u>COHO</u>							
1971-75 Average	-	88,700	136,000	110,500	24,400	2,000	361,600
	-	88,700	224,700	335,200	359,600	361,600	361,600
1978	Closed	36,200	159,400	38,200	3,800	900	238,400
	Closed	36,200	195,500	233,700	237,500	238,400	238,400
1979b/	Closed	12,800	50,800	84,500	15,500	500	164,100
	Closed	12,800	63,600	148,100	163,700	164,100	164,100
1980b/	Closed	1,300	60	31,500	11,200	5,600	49,600
	Closed	1,300	1,400	32,900	44,100	49,600	49,600
1981b/	Closed	14,400	6,700	24,600	29,600	2,800	78,000
	Closed	14,400	21,100	45,600	75,300	78,000	78,000

a/ 1978-81 data are preliminary.

b/ See Tables II-27, II-28, and II-29 for season changes.

Effort - Recreational effort was 127,900 angler trips in 1981. This represented a 12% decrease from the 1980 effort of 145,300 angler trips and a 47% decrease from the 1971-75 average of 241,500 angler trips (Table II-4). As usual, the San Francisco Bay area accounted for the majority (60%) of the effort (Table II-5).

Chinook - The estimated 1981 chinook landings of 83,700 fish were 3% less than 1980 landings of 86,400 chinook and were 51% less than the 1971-75 average of 169,600 chinook (Table II-6). San Francisco sport anglers accounted for 83% of the statewide recreational chinook landings in 1981 compared to 87% in 1980. As is usually the case, July was the peak month when anglers landed 22,200 chinook, which amounted to 27% of the total 1981 harvest (Table II-6).

Coho - The estimated 1981 California coho recreational catch was 9,700 fish, the fewest in several decades, and was only 46% of the 1980 poor landings of 20,900 coho, and 20% of the 1971-75 average of 48,300 coho (Table II-4). As is usually the case, the Eureka area was the leading port with landings of 5,500 coho amounting to 57% of the statewide harvest (Table II-5).

Table II-4. California recreational ocean salmon catch and effort for the years 1971-81 and 1971-75 average.

Year	Effort (Angler Trips)	Catch			Fish/ Angler Trips
		Chinook	Coho	Total	
1971	275,000	188,300	67,400	255,700	0.93
1972	234,500	200,500	44,600	245,100	1.04
1973	245,800	198,000	31,600	229,600	0.93
1974	255,800	157,500	76,600	234,100	0.92
1975	173,400	103,700	21,200	124,900	0.72
1971-75 Average	241,500	169,600	48,300	217,900	0.90
1976	189,700	81,000	57,900	138,900	0.73
1977 ^{a/}	215,000	127,400	26,800	154,200	0.72
1978 ^{a/}	176,100	83,900	44,300	128,200	0.73
1979 ^{a/}	175,000	122,900	15,800	138,700	0.79
1980 ^{a/}	145,300	86,400	20,900	107,300	0.75
1981 ^{a/}	127,900	83,700	9,700	93,400	0.73

a/ Preliminary.

Table II-5. Summary of California recreational ocean salmon effort and catch (numbers of fish) by area, for the years 1976-81 and 1971-75 average.

Year	Area of Landing							Total
	North Coast				South Coast			
	Crescent City	Eureka	Fort Bragg	Subtotal	San Francisco	Monterey	Subtotal	
<u>EFFORT</u> (Angler Trips)								
1971-75 Average	18,900	37,700	19,500	76,100	136,600	28,800	165,400	241,500
1979 ^{a/}	12,600	19,400	10,700	42,700	122,300	9,900	132,300	175,000
1980 ^{a/}	19,200	23,100	6,400	48,700	89,800	6,800	96,600	145,300
1981 ^{a/}	17,800	16,700	10,600	45,000	77,300	5,600	82,900	127,900
<u>CATCH</u> <u>Chinook</u>								
1971-75 Average	2,200	9,900	3,700	15,800	140,900	12,900	153,800	169,600
1976	3,000	7,100	2,300	12,400	63,800	4,800	68,600	81,000
1977 ^{a/}	7,400	13,300	5,900	26,600	96,800	4,000	100,800	127,400
1978 ^{a/}	2,200	2,500	2,800	7,500	66,300	10,100	76,300	83,900
1979 ^{a/}	4,600	3,700	5,800	14,000	102,900	5,900	108,800	122,900
1980 ^{a/}	2,800	4,000	1,200	8,000	75,400	3,100	78,500	86,400
1981 ^{a/}	4,500	4,800	2,000	11,300	69,400	3,000	72,400	83,700
<u>Coho</u>								
1971-75 Average	6,900	22,200	9,000	38,100	8,800	1,500	10,200	48,300
1976	16,900	19,800	7,300	44,000	13,300	600	13,900	57,900
1977 ^{a/}	5,300	5,900	700	11,900	14,900	0	14,900	26,800
1978 ^{a/}	19,800	19,600	2,100	41,400	2,800	b/	2,900	44,300
1979 ^{a/}	5,000	8,600	1,100	14,600	1,200	b/	1,200	15,800
1980 ^{a/}	7,400	12,300	1,200	20,800	100	b/	100	20,900
1981 ^{a/}	3,100	5,500	600	9,200	500	0	500	9,700

a/ Preliminary.

b/ Under 50.

Table II-6. California ocean recreational chinook and coho landings in numbers of salmon by month for 1978-81, with average of 1971-75^a

	February	March	April	May	June	July	August	September	October	November	Season
<u>CHINOOK</u>											
1971-75 Average	17,200 17,200	26,400 43,600	16,700 60,300	10,600 70,900	17,300 88,200	30,800 119,000	25,400 144,400	13,000 157,300	8,800 166,100	3,500 169,600	169,600
1978	14,700 14,700	11,900 26,600	3,400 30,000	3,000 33,000	9,000 42,000	15,100 57,100	9,200 66,300	6,100 72,400	7,700 80,100	3,800 83,900	83,900
1979	7,900 7,900	15,500 23,400	11,600 35,000	5,200 40,200	16,200 56,400	29,900 86,300	16,200 102,600	13,300 116,000	6,900 122,900	- -	122,900
1980	4,700 4,700	12,000 16,700	6,100 22,800	5,600 28,400	18,200 46,600	19,400 66,000	8,800 74,800	7,300 82,100	4,300 86,400	- -	86,400
1981	2,500 2,500	2,500 5,100	7,000 12,100	5,600 17,600	11,300 28,900	22,200 51,100	17,200 68,300	8,300 76,700	5,100 81,800	1,900 83,700	83,700
<u>COHO</u>											
1971-75 Average	b/ b/	100 100	1,300 1,400	4,000 5,400	8,600 14,000	24,900 38,900	8,500 47,400	800 48,200	b/ 48,300	b/ 48,300	48,300
1978	0 0	0 0	0 0	0 0	19,800 19,800	21,000 40,900	3,400 44,300	b/ 44,300	- -	- -	44,300
1979	b/ b/	b/ b/	b/ 100	200 200	3,600 3,900	9,000 12,800	2,700 15,500	300 15,800	- -	- -	15,800
1980	0 0	0 0	b/ b/	b/ b/	3,800 3,900	14,900 18,800	1,900 20,800	100 20,900	b/ 20,900	- -	20,900
1981	0 0	b/ b/	b/ b/	b/ 100	900 1,000	4,900 5,900	3,700 9,600	100 9,700	b/ 9,700	- -	9,700

a/ 1978-81 data are preliminary.
b/ Under 50.

OREGON

Troll Fishery

Catch and effort data for the 1981 Oregon troll salmon fishery are preliminary. Poundages, dollar value, area of catch and days fished are obtained directly from commercial fish receiving tickets. Pounds landed are converted to numbers of fish utilizing average weight information. In the past, all troll catch statistics for Oregon were reported by port of landing; however, catch and effort estimates for 1979-81 are reported by catch area.

1981 Regulations - In the area north of Cape Falcon, commercial troll fishing was open for all salmon except coho from May 1-31 and was open for all salmon from July 15-August 21 when the fishery was projected to reach its preseason harvest guideline of 372,000 coho. State waters remained open through August 24. Minimum size limits north of Cape Falcon were 28" for chinook and 16" for coho.

From Cape Falcon to the Oregon/California border, fishing was open for all salmon except coho from May 1-31, and for all salmon from July 1-August 21 when the fishery was projected to exceed its preseason harvest guideline of 548,000 coho. In state waters the all-species season was extended through August 24. Minimum size limits south of Cape Falcon were 26 inches for chinook and 16 inches for coho.

Fishing was allowed for all salmon except coho between Cape Falcon and Cape Sebastian from August 22 through September 8 using whole bait or 5-inch or larger plugs. In state waters, fishing was allowed for all species except coho between Cape Falcon and the Oregon/California border from August 25 through September 8 with the same gear restrictions.

The area from Cape Falcon to the Oregon/California border was open from September 9 to October 31 for all salmon except coho with no gear restrictions.

Effort - Since 1979, Oregon's troll effort has been estimated in boat days. Cumulative effort for the troll fishery totaled 45,200 boat days in 1981, compared with 39,900 in 1980 and 48,800 in 1979 (Table II-7). The 1981 effort was 13% above 1980 and 7% below 1979.

The Newport and Coos Bay areas accounted for 54% of the total troll effort in 1981, which is similar to 1979 and 1980 (Table II-8). The Tillamook area contributed a somewhat larger percentage of the total effort for Oregon than in previous years. The effort increase in this area occurred primarily during the first two weeks of July when the area north of Cape Falcon was closed.

Effort during May was higher in 1981 than in either 1979 or 1980 (Table II-9). Approximately 84% of the total effort for 1981 occurred in the months of July and August, during the open season for coho. Only 3,900 boat days were expended during the late chinook fishery in September, October, and November of 1981, which is similar to 1979 but considerably below 1980.

Chinook Catch - The 1981 troll chinook catch was considerably lower than in any year since 1972 (Table II-7). A total of 160,500 chinook weighing

Table II-7. Oregon commercial troll salmon effort and catch 1971-1981^{a/}.

Year	Effort (boat days fished)	Chinook		Coho		Pink	
		No.	Lbs. (round)	No.	Lbs. (round)	No.	Lbs. (round)
1971	-	102,900	1,150,800	1,490,100	10,079,900	2,000	10,400
1972	-	127,300	1,499,300	824,600	5,584,800	<100	100
1973	-	363,300	3,980,500	795,500	5,907,600	3,200	16,400
1974	-	224,100	2,634,000	1,137,200	8,315,500	<100	200
1975	-	224,700	2,970,800	657,400	4,700,700	200	1,000
1971-75 Average	-	208,500	2,447,100	981,000	6,917,700	1,800 ^{b/}	9,300 ^{b/}
1976	-	184,300	2,209,800	1,827,000	10,420,300	0	0
1977	-	340,000	3,984,700	446,100	3,036,900	88,000	455,600
1978	-	191,500	2,177,700	611,600	3,195,800	<100	300
1979	48,800	245,500	2,967,000	714,600	5,274,200	20,500	122,300
1980	39,900	209,400	2,497,200	383,300	2,518,700	300	1,800
1981 ^{c/}	45,200	160,500	1,810,300	620,200	3,822,800	60,200	372,000

a/ Includes catches made off California, Washington, and Alaska and landed in Oregon.

b/ Odd-year average.

c/ Preliminary.

Table II-8. Summary of Oregon commercial troll effort and catch by area of catch 1979-1981.

Year	Area of Catch										Total	
	Columbia River	Tillamook	Newport	Coos Bay	Brookings	Oregon Subtotal	Alaska	Washington	California			
<u>EFFORT</u> <u>(Boat Days)</u>												
1979	2,400	6,300	12,800	16,800	9,900	48,200	0	600	100		48,800	
1980	1,700	6,000	10,700	12,400	8,300	39,100	50	700	30		39,900	
1981 ^{a/}	2,500	8,600	11,000	13,400	9,300	44,800	0	200	100		45,200	
<u>CATCH</u> <u>Chinook</u>												
1979	5,900	5,000	38,600	68,700	123,800	242,000	0	2,600	900		245,500	
1980	5,600	7,800	48,700	74,800	68,400	205,300	300	2,900	900		209,400	
1981 ^{a/}	8,400	12,200	27,100	24,400	86,000	158,100	0	1,000	1,500		160,500	
<u>Coho</u>												
1979	48,700	77,900	211,800	263,100	101,200	702,700	0	11,300	600		714,600	
1980	23,500	80,600	137,300	99,200	33,500	374,200	1,800	7,200	40		383,300	
1981 ^{a/}	41,900	160,400	192,300	161,400	53,500	609,500	0	10,400	300		620,200	

a/ Preliminary.

Table II-9. Oregon commercial troll effort and landings of coho and chinook by month, 1971-75 average and 1978-81^{a/}.

		April	May	June	July	August	September	October	November ^{b/}	Season Total
<u>EFFORT (Boat Days)</u>										
1971-75 Average		NA	NA	NA	NA	NA	NA	NA	NA	NA
1979	Monthly	-	1,400	< 100 ^{c/}	21,500	21,700	1,300	2,000	800	
	Cumulative	-	1,400	1,500	23,000	44,700	46,000	48,000	48,800	48,800
1980	Monthly	-	2,100	3,700 ^{d/}	12,100	14,600	4,600	2,300	500	
	Cumulative	-	2,100	5,800	17,900	32,500	37,100	39,400	39,900	39,900
1981	Monthly	-	3,300 ^{e/}	-	21,300	16,700	1,600	1,900	500	
Prelim.	Cumulative	-	3,300	3,300	24,600	41,300	42,800	44,700	45,200	45,200
<u>CHINOOK</u>										
1971-75 Average	Monthly	500	8,300	27,500	56,600	69,700	31,400	13,700	1,300	
	Cumulative	500	8,900	36,400	93,000	162,800	194,200	207,900	209,200	209,200
1978	Monthly	-	3,200	40,600	63,100	46,900	25,000	9,300	3,500	
	Cumulative	-	3,200	43,800	106,900	153,800	178,800	188,100	191,500	191,500
1979	Monthly	-	11,000	200 ^{c/}	73,600	119,500	13,200	25,200	2,600	
	Cumulative	-	11,000	11,300	84,900	204,400	217,700	242,900	245,500	245,500
1980	Monthly ^{b/}	-	25,800	29,700 ^{d/}	47,700	64,000	25,200	16,000	1,000	
	Cumulative	-	25,800	55,400	103,200	167,200	192,300	208,400	209,400	209,400
1981	Monthly	-	28,700 ^{e/}	-	34,900	65,600	16,900	13,200	1,200	
Prelim.	Cumulative	-	28,700	28,700	63,600	129,300	146,200	159,400	160,500	160,500
<u>COHO</u>										
1971-75 Average	Monthly	-	-	227,800	414,400	305,800	29,700	3,300	-	
	Cumulative	-	-	227,800	642,200	948,000	977,700	981,000	-	981,000
1978	Monthly	-	-	279,600	227,200	92,800	10,400	1,600	-	
	Cumulative	-	-	279,600	506,800	599,700	610,000	611,600	-	611,600
1979	Monthly	-	-	400 ^{c/}	534,000	178,700	1,600	-	-	
	Cumulative	-	-	400	534,400	713,100	714,600	-	-	714,600
1980	Monthly	-	-	-	228,700	137,500	17,100	-	-	
	Cumulative	-	-	-	228,700	366,200	383,300	-	-	383,300
1981	Monthly	-	-	-	350,300	269,900	-	-	-	
Prelim.	Cumulative	-	-	-	350,300	620,200	-	-	-	620,200

a/ Statistics from 1971-78 are reported by calendar months; monthly totals from 1979-81 are the sum of statistical weeks with closest fit to calendar months. Includes catches made off California, Washington, and Alaska and landed in Oregon.

b/ Late season at mouth of Elk and Chetco Rivers only (initiated in 1974). Averages for November include only 1974.

c/ Caught off California and landed in Oregon.

d/ Totals for June 1980 include landings made through July 6.

e/ Totals for May 1981 include landings made through June 7.

1.8 million pounds (round weight) was landed in 1981, compared to 209,400 chinook in 1980, and an average of 208,500 chinook for 1971-75. The 1981 catch was 23% below 1980 and 23% below the 1971-75 average.

Of the total Oregon chinook catch, 87% was caught from the Newport area south (Table II-8). Catches in the Columbia River and Tillamook areas increased in 1981 from 1980 and 1979 levels. The Coos Bay area showed a dramatic decline in the 1981 chinook catch compared to 1979 and 1980. The Brookings area showed moderate catches of chinook in 1981--below 1979, but exceeding 1980 levels.

The troll catch of chinook salmon peaked in August 1981 when 41% of the total catch was made (Table II-9). The May fishery landed 28,700 chinook (18% of the season total), which is significantly higher than in earlier years. Catches in July, September, and October of 1981 were below average.

Coho Catch - The commercial troll coho catch in 1981 totaled 620,200 fish, weighing 3.8 million pounds, which is substantially higher than the 383,300 coho landed in 1980 but well below the 1971-75 average of 981,000 (Table II-7). The 1981 coho catch was 62% above 1980 but was 37% below the 1971-75 average.

The distribution of the 1981 coho catch by area was shifted more northerly than in 1979 or 1980 (Table II-8). Of the total coho catch off Oregon during 1981, 83% were caught in the Tillamook, Newport, and Coos Bay areas.

In recent years, peak coho catch usually occurs during the first few weeks of the season. In 1981, however, weekly catches of coho remained fairly constant through early August and peaked in mid-August. This late peak occurred primarily in the Newport area, where high catch rates and effort resulted in an extremely large coho catch in mid-August (Table II-9). Catches in state waters from August 22-24 after the FCZ was closed were 9,200 coho with 800 caught north of Cape Falcon and 8,400 caught south of Cape Falcon.

Pink Catch - Troll catches of pink salmon from the Oregon coast totaled 60,200 in 1981 compared to 20,500 in 1979 and 88,000 in 1977 (Table II-7). The 1981 total was well above the 1971-75 odd-year average of 1,800 fish.

Recreational Fishery

Recreational catch and effort data were obtained from creel census surveys at major coastal ports by Oregon Department of Fish and Wildlife personnel. Ten major ports were sampled in 1981, representing the total catch and effort of the ocean salmon recreational fishery for Oregon.

1981 Regulations - Regulations for the 1981 Oregon ocean salmon recreational fishery provided for an all-species season from May 15 to September 20 south of Cape Falcon and May 23 to September 7 north of Cape Falcon. The recreational fishery was closed to all salmon fishing off Oregon from 3-200 miles effective August 27 when the preseason harvest guideline of 248,000 coho north of Cape Falcon and the overall adjusted harvest guideline of 794,600 coho south of Cape Falcon was expected to be met. However, state waters remained open through the scheduled seasons. A season for all salmon except coho was scheduled from September 21 through October 31 south of Cape Blanco to the Oregon/California border.

The 1981 season began with a 2-fish daily bag limit, but was increased to 3 fish south of Cape Falcon on August 14 when it appeared the recreational fishery would not reach its harvest allocation guideline for coho salmon. Minimum size limits in effect for chinook were 24 inches north of Cape Falcon and 22 inches south of Cape Falcon. Minimum size for coho was 16 inches.

Effort - Recreational effort observed in 1981 was slightly below 1980 and was about the same as the 1971-75 average. Cumulative effort for the 1981 recreational fishery totaled 346,700 angler trips (Table II-10) and was 4% below the 362,000 trips recorded in 1980 and approximately equal to the 1971-75 average of 345,800 trips, but still below effort levels recorded from 1976-78.

The charterboat fishery effort comprised 23% of the 346,700 total ocean recreational angler trips for 1981, compared to 28% in 1980, and the 1973-79 average of 31%. The 1981 charterboat effort was an estimated 80,900 angler trips, 12% below the 1980 effort of 91,600, and was the lowest recorded number of charterboat angler trips since 1971. The Columbia River charterboat effort of 16,000 angler trips in 1981 was well below the 26,300 trips in 1980, and was the lowest recorded effort level since 1965.

The Newport and Coos Bay areas accounted for 52% of the total recreational effort (Table II-11). Effort decreased in all areas in 1981 as compared to 1980, with the exception of Brookings.

An analysis of effort by month showed that 70% of the total effort in 1981 occurred during June and July (Table II-12). The effort for June was well below the 1980 level.

Chinook Catch - Recreational catches of chinook salmon in 1981 were above the 1980 catch but were well below the 1971-75 average. The cumulative recreational catch totaled 28,800, 52% above the 1980 catch of 19,000 fish but 42% below the 1971-75 average catch of 49,400 (Table II-10).

Best catches of chinook salmon occurred in the Columbia River and Brookings areas, with 70% of the total catch attributed to these areas (Table II-11). The 1981 catches of chinook salmon exceeded 1980 levels in all areas, with the greatest disparity in the Columbia River area.

The peak monthly catch of chinook salmon in 1981 occurred in August when 43% of the total catch was recorded (Table II-12). Monthly catches in 1981 were above 1980 levels in all months except June. The 1981 catches were below the 1974-75 average for all months.

Coho Catch - Recreational landings of coho salmon in 1981 were well below 1980 levels and also well below the 1971-75 average. The 1981 catch totaled 199,800, 39% below the 1980 catch of 325,800 and 27% below the 1971-75 average catch of 271,800 (Table II-10).

The Newport and Coos Bay areas accounted for 60% of the Oregon recreational coho catch (Table II-11). The 1981 coho landings in all areas were less than area landings in 1980 or the 1974-75 average.

Table II-10. Recreational ocean salmon effort and catch off Oregon, 1971-81.

Year	Effort (Angler trips)	Catch				Fish/ Angler
		Chinook	Coho	Pinks	Total	
1971	303,700	29,600	311,700		341,300	1.12
1972	331,700	44,100	248,400		292,500	0.88
1973	350,400	61,000	232,100	2,000	295,100	0.84
1974	335,800	36,700	314,500		351,200	1.05
1975	407,500	75,700	252,200	1,200	329,100	0.81
1971-75 Average	345,800	49,400	271,800	1,600 ^{b/}	321,800	0.93
1976	538,400	79,300	501,300		580,600	1.08
1977	404,500	61,400	195,300	4,000	260,700	0.64
1978	403,700	22,800	259,800		282,600	0.70
1979	341,800	20,900	180,800	600	202,300	0.59
1980	362,000	19,000	325,800		344,900	0.95
1981 ^{a/}	346,700	28,800	199,800	1,600	230,200	0.66

a/ Preliminary.

b/ Average 1973 and 1975 only.

Table II-11. Summary of Oregon recreational ocean salmon effort and catch data by area, 1974-75 average and 1976-81.

Year	Area ^{a/}					Total
	Columbia River	Tillamook	Newport	Coos Bay	Brookings	
<u>EFFORT</u>						
<u>(Angler Trips)</u>						
1974-75 Ave.	75,900	40,900	91,300	104,300	59,200	371,700
1978	63,400	31,700	115,600	104,400	88,600	403,700
1979	43,400	36,300	88,300	97,700	76,000	341,800
1980	46,300	52,600	98,400	99,300	65,300	362,000
1981 ^{b/}	44,800	45,300	94,100	87,200	75,300	346,700
<u>CATCH</u>						
<u>Chinook</u>						
1974-75 Ave.	32,600	2,000	4,300	6,800	10,600	56,200
1976	44,600	2,300	4,600	14,600	13,200	79,300
1977	22,600	1,500	2,600	22,700	11,800	61,400
1978	7,900	800	2,100	4,800	7,300	22,800
1979	7,500	1,000	1,400	4,500	6,400	20,900
1980	5,500	1,600	1,800	5,300	4,800	19,000
1981 ^{b/}	11,500	1,900	2,400	4,500	8,500	28,800
<u>Coho</u>						
1974-75 Ave.	70,700	27,200	65,100	90,100	30,200	283,400
1976	116,700	50,000	118,100	164,800	51,800	501,300
1977	55,300	15,600	34,000	76,300	14,000	195,300
1978	60,200	8,500	61,200	82,800	47,100	259,800
1979	38,000	9,400	36,300	79,000	18,200	180,800
1980	55,600	28,900	72,400	135,900	33,000	325,800
1981 ^{b/}	54,300	17,700	61,900	57,600	8,300	199,800

a/ Columbia River area includes Astoria; Tillamook area includes Garibaldi and Pacific City; Newport area includes Depoe Bay and Newport; Coos Bay area includes Florence, Winchester Bay and Coos Bay; Brookings area includes Gold Beach and Brookings.

b/ Preliminary.

Table II-12. Oregon ocean salmon recreational effort and catch (numbers of fish) by month, 1974-75 average and 1978-81.

		April	May	June	July	August	September	October	November	Season
<u>EFFORT (Angler Trips)</u>										
1974-75 ^{b/}	Monthly	1,800	9,800	39,300	124,700	129,800	61,300	5,100	-	
Average	Cumulative	1,800	11,500	50,900	175,600	305,300	366,600	371,700	-	371,700
1978	Monthly	-	12,300	78,700	144,500	115,900	37,600	13,300	1,500	
	Cumulative	-	12,300	90,900	235,500	351,300	388,900	402,200	403,700	403,700
1979	Monthly	-	15,300	53,400	112,700	143,200	11,300	4,800	1,200	
	Cumulative	-	15,300	68,700	181,300	324,500	335,800	340,600	341,800	341,800
1980	Monthly	-	11,000	85,500	147,100	92,400	22,700	2,900	400	
	Cumulative	-	11,000	96,500	243,600	336,000	358,700	361,600	362,000	362,000
1981 Prelim.	Monthly	-	19,400	51,600	123,600	117,400	34,700	-	-	
	Cumulative	-	19,400	71,000	194,600	312,000	346,700	-	-	346,700
<u>CHINOOK</u>										
1974-75 ^{b/}	Monthly	200	900	4,800	19,700	19,700	9,200	1,800	-	
Average	Cumulative	200	1,100	5,900	25,500	45,300	54,500	56,200	-	56,200
1978	Monthly	100	900	4,700	5,000	9,600	1,600	900	100	
	Cumulative	100	1,000	5,700	10,700	20,200	21,900	22,800	22,800	22,800
1979	Monthly	-	800	4,700	5,100	9,400	200	600	100	
	Cumulative	-	800	5,600	10,700	20,000	20,200	20,800	20,900	20,900
1980	Monthly	-	300	4,700	6,900	5,400	1,300	300	100	
	Cumulative	-	300	5,000	11,900	17,300	18,600	19,000	19,000	19,000
1981 Prelim.	Monthly	-	700	3,100	10,300	12,500	2,200	-	-	
	Cumulative	-	700	3,800	14,200	26,600	28,800	-	-	28,800
<u>COHO</u>										
1974-75 ^{b/}	Monthly	800	5,800	36,500	102,500	103,000	33,900	900	-	
Average	Cumulative	800	6,600	43,100	145,600	248,600	282,500	283,400	-	283,400
1978	Monthly	200	5,100	101,500	71,400	67,800	13,200	500	-	
	Cumulative	200	5,300	106,900	178,300	246,100	259,300	259,800	-	259,800
1979	Monthly	-	5,400	35,800	73,800	64,200	1,600	-	-	
	Cumulative	-	5,400	41,200	115,000	179,200	180,800	-	-	180,800
1980	Monthly	-	6,000	114,200	156,100	45,100	4,400	-	-	
	Cumulative	-	6,000	120,200	276,300	321,400	325,800	-	-	325,800
1981 Prelim.	Monthly	-	9,200	26,300	70,800	80,600	12,900	-	-	
	Cumulative	-	9,200	35,500	106,300	186,900	199,800	-	-	199,800

a/ April value includes any early season catches.

b/ Only 1974 and 1975 of 1971-75 period are available on a monthly basis.

NOTE: 1979 and 1980 monthly totals are sum of statistical weeks' estimates with closest fit to calendar month.

Peak catches occurred in July and August with 76% of the total season's landings occurring during these two months (Table II-12). Both June and July landings were well below 1980 levels and the 1974-75 average. Catches in state waters after August 26, when the FCZ was closed, were 19,200 coho with 9,000 caught north of Cape Falcon and 10,200 caught south of Cape Falcon.

Pink Catch - Recreational catches of pink salmon off Oregon totaled 1,600 in 1981 which is below 1977, above 1979 and the same as the 1971-75 average (Table II-10).

WASHINGTON

Troll Fishery

Catch statistics are presented for the 1981 commercial troll salmon fishery as reported on Washington Department of Fisheries' fish receiving tickets. Total troll fishery catches and effort are listed in Table II-13, including all troll-caught salmon regardless of catch area. Monthly catch and effort data for Washington coastal catch areas are presented in Table II-14. Totals may vary slightly in the various tables due to rounding.

Season - The 1981 non-Indian commercial troll season consisted of a May non-coho fishery followed by a July 15 all-species opening. An inseason closure for all salmon occurred on August 21 north of Cape Falcon when the fishery was projected to reach its preseason harvest guideline of 372,000 coho. Following the all-species season, an experimental 10-boat coho gear study fishery was conducted off the Columbia River mouth from September 20 to October 9. A summary of the non-Indian troll seasons since 1971 is provided in Table II-15.

The treaty Indian all-species troll season in outside waters extended from May 1 through October 31. In addition, a Makah tribal troll fishery operates year-around inside the Strait of Juan de Fuca.

Effort - The number of troll boat-days fished off Washington in 1981 totaled 27,900 which was 4% greater than 1980 and 33% less than 1979 levels. While 1981 troll effort compared to 1980 was greater off Grays Harbor (9%) and Cape Flattery (24%), effort declined off the Columbia River mouth (8%) and Quillayute (20%) (Table II-16).

During the May chinook fishery, troll effort was 13% and 24% greater than in 1980 and 1979, respectively. For the remainder of the season, total effort was similar to 1980 but 39% less than in 1979 (Figure II-1 and Table II-14).

Chinook - Troll landings of chinook salmon from Washington coastal areas were estimated to be 113,500 in 1981, continuing the decreasing trend observed since 1976 and 11% less than in 1980. The pattern of chinook landings from each area is variable (Table II-16). Off the Columbia River mouth, 1981 chinook catches increased 8% and 21% compared to 1980 and 1979, respectively. Catches off Grays Harbor in 1981, however, decreased from 1980 (7%) and 1979 (16%). Chinook landed from the Quillayute area in 1981 were 42% less than each of the two previous years, while 1981 Cape Flattery area chinook landings were similar to both 1980 and 1979.

Total 1981 troll chinook landings during the May fishery were 10% greater than in 1980 and 21% greater than in 1979, following a similar pattern for May troll effort. Chinook landings for the remainder of the season were 30% and 36% less than in 1980 and 1979, respectively (Table II-14).

Coho - Troll landings of 1981 coho salmon from Washington coastal areas were 381,400, which was similar to 1980 but 40% less than 1979 totals (Table II-16). Landings decreased dramatically after the first two weeks of the non-Indian, all-species season when almost half the total was taken. Coho catches did accelerate during the final week of the season in all areas. While total 1981 coho landings were similar to 1980, increased catches

Table II-13. Washington commercial troll landings, 1971-81a/

Year (days fished)	Effort	Chinook		Coho		Pink	
		No.	Lbs. Round	No.	Lbs. Round	No.	Lbs. Round
1971	68,300	252,200	3,053,800	1,264,100	7,867,900	20,600	103,300
1972	54,300	202,900	2,569,100	575,300	3,920,400	3,500	11,500
1973	50,900	317,300	3,805,300	702,200	4,320,400	55,400	299,100
1974	57,500	353,100	4,288,500	1,038,300	6,434,600	1,300	6,100
1975	53,100	274,200	4,298,000	774,300	5,080,400	77,300	427,800
1971-75 Average	53,900 ^{c/}	279,900		870,800		51,100 ^{d/}	
1976	60,700	361,400	4,372,800	1,384,800	7,166,200	1,500	6,700
1977	57,300	267,500	3,259,400	716,200	4,270,500	288,300	1,591,800
1978	43,500	166,200	2,384,500	609,800	3,222,500	3,500	15,400
1979 ^{b/}	42,800	148,100	1,939,600	665,600	4,206,100	560,700	2,914,600
1980 ^{b/}	27,000	132,700	1,765,400	385,900	2,221,100	1,200	9,200
1981 ^{b/}	28,500	117,000	1,402,600	400,700	2,025,200	233,600	1,050,700

a/ Includes catches made off Oregon, California and Alaska and landed in Washington.

b/ Preliminary.

c/ 1973-75 effort average.

d/ 1971-75 odd-year pink average.

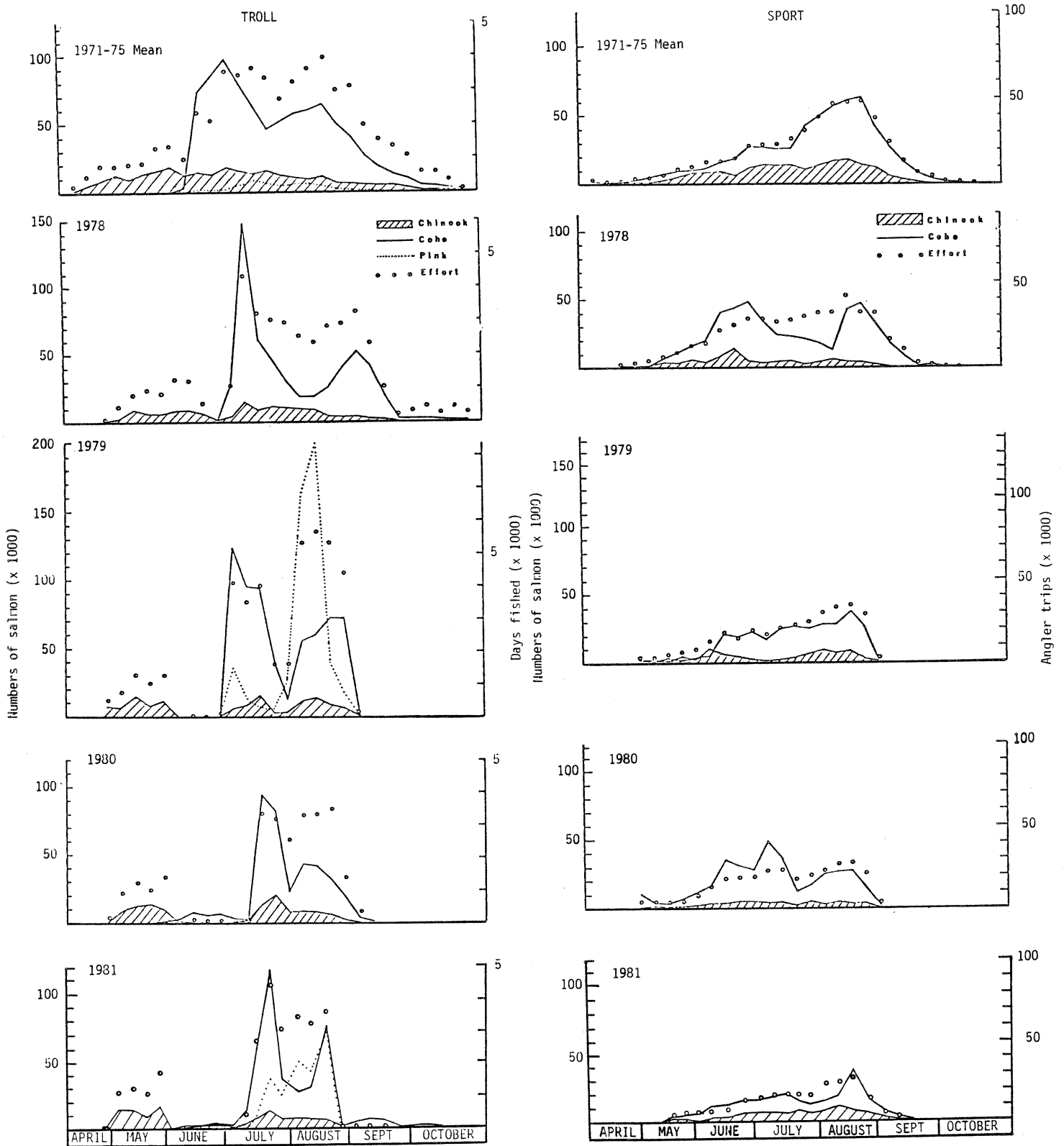


Figure II-1. Weekly Washington coastal troll and sport salmon catches and effort, 1971-75, 1977, 1978, and preliminary 1979-1981.

Table II-14. Washington commercial troll effort, and numbers of chinook, coho and pink caught by month - 1971-75 average and 1978-1981^{a/}.

		April ^{b/}	May	June	July	August	September	October	Total
<u>EFFORT (Days fished)</u>									
1973-75	Monthly	1,800	3,700	6,700	16,800	13,700	8,000	2,700	
Average	Cumulative	1,800	5,500	12,200	29,000	42,700	50,700	53,400	53,400
1978	Monthly	800	3,000	3,100	14,800	10,800	6,900	2,000	
	Cumulative	800	3,800	6,900	21,700	32,500	39,400	41,400	41,400
1979 ^{c/}	Monthly	1,000	4,200	200	15,100	20,800	200	100	
	Cumulative	1,000	5,200	5,400	20,500	41,300	41,500	41,600	41,600
1980 ^{c/}	Monthly	900	4,600	200	9,200	11,500	500	<100	
	Cumulative	900	5,500	5,700	14,900	26,400	26,900	26,900	26,900
1981 ^{c/}	Monthly	1,000	5,200	200	10,500	10,600	400	<100	
	Cumulative	1,000	6,200	6,400	16,900	27,500	27,900	27,900	27,900
<u>CHINOOK</u>									
1971-75	Monthly	20,500	48,100	58,100	77,400	37,800	21,900	8,600	
Average	Cumulative	20,500	68,600	126,700	204,100	241,900	263,800	272,400	272,400
1978	Monthly	9,000	25,500	23,600	49,600	26,700	8,200	2,900	
	Cumulative	9,000	34,500	58,100	107,700	134,400	142,600	145,500	145,500
1979 ^{c/}	Monthly	13,600	40,700	1,000	36,800	39,100	800	500	
	Cumulative	13,600	54,300	55,300	92,100	131,200	132,000	132,500	132,500
1980 ^{c/}	Monthly	11,300	44,900	800	44,900	25,500	500	300	
	Cumulative	11,300	56,200	57,000	101,900	127,400	127,900	128,200	128,200
1981 ^{c/}	Monthly	14,000	49,200	2,600	28,200	19,100	300	100	
	Cumulative	14,000	63,200	65,800	94,000	113,100	113,400	113,500	113,500
<u>COHO</u>									
1971-75	Monthly	-	-	162,900	339,200	232,600	98,000	22,900	
Average	Cumulative	-	-	162,900	502,100	734,700	832,700	855,600	855,600
1978	Monthly	1,800	100	1,600	316,200	112,700	112,900	9,500	
	Cumulative	1,800	1,900	3,500	319,700	432,400	545,300	554,800	554,800
1979 ^{c/}	Monthly	200	1,200	5,400	366,000	263,100	4,300	-	
	Cumulative	200	1,400	6,800	372,800	635,900	640,200	-	640,200
1980 ^{c/}	Monthly	100	2,100	22,900	205,000	138,500	5,400	-	
	Cumulative	100	2,200	25,100	230,100	368,600	374,000	-	374,000
1981 ^{c/}	Monthly	100	1,200	6,800	228,100	130,300	14,200	700	
	Cumulative	100	1,300	8,100	236,200	366,500	380,700	381,400	381,400
<u>PINK</u>									
1971-75	Monthly	-	200	3,600	27,200	16,800	2,300	-	
Odd-year Ave.	Cumulative	-	200	3,800	31,000	47,800	50,100	-	50,100
1977	Monthly	-	1,200	1,300	102,900	166,200	9,100	100	
	Cumulative	-	1,200	2,500	105,400	271,600	280,700	280,800	280,800
1979 ^{c/}	Monthly	-	100	2,200	93,600	459,700	600	600	
	Cumulative	-	100	2,300	95,900	555,600	556,200	556,800	556,800
1981 ^{c/}	Monthly	-	800	100	67,800	163,200	700	-	
	Cumulative	-	800	900	68,700	231,900	232,600	-	232,600

a/ Excluding Washington landings from California, Oregon and Alaska catch areas. Includes Indian troll catch and effort for all years.

b/ Includes November through April Strait of Juan de Fuca Indian troll catch.

c/ Preliminary.

Table II-15. Washington commercial troll salmon regulations^{a/} for 1971-1981.

Year	Season		Days		Size	
	Early (non-coho)	Late (all species)	Early	Late	Chinook	Coho ^{b/}
1971-75 Average	4/15-6/14	6/15-10/31	61	139	26"	16"
1976	5/1-6/14	6/15-22, 7/1-10/31	45	131	26"	16"
1977 ^{c/-d/}	5/1-6/14	7/1-9/15 north 7/1-10/9 south	45 45	77 101	28" ^{c/} 28"	16" 16"
1978 ^{d/}	5/1-6/14	7/1-9/15 north 7/1-10/31 south	45 45	77 123	28" 28"	16" 16"
1979 ^{e/}	5/1-5/31	7/1-24, 8/4-31	31	52	28"	16"
1980 ^{f/}	5/1-5/31	7/15-8/25 north 7/15-9/8 south	31 31	42 56	28" 28"	16" 16"
1981	5/1-5/31	7/15-8/21 ^{g/}	31	38	28"	16"

a/ All dates inclusive; minimum size measured as total length; no minimum size restrictions for species other than chinook and coho.

b/ 1971-77 coho size regulation effective annually beginning August 1.

c/ 1977, 28" regulation with only partial compliance.

d/ 1977-78 season closures differing north and south of Point Grenville.

e/ 1979 late season with 10-day closure (7/25-8/3); southern boundary of Columbia River area moved south from Tillamook Head to Cape Falcon.

f/ 1980 season closures differing north and south of Leadbetter Point.

g/ An experimental 10-boat coho gear study fishery was conducted off the Columbia River mouth from September 20 to October 9.

Table II-16. Summary of Washington troll effort and catch (number of fish) by coastal catch area, 1976-81, average effort for 1973-75, and average catch for 1971-75.

Year	Cape Flattery	Quillayute	Grays Harbor	Columbia River	Total Wash. Coastal Area
<u>EFFORT (days fished)</u>					
1973-75 Average	9,700	15,400	18,200	10,100	53,400
1976	10,800	13,200	22,300	13,900	60,200
1977	13,400	11,200	18,400	11,400	54,400
1978	11,700	9,400	12,900	7,400	41,400
1979 ^{a/}	12,200	8,600	13,200	7,700	41,700
1980 ^{a/}	7,100	5,500	9,400	4,900	26,900
1981 ^{a/}	8,800	4,400	10,200	4,500	27,900
<u>CATCH</u>					
<u>Chinook</u>					
1971-75 Average	55,000	85,400	100,200	31,900	272,500
1976	68,100	86,300	153,000	46,300	353,700
1977	52,200	44,800	94,100	40,500	231,600
1978	46,000	39,500	49,500	10,500	145,500
1979 ^{a/}	35,500	29,200	58,100	9,600	132,400
1980 ^{a/}	35,000	29,400	52,600	10,700	128,200
1981 ^{a/}	36,200	17,000	48,700	11,600	113,500
<u>Coho</u>					
1971-75 Average	133,000	247,400	242,400	232,800	855,600
1976	221,000	406,000	401,500	326,500	1,355,000
1977	191,500	183,600	189,700	99,000	663,800
1978	169,200	165,200	128,600	91,800	554,800
1979 ^{a/}	150,200	162,000	215,500	112,500	640,200
1980 ^{a/}	88,600	122,900	107,200	55,300	374,000
1981 ^{a/}	112,000	67,600	124,800	76,000	381,400
<u>Pink</u>					
1971-75 Odd-year Ave.	15,600	30,000	4,400	100	50,100
1977	158,500	93,100	25,200	4,000	280,800
1979 ^{a/}	325,500	198,700	29,300	3,300	556,800
1981 ^{a/}	155,200	54,600	20,100	2,700	232,600

a/ Preliminary.

occurred in all areas (Grays Harbor, 16%; Columbia River, 37%; Cape Flattery, 26%) except off Quillayute where a 45% decrease was experienced, corresponding to lower effort in that area (Table II-16).

Pink - Troll landings of pink salmon from the Washington coast totaled 232,600 in 1981 which represented a 58% and 17% decrease from 1979 and 1977, respectively. Late season troll pink fishing opportunity was limited in 1981 by Washington State landing restrictions because of the jurisdictional overlap in International Pacific Salmon Fisheries Commission Convention waters. The 1981 total, however, was more than quadruple the 1971-75 odd-year average. The large weekly landings which occurred during August 1979 never developed during 1981.

Late Season Experimental Coho Fishery - An experimental gear study was conducted September 20 through October 9 to test the ability of various troll-terminal gear to capture coho while excluding chinook salmon. The basic intent was to determine if ocean managers might have the flexibility to allow coho-only troll fisheries in areas where harvestable surpluses of coho exist but various resource management needs preclude harvest of chinook. The area from Cape Falcon to Leadbetter Point (0 to 12 miles) was chosen as a test area due to the high proportion of late run Columbia River hatchery coho expected to be available. Ten trollers were randomly selected to participate and observers were placed on each vessel to record pertinent information on catch of legal or sublegal chinook or coho by line, depth, and area. Sale of legal size coho was allowed to provide economic incentive to participate and better simulate actual commercial fishery conditions. All chinook were released.

During the 20-day period, the following catches were recorded: 1,982 legal-size coho; 1,346 sublegal-size coho; 71 legal-size chinook; and 1,541 sublegal-size chinook. Terminal gear types included: Apex spoon, Manistee spoon, a variety of brilliantly colored spoons, plugs, bait (mostly herring), butterflies, and hootchies. The latter three (especially hootchies) were fished with various flashers and dodgers. The three most successful coho gears (flashers with either bait, butterflies, or hootchies) were also the three most successful chinook gears. Spoons, baits, and butterflies without flashers also were successful on coho, but again, chinook catches were common. Plugs appeared to be more selective towards chinook than coho relative to the other lures.

Depth of gear fished had a much more significant effect on chinook and coho incidence than did the specific gear used. In the top five fathoms, coho dominated the catch (over 85%). At greater depths, catch of chinook increased rapidly, especially during the first half of the study when up to 70% of the total catch were chinook between 10 and 20 fathoms. The availability of chinook in the test area seemed to decline during the second half of the study and chinook did not outnumber coho until approximately 20 fathoms.

While a more detailed evaluation of the study will be presented by the Washington Department of Fisheries in the near future, some preliminary conclusions are appropriate. The apparent failure to discover selective coho troll gear in this study could have been related in large measure to large populations of immature, feeding chinook known to frequent the Columbia River mouth area. Any future studies related to coho gear selectivity, if considered, should be restricted to: (1) areas documented to have harvestable

surpluses of coho stocks with minimal incidence of coho stocks needing protection; (2) times of the season when catches of immature chinook and coho would be minimized; (3) areas not dominated by chinook populations in general.

Treaty Indian Troll Fishery - Historic records are available for the treaty Indian troll fishery since 1972 (Table II-17). In both 1980 and 1981 the treaty Indian portion of the total commercial troll catch has increased significantly above past years. In 1981, for troll landings from Washington coastal catch areas (including the Strait of Juan de Fuca), treaty Indians accounted for 20% of the chinook landings and 8% of the coho landings. This compares with 19% for chinook and 9% for coho in 1980.

Recreational Fishery

Recreational catch and effort statistics are presented in Tables II-18 and II-19 on an annual and monthly basis, respectively, for the entire Washington coast. Preliminary data are based upon extensive inseason creel census surveys, while final statistics are derived from post-season punch card reports published annually by the Washington Department of Fisheries.

Season - Regulations for the Washington ocean recreational salmon fishery since 1971 are tabulated in Table II-20. The 1981 season opened on Saturday, May 23, in waters north of Cape Falcon, representing the latest start on record. An inseason closure occurred on August 26 north of Cape Falcon when the fishery was projected to reach its harvest guideline of 248,000 coho. Some Washington-based ocean recreational effort continued inside Oregon State waters through Labor Day (September 7) by vessels with Oregon licenses. In addition, some fishing occurred inside the Columbia River and Strait of Juan de Fuca subsequent to the ocean closure.

The bag limit for the 1981 season was two salmon. North of the Queets River (La Push and Neah Bay) one additional salmon, other than chinook or coho, was allowed thereby taking advantage of odd-year pink abundance in these areas. The coho size limit was changed from 16 inches in previous years to 20 inches in 1981 for Washington coastal waters.

Effort - Total days fished (angler trips) for the 1981 season amounted to 234,700, a record low for recent years. This effort level represents a 16% and 24% decrease from 1980 and 1979, respectively, and partially reflects the reduced 1981 season length (Table II-18). In addition, the recreational fishery based at La Push did not get started until late in the season due to local problems at that port. Neah Bay was the only area which showed no change in 1981 effort compared to 1980 (Table II-21). Recreational effort was generally down each month throughout the season, indicating factors in addition to the later opening (Table II-19). A more traditional ratio of late-to-early recreational effort occurred in 1981, however, as compared to 1980 and 1979 when shifts of effort toward the pre-July 4 weekend were apparent (Table II-22).

Chinook - Estimated 1981 recreational chinook landings of 84,400 were 57% greater than the record low in 1980, 10% greater than 1979, but 60% less than the 1971-75 average (Table II-18). Increases above 1980 landings were experienced in all areas except La Push (Table II-21). July and August accounted for most of the increased 1981 recreational chinook catch which

Table II-17. Troll catch (numbers of fish) of chinook, coho, and pink salmon by treaty Indian and all others from Washington catch areas, 1972-1981.

Year	Chinook				Coho				Pink			
	Treaty Indian		All Others	Total	Treaty Indian		All Others	Total	Treaty Indian		All Others	Total
	Ocean	Strait ^{a/}			Ocean	Strait ^{a/}			Ocean	Strait ^{a/}		
1972	4,600	6,200	180,600	9,000	b/	9,000	542,800	b/	b/	b/	400	
1973	5,300	6,200	301,900	10,600	200	10,800	683,100	1,400	b/	1,400	53,800	
1974	8,300	3,500	336,100	17,700	b/	17,700	1,001,600	b/	b/	b/	1,000	
1975	9,300	3,100	251,300	6,200	800	7,000	753,900	800	100	900	75,300	
1976	7,400	11,000	335,200	7,600	200	7,800	1,347,300	b/	b/	b/	1,300	
1977	3,900	9,800	217,900	6,100	1,100	7,200	656,600	4,300	600	4,900	275,900	
1978	2,600	13,300	129,600	4,400	3,600	8,000	546,700	b/	b/	b/	1,100	
1979 ^{c/}	1,100	8,200	123,100	7,400	3,100	10,500	629,800	5,000	1,600	6,600	551,400	
1980 ^{c/}	4,300	10,100	113,800	31,700	800	32,500	341,600	100	0	100	300	
1981 ^{c/}	7,200	16,100	91,300	28,600	2,300	30,900	350,500	3,400	800	4,200	228,900	

a/ Strait of Juan de Fuca.

b/ Less than 50 fish.

c/ Preliminary.

Table II-18. Washington ocean recreational salmon fishery statistics (number of fish), 1971-81.

Year	Effort (Angler trips)	Catch				Fish/ Angler Trip
		Chinook	Coho	Pinks	Total	
1971	443,300	160,000	747,300	9,000	916,300	2.07
1972	490,500	212,300	541,800		754,100	1.54
1973	479,700	203,800	471,700	7,900	683,400	1.42
1974	464,900	214,600	595,300		809,900	1.74
1975	535,900	261,600	481,100	13,500	786,200	1.41
1971-75 Average	493,500 ^{a/}	210,400	567,400	10,100 ^{b/}	787,900	1.60
1976	538,100	170,700	942,800		1,113,500	2.07
1977	530,000	175,000	490,200	29,300	694,500	1.31
1978	482,800	96,400	469,800		566,200	1.17
1979 ^{c/}	310,700	76,900	290,300	17,600	384,800	1.24
1980 ^{c/}	280,100	53,600	361,500		415,100	1.48
1981 ^{c/}	234,700	84,400	237,600	10,200	332,200	1.42

a/ 1973-75 effort average.

b/ 1971-75 odd-year pink average.

c/ Preliminary.

Table II-19. Washington ocean sport salmon angler trips, and numbers of chinook, coho and pink caught, by month-- 1971-75 mean and 1978-1981.

		April	May	June	July	August	September	October	Total
<u>EFFORT</u>									
1971-75	Monthly	7,400	22,300	51,200	127,400	182,000	84,300	8,300	
Average	Cumulative	7,400	29,700	80,900	208,300	390,300	474,600	482,900	482,900
1978	Monthly	2,900	17,300	71,600	148,700	159,400	73,200	9,700	
	Cumulative	2,900	20,200	91,800	240,500	399,900	473,100	482,800	482,800
1979 ^{a/}	Monthly	-	19,300	54,200	105,600	127,700	3,900	-	
	Cumulative	-	19,300	73,500	179,100	306,800	310,700	-	310,700
1980 ^{a/}	Monthly	-	15,700	54,900	104,100	101,500	3,900	-	
	Cumulative	-	15,700	70,600	174,700	276,200	280,100	-	280,100
1981 ^{a/}	Monthly	100	10,700	38,000	86,000	92,400	7,500	-	
	Cumulative	100	10,800	48,800	134,800	227,200	234,700	-	234,700
<u>CHINOOK</u>									
1971-75	Monthly	5,900	13,100	33,900	66,900	64,100	24,800	1,700	
Average	Cumulative	5,900	19,000	52,900	119,800	183,900	208,700	210,400	210,400
1978	Monthly	2,500	9,200	33,900	21,000	23,900	4,500	1,400	
	Cumulative	2,500	11,700	45,600	66,600	90,500	95,000	96,400	96,400
1979 ^{a/}	Monthly	-	9,900	24,500	15,200	27,200	100	-	
	Cumulative	-	9,900	34,400	49,600	76,800	76,900	-	76,900
1980 ^{a/}	Monthly	-	2,600	13,500	21,800	15,400	300	-	
	Cumulative	-	2,600	16,100	37,900	53,300	53,600	-	53,600
1981 ^{a/}	Monthly	>100	2,600	12,000	36,700	31,900	1,200	-	
	Cumulative		2,600	14,600	51,300	83,200	84,400	-	84,400
<u>COHO</u>									
1971-75	Monthly	2,900	26,600	56,900	150,000	231,100	93,000	6,900	
Average	Cumulative	2,900	29,500	86,400	236,400	467,500	560,500	567,400	567,400
1978	Monthly	1,400	13,700	105,400	149,500	127,900	68,300	3,600	
	Cumulative	1,400	15,100	120,500	270,000	397,900	466,200	469,800	469,800
1979 ^{a/}	Monthly	-	7,900	47,800	115,700	116,800	2,100	-	
	Cumulative	-	7,900	55,700	171,400	288,200	290,300	-	290,300
1980 ^{a/}	Monthly	-	24,800	96,300	143,400	95,000	2,000	-	
	Cumulative	-	24,800	121,100	264,500	359,500	361,500	-	361,500
1981 ^{a/}	Monthly	<100	8,300	47,500	84,800	86,800	10,200	-	
	Cumulative		8,300	55,800	140,600	227,400	237,600	-	237,600
<u>PINK</u>									
1971-75	Monthly	-	<100	800	2,700	5,800	800	-	
Odd-year	Cumulative	-		800	3,500	9,300	10,100	-	10,100
1977	Monthly	-	300	1,700	14,600	12,600	100	-	
	Cumulative	-	300	2,000	16,600	29,200	29,300	-	29,300
1979 ^{a/}	Monthly	-	<100	1,100	3,900	12,200	400	-	
	Cumulative	-		1,100	5,000	17,200	17,600	-	17,600
1981 ^{a/}	Monthly	-	<100	200	2,700	6,900	400	-	
	Cumulative	-		200	2,900	9,800	10,200	-	10,200

a/ Preliminary.

Table II-20. Washington ocean sport salmon regulations,^{a/} 1971-1981.

Year	Season	Days	Bag	Size	
				Chinook	Coho
1971-73 (Average)	4/15-10/31	200	3	20"	20"
1974	4/13-10/31	202	3	20"	20"
1975	4/12-10/31	203	3	20"	20"
1976	5/1-10/31	184	3	24"	16"
1977	4/30-10/9	163	3	24"	16"
1978	4/29-10/31	186	3	24"	16"
1979	5/12-9/3	115	2+1 ^{b/}	24"	16"
1980	5/10-8/25 north	108	3/2 ^{c/}	24"	16"
	5/10-9/1 south	115	3/2 ^{c/}	24"	16"
1981	5/23-8/26	96	2+1 ^{d/}	24"	20"

a/ All dates inclusive; minimum size measured as total length; no minimum size for species other than chinook and coho.

b/ 1979 bag limit restricted to only two chinook/coho; third salmon confined to other three species (to take advantage of large pink abundance).

c/ 1980 seasons differed north and south of Leadbetter Point; initial 3-fish bag limit reduced to 2 fish on 7/16.

d/ 1981 bag limits restricted to only two chinook/coho; north of Queets River a third salmon of other species allowed (La Push - Neah Bay).

Table II-21. Summarized Washington recreational ocean sport angler effort and catch (numbers of fish) by area, 1971-75 average and 1976-81.

Year	Area				Total
	Neah Bay	La Push	Westport	Ilwaco	
<u>EFFORT</u>					
<u>(Angler trips)</u>					
1971-75 Average	57,600	36,200	220,600	168,500	482,900
1976	44,300	46,100	247,000	200,700	538,100
1977	56,200	29,000	263,200	181,500	530,000
1978	59,100	23,400	244,700	155,600	482,800
1979 ^{a/}	30,000	12,500	158,600	109,500	310,700
1980 ^{a/}	28,500	12,600	135,900	103,100	280,100
1981 ^{a/}	28,500	1,400	117,100	87,800	234,700
<u>Chinook</u>					
1971-75 Average	13,800	11,200	102,700	82,800	210,400
1976	11,300	6,900	91,500	61,000	170,700
1977	7,300	2,700	101,000	64,000	175,000
1978	7,200	2,700	64,800	21,700	96,400
1979 ^{a/}	2,600	1,000	48,900	24,400	76,900
1980 ^{a/}	2,800	900	33,500	16,400	53,600
1981 ^{a/}	3,100	100	57,400	23,800	84,400
<u>Coho</u>					
1971-75 Average	50,400	37,900	256,000	223,100	567,400
1976	56,600	63,000	451,300	371,900	942,800
1977	68,100	32,600	206,600	183,000	490,200
1978	45,000	21,700	204,300	198,800	469,800
1979 ^{a/}	24,800	11,600	131,600	122,300	290,300
1980 ^{a/}	23,900	15,400	167,700	154,500	361,500
1981 ^{a/}	25,700	1,300	92,000	118,500	237,600
<u>Pink</u>					
1971-75 Odd- Year Average	5,200	2,600	2,100	200	10,100
1977	10,500	3,000	14,300	1,500	29,300
1979 ^{a/}	11,500	1,800	4,000	300	17,600
1981 ^{a/}	7,800	300	1,700	400	10,200

a/ Preliminary.

Table II-22. Comparable Washington ocean recreational effort (angler trips) for May-June versus July-August, 1971-75 mean and 1976-81.

Year	May-June ^{a/}	July-August ^{b/}	Ratio of late-to-early
1971-75 Average	73,500	309,400	4.2
1976	88,500	346,800	3.9
1977	86,500	344,800	4.0
1978	86,900	308,000	3.5
1979 ^{c/}	73,500	233,300	3.2
1980 ^{c/}	70,600	205,600	2.9
1981 ^{c/}	48,700	178,400	3.7

a/ Statistical weeks 19-26.

b/ Statistical weeks 27-35.

c/ Preliminary.

partially resulted from reduced coho angling success during much of this period.

Coho - Total landings were 237,600 coho for the 1981 recreational season, which were 34% and 18% less than 1980 and 1979, respectively (Table II-18). This general trend was apparent at all coastal ports except for Neah Bay which showed small increases in 1981 coho landings compared to 1980 and 1979 (Table II-21). Coho landings were down throughout the 1981 season (Table II-19).

Pink - Recreational pink landings totaled 10,200 in 1981, similar to the 1971-75 odd-year average but 42% and 65% less than 1979 and 1977, respectively.

Size and Age Data

Chinook - Chinook salmon age composition data are presented in Tables II-23 and II-24. These data are not yet available for 1981 which was the fifth season since the minimum size regulation changed from 26 to 28 inches (total length) in the troll fishery, and the fifth year since a 24-inch regulation was implemented in the ocean recreational fishery (previously 20 inches).

Coho - Monthly troll-caught coho average weights for all coastal areas combined are listed in Table II-25. Specific comparisons are difficult due to recent changes in the all-species season but the season average of 5.1 pounds is the lowest in recent years.

Table II-23. Age composition of chinook salmon caught in Washington commercial troll fishery, 1971-75 mean and 1976-81.^{a/}

	Age	1971-75 mean	1976	1977	1978	1979 ^{b/}	1980 ^{b/}	1981
Catch	2	4,367	2,336	1,286	132	744	473	906
	3	182,755	266,763	168,711	59,271	90,124	83,877	73,836
	4	71,141	63,902	45,939	67,851	29,132	31,661	21,962
	5	6,216	9,103	5,305	4,752	3,843	2,126	1,776
	6	<u>207</u>	<u>388</u>	<u>163</u>	<u>-</u>	<u>124</u>	<u>-</u>	<u>-</u>
Total		264,686	342,492	221,404	132,006	123,967	118,137	98,480
Percent	2	1.7	0.7	0.6	0.1	0.6	0.4	0.9
	3	68.9	77.8	76.2	44.9	72.7	71.0	75.0
	4	26.9	18.7	20.7	51.4	23.5	26.8	22.3
	5	2.4	2.7	2.4	3.6	3.1	1.8	1.8
	6	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>-</u>	<u>0.1</u>	<u>-</u>	<u>-</u>
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average weight (lbs. round)		12.2	12.3	12.1	15.0	13.5	14.2	NA
Minimum size regulation ^{c/}		26"	26"	28" ^{d/}	28"	28"	28"	28"

a/ For the four Washington coastal catch areas only (plus area 4-B). Excludes November-April landings.

b/ Preliminary.

c/ Total length.

d/ Only partial compliance in 1977.

Table II-24. Age composition of chinook salmon caught in Washington ocean recreational fishery, 1971-75 mean and 1976-81.

	Age	1971-75 mean	1976	1977	1978	1979 ^{a/}	1980 ^{a/}	1981
Catch	2	70,618	11,030	5,810	3,471	6,755	5,831	31,823
	3	103,510	127,125	128,790	63,532	57,457	35,008	41,267
	4	32,491	27,515	36,198	27,861	11,305	11,636	10,486
	5	3,688	3,845	3,895	1,542	1,319	1,094	824
	6	136	275	84	-	-	6	-
	Total		210,443	169,790	174,777	96,406	76,836	53,575
Percent	2	33.6	6.5	3.3	3.6	8.8	10.9	37.7
	3	49.2	74.8	73.8	65.9	74.8	65.4	48.9
	4	15.4	16.2	20.7	28.9	14.7	21.7	12.4
	5	1.7	2.3	2.2	1.6	1.7	2.0	1.0
	6	<.1	0.2	-	-	0.1	-	-
	Total		100.0	100.0	100.0	100.0	100.0	100.0
Minimum size regulation ^{b/}		20"	24"	24"	24"	24"	24"	24"

a/ Preliminary 1979 and 1980.

b/ Total length.

Table II-25. Monthly Washington commercial troll coho salmon average round weights, 1971-1981.

Year	June	July	August	September	October	Total
1971	4.9	5.6	7.1	7.2	8.5	6.2
1972	5.0	6.0	7.6	8.3	11.1	6.8
1973	4.8	5.9	7.3	8.5	9.6	6.2
1974	4.4	5.4	7.2	8.2	9.8	6.2
1975	5.1	6.3	7.8	8.5	9.7	6.6
1976	4.1	4.8	6.0	6.4	7.5	5.2
1977	4.7	5.3	6.6	7.5	7.9	6.0
1978	4.4	4.5	6.0	6.7	7.5	5.3
1979 ^{a/}	4.1 ^{b/}	5.5	7.4	8.2	-	6.3
1980 ^{a/}	3.9 ^{b/}	5.7	6.5	6.8	-	6.1
1981 ^{a/}	3.4 ^{b/}	4.8	5.5	6.7 ^{b/}	6.9 ^{c/}	5.1

a/ Preliminary.

b/ Treaty Indian fishery.

c/ Gear study at mouth of Columbia River.

REVIEW OF SOME OF THE SOCIOECONOMIC CONDITIONS IN THE
1981 OCEAN SALMON FISHERIES

Spawning escapements and other biological fishery conditions are a result of regulations, environment, and other factors. In the same way, social and economic conditions result from a combination of factors including the general state of the economy, decisions in other sectors of the government and private industry, Council regulations and other factors. An understanding of socio-economic conditions in the fisheries in 1981 is important in the design of a salmon management regime for 1982.

The following is a brief review of available socioeconomic indicators in the 1981 ocean salmon fisheries:

- ° Number of vessels in the troll salmon fleets in 1981:
 - (a) California: 3,854 licensed vessels landing salmon (although approximately 8,500 are qualified to fish salmon under the state license moratorium). (See Table V-7.)
 - (b) Oregon: 3,587 licensed vessels landing salmon. (See Table V-6.)
 - (c) Washington: 2,594 licensed vessels landing salmon. (Comparative figures for previous years will be available in the near future.)
- ° As noted earlier in this chapter, 1981 California angler effort was down 12% from 1980 (47% less than the 1971-75 average). Oregon angler effort was slightly below 1980, although charterboat effort was the lowest since 1971 [12% below 1980, and only 23% of total Oregon effort (compared to 28% in 1980)]. Washington angler effort was also the lowest in recent years (16% below 1980).
- ° Membership in the Golden Gate Sportfishers (San Francisco's charterboat association) numbered 60 in 1981 compared to 132 ten years ago. This group includes the vast majority of the professional salmon charterboat fleet.

The Oregon charterboat fleet numbered 248 in 1981 compared to 194 in 1980.

The Washington charterboat fleet numbered 448 licensed vessels in 1981.

- ° The 1981 commercial ex-vessel salmon average prices and values were not available for Washington, but for California and Oregon, they were as follows:

California: Preliminary estimates of ex-vessel values of 1981 troll landings show a slight increase over 1980, \$14.32 million compared to \$13.15 million. (See Table V-5.) However, the 1981 value was still considerably less than the 1979 value of \$19.66 million. The price per pound for chinook in 1981 of \$2.48 was up from the 1980 value of \$2.27 per pound although, after adjustment for inflation, this only constituted a 2% increase. Coho showed a dramatic 43% increase to \$1.94 in 1981.

Oregon: The preliminary estimate of ex-vessel value for 1981 troll landings was \$9.57 million compared with \$8.19 million in 1980 and \$17.0

million in 1979 (See Table V-4.) The total value of chinook landed was low in 1981 (28% lower than in 1980, after adjusting for inflation) due to depressed catches. Nominally, the ex-vessel value of coho was 89% higher in 1981 than in 1980, or 78% higher after adjusting for inflation. The coho value was moderate compared with values from the 1970s. Both chinook and coho nominal prices per pound in 1981 were higher than in 1980. Adjusting for inflation, the 1981 chinook average prices were equivalent to 1980, while the 1981 average coho price increased 16% over 1980.

- ° Troll salmon markets were generally weak for a number of reasons. Abundant supply of Norwegian pen-reared salmon and the strength of the U. S. dollar in 1981 are cited by fish buyers as reasons for a drop in the European market for Pacific salmon. Markets were also unstable in Japan. High interest rates affected domestic salmon markets, and the influx starting in late June of cheaper Alaskan net-caught sockeye salmon further undermined troll salmon prices (1981 was a record year for Bristol Bay sockeye salmon harvests).

In California, some buyers reported special difficulties in moving small fish (5-7 pounds), which normally are destined for supermarkets. They also reported a gradual decline in the market for lox (salt-cured salmon), which utilizes primarily the larger fresh and frozen chinook. Other buyers, however, report a trend toward improved fresh salmon markets, due in part to improved transportation methods for fresh fish.

- ° Albacore serves as a supplementary fishery, and in some cases the primary fishery for many salmon trollers. Albacore harvests increased greatly compared to the poor seasons in 1979 and 1980. Albacore became available in significant numbers for a short time off the West Coast about late June/early July in 1981; primary fishing grounds were off Southern Washington/Northern Oregon, about 500-1,000 miles offshore, and, coastal California about 2-4,000 miles offshore. The appearance of albacore lured a significant segment of the troll fleet away from the salmon fishery for a brief period in the early season, reducing pressure on salmon stocks, and providing additional income to the fishermen involved. This movement of vessels away from salmon fishing into albacore fishing is common, except in 1979 and 1980, when albacore availability was low. (See Tables V-3 and V-4.)
- ° Dungeness crab is also fished by some northern California, Oregon, and Washington salmon trollers. Preliminary indications are that crab abundance in the 1981-82 fishery is very low. Poor crab fishing is expected to increase many fishermen's dependence on salmon and increase salmon fishing effort in 1982, especially in the early part of the season.
- ° In 1981, as every year, some fishing time was lost to weather. Off the Washington coast, there were 31 days between May 1 and August 31 when marine advisories were in effect. Seven of these advisories were for rough bar conditions in Grays Harbor and Willapa Bay; the remainder were small-craft advisories. Comparative data for previous years are available in Chapter V (Table V-22 and Figure V-5). Data for Oregon and California are not currently available.

- Sea surface temperatures affect the distribution concentration and "catchability" of salmon and, therefore, influence the level of harvest and fishing effort. Charts showing sea surface temperature patterns are on file as background material at the Council office in Portland, Oregon.
- U. S. Coast Guard data on accidents at sea involving fishing vessels under 60 feet long for the period May-October are available for 1981 for the Washington and Oregon coasts only. No comparative data for previous years are currently available, although some discussion of fishing vessel accidents is provided in Chapter V. The record of accidents for 1981 is as follows:

<u>North of Cape Falcon</u>	<u>South of Cape Falcon</u>
307 cases total	620 cases total
3 adrift	3 adrift
15 aground	20 aground
2 capsized	5 capsized
2 collision	451 disabled
228 disabled	60 disoriented
19 disoriented	4 endangered
5 fire	5 fire
16 flooding	40 flooding
3 medical incidents involving crew	2 medical incidents involving crew
2 out of fuel	2 out of fuel
6 overdue	6 overdue
5 rough bar escort	16 rough bar escort
2 miscellaneous	6 miscellaneous
Total lives lost - 3	Total lives lost - 2
Total lives saved - 8	Total lives saved - 24
Persons otherwise assisted - 931	Persons otherwise assisted 1,230

- Information on moorage payment defaults, moorage vacancy rates and boat loan defaults, obtained in a survey of many of the West Coast fishing ports, provides some indication of the general economic condition of both the salmon fleets and the ports that service them. Unfortunately, comparative data for previous years were not available in many cases.

The ports of Ilwaco, Grays Harbor, Newport, Gold Beach, Brookings, San Mateo and Moss Landing all reported substantial increases in moorage payment defaults, vacancy rates and boat loan defaults/repossessions. The ports of Crescent City and Depoe Bay both reported an influx of vessels from the north.

Specifically, Grays Harbor, a 1,000-boat facility, reported that 11% of payments on permanent moorage and 40% of payments on transient moorage were unpaid. Brookings found that 1980 was the worst season for permanent moorage payment defaults, while 1981 was the worst for transient moorage. In Ilwaco, \$60,000 in moorage payments (24% of the port's annual revenue) is overdue in 1981; 56% of this amount is owed by trollers (140 boats) and 18% is owed by charterboats (23 boats).

With respect to vacancy rates, Grays Harbor reported that before the 1980 season, there was a waiting list of about 200 boats; after the 1980 season

there was a 40% vacancy rate, which rose to 46% after the 1981 season. Similarly, a 2-3 year waiting list at the Port of Ilwaco was replaced by a 30% vacancy rate in 1980 and a 37% vacancy rate after the 1981 season. In 1981, 33% of Ilwaco's troll berths, 24% of its charter berths, and 41% of its recreational berths were empty.

In Grays Harbor, the charter fleet has been reduced from about 220 boats in 1978 to 142 in 1981 (four companies representing 30 vessels ceased operations in 1981). An unprecedented number of troll and charter vessels are reportedly being repossessed or are for sale.

- ° As of October 1, 1981, commercial fishermen have a new expense to contend with in fishing operations. Until that date, free medical care was provided to commercial fishermen through the U. S. Public Health Service. This program was eliminated through the recent passage of P.L. 97-35. In the future, if fishermen want health insurance for themselves or their crew, they will have to purchase private health insurance, which constitutes an extra expense.
- ° Diesel fuel prices in 1981 for marine vessels rose 15% over 1980 (see additional data in Chapter V, Table V-21 and Figure V-2). Increased operating costs such as fuel expenses placed increased economic pressures on commercial fishermen and charterboat operators and probably has contributed to decreases in recreational effort.

SUMMARY OF OCEAN FISHERIES

The harvest by the 1981 ocean salmon fisheries of California, Oregon, and Washington amounted to 826,000 chinook and 1,099,000 coho by commercial trollers and 197,000 chinook and 448,000 coho by the recreational fleet. The chinook commercial harvest was 22% below the 1971-75 average. The commercial coho catch was only 50% of the average. The recreational chinook catch was only 46% of average and the coho catch was 50% of average.

By states, the California commercial chinook harvest was 95% of 1980 and 98% of the 1971-75 average. The troll coho catch was 156% of 1980 and 22% of the average. The recreational take of chinook was 98% of 1980 and 49% of average.

Oregon commercial troll harvest of chinook in 1981 was 77% of both 1980 and the 1971-75 average; the coho catch was 162% of 1980 and 63% of average. The recreational catch of chinook was 152% of 1980 and 59% of average, and the coho catch was 61% of 1980 and 74% of average.

In Washington, the commercial troll harvest of chinook in 1981 was 87% of 1980 and 41% of the 1971-75 average, and the coho catch was 104% of 1980 and 46% of average. The recreational catch of chinook was 156% of 1980 and 40% of average, and the coho catch was 66% of 1980 and 42% of average.

Details are illustrated in Figures II-2 and II-3, and summary data are given in Table II-26. The salmon fishing seasons for 1981 are summarized in Table II-27, and past seasons are summarized in Tables II-28 and II-29.

Table II-26. Summary of ocean salmon fisheries of California, Oregon and Washington (in thousands of fish).

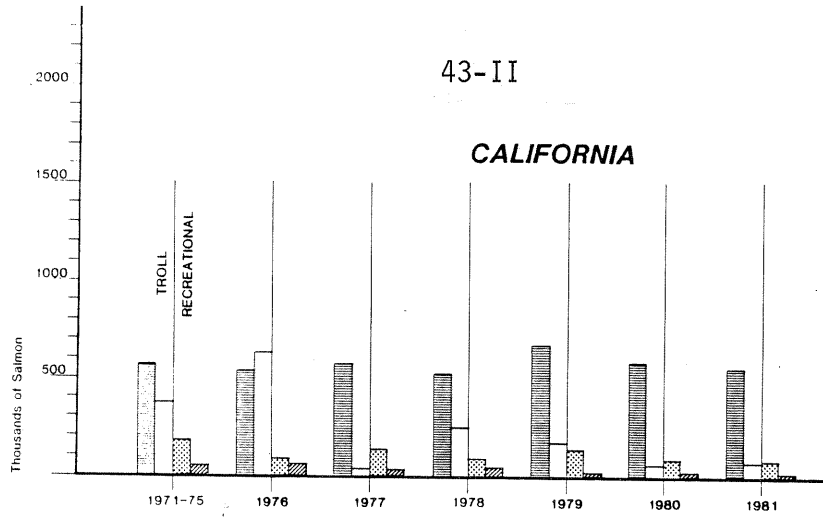
Year	Troll		Ocean Sport		Total		Troll		Ocean Sport		Total	
	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho
	<u>C A L I F O R N I A</u>						<u>O R E G O N</u>					
1971	434	442	188	67	622	509	103	1,490	30	312	133	1,802
1972	492	158	200	45	692	203	127	825	44	248	171	1,073
1973	817	348	198	32	1,015	380	363	796	61	232	424	1,028
1974	492	656	157	77	649	733	224	1,137	37	314	261	1,451
1975	579	204	104	21	683	225	225	657	76	252	301	909
1971-75 Average	563	362	170	48	733	410	209	981	49	272	258	1,253
1976	540	622	81	58	621	680	184	1,827	79	501	263	2,328
1977 ^{a/}	563	35	127	27	690	62	340	446	61	195	401	641
1978 ^{a/}	519	238	84	44	603	282	192	612	23	260	215	872
1979 ^{a/}	659	164	123	16	782	180	245	715	21	181	266	896
1980 ^{a/}	575	50	86	21	661	71	209	383	19	326	228	709
1981 ^{a/}	549	78	84	10	633	88	161	620	29	200	190	820
	<u>W A S H I N G T O N^{b/}</u>						<u>T O T A L - A L L S T A T E S</u>					
1971	252	1,264	160	747	412	2,011	789	3,196	378	1,126	1,167	4,322
1972	203	575	212	542	415	1,117	822	1,558	456	835	1,278	2,393
1973	317	702	204	472	521	1,174	1,497	1,846	463	736	1,960	2,582
1974	353	1,038	215	595	568	1,633	1,069	2,831	409	986	1,478	3,817
1975	274	774	262	481	536	1,255	1,078	1,635	442	754	1,520	2,389
1971-75 Average	280	871	210	567	490	1,438	1,052	2,214	429	887	1,481	3,101
1976	361	1,385	171	943	532	2,328	1,085	3,834	331	1,502	1,416	5,336
1977 ^{a/}	268	716	175	490	443	1,206	1,171	1,197	363	712	1,534	1,909
1978 ^{a/}	166	610	96	470	262	1,080	877	1,460	203	774	1,080	2,234
1979 ^{a/}	147	666	77	290	225	956	1,052	1,545	221	487	1,273	2,032
1980 ^{a/}	133	386	54	362	187	748	917	820	159	709	1,076	1,529
1981 ^{a/}	116	401	84	238	200	639	826	1,099	197	448	1,023	1,547

a/ Preliminary.

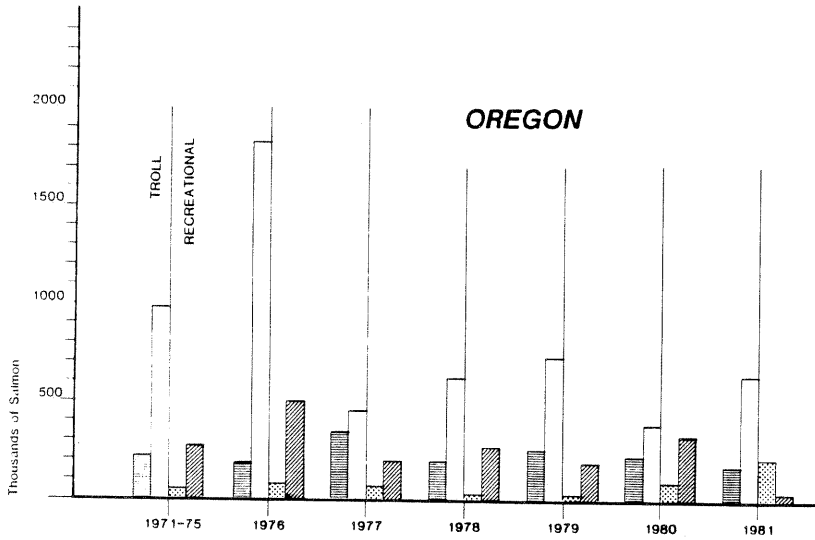
b/ Includes catches from Alaska and Oregon landed in Washington.

NOTE: Totals may be inconsistent with figures in the text because of rounding.

CALIFORNIA



OREGON



WASHINGTON

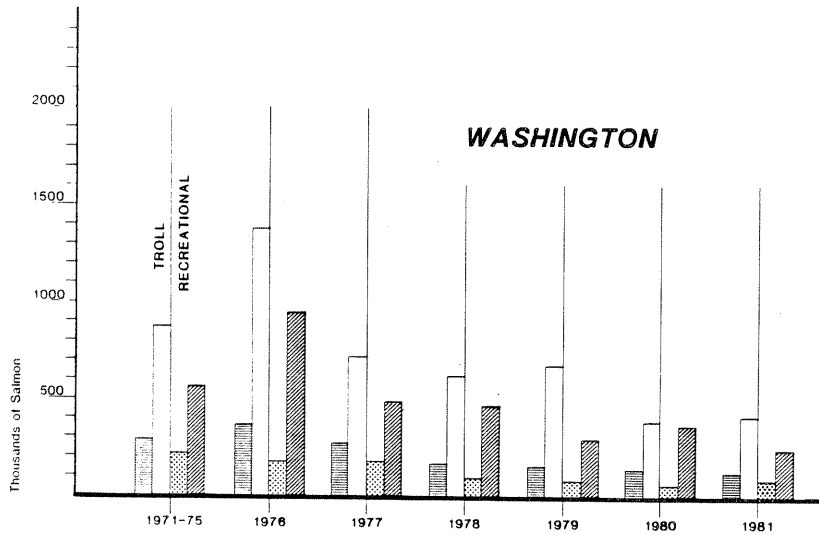


FIGURE II-2. Summary of ocean salmon landings of California, Oregon, and Washington, 1976-81 with 1971-75 average.



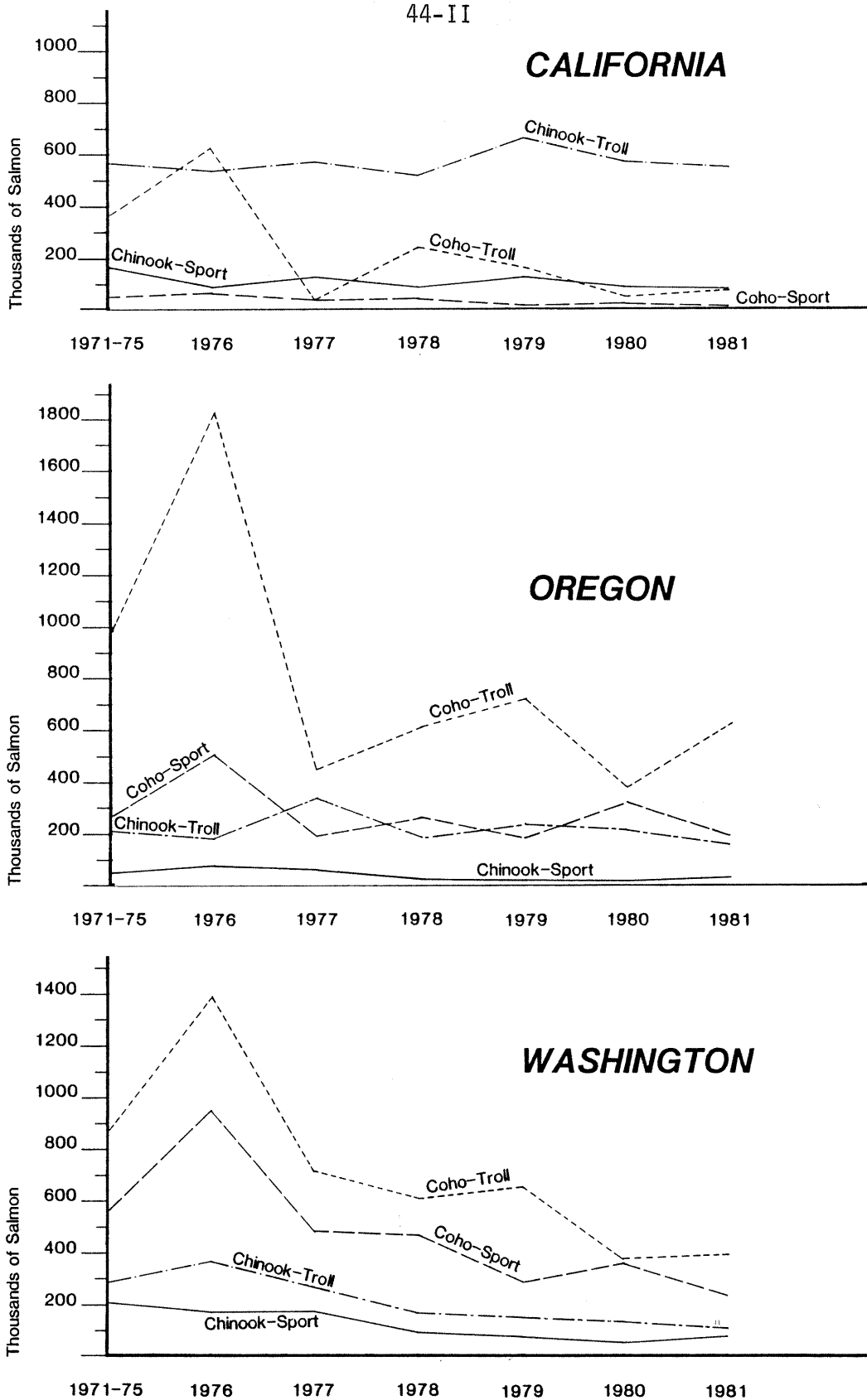


FIGURE II-3 Summary of ocean salmon landings of California, Oregon, and Washington, 1976-81 and 1971-75 average, showing trends by species and type of fishery.

Table II-27. Summary of salmon fishing season, 1981 (dates inclusive).

Area	FCZ		State Waters	
	Sport	Commercial	Sport	Commercial
<u>North of Cape Falcon</u>				
All salmon except coho		5/1-5/31		5/1-5/31
All salmon	5/23-8/26	7/15-8/21 ^{a/}	5/23-8/26 ^{b/}	7/15-8/21 ^{a/}
Size limit - Chinook	24"	28"	24"	28"
Coho	20" ^{c/}	16"	20" ^{c/}	16"
Bag limit	2+1 ^{d/}	-	2+1 ^{d/}	-
<u>South of Cape Falcon</u>				
All salmon except coho	9/21-10/31 ^{e/}	5/1-5/31 8/22-9/8 ^{f/} 9/9-10/31	9/21-10/31 ^{e/}	5/1-5/31 8/25-9/8 ^{g/} 9/9-10/31
All Salmon	5/15-8/27	7/1-8/21	5/15-9/20	7/1-8/24
Size limit - chinook	22"	26"	22"	26"
coho	16"	16"	16"	16"
Bag limit	2 ^{h/}		2 ^{h/}	-
<u>California</u>				
All salmon except coho		5/1-5/15		5/1-5/15
All salmon	2/14-11/15	5/16-5/31 7/1-9/30	2/14-11/13	5/16-9/30
Size limit - chinook	22" ^{i/}	26"	22" ^{i/}	26"
coho	22" ^{i/}	22"	22" ^{i/}	22"
Bag limit	2	-	2	-

a/ A special lottery-selected, 10-boat only, experimental troll fishery occurred off the Columbia River mouth out to 12 miles for coho only from September 20 to October 9.

b/ Season remained open through 9/7 in Oregon state waters north of Cape Falcon.

c/ Size limit for Oregon waters north of Cape Falcon was 16".

d/ Restricted to only two chinook/coho with a third salmon of other species allowed north of the Queets River.

e/ For the area from Cape Blanco to OR/CA border.

f/ For the area from Cape Falcon to Cape Sebastian using whole bait or five-inch or larger plugs.

g/ Using whole bait or five-inch or larger plugs.

h/ Increased to 3 on 8/14.

i/ Allowance for one fish to be less than 22 inches but not less than 20 inches.

Table II-28. Actual "other than treaty Indian" troll seasons^{a/} and size limits, 1977-80.

Area	SEASON		NO. OF DAYS		SIZE LIMIT	
	All except Coho	All Salmon	All		Chinook	Coho
			Coho	Salmon		
<u>1977</u>						
No. of Pt. Grenville	May 1-Jun 14	Jul 1-Sep 15	45	77	122	16
Pt. Grenville to Tillamook Head	May 1-Jun 14	Jul 1-Oct 9 ^{b/}	45	101	146	16
Tillamook Head to OR/CA Border	May 1-Jun 14	Jun 15-Oct 31	45	139	184	16
California	Apr 15-May 14	May 15-Sep 30	30	139	169	22
<u>1978</u>						
No. of Pt. Grenville	May 1-Jun 14	Jul 1-Sep 15	45	77	122	16
Pt. Grenville to Cape Falcon	May 1-Jun 14	Jul 1-Oct 31	45	123	168	16
Cape Falcon to OR/CA Border	May 1-Jun 14	Jun 15-Oct 31	45	139	184	16
California	Apr 15-May 14	May 15-Sep 30	30	139	169	22
<u>1979</u>						
No. of Cape Falcon	May 1-31	Jul 1-24; Aug 4-31 ^{d/}	31	52	83	16
Cape Falcon to OR/CA Border	May 1-31; Sep 4-Oct 31	Jul 1-Sep 3 ^{e/}	89	65	154	16
California	May 1-23	May 24-Jun 15; Jul 1-Sep 30	23	115	138	22
<u>1980</u>						
No. of Leadbetter Pt.	May 1-31	Jul 15-Aug 25	31	42	73	16
Leadbetter Pt. to Cape Falcon	May 1-31	Jul 15-Sep 8	31	56	87	16
Cape Falcon to Cape Blanco	May 1-31; Jun 16-30; Sep 9-Oct 31	Jul 15-Sep 8	99	56	155	16
Cape Blanco to OR/CA Border	May 1-31;	Jul 15-Sep 8	84	56	140	16
OR/CA Border to Cape Vizcaino	Sep 9-Oct 31 May 1-15	May 16-31; Jul 16- Sep 30 ^{g/}	15	93	108	22
South of Cape Vizcaino	May 1-15	May 16-31; Jul 1- Sep 30	15	108	123	22

a/ Dates inclusive.
b/ Closed on October 9 in Washington waters. FCZ and Oregon waters closed on October 31.
c/ Received only in partial compliance in 1977.
d/ Closed early in response to a court order to meet Columbia fall chinook treaty obligations.
e/ Closed in Oregon waters on September 3 for coho. FCZ closed on September 15.
f/ Experimental fishery with plugs and whole bait.
g/ State waters also open July 5-12 by state court order.

Table II-29. Actual ocean sport salmon seasons, ^{a/} size limits and bag limits, 1977-80.

Year	Area	Season	Days	Bag Limit	Size Limit (inches)	
					Chinook	Coho
1977	No. of Tillamook Head	Apr 30-Oct 9 ^{b/}	163	3	24	16
	Tillamook Head to OR/CA Border	Apr 30-Oct 31	185	3	- No limits -	-
	OR/CA Border to Tomales Pt.	All year	365	3	22 ^{c/}	22 ^{c/}
	So. of Tomales Pt.	Feb 12-Nov 13	275	3	22 ^{c/}	22 ^{c/}
1978	No. of Cape Falcon	Apr 29-Oct 31	186	3	24	16
	Cape Falcon to OR/CA Border	Apr 29-Oct 31	186	3	22	16
	OR/CA Border to Tomales Pt.	All year	365	3	22 ^{c/}	22 ^{c/}
	So. of Tomales Pt.	Feb 18-Nov 12	268	3	22 ^{c/}	22 ^{c/}
1979	No. of Cape Falcon	May 12-Sep 3 ^{d/}	115	2+1 ^{e/}	24	16
	Cape Falcon to OR/CA Border	May 12-Sep 16	128	2	22	16
	California	Feb 17-Oct 14	240	2	22 ^{c/}	22 ^{c/}
1980	No. of Leadbetter Pt.	May 10-Aug 25 ^{f/}	108	3/29 [/]	24	16
	Leadbetter Pt. to Cape Falcon	May 10-Sep 1 ^{f/}	115	3/29 [/]	24	16
	Cape Falcon to OR/CA Border	May 10-Sep 1; ^{f/} Sep 2-Oct 31 (except coho)	155	3/29 [/]	22	16
	California	Feb 16-Oct 13	241	2	22 ^{c/}	22 ^{c/}

47-II

a/ Dates inclusive.
b/ Emergency closure in Washington waters on October 9. FCZ and Oregon waters open through October 31.
c/ Allowance for one fish between 20-22 inches.
d/ Closed on September 3 in Washington waters to protect wild coho. FCZ and Oregon waters closed on September 16, except closed for coho in Oregon waters south of Falcon on September 3.
e/ Two chinook/coho plus one other species.
f/ In Oregon waters, all-salmon season extended through September 14.
g/ Reduced to 2 fish on July 16.

INSIDE FISHERIES
Columbia River
(Oregon and Washington)

Restrictive regulations placed upon the in-river recreational and commercial fisheries in 1981 essentially eliminated any targeted harvest other than treaty Indian harvest of chinook salmon originating above Bonneville Dam, due to the need to protect spawning escapement and provide for allocation as set forth in the Columbia River Management Plan adopted by the U. S. District Court in February 1977.

One of the most restrictive commercial seasons ever adopted for the treaty Indian fishery also occurred in 1981. Although all in-river runs originating below Bonneville Dam were of sufficient size to allow harvest, the only upriver origin in-river run with harvestable numbers was the Bonneville Pool Hatchery origin fall chinook "tule" stock.

For management purposes, the various Columbia River salmon runs are separated by seasons which reflect run timing through the fishing zones, both above and below Bonneville Dam.

Table II-30 shows the in-river run size since 1971 of each of the major salmon runs that are destined to migrate above Bonneville Dam.

Winter Season (January-March) - The Columbia River Management Plan does not set forth that catch sharing will occur during the "winter season." This is essentially due to the fact that the lower river fishery is designed primarily to harvest the early arriving segments of spring chinook salmon destined for several lower river tributaries, with Willamette River fish predominating.

The 1981 lower river commercial "winter" season was not as short as the record 1980 one-day season but was significantly below the more than 12-day average season allowed through the early 1970s. In 1981, six days were allowed for other than treaty Indian fishermen downstream of the mouth of the Willamette River during which 7,300 spring chinook were caught. Although the 1981 treaty Indian "winter" season on spring chinook was from February 1 to April 1, the entire treaty catch of 1,500 chinook was taken during the last two weeks of March. In 1980, these two weeks were closed, and the treaty chinook catch was near zero.

The lower river sport harvest through March was an estimated 3,700 fish, essentially of lower river stock origin. Table II-31 lists 1971-1981 "winter" season catches of spring chinook during February-March below Bonneville Dam.

Spring Season (April-May) - The 1981 upriver spring chinook run to the Columbia River showed some improvement over the near record low return experienced in 1980 although it was still significantly below the escapement objective as defined in the Columbia River Management Plan. The run was not of sufficient size to allow any targeted harvest.

Both commercial and recreational seasons were eliminated during April and May. In addition, significant steelhead sport fisheries in the mainstem Columbia River were also curtailed due to the impact from the incidental catch and handling of spring chinook which would unavoidably occur.

Table II-30. Estimate of runs into Columbia River of adult salmon and steelhead destined to migrate above Bonneville Dam (in numbers of fish), 1971-81.

Year	Spring Chinook	Summer Chinook ^{a/}	Sockeye	Fall Chinook	Coho ^{a/}	Steelhead
1971	146,500	66,300	150,500	244,800	53,800	224,600
1972	269,500	63,600	123,300	188,600	34,200	225,600
1973	223,800	35,300	61,300	249,300	25,800	187,800
1974	99,800	39,000	43,900	176,900	31,600	144,800
1975	97,900	33,000	58,200	311,600	32,800	84,100
1971-75 Average	167,500	47,400	87,400	234,200	35,600	173,500
1976	63,900	43,800	43,700	260,400	35,500	122,400
1977	138,400	39,100	99,800	199,000	9,300	196,100
1978	127,000	39,700	18,400	183,800	30,200	105,000
1979 ^{b/}	48,600	27,700	52,600	172,400	29,600	114,200
1980 ^{b/}	61,000	27,000	59,400	174,900 ^{c/}	12,700	129,800
1981 ^{b/}	62,800	22,400	56,000	158,000 ^{c/}	21,200	164,200

a/ Bonneville Dam count only.

b/ Preliminary.

c/ Includes Bonneville Dam count and estimated catches of upriver fish in September fisheries below Bonneville, based on mark recoveries.

Table II-31. Mainstem Columbia River "other than treaty Indian" winter season spring chinook landings (adults and jacks), 1971-80.^{a/}

Year	Commercial		Sport
	Numbers	Pounds	Numbers
1971	13,400	278,000	6,500
1972	15,800	331,000	200
1973	17,200	337,500	7,400
1974	13,300	277,000	2,200
1975	9,100	184,800	2,400
1971-75 Average	13,800	281,700	3,700
1976	4,700	96,100	3,200
1977	6,800	132,500	3,100
1978	13,500	264,700	5,000
1979 ^{b/}	5,500	111,800	1,700
1980 ^{b/}	400	7,600	800
1981 ^{b/}	7,300	141,400	3,700

a/ Includes both upper- and lower-river origin spring chinook.

b/ Preliminary.

Although no spring season harvests as such occurred in 1981, Table II-32 lists historical harvests since 1971 for reference purposes. This table represents primarily upriver origin fish, but some lower river fish also are included. Included within this table are the February-May above Bonneville Dam treaty Indian commercial catches and April-May below Bonneville Dam commercial catches. As set forth in the Columbia River Management Plan, the ceremonial and subsistence catch by treaty Indians was limited to a maximum of 2,000 fish due to low run size. Table II-32 does not include ceremonial and subsistence harvests.

Summer Season (June-July) - No targeted fisheries were allowed on summer migrating salmon runs, either chinook or sockeye, in 1981. In accordance with the Columbia River Management Plan, the treaty Indian ceremonial and subsistence catches were limited to 2,000 summer chinook and 2,000 sockeye salmon. The 1981 summer chinook run was 22,400 adults, the same as 1980 (Table II-30). The 1981 sockeye run was 56,000 fish (Table II-30).

Fall Chinook Seasons Above and Below Bonneville - The upriver adult fall chinook run totaled approximately 158,000 adult fish (205,500 including jacks) in 1981. This was near the preseason forecast of 163,500 adult fish entering the river and one of the smallest runs ever recorded. With only lower river incidental catches and passage losses at Bonneville Dam, it was projected that the run entering the upriver fishery would be 150,000 adult fish. The upriver bright component of this upriver fall chinook run was a new record low 63,900 adult fish (1980 previous record) and only slightly above the preseason forecast of 63,500 adult fish at the river mouth.

The new data base established for in-river fall chinook management in 1980 was again used successfully in 1981. This new data base reflects: (1) revised stock timing data, (2) ability to differentiate the Bonneville passage count into the two major run components (brights and tules), and (3) the ability to estimate harvest by stock of origin. As was the case in 1980, the objective of the 1981 fall chinook management was to achieve the 40,000 adult escapement goal over McNary Dam by maximizing harvest opportunity for Bonneville Pool Hatchery origin fall chinook "tule" stocks while minimizing harvest of upriver origin fall chinook "bright" stocks. It was also the objective of in-river management to reduce as much as possible the share deficit owed the treaty tribes while minimizing impact on the depressed upriver "bright" run component.

At the start of the 1981 season, controversy surrounded the establishment of the size of the actual harvest deficit owed the treaty tribes as set forth by the Columbia River Management Plan. This controversy occurred due to questions of foregone harvest opportunity, straying of upriver origin salmon into lower river hatcheries, and lack of harvest estimates of subsistence catches. The harvest deficit owed the treaty tribes for fall chinook was ultimately declared by the U. S. District Court to be 25,200 adult fish prior to 1981 harvests. The upriver origin run was not of sufficient size to eliminate this deficit.

The joint Oregon/Washington technical staffs had recommended a fishery in the Bonneville Pool area only where harvest would target on hatchery origin fall chinook while reducing upriver "bright" harvest to an incidental level. This

Table II-32. Columbia River upriver spring chinook landings (jacks and adults), 1971-81.

Year	Other than Treaty Indian			Treaty Indian	
	Commercial		Sport	Commercial	
	Numbers	Pounds	Numbers	Numbers	Pounds
1971	22,600	363,300	19,900	12,700	162,500
1972	69,900	1,076,500	24,400	42,800	637,900
1973	60,500	928,500	30,300	34,200	533,900
1974	8,400	135,100	14,000	17,500	270,800
1975	0	0	0	0	0
1971-75 Average	32,300	500,700	17,700	21,400	321,000
1976	0	0	0	400	7,200
1977	9,300	123,800	14,800	17,200	234,600
1978	0	0	100	2,600	55,400
1979 ^{a/}	0	0	0	500	10,800
1980 ^{a/}	0	0	0	c/	NA
1981 ^{a/}	0	0	0	1,500	22,300

a/ Preliminary.

b/ A portion of catches shown for other than treaty Indian fisheries are of lower river origin. Table also does not include a portion of the upriver origin spring chinook caught during the lower river winter season.

c/ Less than 50.

was not agreed to by the other parties of the Columbia River compact, so the treaty Indian season for the area above Bonneville Dam was set by the U. S. District Court.

Noting that this action did not establish a precedent for future season considerations, the U. S. District Court allowed a treaty Indian fishery throughout Zone 6 (Bonneville to McNary Dams), despite the fact that the goal of providing 40,000 fish escapement at McNary Dam was not expected to be achieved. With a mesh restriction imposed to minimize harvest of steelhead, the court-adopted season was noon September 1 to noon September 3 (two days) in all three dam pools, noon September 7 to noon September 11 (four days) in Bonneville Pool only, and noon September 14 to noon September 16 (two days) in all three pools. The last period could have been curtailed by tribal technical staff's determination and the first six hours were eliminated by tribal action. The Columbia River Compact also allowed two additional days of fishing time in a restricted area adjacent to the Spring Creek hatchery to harvest excess tule fall chinook. However, with the additional treaty fishing during September 14-16, this actually resulted in only one day of additional fishing in the terminal area, compared to the court-approved season. In summary, 3.75 days of fishing occurred in all three dam pools compared to five days in 1980, 7.75 days in the Bonneville Pool only, and one day in the restricted area adjacent to Spring Creek Hatchery.

The Columbia River catch of upriver fall chinook is summarized in Table II-33. The fishery was managed based upon the strength of the two components of the upriver fall chinook run as well as the need to reduce, as much as possible, the sharing deficit owed the treaty tribes under the Columbia River Management Plan. This plan requires that a zero deficit be achieved after five years. 1981 was the fifth year of management under the Columbia River Management Plan. In summary, the only commercial directed harvest of fall chinook below Bonneville Dam occurred in restricted, terminal fishing areas. Incidental catches of fall chinook also occurred during the coho season. The other than treaty Indian harvest of adult upriver fall chinook was 1,350 brights and 2,600 tules. Despite the almost total lower river harvest curtailment, the treaty Indian fishing season was one of the most restrictive ever adopted and the catch of 44,300 adult fall chinook was considerably below the 1971-75 average although well above the catch of 33,600 adults made in 1980.

Escapement at McNary Dam (21,200) was the lowest in the past 20 years and well below the goal of 40,000 and an allocation deficit is still owed the treaty tribes. Table II-34 shows the in-river harvest of fall chinook stocks which occurred in 1981.

Fall Coho Season

The fall coho season is established in the region below Bonneville Dam to harvest hatchery origin stocks. The total coho catch in 1981 was the second lowest on record since the early 1960s (1977 was the lowest). During the fall coho season 46,500 coho were harvested with an additional 12,500 coho caught in the lower river terminal fishing areas. Since a mainstem fall chinook fishery did not occur below Bonneville, no coho were caught during that traditional fishing period (August through early September).

Table II-33. Columbia River catch of upriver origin fall chinook (including jacks), 1971-81.

Year	Other than Treaty Indian		Treaty Indian	
	Numbers	Pounds	Numbers	Pounds
1971	93,800	2,044,700	56,500	953,600
1972	96,300	2,177,500	42,900	634,500
1973	105,400	2,350,900	67,900	1,148,300
1974	52,200	1,225,600	54,900	980,100
1975	95,900	2,257,800	140,600	2,665,600
1971-75 Average	88,700	2,011,300	72,600	1,276,400
1976	33,400	746,300	135,000	2,555,000
1977	69,200	1,509,600	55,200	941,800
1978	39,700	939,400	62,200	1,185,200
1979 ^{a/}	28,400	636,300	62,400	1,182,300
1980 ^{a/b/}	38,500 ^{c/}	825,000	35,500	650,200
1981 ^{a/b/}	4,100	69,700	53,000	915,300

a/ Preliminary.

b/ 1980-81, derived from new data base.

c/ Includes adults only.

Table II-34. Columbia River in-river harvest of individual fall chinook stocks (adults) in 1981^{a/}.

Fishery	Bonneville		Upriver Total	Lower River	
	Upriver Bright	Pool Hatchery		Natural and Hatchery	Total
<u>Lower River (other than treaty Indian)</u>					
Tributary Terminal Gillnet Fisheries	300	2,500	2,800	23,200	26,000
Mainstem Fall Coho Season	700	100	800	4,400	5,200
Mainstem Sport	<u>350</u>	<u>0</u>	<u>350</u>	<u>650</u>	<u>1,000</u>
Total Lower River Catch	1,350	2,600	3,950	28,250	32,200
<u>Upper River</u>					
Treaty Indian Above Bonneville	6,800	37,500	<u>44,300</u>	<u>0</u>	<u>44,300</u>
<u>Total River Catch</u>	8,150	40,100	48,250	28,250	76,500

a/ Preliminary.

The commercial fall coho season for other than treaty Indian fishermen in the lower river opened on September 27 (one day earlier than the record late opening date in 1980), and closed on November 12. There were a total of 25 fishing days during this period (two four-day fishing periods followed by three three-day fishing periods and then two four-day fishing periods). The initial open area was restricted to the area below Longview/Rainier highway bridge to further minimize upriver fall chinook incidental harvest. After an initial two days' fishing, the area was expanded upstream to Lady Island due to low level chinook harvests and the potential to increase coho harvests.

A targeted coho harvest was not allowed in the upriver treaty fishing area to minimize incidental catches of upriver origin steelhead under terms of the Management Plan. The only lower river commercial harvest of fall chinook occurred incidental to a mainstem coho fishery, and in the Youngs Bay and in five Washington terminal river fishery areas. Lower river fall chinook and coho catches are shown in Table II-35.

Table II-35. Columbia River commercial landings of lower river fall chinook (adults and jacks) and adult coho, 1971-81.

Year	Chinook		Coho ^{a/}	
	Numbers	Pounds	Numbers	Pounds
1971	122,100	2,027,300	264,300	2,191,500
1972	43,400	715,400	131,300	1,177,500
1973	165,300	3,201,400	183,700	1,823,200
1974	44,700	748,500	261,000	2,391,000
1975	77,400	1,478,100	156,600	1,530,800
1971-75 Average	90,600	1,634,100	199,400	1,822,800
1976	114,900	2,174,200	168,400	1,298,400
1977	97,900	1,721,700	39,000	308,900
1978	70,300	1,213,900	132,700	1,074,100
1979 ^{b/}	74,200	1,283,700	127,600	1,065,700
1980 ^{b/}	78,400 ^{c/}	NA	149,800	NA
1981 ^{b/}	27,600 ^{c/}	NA	59,000	NA

a/ Includes small numbers of August landings, except in 1980 and 1981 which include terminal fishery catches.

b/ Preliminary.

c/ The chinook catch for 1980 and 1981 is an estimate of lower river stocks caught in all fisheries below Bonneville Dam, September-October.

WASHINGTON COASTAL AREA

Commercial net and river sport fisheries historically occur in Willapa Bay, Grays Harbor, and several north Washington coastal rivers. No treaty Indian fishing rights have been established in Willapa Bay. The Willapa Bay salmon fisheries are managed exclusively by the Washington Department of Fisheries (WDF).

A treaty Indian net fishery occurs in Grays Harbor along with non-Indian commercial net and recreational fisheries. In addition, an on-reservation, non-treaty Indian net fishery operates on the Chehalis River (Grays Harbor tributary).

The net fisheries along the Washington coast north of Grays Harbor are currently conducted only by treaty Indians. Recreational fisheries occur on most river systems. Management of salmon harvest in Grays Harbor and north Washington coastal rivers is shared by WDF and tribal governments depending upon the specific fishery, participating fishermen, and location. Proposals on fishing schedules, allowable harvest, and escapement needs are exchanged and agreed to by all parties wherever possible prior to commencement of each fishery. If agreement is not possible, the matter is referred to the U. S. District Court Fishery Advisory Board (F.A.B.).

The catch statistics presented here are preliminary, and may change significantly by season's end. Historical catch figures reflect WDF and tribal catch records for these fisheries.

Willapa Bay - The summer season for sturgeon and non-local chinook started July 6 and continued through August 20. A total of 4,600 chinook were taken during this period.

Fishing for local salmon stocks began August 24 and continued through November 30. Preliminary catches for this local season are 12,200 chinook, 29,800 coho, and 19,000 chum. Catches for 1971-1981 are shown in Table II-36.

Catch on local chinook was 31% above the 1971-1975 average and similar to 1979 and 1980. Coho catch was 129% above the 1971-1975 average, the third best since 1956. Chum catch was 43% below the 1971-1975 average.

Grays Harbor - The early season gillnet fishery for sturgeon and non-local chinook began July 6 and continued through August 14 for treaty non-Indian fishermen and until August 26 for treaty Indian fishermen. A total catch of 1,400 chinook by treaty non-Indian fishermen and 200 chinook by treaty Indian fishermen was taken during this time period.

Preseason predictions indicated no harvestable local chinook would be available in 1981 so no directed fisheries on local chinook stocks were allowed. A total of 4,100 chinook (Table II-37) were taken incidentally during coho and chum fisheries. The Quinault Indian fishery for coho began on September 20 for two days and then closed to protect chinook. It restarted October 2 for another two weeks. Chum fishing began October 24 and ran to October 26. Total tribal catch was 3,500 chinook, 24,400 coho, and 8,600 chum. A proposed non-Indian gillnet fishery for coho starting in late September was canceled because of expected allocation problems and fishing was

Table II-36. Willapa Bay chinook and coho catches in numbers of fish by gillnet gear, 1971-81.

Year	Early Season ^{a/}	Regular Fall Season		
	Chinook	Chinook	Coho	Chum
1971	2,100	7,800	14,500	17,100
1972	2,400	8,600	10,800	56,400
1973	27,900	12,600	16,700	35,400
1974	5,000	8,700	15,800	35,500
1975 ^{b/}	6,800	8,600	7,400	23,500
1971-1975 Average	8,800	9,300	13,000	33,600
1976 ^{b/}	15,700	13,300	9,000	33,100
1977 ^{b/}	21,900	9,400	3,100	8,100
1978	3,800	7,600	7,000	28,400
1979 ^{c/}	5,500	12,700	31,900	1,200
1980 ^{c/}	11,900	12,900	25,700	29,800
1981 ^{c/}	4,600	12,200	29,800	19,000

a/ Prior to August 26. Represents non-local stocks.

b/ Includes Indian catches although no treaty rights have been adjudicated in this area.

c/ Preliminary.

Table II-37. Grays Harbor treaty Indian and treaty non-Indian salmon commercial catches in number of fish by gillnet gear, 1971-81 (does not include Chehalis Indian catch).

Year	Early Season		Fall Chinook				Fall Season				Chum	
	Chinook ^{a/}	Total	Treaty		Total	Treaty		Total	Treaty		Total	
			Non-Indian	Indian		Non-Indian	Indian		Non-Indian	Indian		
1971	400	8,900	0	8,900	58,700	0	58,700	12,500	0	12,500	0	12,500
1972	400	10,100	0	10,100	46,600	0	46,600	46,800	0	46,800	0	46,800
1973	6,100	10,500	0	10,500	40,200	0	40,200	34,300	0	34,300	0	34,300
1974	1,700	7,900	100	8,000	49,500	100	49,600	28,800	0	28,800	0	28,800
1975	400	7,000	1,300	8,300	21,000	3,500	24,500	10,000	2,800	12,800	2,800	12,800
1971-75 Average	1,800	8,900	300	9,200	43,200	700	43,900	26,500	600	27,100	600	27,100
1976	5,300	2,900	3,100	6,000	13,800	14,700	28,500	12,800	10,200	23,000	10,200	23,000
1977	13,500	1,800	4,000	5,800	1,500	2,600	4,100	600	1,000	1,600	1,000	1,600
1978	900	700	2,700	3,400	900	4,300	5,200	7,600	7,900	15,500	7,900	15,500
1979 ^{b/}	900	0	100	100	0	3,300	3,300	0	<100	<100	<100	<100
1980 ^{b/}	1,600	3,500	5,700	9,200	10,300	23,800	34,100	8,800	15,700	24,500	15,700	24,500
1981 ^{b/}	1,600 ^{c/}	600	3,500	4,100	3,000	24,800	27,800	10,400	8,600	19,000	8,600	19,000

a/ Prior to August 16. Represents non-local stocks.

b/ Preliminary.

c/ Includes 1,450 non-Indian and 150 treaty Indian chinook.

restricted to a three-day chum fishery between October 27 and October 31. Treaty non-Indian gillnet catch totaled 600 chinook, 3,000 coho, and 10,400 chum.

Sport fishing in Grays Harbor and its tributaries was severely restricted in 1981. With the exception of later season openings in the Humptulips and Satsop Rivers designed to harvest extra hatchery fish, all other sport fishing was limited to fish less than 24" total length.

Chehalis River (Grays Harbor Tributary) - A non-treaty Indian gillnet fishery is conducted by the Chehalis Tribe on their reservation near Oakville on the Chehalis River. Spring/summer chinook fishing was severely restricted in 1981 to improve declining escapements, although catch of this run was similar to 1980. Catches of fall chinook and coho likely will be below average while chum catches are above average (Table II-38).

Table II-38. Chehalis Indian Reservation catch, 1971-81.

Year	Spring/Summer Chinook	Fall Chinook	Coho	Chum
1971	600	500	3,600	500
1972	900	1,700	1,600	600
1973	800	2,200	3,300	800
1974	300	500	4,700	500
1975	100	600	900	400
1971-75 Average	500	1,100	2,800	500
1976	400	400	4,000	700
1977	900	1,300	1,500	700
1978	600	1,100	1,800	1,700
1979 ^{a/}	800	1,400	5,900	200
1980 ^{a/}	400	800	4,200	1,900
1981 ^{b/}	200	600	3,100	1,600

a/ Preliminary.

b/ Through 11/22/81.

NORTH COASTAL FISHERIES

Quinault River

Sockeye - A total of 21,700 sockeye were harvested by treaty Indian fisheries in the Quinault River during a fishery operating four days per week during May and five days per week in June. The sockeye run is managed for natural production.

Spring/Summer Chinook - A small run of spring/summer chinook enters the Quinault River from April to August. The only directed terminal fishery on this stock occurs in July. Harvest prior to July is taken incidentally during the sockeye fishery. After July, the fishery targets on hatchery returns of fall chinook. Total 1981 terminal harvest of this stock was 300 fish. The spring/summer stock is managed for natural production.

Coho, Fall Chinook, and Chums - Quinault coho, fall chinook and chum stocks are managed to harvest hatchery production to the extent possible and still provide natural escapement to utilize available rearing habitat. The fall fishery harvested approximately 10,100 coho, 5,300 fall chinook and 4,500 chum. Recent annual catches by species are shown in Table II-39.

Queets River

All Queets River salmon stocks are managed for natural production (Table II-40).

Spring/Summer Chinook - Spring/summer chinook is the predominant stock returning to the Queets River from May through August. Run sizes of this stock have always been small relative to fall chinook. A three-day per week evaluation fishery commenced June 1, continuing for three days per week for four weeks. A dispute between the State and the tribe about inseason estimates and the appropriate escapement goal for this stock resulted in a ruling by the F.A.B. chairman for an interim escapement goal of 1,050 for 1981. A directed net fishery occurring intermittently from June to August harvested a total of 300 fish. River sport catch of spring/summer chinook is estimated at 100 fish.

Fall Chinook - The 1981 terminal run size of 8,300 fall chinook was the highest recorded since at least 1973 and 120% of preseason expectations. The tribe operated a fall chinook fishery for five days per week beginning September 1. The five days per week evaluation fishery commenced on September 28 and continued for two weeks. The inseason estimators showed a strong chinook run and a poorer than expected coho run. The tribe conducted brief fisheries in October with large mesh gear, targeting on chinook. A tribal fishery during September and October harvested 3,800 fall chinook. River sport catch of fall chinook is estimated at 300 fish.

Fall Coho - The estimated 1981 terminal run size of fall coho was 10,900, approximately 73% of preseason expectations. Terminal net and river sport catches in 1981 were 4,200 and 100 coho respectively.

Chum - A small run of chum salmon returns to the Queets River. No management objectives have been established for this stock and harvests are taken incidentally during fisheries targeted on other species. In 1981, an estimated 200 chum were taken by Queets River fisheries.

Table II-39. Treaty Indian gillnet catch of salmon in the Quinault River, 1971-81^{a/}.

Year	Spring Chinook	Fall Chinook	Coho	Chum	Sockeye
1971	NA	2,100	11,800	900	9,700
1972	NA	2,900	13,000	2,300	16,200
1973	300	1,600	9,300	1,200	12,400
1974	200	2,500	14,800	3,800	25,600
1975	100	1,600	4,700	1,800	73,800
1971-75 Average	NA	2,100	10,700	2,000	27,500
1976	100	3,200	5,600	7,400	14,800
1977	100	6,000	1,900	3,600	30,500
1978	300	6,900	6,900	13,700	21,000
1979	300	6,500	17,800	3,200	4,700
1980	300	4,400	12,400	11,900	16,800
1981 ^{b/}	300	5,500	10,200	4,500	21,700

a/ 1971-72 data from catch records of Washington Department of Fisheries. 1973-81 data from Quinault Indian Tribe.

b/ Preliminary.

Table II-40. Treaty Indian gillnet catch of salmon in Queets River, 1971-81.^{a/}

Year	Spring/Summer Chinook	Fall Chinook	Coho	Chum
1971	1,100	2,300	6,000	<50
1972	1,200	2,500	5,100	100
1973	500	3,600	9,000	100
1974	400	3,100	12,000	200
1975	300	2,100	2,900	300
1971-75 Average	700	2,100	7,000	100
1976	100	1,300	2,800	100
1977	400	1,900	1,000	300
1978	200	900	2,300	100
1979	500	900	2,700	100
1980	100	2,600	3,200	500
1981 ^{b/}	300	3,800	4,200	200

a/ 1974 to 1981 agreed upon between Quinault Tribe and WDF.

b/ Preliminary.

Hoh River

All Hoh River stocks are managed for natural production supplemented by plants of hatchery fish (Table II-41).

Spring/Summer Chinook - The tribe initiated a three-day per week evaluation fishery on June 1 continuing through June. A dispute over inseason estimators and escapement goals was resolved by a ruling from the F.A.B. chairman, who set the 1981 goal at 1,500. The additional chinook made available for harvest by this decision were taken in three weeks of fishing time during July. Terminal net and sport harvests for this stock in 1981 were 400 and 200 fish respectively. The tribal season commenced on June 1 and ended in July.

Fall Chinook - Terminal net and river sport harvests for fall chinook in 1981 were 800 and 100 fish, respectively. The 1981 terminal run size of 4,600 showed a substantial increase over 1980, and 48% of the preseason forecast.

Fall Coho - The fall coho season commenced on September 1 and ranged from three to five days per week through September 25. The major objective of this fishery was to harvest hatchery coho, which have a somewhat earlier run timing than natural coho.

The evaluation fishery for fall coho and fall chinook commenced September 28 for two weeks. A dispute between the state and the tribe arose concerning run size estimators and allocation rules. The allocation rules are being addressed in a long-range planning process initiated at the direction of the U. S. District Court. Run size estimators are evaluated each season. The natural coho run was managed within the constraint of a federal court mandated minimum escapement of 2,400.

Terminal net and river sport harvests of fall coho were 2,000 and less than 100 fish respectively. The 1981 terminal run size was 23% larger than 1980's and 81% of preseason expectations.

Chum - No management objectives have been established for this stock. In 1981, less than 100 chum were taken by river gillnet fisheries.

Quillayute River

Hatchery stocks dictate the management objectives of spring/summer stocks, while fall stocks are managed for natural production.

Spring/Summer Chinook - Spring/summer chinook are managed for hatchery production. The spring chinook fishery commenced May 3 and continued through June at five days per week. Because of an expected poor run size of summer chinook the fishery was reduced from five to two-four days per week during July and early August. Terminal net and river sport harvests were 1,000 and 100 fish, respectively (Table II-42).

Summer Coho - Summer coho are managed for hatchery production. The tribe commenced a fishery targeted on coho on August 9. The coho fishery continued at five days per week until September 18. Concern about poor escapements of summer coho to Soleduck Hatchery resulted in a reduction from five days per week to three days during the week of September 20. The terminal run size was 3,700, 15% of the 1980 level and 49% of preseason expectations. Terminal net and river sport harvests were 2,400 and 200 fish, respectively.

Table II-41. Treaty Indian gillnet catch of salmon in the Hoh River.

Year	Spring/Summer Chinook	Fall Chinook	Coho
1971	1,500	1,100	5,200
1972	1,400	700	2,900
1973	700	2,200	6,700
1974	600	800	5,700
1975	500	700	2,400
1971-75 Average	900	1,100	4,600
1976	500	500	1,800
1977	900	1,600	1,000
1978	900	800	2,800
1979	700	400	3,100
1980	100	500 ^{a/}	1,400
1981 ^{b/}	400	800	2,000

a/ Includes 110 fish taken as brood stock.

b/ Preliminary.

Table II-42. Treaty Indian gillnet catch of salmon in the Quillayute River, 1971-81.

Year	Chinook		Coho	
	Spring/Summer	Fall	Summer	Fall
1971	400	2,900	800	5,600
1972	800	3,500	800	7,000
1973	300	5,000	1,100	42,800
1974	100	3,800	1,600	28,000
1975	2,300	2,300	700	7,400
1971-75 Average	800	3,500	1,000	18,200
1976	2,500	2,200	1,300	7,400
1977	2,600	5,300	1,400	2,700
1978	3,200	1,400	300	4,500
1979	2,500	2,600	11,200	6,600
1980	1,000	1,400	13,600	5,500
1981 ^{a/}	1,000	1,300	2,400	3,700

a/ Preliminary.

Fall Chinook - Fall chinook are managed for natural production. The management season for fall chinook began September 1. Chinook were taken along with summer coho in a five day per week fishery through September 18, and a three-day fishery was conducted during the week of September 20.

The fall chinook evaluation fishery began on September 28. The evaluation fishery closed on October 11 to review data which subsequently indicated a need to protect fall chinook. A coho fishery scheduled for October 18-21 was terminated early due to excessive incidental chinook catches.

Terminal net and river sport harvests were 1,300 and 200 fish, respectively. The terminal run size of 7,400 was 86% of the preseason forecast and 12% lower than the 1980 return.

Fall Coho - Fall coho are managed for natural production. The evaluation fishery for fall coho began on September 28. The terminal run size was estimated at 13,000, 28% lower than 1980's and 15% of preseason expectations. Terminal net and river sport harvests were 3,700 and less than 100 fish, respectively.

Sockeye and Chum - No management objectives have been established for these species. In 1981, a ceremonial and subsistence harvest of 200 sockeye was recorded.

Washington coastal net catches for all areas are summarized in Table II-43.

PUGET SOUND

Commercial Fishery - The 1981 catches were larger than the 1971-75 averages for all species except coho and sockeye. The data in Table II-44 are strictly Puget Sound net catches and do not reflect treaty allocations. When the 1981 Plan was adopted, it was recognized that the escapement goal established for Skagit River coho by the WDF could not be met even with a complete closure of all intercepting Washington fisheries north of Cape Falcon. A dispute concerning a treaty non-Indian chum evaluation fishery in Skagit Bay was brought before the Fishery Advisory Board in October. The Skagit tribes requested that the evaluation fishery be delayed to protect coho and expressed their concern that the incidental harvest of large numbers of coho present in Skagit Bay would further aggravate an allocation imbalance of several thousand coho in favor of non-treaty fisheries. The Fishery Advisory Board permitted the evaluation fishery to proceed in order to obtain information necessary for chum management, but determined that purse seine gear would not be permitted to participate. A detailed catch analysis of all Puget Sound management units on a species-by-species basis will be provided at a later date.

Recreational - Inseason Puget Sound marine sport fishery estimates are not available for 1981. Historical data are listed in Table II-45.

SUMMARY OF INSIDE FISHERIES

Data on the inside commercial salmon harvest presented in this report are summarized in Table II-46.

Table II-43. Summary of estimated 1981 Washington coastal net catch as compared to 1980 catch and 1971-75 average catch.

Region	Race	Catch		
		1981 ^{a/}	1980 ^{a/}	1971-75 Average
Willapa Bay	Non-local chinook	4,600	11,900	8,800
	Local fall chinook	12,200	12,900	9,300
	Coho	29,800	25,700	13,300
	Chum	19,000	29,800	33,600
Grays Harbor ^{b/}	Non-local chinook	1,600	1,600	1,800
	Local fall chinook	4,100	9,200	9,200
	Coho	27,800	34,100	43,900
	Chum	19,000	24,500	27,000
Quinault River	Spring/summer chinook	300	300	
	Fall chinook	5,500	5,200	2,100
	Coho	10,200	12,400	10,700
	Chum	4,500	11,900	2,000
	Sockeye	21,700	16,800	27,500
Queets River	Spring/summer chinook	300	100	700
	Fall chinook	3,800	2,600	2,100
	Coho	4,200	3,200	7,000
	Chum	200	500	100
Hoh River	Spring/summer chinook	400	100	900
	Fall chinook	800	500	1,100
	Coho	2,000	1,300	4,600
Quillayute River	Spring/summer chinook	1,000	1,000	800
	Summer coho	2,400	13,600	1,000
	Fall chinook	1,300	1,400	3,500
	Fall coho	3,700	5,500	18,200
	Sockeye	200	<50	NA
Chehalis Reservation	Spring/summer chinook	200	300	500
	Fall chinook	600	1,200	1,100
	Coho	3,100	4,200	2,800
	Chum	1,600	800	500

a/ Preliminary.

b/ Does not include Chehalis Indian catch.

Table II-44. Puget Sound commercial net fishery salmon catches, 1971-81.^{a/}

Year		S P E C I E S				
		Chinook	Coho	Pink	Chum	Sockeye
1971	Treaty non-Indian	130,700	435,200	2,355,600	123,800	3,040,400
	Treaty Indian	<u>29,200</u>	<u>118,500</u>	<u>122,900</u>	<u>27,500</u>	<u>22,400</u>
	Total	159,900	553,700	2,478,500	151,300	3,062,800
1972	Treaty non-Indian	83,900	453,700	100	736,300	1,128,100
	Treaty Indian	<u>33,800</u>	<u>97,100</u>	<u><100</u>	<u>51,900</u>	<u>16,500</u>
	Total	117,700	550,800	100	788,200	1,144,600
1973	Treaty non-Indian	94,100	684,300	2,247,200	462,400	2,616,200
	Treaty Indian	<u>42,300</u>	<u>117,500</u>	<u>116,100</u>	<u>72,700</u>	<u>58,800</u>
	Total	136,400	801,800	2,363,300	535,100	2,675,000
1974	Treaty non-Indian	80,200	494,400	200	229,800	2,452,100
	Treaty Indian	<u>64,500</u>	<u>379,000</u>	<u><100</u>	<u>166,300</u>	<u>33,200</u>
	Total	144,700	873,400	200	396,100	2,485,300
1975	Treaty non-Indian	130,400	550,300	1,226,000	103,100	1,558,300
	Treaty Indian	<u>100,000</u>	<u>411,300</u>	<u>104,200</u>	<u>72,500</u>	<u>58,300</u>
	Total	230,400	961,600	1,330,200	175,600	1,616,600
1971-75 Average	Treaty non-Indian	103,900	523,600	1,942,900 ^{b/}	331,100	2,159,000
	Treaty Indian	<u>54,000</u>	<u>224,700</u>	<u>114,400^{b/}</u>	<u>78,200</u>	<u>37,800</u>
	Total	157,900	748,300	2,057,300 ^{b/}	409,300	2,196,800
1976	Treaty non-Indian	91,100	376,400	100	478,700	1,223,000
	Treaty Indian	<u>123,000</u>	<u>290,300</u>	<u><100</u>	<u>279,200</u>	<u>95,500</u>
	Total	214,100	666,700	100	757,900	1,318,500
1977	Treaty non-Indian	136,200	555,600	1,858,800	279,800	1,473,500
	Treaty Indian	<u>108,500</u>	<u>447,200</u>	<u>175,200</u>	<u>176,300</u>	<u>365,700</u>
	Total	244,700	1,002,800	2,034,000	456,100	1,839,200
1978	Treaty non-Indian	121,100	383,300	200	751,700	1,137,600
	Treaty Indian	<u>128,000</u>	<u>435,000</u>	<u><100</u>	<u>483,700</u>	<u>235,300</u>
	Total	249,100	818,300	300	1,235,400	1,372,900
1979	Treaty non-Indian	78,500	276,500	3,393,300	21,900	1,372,700
	Treaty Indian	<u>114,200</u>	<u>481,400</u>	<u>753,600</u>	<u>84,000</u>	<u>424,200</u>
	Total	192,700	757,900	4,146,900	105,900	1,796,900
1980	Treaty non-Indian	90,400	475,300	200	508,100	271,400
	Treaty Indian	<u>156,700</u>	<u>788,000</u>	<u>200</u>	<u>450,400</u>	<u>268,100</u>
	Total	247,000	1,263,300	400	958,300	539,500
1981 ^{c/}	Treaty non-Indian	76,500	273,500	2,707,600	217,000	752,700
	Treaty Indian	<u>152,900</u>	<u>470,500</u>	<u>1,147,700</u>	<u>289,400</u>	<u>548,500</u>
	Total	230,400	744,000	3,855,300	506,400	1,301,200

a/ Data do not reflect treaty allocations. Includes U. S. and Canadian-origin salmon.

b/ Odd-year average.

c/ Preliminary data.

Table II-45. Summary of Puget Sound Marine recreational salmon catches,^{a/} 1971-1981.

Year	Species	
	Chinook	Coho
1971	153,400	98,400
1972	189,100	74,100
1973	196,300	61,600
1974	255,400	163,600
1975	334,000	198,800
1971-75 Average	225,600	119,300
1976	307,200	223,900
1977	196,100	177,300
1978	228,700	223,600
1979	285,700	258,200
1980	244,000	118,700
1981	NA	NA

a/ Washington Department of Fisheries Statistical Areas 5-13, which include the Strait of Juan de Fuca, San Juan Islands, and inner Puget Sound.

Table II-46. Summary of commercial net catch of salmon from inside fisheries of Washington and the Columbia River, 1971-81 (in thousands).

Year	Washington Coast					Puget Sound				
	Chinook	Coho	Chum	Sockeye	Chinook	Coho	Chum	Sockeye	Pink	
1971	31	106	31	10	160	554	151	3,063	2,478	
1972	35	88	106	16	118	551	788	1,145	a/	
1973	74	129	72	12	136	802	535	2,675	2,363	
1974	36	132	69	26	145	873	396	2,485	a/	
1975	35	51	39	74	230	962	176	1,617	1,330	
1971-75 Average	42	102	63	28	158	748	409	2,197	2,057 ^{b/}	
1976	52	61	64	15	214	667	758	1,319	a/	
1977	72	17	14	30	245	1,003	456	1,839	2,034	
1978 ^{c/}	32	31	59	21	249	818	1,235	1,373	a/	
1979 ^{c/}	36	82	5	5	193	758	106	1,797	4,147	
1980 ^{c/}	48	100	68	17	247	1,263	958	540	a/	
1981 ^{c/}	37	102	44	22	230	744	506	1,301	3,855	

Year	Columbia River					Total				
	Chinook	Coho ^{d/}	Chum	Sockeye	Pink	Chinook	Coho	Chum	Sockeye	Pink
1971	331	277	-	-	522	937	182	3,073	2,478	
1972	319	140	-	-	472	779	894	1,161	a/	
1973	454	195	-	-	664	1,123	607	2,687	2,363	
1974	191	273	-	-	372	1,278	465	2,511	a/	
1975	323	162	-	-	588	1,175	215	1,691	1,330	
1971-75 Average	324	209	-	-	524	1,059	472	2,225	2,057 ^{b/}	
1976	288	172	-	-	554	900	822	1,334	a/	
1977	256	40	-	-	573	1,060	470	1,869	2,034	
1978 ^{c/}	188	136	-	-	469	985	1,294	1,394	a/	
1979 ^{c/}	171	132	-	-	400	972	111	1,802	4,147	
1980 ^{c/}	152	150	-	-	447	1,513	1,026	557	a/	
1981 ^{c/}	94	59	-	-	361	905	550	1,323	3,855	

a/ Less than 1,000.
b/ Odd-year average.
c/ Preliminary data.
d/ Includes treaty catch through 1979.

III. EVALUATION OF 1981 MANAGEMENT

INTRODUCTION

Before regulations are proposed for the 1982 ocean salmon fisheries, it is desirable to analyze the performance of the regulatory controls in effect during the 1981 season relative to management objectives.

In the 1978 Salmon Management Plan,^{1/} the Council established objectives toward which management would be directed for the duration of the Plan. In 1980, the Council refined these objectives further by adopting escapement and allocation goals.

These two issues, escapement and allocation, are reviewed in this section but their analysis is somewhat limited at this time due to the incomplete and preliminary nature of much of the data necessary for the analysis. As additional data become available and preliminary data are confirmed, updated reports will be provided to the Council.

ASSESSMENT OF HARVEST GUIDELINES AND QUOTAS

Coho Harvest Guidelines

North of Cape Falcon

A preseason harvest guideline of 620,000 coho north of Cape Falcon was established in 1981. This harvest level was designed to provide for spawning escapement objectives and aggregate treaty Indian allocations for Washington coastal coho stocks. The total quota was allocated on a 60:40 basis to the ocean user groups as follows: 372,000 troll and 248,000 recreational. Early inseason closures were implemented for both fisheries based on projected catches and the preseason harvest guidelines. The final catches north of Cape Falcon totaled 725,600 coho, or 433,700 troll (60%) and 291,900 recreational (40%) (Table III-1).

While estimated 1981 catches were 105,600 (17%) higher than the preseason quota, the distribution of coho catch north of Cape Falcon is a critical factor in examining potential for fisheries impacts in this area. Specifically, the 620,000 quota north of Cape Falcon was based upon a harvest distribution projection of 137,000 coho south (Columbia River area) and 483,000 coho north of Leadbetter Point. The actual harvest from these areas was 290,700 and 434,900, respectively. The stock specific impacts of actual 1981 fishery patterns are still being evaluated.

South of Cape Falcon

A preseason harvest guideline of 772,000 coho south of Cape Falcon was established in 1981. The harvest guideline was based on a preseason allowable

1/ Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978. March 1978.

Table III-1. Assessment of coho harvest guidelines and chinook quotas for 1981.

Species	Area	Fishery	1981 Harvest	Preseason harvest guide- line or quota	% difference from quota or harvest guideline
Coho	N. of Falcon	Troll	433,700	372,000	+17%
		Rec.	<u>291,900</u>	<u>248,000</u>	<u>+18%</u>
		TOTAL	725,600	620,000	+17%
	S. of Falcon	Troll	665,200	548,000	+21%
		Rec.	<u>155,200</u>	<u>224,000</u>	<u>-31%</u>
		TOTAL	820,400	772,000 ^{a/}	+6%
Chinook	N. of Arena	Troll	292,600	300,000	-2%
		Rec.	<u>11,300</u>	<u>15,000</u>	<u>-25%</u>
		TOTAL	303,900	315,000	-4%
	S. of Arena	Troll	256,800	265,000	-3%
		Rec.	<u>72,400</u>	<u>115,000</u>	<u>-37%</u>
		TOTAL	329,200	380,000	-13%

a/ Preseason harvest guideline was adjusted to 794,600 inseason.

catch in the entire OPI area (south of Leadbetter Point) of 909,000 and an anticipated harvest distribution of 137,000 in the Columbia River area (Cape Falcon to Leadbetter Point) and 772,000 south of Cape Falcon. This harvest level was designed to provide for spawning escapement objectives in the Oregon Production Index (OPI) area. The total catch was allocated on a 71:29 basis to the ocean user groups with 548,000 allocated to the troll fishery and 224,000 to the recreational fishery. The preseason harvest guideline was adjusted upward to 794,600 during inseason management and it was acknowledged that there would be a greater allocation of the allowable catch to the troll fishery. Due to the allocation imbalance to the recreational fishery the daily bag limit was increased from two to three fish on August 14.

The actual 1981 catches south of Cape Falcon totaled 820,400 which was 48,400 fish or 6% above the preseason harvest guideline (Table III-1). The distribution of the catch between fisheries was 665,200 (81%) for the troll fishery and 155,200 (19%) for the recreational fishery. Early inseason closures for coho were implemented in Oregon for both fisheries based on projected catches and the adjusted harvest guidelines, although the recreational fishery was not closed early in state waters.

While estimated 1981 catches were only 6% higher than the preseason harvest guideline, the impact on OPI stocks appeared to be much higher. The actual harvests from the Columbia River and south of Cape Falcon areas compared with the preseason quotas or expected catches were 290,700 (137,000 expected catch) and 820,400 (772,000 quota) respectively, bringing the total catch in the OPI area to 1,111,100 (909,000 expected catch) or an overharvest on OPI coho stocks.

California Chinook Quotas

North of Point Arena

For 1981, a preseason quota of 315,000 chinook was established north of Pt. Arena. The total quota was allocated between fisheries as follows: 300,000 troll and 15,000 recreational. Neither fishery exceeded its quota. The actual catches were 292,600 for the troll fishery (-2%) and 11,300 for the recreational fishery (-25%). The total catch was 303,900 chinook which is 11,100 (4%) below the quota.

South of Point Arena

A preseason quota of 380,000 chinook was established south of Pt. Arena with an allocation of 265,000 to the troll fishery and 115,000 to the recreational fishery. As in the northern area, the quotas were not met during the 1981 season. The actual catches were 256,800 for the troll fishery (-3%) and 72,400 for the recreational fishery (-37%). The total catch was 329,200 chinook which is 50,800 (13%) below the quota.

ANALYSIS OF OREGON PRODUCTION INDEX (OPI)

The 1981 ocean salmon regulations were set, in part, to provide added protection to depressed stocks of coho in the OPI area. The preseason spawning escapement objective was 300,000 adults to the index area (primarily

hatchery) while achieving an interim coastal wild stock goal of 125,000 adults.

The OPI is used as a measure of the annual abundance of adult three-year-old coho salmon resulting from production in the Columbia River and Oregon coastal hatcheries and streams. The index itself is simply the combined number of adult coho that can be accounted for within the general area from Ilwaco, Washington to as far south as coho are found. More specifically, it is the sum of (1) ocean sport and troll catches in the Columbia River area (south of Leadbetter Point), Oregon, and California, regardless of origin; (2) Oregon coastal hatchery and Ten Mile Lake returns; and (3) the Columbia River in-river gillnet catch, Bonneville Dam and Willamette counts, and hatchery returns to the Columbia River below Bonneville Dam.

The Oregon Production Index, as the name indicates, is not an absolute measure of numbers of fish available in the area. The OPI accounts for 90% to 95% of the actual stock size. Coho that escape to streams and spawn naturally and returns to private hatcheries are not included in the index value. The portion of fish unaccounted for will vary with stock size, percentage of fish escaping the fishery, and the ratio between hatchery and wild fish.

Ocean Catch

An estimated 1,111,100 coho were harvested by the ocean fisheries in the area from Leadbetter Point, Washington south through California (Table III-2). This total includes catches of 290,700 for the Columbia River area, 732,700 for Oregon south of Cape Falcon, and 87,700 for California.

The troll fishery harvested 783,100 coho compared with 328,000 coho for the recreational fishery. The division of catch between the troll and recreational fishery was 71% and 29%, respectively, which is close to the 1971-75 average allocation between fisheries of 74:26.

1981 OPI Abundance

The number of adult coho comprising the OPI in 1981 totaled 1,305,400 (Table III-3). This total includes an ocean catch of 1,111,100, a Columbia River run size of 159,100, and an estimated 35,200 coho returning to Oregon coastal areas, primarily from hatchery production. The 1981 OPI abundance is the second lowest since 1962 and only slightly above the near failure in 1977.

New production sources, such as private hatcheries, are included in the OPI ocean catches but have not been a part of the historic data base from which the index was developed. The OPI stock size, therefore, needs to be adjusted to account for the private hatchery catch component as was done the past two years. Preliminary estimates were made from coded-wire tag recoveries of the contribution of private hatchery fish to the ocean catch for 1981. It was estimated that private hatcheries contributed 142,000 fish to the total 1981 OPI ocean catch, a contribution of 13%. The contribution consisted of 127,000 fish south of Cape Falcon and 15,000 in the Columbia River area. Subtracting the estimated private hatchery catch contribution from the OPI stock size provides an adjusted OPI total of 1,163,400 in 1981 (Table III-3).

Table III-2. Estimated harvest of coho salmon in the Oregon Production Index area in 1981.

Area	Fishery		Total
	Recreational	Troll	
Columbia River area	172,800	117,900	290,700
Oregon coast (S. of Cape Falcon)	145,500	587,200 ^{a/}	732,700
California coast	<u>9,700</u>	<u>78,000</u>	<u>87,700</u>
TOTAL	328,000	783,100	1,111,100

a/ Includes 19,300 fish caught off Oregon and landed in Washington.

Table III-3. Oregon Production Index of adult coho (thousands of fish), 1972-81.

Adult Production Year	Adult Production Index Areas ^{a/}				OPI Total	Est. Private	
	Ocean		Columbia	Oregon Coast ^{b/}		Hatchery	Adjusted
	Troll	Sport					Catch
1972	1,214.9	533.6	266.8	26.6	2,041.9	-	-
1973	1,257.4	422.1	282.9	35.9	1,998.3	-	-
1974	1,995.3	636.8	446.9	47.1	3,126.1	-	-
1975	1,027.8	441.6	280.7	8.3	1,758.4	-	-
1976	2,796.3	931.1	323.5	59.0	4,109.9	-	-
1977 ^{d/}	622.6	405.1	86.4	13.0	1,127.1	-	-
1978 ^{d/}	974.2	502.9	296.0	10.6	1,783.7	-	-
1979 ^{d/}	986.0	318.9	260.1	40.5	1,605.5	63.0	1,542.5
1980 ^{d/}	482.7	501.2	284.2	39.6	1,307.7	53.6	1,254.1
1981 ^{d/}	783.1	328.0	159.1	35.2	1,305.4	142.0	1,163.4

a/ Components are troll: California, Oregon, Ilwaco
sport: California, Oregon, Ilwaco
Columbia: Gillnet catch, hatchery, and dam escapements
Oregon coast: Hatchery and Tenmile Lake escapements
Excludes: Natural spawning escapements and private hatchery returns.

b/ Includes estimates of adult returns from off-station hatchery releases and the number of fish entering hatchery facilities.

c/ Adjusted OPI excludes catch of private hatchery fish and is identical to total OPI for 1972-78.

d/ Data are preliminary; 1979 and 1980 statistics have been updated.

Assessment

A preseason estimate of the 1981 coho stock size in the OPI area was developed using the OPI abundance predictor (jack index) and an independent estimate of the private hatchery contribution. The number of three-year-old adult coho in the OPI area can be predicted by the number of two-year-old jack coho returning to selected facilities in 1980. The assumption is made that three-year-old fish will return in the same proportion as two-year-old fish and for coho this is generally true. The predictor compares the number of coho jacks returning to selected hatcheries and dams with the catches and returns of adults making up the OPI, as previously described. New production sources, such as private hatcheries, are not estimated in the OPI abundance predictor since they have not been a part of the historic data base from which the predictor was developed. Therefore, it was necessary to make a separate estimate of the private origin fish contributing to the ocean catch in the OPI area using the 1980 survival rate and catch-to-escapement ratio. Production of coho from private hatcheries was estimated independently and added to the OPI stock predictor to determine the total number of coho contributing to the OPI area.

The OPI abundance predictor was modified for application in 1981 to improve its accuracy and precision. The major modifications include: (1) an adjustment to account for jacks and adults returning from off-station smolt releases at each hatchery in coastal streams; (2) inclusion of jack counts at most Washington Department of Fisheries (WDF) hatcheries in the Columbia River jack totals; (3) omission of 1972 and 1978 data points from regression analysis due to the inability to distinguish Cowlitz jacks from adults in 1971 and 1977; and (4) the addition of 1980 data to the jack vs. adult relationship bringing to seven the number of data points in the relationship. Table III-4 and Figure III-1 show the data and regression calculation which made up the 1981 abundance predictor. It should be noted that due to the data adjustments and the addition of 1980 data to the jack vs. adult relationship, the data base in the 1981 relationship varies slightly from that utilized in prior years.

The modifications in the OPI abundance predictor improved the degree of correlation in the relationship and more fully accounted for the actual stock size in the OPI area. The 1981 predictor has an R^2 value of 0.988. The potential accuracy of the predictor is best indicated by comparing the expected and observed values of the OPI for individual years from 1973-81 (Table III-4). Observed stock sizes deviated a maximum of 208,400 ($\pm 6\%$) from expected values for a population which varied between 1.1 and 4.1 million fish. The deviations ranged between 2% and 6%.

Jack returns to index areas during the fall of 1980 were the lowest recorded since 1965. A total of 51,200 jacks returned to Columbia River and coastal index areas in 1980 (Table III-4). Based on the relationship of jacks to adults (Figure III-1) the total adult production for the OPI area in 1981 was expected to be 1,069,300, which is the lowest level since 1972. It was estimated that private hatcheries would add an additional 140,000 coho to the catch in the OPI area. This brought the total 1981 preseason estimate of coho contributing to the OPI area to 1,209,300 (Table III-5).

The observed OPI area stock size in 1981 of 1,305,400 coho was 96,100 (8%) above the preseason prediction. Excluding private hatchery catch, the 1981

Table III-4. Relationship of Columbia River and Oregon coastal coho jack index to the Oregon Production Index for coho adults in thousands of fish, 1972-81.

Year of Adult Production	Jacks ^{a/} of Previous Year			Adult Production Index ^{b/}	
	Columbia	Coastal ^{c/}	Total	Expected	Observed
1972 ^{d/}	99.4	14.3	113.7	-	2,041.9
1973	83.0	6.5	89.5	1,953.4	1,998.3
1974	128.4	20.9	149.3	3,334.5	3,126.1
1975	72.8	4.0	76.8	1,660.4	1,758.4
1976	144.0	32.7	176.7	3,967.2	4,109.9
1977 ^{e/}	46.1	10.7	56.8	1,198.6	1,127.1
1978 ^{d/e/}	98.5	5.1	103.6	-	1,783.7
1979 ^{e/}	63.4	11.7	75.1	1,621.1	1,553.2 ^{f/}
1980 ^{e/}	51.1	5.8	56.9	1,200.7	1,263.4 ^{f/}
1981 ^{e/}	40.3	10.9	51.2	1,069.3	1,163.4 ^{f/}

a/ Components of jacks are ODFW and WDF hatcheries below Bonneville, Bonneville and Willamette dam counts, Oregon coastal hatcheries and Tenmile Lake counts.

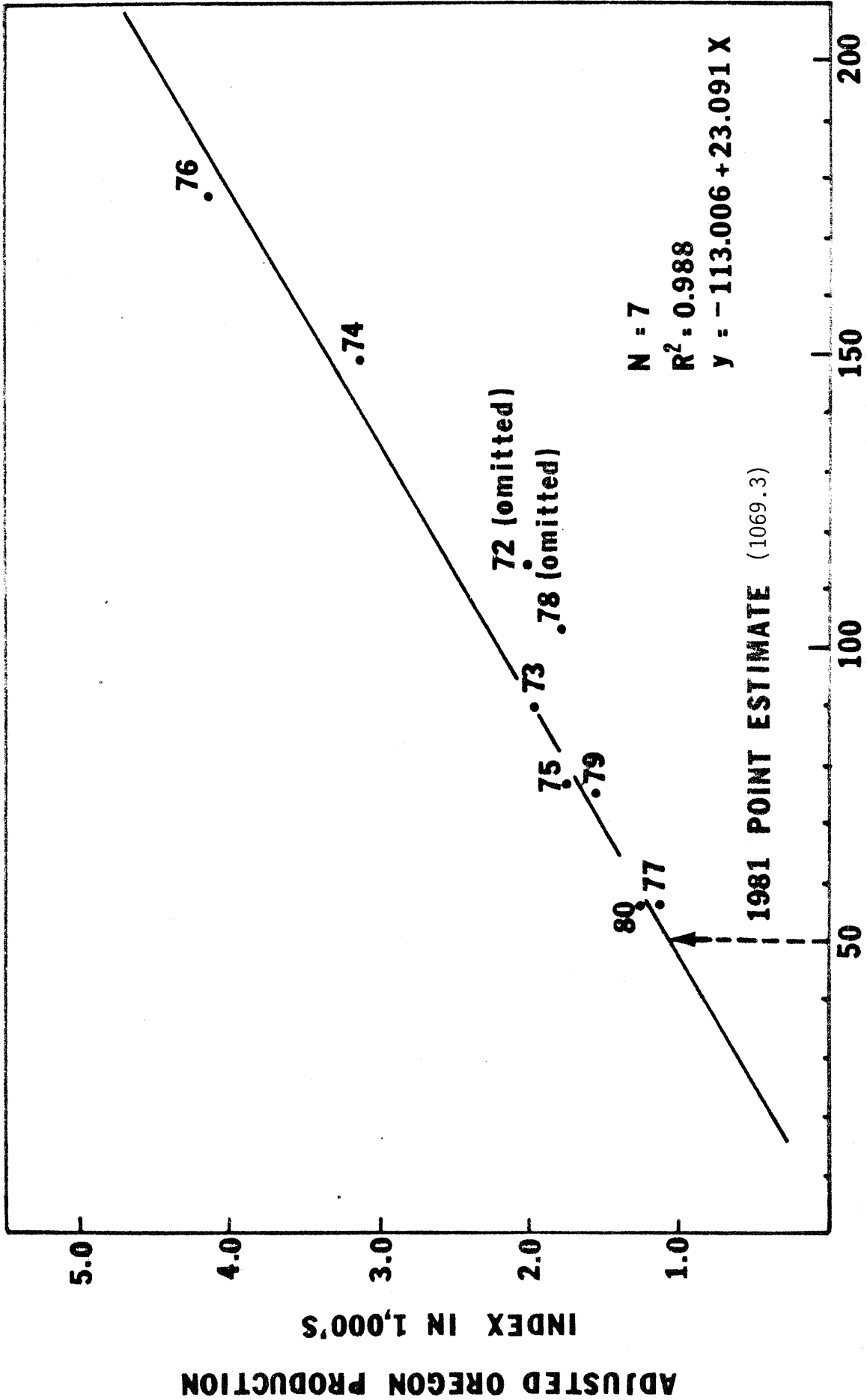
b/ Oregon production index includes: (1) ocean catches off the Columbia River, Oregon and California, (2) Oregon coastal hatchery and Tenmile Lake returns; and (3) the gillnet catch, Bonneville and Willamette dam counts and hatchery returns to the Columbia River below Bonneville Dam.

c/ Includes estimated returns of jacks and adults to Oregon coastal areas from off-station hatchery releases. These estimated returns are based on the percentage of the total smolt releases liberated off-station and the actual return to the hatchery. The basic assumption is that the survival is identical to hatchery releases and the fish return to the liberation site in the same proportion.

d/ Omitted from regression due to bias in jack counts.

e/ Data are preliminary and observed OPI values for 1979-80 have not been updated, since these were the figures used in computing the 1981 OPI.

f/ OPI has been adjusted to exclude the catch of coho originating from private hatcheries.



COHO JACK INDEX IN 1,000'S

Figure III-1. Relationship between Columbia River and coastal jack index and the coho adult production index, 1972-80 and 1981 prediction. (Data points for 1972 and 1978 were omitted from the regression.)

Table III-5. Comparison of the preseason estimate and observed stock size of coho in the OPI area in 1981.

Component of Stock Size Estimate	1981 Preseason Estimate	1981 Observed Stock Size ^{a/}	Deviation of 1981 Observed Value from Preseason Estimate	
OPI Abundance Predictor (Jack Index)	1,069,300	1,163,400	+94,100	(9%)
Private Hatchery Ocean Catch	<u>140,000</u>	<u>142,000</u>	<u>+2,000</u>	<u>(1%)</u>
Total OPI Area Stock Size	1,209,300	1,305,400	+96,100	(8%)

a/ Preliminary.

adjusted OPI abundance was 1,163,400, which is 94,100 coho or 9% above the preseason estimate of 1,069,300 (Table III-5).

It is possible to assess the "apparent" exploitation rate of coho in the OPI area by comparing the 1981 harvest with the total OPI stock size. The coho harvest in the OPI area was 969,100 in relation to the total stock size of 1,163,400 (adjusted to exclude fish of private hatchery origin). The 1981 ocean harvest represents an apparent exploitation rate of 83% which provided an escapement of 194,300 to the OPI area, compared to the preseason objective of 300,000.

When discussing harvest rates relative to the final OPI number, it is important to distinguish between "apparent" harvest rates and "real" rates since the index is not a measure of absolute stock abundance. The real harvest rate will always be somewhat less than the apparent rate depending on the proportion of stock size included in the index. For example, the apparent harvest rate of 83% experienced in 1981 translates to an estimated real rate of approximately 75%.

In summary, the 1981 OPI area stock size was 8% above the preseason prediction and harvest rates were higher than anticipated resulting in an overharvest and failure to meet the 300,000 escapement goal by 105,700 fish.

ESCAPEMENT

Escapements for major stocks are presented for the 1981 run in relation to established goals. Where feasible, escapement information is reviewed for both natural and hatchery returns. Data presented are preliminary.

California Chinook

The two largest river systems in California are the Klamath and Sacramento Rivers. There are other river systems that produce major runs of chinook salmon; the most significant is the Eel River system. A small research project, which includes estimating spawning escapement, was started on the Eel in 1981, and is expected to be expanded in future years. As soon as data become available from other river systems, such as the Eel, they will be included in the salmon plan. A table showing the relative importance of the Klamath River, Eel River, and other north coast rivers was included on page 15-IV on the 1981 Salmon Plan Amendment.

The fall chinook runs in the Klamath and Sacramento River systems were expected to be slightly depressed in 1981, but not as depressed as in 1980 when both three- and four-year-old fish were affected by the drought.

Klamath River System

In the Klamath River system the 1981 spawning escapement goal was 86,000 adult fish (75% of the long-term goal of 115,000). This interim goal was adopted primarily to ease the economic hardships on the ocean troll fishery.

The preliminary in-river run size estimate for 1981 is 76,100 adult chinook (Table III-6). This represents a 67% increase over the 1980 run size of

Table III-6. Preliminary Klamath River system fall chinook salmon in-river run size, catch and escapement, 1981 season.^{a/}

Spawning/Fishery Unit	Number		
	Adults	Jacks	Total
SPAWNING ESCAPEMENT ESTIMATE:			
Iron Gate Hatchery	2,055	540	2,595
Shasta River (count)	7,890	4,330	12,220
Bogus Creek (count)	2,730	912	3,642
Scott River (estimate)	2,100	2,100	4,200
Misc. Tribs. to Middle/Upper Klamath (est.)	1,000	500	1,500
Mainstem Klamath (estimate)	3,000	1,000	4,000
Salmon River (estimate)	<u>800</u>	<u>200</u>	<u>1,000</u>
Subtotal	19,575	9,582	29,157
Trinity River System [above Willow Creek and not including hatchery (est.)]			
	14,758	14,687	29,445
Trinity River Hatchery	<u>2,350</u>	<u>1,026</u>	<u>3,376</u>
Subtotal	17,108	15,713	32,821
Hoopla Reservation Tributaries ^{b/}	<u>NA</u>	<u>NA</u>	<u>NA</u>
TOTAL SPAWNING ESCAPEMENT	36,683	25,295	61,978
IN-RIVER HARVEST ESTIMATE			
River Sport Fishing Catch:			
Klamath Below 101	1,500	800	2,300
Klamath Glen	300	1,500	1,800
Trinity River above Willow Creek	1,608	2,574	4,182
Balance of Klamath system	<u>500</u>	<u>4,000</u>	<u>4,500</u>
Subtotal	3,908	8,874	12,782
Indian Net Fishery ^{c/}	<u>35,498^{d/}</u>	<u>d/</u>	<u>35,498</u>
TOTAL RIVER HARVEST	39,406	8,874	48,280
IN-RIVER RUN SIZE ESTIMATE	76,089	34,169	110,258

a/ Prepared December 1, 1981.

b/ No estimate made for 1981. In 1980 and 1979 amounted to 400 adults.

c/ USFWS estimate. The majority of the catch (24,009 salmon) was from 1/2 mile above 101 Bridge to river mouth.

d/ A small percentage of jacks is included as adults in Indian net fishery.

45,500 chinook and is the highest in-river run size since 1978 when the in-river run size was 96,400 adult chinook. Table III-7 presents Klamath River escapement and in-river harvest data for the years 1978-81.

Although in-river run size shows a significant increase in 1981 over 1980, spawning escapement does not reflect an increase of similar magnitude. The preliminary 1981 Klamath River adult spawning escapement of 36,700 chinook shows a 23% increase over the 1980 poor escapement of 29,900 chinook but is only 43% of the 1981 spawning escapement goal of 86,000 adult fish. It should be noted that even in the absence of all in-river fisheries on the Klamath, the total in-river run size of 76,100 adults amounted to only 88% of the 1981 spawning escapement goal.

Two major factors contributed toward not achieving the 1981 spawning escapement goal: (1) the higher than anticipated Indian net harvest; and (2) the troll fishery that occurred in state waters during the June closure in the FCZ.

In 1981, the Indian net harvest was estimated by the U. S. Fish and Wildlife Service (USFWS) to be 35,500 fall run adult chinook, a 173% increase over the 1980 Indian harvest of 13,000 chinook. However, the spawning escapement in 1981 increased only 23% over 1980. In 1981, Indian net fisheries caught 47% of the in-river chinook run (Table III-7), the highest catch and percentage since the USFWS began making estimates in 1978.

For the month of June, while FCZ waters were closed, California state waters (0-3 miles) remained open due to a State Superior Court decision and inability to gain approval for emergency closure regulations by the state Office of Administrative Law. The June troll fishery landed 52,100 chinook, of which the majority (68%) were landed in northern California. Of the northern California June harvest of 35,400 chinook, 27,500 (78%) were landed in Fort Bragg. Preliminary coded-wire tag analysis shows that the greatest number of Klamath River tags, for both three- and four-year-old chinook in the Fort Bragg area, were landed during the month of June, even though it was not the highest total monthly catch. Preliminary indications are that, of the 35,400 chinook landed in the northern California June fishery, 10,000-15,000 fish were of Klamath River origin.

Currently, there is no control over allowable harvest by the net fishery in the Klamath River. Consequently, spawning escapement goals cannot be assured regardless of the ocean harvest. According to state law, the Indians can legally fish for subsistence; however, the courts have not fully defined the Klamath River Indian fishing rights. This is a very complicated situation and needs to be resolved before a comprehensive management regime can be implemented. On the other hand, it is important to keep in mind that 1981 escapement goals would not have been met even in the absence of all in-river harvest.

Sacramento-San Joaquin River System

The 1981 management goal for the Sacramento River system was to achieve 145,000 adult spawning escapement. This represents 71,000 fish in the lower

Table III-7. Klamath River adult in-river fall chinook run size, spawning escapement, sport catch, and Indian net harvest (in numbers and percent of the total in-river run size) for the period 1978-81.

Run Component	1978		1979		1980		1981	
	Numbers	%	Numbers	%	Numbers	%	Numbers	%
Spawning escapement	69,700	72	34,100	61	29,900	66	36,700	48
Sport catch	1,700	2	2,000	4	2,600	6	3,900	5
Indian net harvest ^{a/}	<u>25,000</u>	<u>26</u>	<u>20,000</u>	<u>36</u>	<u>3,000</u>	<u>29</u>	<u>35,500</u>	<u>47</u>
In-River Run Size	96,400	100	56,100	100	45,500	100	76,100	100

a/ U. S. Fish and Wildlife Service estimate. A small percentage of jacks is included as adults in Indian net fishery.

Sacramento, 100% of the long-term spawning escapement goal, and 74,000 fish in the upper Sacramento, which is 75% of the long-term spawning escapement goal of 99,000 (Table III-8).

Within the Sacramento River system, preliminary estimates of 147,000 adult chinook exceeded the 1981 goal of 145,000 adults by 1% although the upper Sacramento goal was not reached. As is almost always the case, Feather and American River spawning escapements were excellent and greatly exceeded the goals. In the Feather River, spawning escapement was 40,000 adults, which exceeded the goal of 27,000 fish. In the American River, the preliminary escapement figure was 39,000 adults compared to the goal of 24,000. Escapement into the upper Sacramento of 57,000 adults was 21% above 1980, but 23% less than the 1981 goal of 74,000 adults. The Yuba River escapement was 11,000 adults in 1981, the same as the previous two years', but less than the goal of 20,000 chinook.

The San Joaquin, with an estimated spawning escapement of at least 18,000 adult chinook, showed the greatest percentage increase of 200% over 1980. The 1981 San Joaquin escapement was well above the goal of 5,000 adult chinook, as well as the long-term goal of 7,000 chinook. Part of the large increase in returns to the San Joaquin can be attributed to the downstream trucking program, which results in more straying in the San Joaquin, as well as the extremely favorable water flows due to heavy fall rainfall.

Hatchery escapement goals were met or exceeded at all facilities except for Coleman Hatchery in the Sacramento River system and Merced River Installation in the San Joaquin system (Table III-9). However, as is usually the case, egg allotments for these facilities will be met from the surplus taken at the other facilities.

There are several non-profit groups in California that are involved with salmon rearing programs to restore and enhance existing salmon runs.

In summary, within the Sacramento-San Joaquin River system both spawning escapement to the rivers and hatchery returns showed a significant gain over 1980, and in most instances 1981 escapement goals were met. The major exceptions were the upper Sacramento and Yuba Rivers. The escapement goals on these rivers reflect their current carrying capacity, taking into account the environmental problems discussed in Chapter IV.

Oregon Coastal Chinook

Available information indicates that current escapements of chinook salmon to Oregon coastal streams are adequate to meet 1981 management goals. These stocks remain in a generally favorable status, showing an average 3% per year increase in spawning escapements since 1952 (Table III-10). Preliminary spawning surveys indicate that an escapement level of 83 adults per mile was achieved in 1981 which is similar to that observed since 1978. The spawning levels observed in 1981 were adequate to meet the management goal of 150,000 to 200,000 spawning adults.

Some Oregon coastal hatcheries may not receive adequate escapement of fall chinook salmon in 1981 to meet program goals (Table III-11). However, the low

Table III-8. Preliminary Sacramento-San Joaquin River system natural fall-run chinook salmon spawning population estimates for the 1981 season, including comparisons with recent years and escapement goals (in thousands).

River System	Estimated 1981 Run		1980		1979		1970-79 Average		Long-Term Escapement Goal (Adults)	1981 Escapement Goal (Adults)
	Adults	Jacks	Adults	Jacks	Adults	Jacks	Adults	Jacks		
<u>Sacramento</u>										
Upper Sacramento ^{a/}	57	38	47	12	82	39	61	16	99	74
Feather River	40	5	30	2	25	3	39	8	27	27
Yuba River	11	2	10	2	10	2	9	2	20	20
American River	39	4	32	2	37	1	34	2	24	24
Subtotal	147	49	119	18	154	45	143	28	170	145
<u>San Joaquin</u>										
	18	9	5	1.4	4.2	0.2	11	2	7	5
TOTALS	165	58	124	19.4	158.2	45.2	154	30	177	150

a/ Includes Tehama-Colusa Spawning Channel.

Table III-9. Preliminary Sacramento-San Joaquin Hatchery fall-run chinook salmon spawning population estimates for the 1981 season, including comparisons with recent years and escapement goals (in thousands).

Hatchery	Estimated 1981 Run		1980		1979		1970-79 Average		1981 Escapement
	Adults	Jacks	Adults	Jacks	Adults	Jacks	Adults	Jacks	Goal (Adults)
<u>Sacramento System</u>									
Coleman	5.7	7.5	8.9	0.6	4.8	3.9	3.0	NA	9.0
Feather River	7.3	1.0	3.2	0.5	3.4	0.6	4.0	1.0	5.0
Nimbus	17.8	2.8	13.5	2.0	7.0	3.3	7.0	1.0	6.0
<u>San Joaquin System</u>									
Mokelumne River	1.1	0.4	0.4	0.2	0.3	0.2	0.4	NA	0.5 ^{b/}
Merced River	0.6	0.3	0.2	a/	0.1	0.1	0.3	NA	5.0
TOTAL	32.5	12.0	26.2	3.3	15.8	8.1	14.7		25.5

a/ Less than 100 fish.

b/ Since most Mokelumne River salmon return to Nimbus Hatchery, 3.5 thousand adults were added to the Nimbus escapement goal and subtracted from the Mokelumne River goal.

Table III-10. Average number of spawning fish/mile observed in standard Oregon index streams, 1949-81.

Year	Coastal Rivers						Columbia River	
	Chinook salmon			Coho salmon			Chum Salmon	Coho
	Jacks	Adults	Total	Jacks	Adults	Total		
1949	--	--	--	--	--	--	--	12
1950	--	--	--	3.0	22.4	25.4	--	24
51	--	--	--	9.5	66.9	76.4	--	70
52	10.3	81.0	91.3	4.0	49.5	53.5	--	51
53	5.0	19.6	24.6	2.8	14.5	17.3	--	18
54	3.7	18.7	22.4	4.2	15.1	19.3	--	29
55	14.0	17.6	31.6	2.0	29.6	31.6	--	26
56	6.4	13.2	19.6	12.1	37.9	50.0	--	53
57	12.7	40.1	52.8	2.4	40.5	42.9	--	54
58	9.2	59.7	68.9	2.8	13.9	16.7	--	22
59	3.9	41.3	45.2	1.6	26.0	27.6	--	21
1960	28.5	34.3	62.8	7.8	13.3	21.1	76	20
61	12.3	54.1	66.4	12.6	45.9	58.5	111	17
62	10.6	44.7	55.3	4.6	36.0	40.6	518	29
63	11.3	58.7	70.0	7.4	24.5	31.9	369	18
64	12.1	66.1	78.2	8.2	52.4	60.6	330	54
65	20.6	62.5	83.1	15.0	54.0	69.0	158	15
66	12.9	65.4	78.3	4.3	32.8	37.1	364	38
67	12.6	52.4	65.0	25.2	39.7	64.9	176	24
68	10.8	34.8	45.6	2.0	24.4	26.4	184	25
69	11.7	39.0	50.7	12.6	30.3	42.9	288	39
1970	22.1	84.5	106.6	5.9	41.5	47.4	434	30
71	9.4	45.6	55.0	2.9	46.8	49.7	308	11
72	21.0	43.6	64.6	5.5	14.5	20.0	532	14
73	5.6	53.6	59.2	2.3	27.6	29.9	744	4
74	14.4	62.2	76.6	10.7	17.4	28.1	752	8
75	23.9	61.4	85.3	5.0	19.3	24.3	731	6
76	15.9	40.7	56.6	4.9	19.8	24.7	286	2
77	15.1	73.2	88.3	2.2	7.7	9.9	417	2
78	7.4	83.3	90.7	2.7	9.1	11.8	1,072	2
79	12.5	83.9	96.4	2.4	21.1	23.5	154	2
1980	14.2	85.8	100.0	5.3	13.2	18.5	371	9
81 ^{a/}	8.3	83.2	91.5	1.9	8.9	10.8	NA	2

a/ Preliminary.

Table III-11. Preliminary 1981 adult escapement to Oregon Department of Fish and Wildlife salmon hatcheries on the Columbia River and Oregon coastal streams compared with recent escapements from 1971-80 and the 1981 management goal.

Hatchery Location and Species	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981 ^{a/}	Management Goal ^{b/}
<u>Columbia River</u>												
Above Bonneville												
Spring-Summer Chinook	-	-	-	-	-	-	100	200	100	100	400	700
Fall Chinook	-	-	-	-	3,000	3,900	4,900	4,100	1,100	1,800	3,500	6,000
Coho	1,900	1,100	2,600	6,000	800	3,600	200	2,900	2,400	1,700	300	1,000
<u>Below Bonneville^{c/}</u>												
Spring Chinook	9,000	5,800	9,200	16,400	5,900	6,600	12,700	14,100	7,700	7,000	9,900	16,200
Fall Chinook	22,800	21,200	32,300	20,600	18,800	37,500	25,900	40,200	24,700	22,100	36,100	22,000
Coho	52,100	22,100	15,400	52,000	20,600	39,300	10,200	57,600	38,800	39,200	19,100	15,000
<u>Oregon Coastal</u>												
Spring Chinook	-	-	-	-	-	2,900	2,400	4,400	7,000	7,900	2,500	7,000
Fall Chinook	2,200	4,100	4,200	1,600	2,100	500	4,200	1,600	2,000	1,800	1,600	3,000
Coho	29,100	12,900	18,400	35,100	4,900	38,700	6,500	5,600	23,000	22,400	21,200	19,000 ^{d/}

a/ Preliminary returns.
b/ Hatchery escapement goals include number of adult fish needed to meet 1981 agency production and does not include private hatchery needs.
c/ Includes Willamette River hatcheries.
d/ Includes 3,000 excess adults for distribution in priority streams and 6,000 to provide eggs for coho fingerling releases to augment natural production.

hatchery escapements were largely due to small brood-year releases rather than overharvest in the ocean.

Columbia River Chinook

Upriver Spring Chinook

The upriver run of spring chinook destined for areas above Bonneville Dam was 62,800 adults, a slight improvement over the record low runs of 1979 and 1980 (Table III-12). The escapement of 13,100 adults into the Snake River at Lower Granite Dam showed considerable improvement over the record low 1979 and 1980 escapements of 6,800 and 5,400, respectively, but still was less than 50% of the minimum 30,000 adult escapement goal as set forth in the Columbia River Management Plan. The Priest Rapids Dam count of 14,500 adults, which measures escapement in the upper Columbia River above its confluence with the Yakima and Snake Rivers, also showed considerable improvement over the 1971-80 average of 11,000. These stocks contribute at relatively low levels to the Washington and Oregon ocean fisheries and only minor in-river harvests have occurred in recent years. One of the major causes for failure to meet in-river escapement goals was due to in-river environmental problems directly related to Snake River and Columbia River hydroelectric dam projects.

Historically, the major segment of the upriver spring chinook run returned to the Snake River. Based upon comparison of Priest Rapids and Ice Harbor Dam counts, the 1971-75 average was 81% Snake River origin for the run destined to return above McNary Dam. In 1981, the Snake River component represented 48% of the run originating above McNary Dam (this comparison does not include the run destined for Yakima River and the WDF hatchery complex below Priest Rapids Dam).

Upriver Summer Chinook

Despite the continued severe restriction of in-river harvest, the Columbia River summer chinook run continues in a depressed state. The 1981 run of 27,000 fish, as measured by the Bonneville Dam count, was the smallest run ever recorded (Table III-13). Previous record low run size was 31,200 in 1980. The major components of summer chinook originate from the Snake River and the Columbia River above Priest Rapids Dam. The principal reason for not achieving the escapement goal is in-river environmental problems which, as with spring chinook, are manifesting themselves more in the Snake River than other production areas. The 1981 Snake River escapement was only 25% of the 1971-75 average while the upper Columbia River escapement was 75% of the 1971-75 average. The principal ocean harvest of these stocks occurs off British Columbia and Alaska.

Upriver Fall Chinook

The upriver fall chinook run of 158,000 adult fish was the smallest run ever observed since the construction of Bonneville Dam in 1938. The 1981 run consisted of 63,900 adult upriver "brights" and 94,100 adults of Bonneville Pool Hatchery complex (tule stock) origin (Table III-14). The escapement of 21,000 adults over McNary Dam was the smallest count recorded since at least 1960. In 1981, as in 1980, an abnormally large unexplained loss (in excess of 50%) occurred between Bonneville and McNary dams. This reduced the

Table III-12. Estimates of in-river run size and escapement of Columbia River adult spring chinook above Bonneville Dam, 1971-81.

Year	In-river Run Size	Bonneville Escapement ^{a/}	Snake River Escapement ^{b/}
1971	146,500	96,800	21,800
1972	269,500	136,400	38,500
1973	223,800	101,200	52,800
1974	99,800	61,900	15,500
1975	97,900 ^{c/}	97,900 ^{c/}	16,100
1971-75 Average	167,500	98,800	28,900
1976	63,900	63,700	15,900
1977	138,400	98,600	36,200
1978	127,000	124,700	40,700
1979	48,600	48,100	6,800
1980	53,100	53,100	5,500
1981 ^{d/}	62,800	61,300	13,100
Goal	250,000	100,000-120,000	30,000 (minimum)

a/ Bonneville Dam count minus treaty Indian harvest above Bonneville.

b/ Count at uppermost Snake River Dam. In 1971-74 this was Little Goose Dam. In 1975-81 this was the Lower Granite Dam.

c/ Maximum figure, not adjusted for fallbacks at the dam.

Table III-13. Estimates of in-river run size and escapement of Columbia River adult and jack summer chinook above Bonneville Dam, 1971-81.

Year	In-river Run Size	Bonneville Escapement ^{a/}	Snake River Escapement	Upper Columbia Escapement
1971	89,500	72,100	26,800	17,700
1972	77,500	66,400	20,500	14,800
1973	48,900	43,400	12,000	14,300
1974	34,000	34,000	8,800	13,700
1975	44,400	44,400	8,600	22,200
1971-75 Average	59,600	52,100	15,300	16,500
1976	42,100	42,100	9,900	19,300
1977	41,200	41,000	8,400	19,600
1978	43,400	43,000	11,800	21,200
1979	34,400	34,200	3,600	22,700
1980	31,200	31,100	3,400	18,700
1981 ^{b/}	27,000	27,000	3,800	12,300
1981 Goal	-	80,000-90,000	-	-

a/ Bonneville count minus treaty Indian harvest.

b/ Preliminary.

Table III-14. Estimates of in-river run size and escapement of Columbia River adult fall chinook above Bonneville Dam, 1971-81.

Year	In-river Run Size	Bonneville ^{a/} Escapement	McNary Count
1971	244,800	102,000	49,000
1972	188,600	55,200	37,600
1973	249,300	91,100	46,600
1974	176,900	74,100	34,600
1975	311,600	97,200	29,600
1971-75 Average	234,200	83,900	39,500
1976	260,400	107,200	28,800
1977	199,000	85,700	37,600
1978	183,800	89,500	27,300
1979 ^{b/}	172,100	84,000	31,200
1980 ^{b/}	174,900 ^{c/}	98,100	28,600
1981 ^{b/}	158,000 ^{c/}	101,500	21,000
1981 Goal	-	-	40,000

a/ Bonneville Dam count minus treaty Indian harvest.

b/ Preliminary.

c/ Derived from new methodology for stock separation by origin of stock.

possibility of achieving the escapement goal at McNary Dam. This problem currently is under review. Since this factor alone has such a large impact upon achievement of escapement goals, ability to harvest more abundant stocks, and to allocate in-river harvest, it is imperative that another year not be lost before research is begun to address this problem. The Snake River adult component of the upriver "bright" fall chinook run (Ice Harbor Dam count) was a record low 700 compared to 1,100-1,200 for the past five years. Like spring and summer chinook runs, a weak Snake River component is typical for this run in recent years.

Lower River Spring Chinook

The two major components of the lower river spring chinook run are from the Willamette River and the Cowlitz River. The total Willamette River run was 48,600 fish in 1981 and the escapement over Willamette Falls of 30,100 fish was at the low range of the desired level of 30,000-35,000 (Table III-15).

The return to the Cowlitz River was 38,100 fish, of which 13,000 were caught by recreational fishermen.

The major harvest of lower river spring chinook occurs from Alaska to Washington.

Lower River Fall Chinook

Based on catch information, the 1981 returns of lower river fall chinook were below average. The only directed in-river harvest on these fish was by a minor recreational fishery and a commercial fishery in selected terminal areas. Columbia River commercial fisheries caught 27,600 lower river fall chinook while the river sport fishery caught 650 chinook (Tables II-35 and II-34).

Hatchery Chinook

Returns of adult chinook to Columbia River hatcheries since 1971 are shown in Table III-16. In general, egg take needs were met for all stocks of salmon except upriver fall chinook "brights." Spring chinook eggs were obtained from federal hatcheries located in Washington to meet production goals for Snake River hatcheries. Where required to meet system-wide program goals, eggs were exchanged between hatcheries wherever common desired stocks were available.

Columbia River and Oregon Coastal Coho

In 1981, measured escapements of coho salmon for the Oregon Production Index (OPI) area totaled 194,300. This was below the preseason objective of 300,000 and below the 1978-80 average of 305,700. The 1981 OPI escapement figure included a run size of 159,100 to the Columbia River and an Oregon coastal escapement of 35,200 resulting primarily from hatchery production.

The run of 159,100 to the Columbia River was the smallest in-river run size since the 1977 run when problems with OPI production were first recognized. The in-river run was considerably below the 1978-80 runs and far below the 1971-75 average of 360,100 (Table III-17). Despite little in-river harvest of early coho, hatchery escapement of 77,900 Columbia River coho was second only

Table III-15. Estimates of in-river run size and escapement of lower Columbia River spring chinook, including jacks, 1971-81.

Year	Willamette River		Cowlitz In-river Run Size
	In-river Run Size	Escapement (Willamette Falls Count)	
1971	67,400	44,600	11,000
1972	47,100	26,200	9,200
1973	54,500	42,000	13,700
1974	71,800	44,500	27,800
1975	32,600	19,100	45,200
1971-75 Average	54,700	35,300	21,400
1976	40,700	22,200	53,000
1977	58,000	40,000	35,800
1978	71,400	47,500	35,700
1979 ^{a/}	44,600	26,600	17,200
1980 ^{a/}	42,500	27,000	30,000
1981 ^{a/}	48,600	30,100	38,100
1981 Goal	-	30,000-35,000	-

a/ Preliminary.

Table III-16. Adult chinook and coho returns to Columbia River hatcheries, 1971-81. Includes hatcheries operated by all agencies.

Year	Chinook				Coho	
	Spring		Fall		Below	Above
	Below Bonneville	Above Bonneville	Below Bonneville	Above Bonneville	Bonneville	Bonneville
1971	16,900	8,200	55,700	17,100	187,600	20,400
1972	9,300	20,500	41,200	9,600	91,300	6,200
1973	15,100	19,800	50,100	20,400	68,200	4,600
1974	33,200	6,400	34,200	14,200	152,800	10,000
1975	25,900	12,000	34,800	36,800	85,400	16,700
1976	29,900	14,800	51,600	25,800	117,300	14,400
1977	30,200	20,100	41,600	22,200	37,100	2,000
1978	25,200	14,100	59,400	20,100	131,400	7,800
1979	19,200	9,300	46,800	21,200	101,100	7,700
1980	28,400	11,200	36,300	31,200	120,400	3,400
1981	33,800	14,400	52,900	26,900	77,900	9,200

a/ Preliminary.

Table III-17. Estimated in-river run size, catch and escapement of Columbia River adult coho, 1971-81.

Year	Catch	Escapement			Minimum Run Size
	Gillnet Below Bonneville	Hatcheries Below Bonneville	Bonneville Count	Willamette Count	
1971	264,300	187,600	53,800	17,400	523,100
1972	131,300	91,300	34,200	10,000	266,800
1973	183,700	68,200	25,800	5,200	282,900
1974	261,000	152,800	31,600	1,500	446,900
1975	156,600	85,400	32,800	5,900	280,700
1971-75 Average	199,400	117,100	35,600	8,000	360,100
1976	168,400	117,300	35,500	2,300	323,500
1977	39,000	37,100	9,300	1,000	86,400
1978	132,700	131,400	30,200	1,700	296,000
1979 ^{a/}	127,600	101,100	29,600	1,800	259,800
1980 ^{a/}	149,800	120,400	12,700	1,300	284,200
1981 ^{a/}	59,000	77,900	21,200	1,000	159,100

a/ Preliminary.

to the 1977 escapement in being the smallest in the recent decade. Early stock coho (August-September) are largely unfishable in the river due to the mixed species problem that conflicts with chinook management needs during this period. This problem will exist as long as lower river harvest constraints exist for fall chinook of upriver origin. Required egg takes have been achieved for the early coho stock and surpluses were available. However, the surpluses were of a lesser magnitude than observed in past years despite the fact that there was no August-September lower river fishery in 1981.

The dominant stock produced by Washington hatcheries is the late coho stock (October-January) of Cowlitz River origin. Program goals for these fish are intended to achieve an in-river run timing from October to mid-November after most chinook harvest constraints and before winter steelhead begin entering the river in significant numbers. The proper egg-taking pattern was achieved for the 1979-81 brood cycle.

Oregon's coastal hatchery escapement in 1981 of 21,200 (Table III-18) was less than the 22,400 in 1980 but was comparable to the 1971-75 average of 20,000. An additional 9,500 hatchery fish are estimated to have returned to coastal areas from off-station hatchery releases of smolts. Some surplus coho were available at two coastal hatcheries, but program needs were not met at three facilities. Approximately 3,400 adults were distributed in streams and 4.6 million eggs surplus to hatchery needs were taken at coastal hatcheries to provide for coho pre-smolt releases of 4 million to augment natural production.

A decline was observed from 1965 to 1978 in the abundance of natural spawning stocks of coho in Oregon coastal spawning index areas (Table III-10). The number of coho counted in Oregon coastal streams declined at an average rate of 9.3% per year to levels of 62,900 and 74,500 adults in 1977 and 1978, respectively (Table III-18). Assessment of the 1979 spawning escapement indicated a level of 172,200 adults was achieved which is equivalent to the 1976 parent year and represents significant improvement over 1977 and 1978. The 1980 spawning escapement indicated a level of escapement (107,500 adults) which was an improvement over the 1977 parent year but below 1979. It appears that significant progress was made in both 1979 and 1980 toward the long-term goal of rebuilding natural spawning stocks of Oregon coastal coho to a level of 200,000 adult escapement by 1987. Spawning surveys for 1981 indicate an escapement of 72,700 adults, which is below the 1981 goal of 125,000. The natural escapement observed in 1981 is similar to that observed in the depressed 1978 parent year.

Declines have been noted in the abundance of natural spawning stocks of coho in the Columbia River (Table III-10). However, the decline is not unexpected since coho management in the Columbia River is based upon hatchery production which would tend to overharvest the natural stocks.

Oregon Private Hatchery Escapements

Returns to Oregon's private hatcheries have increased since 1978 in response to growing production programs. Returns of adults in 1981 totaled 98,700 coho, 2,600 chinook and 300 chum (Table III-19). The most dramatic increase is for coho and represents returns in 1981 from releases of 14.8 million in 1980.

Table III-18. Estimated escapement of Oregon coastal adult coho, 1971-81.

Year	Hatchery Escapement		Tenmile Lakes Escapement	Natural Spawning Escapement	Minimum Run Size
	Returns to Facility	Returns from Off-Station Releases			
1971	29,100	-	28,000	302,400	-
1972	12,900	5,700	8,000	120,600	147,200
1973	18,400	4,500	13,000	148,000	183,900
1974	35,100	7,500	4,500	130,400	177,500
1975	4,900	900	2,500	157,800	166,100
1971-75 Average	20,100	-	11,200	171,800	-
1976	38,700	16,800	3,500	161,700	220,700
1977	6,500	2,500	4,000	62,900	75,900
1978	5,600	2,000	3,000	74,500	85,100
1979	23,000	15,800	2,500	172,200	213,500
1980	22,400	13,800	4,000	107,500	147,700
1981 ^{a/}	21,200	9,500	4,500	72,700	107,900
1981 goal	19,000	-	-	125,000 ^{b/}	-

a/ Preliminary.

b/ Interim goal; long-term goal 200,000.

Table III-19. Number of fish returned to Oregon private salmon hatcheries, 1978-81.

Species	1978	1979	1980	1981 ^{a/}
Chinook adults	200	300	800	3,000
Chinook jacks	b/	100	2,600	3,000
Coho adults	8,100	47,700	27,900	98,600
Coho jacks	6,600	1,400	15,600	19,000
Chum	600	b/	500	200

a/ Preliminary.

b/ Under 50.

Washington Chinook

Willapa Bay

Willapa chinook are managed on the basis of hatchery run strength. Escapements in 1981 will not meet the needs of the hatchery program where the goal was 8,000 adults. Terminal run size information for 1973-81 is presented in Table III-20.

Grays Harbor

Grays Harbor chinook are managed on the basis of natural run strength. It does not appear that either the natural escapement goal of 14,600 adults or the hatchery requirements of approximately 2,000 adults for eggs will be met. Terminal run size information for 1973-81 is presented in Table III-21.

North Washington Coast

All stocks except Quinault fall and Quillayute spring/summer chinook are managed for natural production. Natural chinook stocks have shown encouraging trends in terminal run size in recent years. Escapements also generally have increased in recent years. Recent late season ocean fishery closures off Washington, chinook size limit increases off Washington and southeastern Alaska, and mild winter stream discharge for the 1976 brood year probably have impacted these stocks in a favorable manner.

Escapement of Hoh spring/summer chinook was 1,500, 89% of the state objective, and 80% greater than the 1980 escapement. The interim 1981 escapement goal of 1,500 was established by F.A.B. ruling.

Escapement of Queets spring/summer chinook of 1,000 fish was 69% of the state objective of 1,400 and approximated the interim goal of 1,050 established by the F.A.B. The 1981 escapement was slightly below the 1980 level but equaled the 1977-1980 average.

Quillayute spring/summer chinook achieved only 40% of the state objective for both hatchery and natural stocks. Primary management emphasis is on hatchery stocks, and poor escapements of these stocks apparently resulted from poor marine survival of broods contributing to the 1981 return.

Fall chinook runs provided adequate escapements to the Queets, Hoh, and Quillayute. The objectives of 4,200 and 2,400 fish were met on the Queets and Hoh, respectively. Quillayute escapement was 5,700, or 95% of the 6,000 fish goal.

Preliminary estimates of spawning escapements for natural spawning north coastal chinook are presented in Table III-22. Terminal run size data for north coastal chinook stocks are summarized in Tables III-23 through III-25.

Puget Sound

It appeared that a larger than usual percentage of chinook utilized small tributaries for spawning, possibly as a result of abnormally high water

Table III-20. Estimated terminal run size, catch, and escapement for Willapa Bay fall chinook, 1973-81.

Year	Catch		Escapement		Terminal Run Size
	Gillnet	River Sport ^{a/}	Natural	Hatchery	
1973	12,600	350	2,500	5,500	20,950
1974	8,700	300	2,700	5,400	17,100
1975	8,600	200	800	4,000	13,600
1976	13,300	300	3,400	2,900	19,900
1977	9,400	500	3,000	5,800	18,700
1978	7,600	600	6,700	3,700	18,600
1979	12,700	400	5,000	3,900	22,000
1980	12,900	300	4,900	4,100	22,200
1981 ^{b/}	12,200	NA	3,600	3,000	18,800
1981 Goal	-	-	-	8,000	-

a/ Adult fish only, no jacks included.

b/ Preliminary.

Table III-21. Estimated terminal run size, catch, and escapement for Grays Harbor chinook, 1973-81.

Stock	Year	Catch		Escapement		Terminal Run Size
		Gillnet ^{a/}	River Sport ^{b/}	Natural	Hatchery	
Fall	1973	12,700	1,300	7,200	0	21,200
	1974	8,500	1,100	4,200	0	13,800
	1975	8,900	700	4,300	0	13,900
	1976	6,300	800	1,800	0	8,900
	1977	7,200	1,000	5,200	200	13,600
	1978	4,400	2,000	4,600	200	11,200
	1979	1,500	1,300 ^{c/}	9,400	100	12,300
	1980	10,400	800	11,700	1,100	23,900
	1981 ^{c/}	4,700	NA	7,600	800	13,100
	1981 Goal	-	-	14,600	-	-
Spring/Summer	1973	800	d/	250	-	1,050
	1974	300	0	350	-	650
	1975	100	0	450	-	600
	1976	400	0	650	-	1,050
	1977	900	0	850	-	1,700
	1978	600	0	1,050	-	1,650
	1979	800	0	350	-	1,100
	1980	300	0	250	-	550
	1981 ^{c/}	200	NA	NA	-	NA

a/ Includes Chehalis tribal catches.

b/ Adults only, jacks not included.

c/ Preliminary.

d/ Under 50 fish per year.

Table III-22. Chinook salmon natural spawning escapements for north Washington coastal stocks, 1973-81 (estimates provided by Washington Department of Fisheries).

Stock	1973	1974	1975	1976	1977	1978	1979	1980	1981 ^{a/}	1981 Goal ^{b/}
<u>Queets</u>										
Spring/ Summer	c/	c/	c/	c/	700	1,100	1,000	1,000	1,000	1,600 (1,050)
Fall	3,500	1,500	2,400	1,200	3,400	2,100	5,700	3,800	4,200	4,200
<u>Hoh</u>										
Spring/ Summer	c/	c/	500	600	1,000	1,400	1,400	800	1,500	1,700 (1,500)
Fall	2,000	600	400	500	1,200	800	1,800	2,100	3,700	2,400
<u>Quillayute</u>										
Fall	4,700	2,300	2,100	2,100	3,000	4,600	4,600	6,600	5,700	6,000

a/ Preliminary.

b/ Washington Department of Fisheries goals. The 1981 management goals for the Queets and Hoh spring/summer stocks were established by F.A.B. ruling and are shown in parentheses.

c/ The earlier estimates are now questioned by WDF.

Table III-23. Estimated in-river run size, catch and escapement of Queets River chinook stocks, 1973-81.

Stock/Year	Catch ^{a/}			Escapement		Terminal Run Size		
	Gillnet	Ceremonial & Subsistence	River Sport ^{b/}	Natural	Hatchery	Natural	Hatchery	Total
<u>Spring/Summer</u>								
1973	500	<50	100	NA ^{c/}		NA		NA
1974	400	<50	100	NA ^{c/}		NA		NA
1975	300	<50	100	NA ^{c/}		NA		NA
1976	100	<50	100	NA ^{c/}		NA		NA
1977	400	<50	200	700		1,200		1,200
1978	200	<50	100	1,100		1,400		1,400
1979	500	<50	200	1,000		1,600		1,600
1980	100	<50	100	1,000		1,400		1,400
1981 ^{d/}	300	<50	100	1,000		1,300		1,300
<u>Fall</u>								
1973	3,600	NA	100	3,500		7,300		7,300
1974	3,100	NA	100	1,500		4,700		4,800
1975	2,100	NA	100	2,400		4,600		4,700
1976	1,300	NA	100	1,200		2,500		2,600
1977	1,900	NA	100	3,400		5,500		5,500
1978	900	NA	100	2,100		3,100		3,100
1979	900	100	200	5,700		6,800		6,800
1980	2,600	NA	100	3,800		6,600		6,600
1981 ^{c/}	3,800	NA	300	4,200		8,300		8,300

a/ Gillnet and ceremonial and subsistence catches provided by Quinault Tribe; other statistics provided by Washington Department of Fisheries.

b/ Predominantly fish under 28 inches in total length.

c/ These early estimates are now questioned by WDF.

d/ Preliminary.

Table III-24. Estimated in-river run size, catch and escapement of Hoh River chinook stocks, 1973-81.

Stock/Year	Catch ^{a/}				Escapement		Terminal Run Size		
	Gillnet	Ceremonial & Subsistence		River Sport ^{b/}	Natural	Hatchery	Natural	Hatchery	Total
		<50	<50						
<u>Spring/Summer</u>									
1973	700	<50	400	NAC/ NAC/	NAC/ NAC/	1,600			1,600
1974	600	<50	300	NAC/ NAC/	NAC/ NAC/	1,400			1,400
1975	500	100	500	500		2,000			2,000
1976	500	<50	200	600		2,500			2,500
1977	900	<50	100	1,000		2,500			2,500
1978	900	100	100	1,400		2,500			2,500
1979	700	100	300	1,400		2,500			2,500
1980	100	<50	200	800		1,200			1,200
1981 ^{d/}	400	<50	200	1,500		2,100	100		2,100
<u>Fall</u>									
1973	2,200	100	200	2,000		4,500			4,500
1974	800	100	200	600		1,700			1,700
1975	700	200	270	400		1,500			1,500
1976	500	<50	200	500		1,200			1,200
1977	1,600	<50	200	1,200		3,000			3,000
1978	800	100	100	800		1,800			1,800
1979	400	<50	300	1,800		2,500			2,500
1980	500	<50	400	2,100		3,000			3,000
1981 ^{c/}	800	<50	200	3,700		4,600			4,600

a/ Gillnet and ceremonial and subsistence catches provided by Hoh Tribe; other statistics provided by Washington Department of Fisheries.

b/ Predominantly fish under 28 inches in length.

c/ These early estimates are now questioned by WDF.

d/ Preliminary.

Table III-25. Estimated in-river run size, catch and escapement of Quillayute River chinook stocks, 1973-81.

Stock/Year	Catch						Escapement		Terminal Run Size			
	Ceremonial and Subsistence ^{a/}			River Sport ^{b/}			Natural ^{c/}	Hatchery ^{d/}	Natural	Hatchery ^{d/}	Total	
	Gillnet ^{a/}	NA	Subsistence ^{a/}	NA	1,500	NA						<50
<u>Spring/Summer</u>												
1973	300	NA	NA	1,500	NA	<50	NA	NA	NA	NA	NA	NA
1974	100	NA	NA	400	NA	NA	NA	NA	NA	NA	NA	NA
1975	2,300	<50	<50	900	1,100	1,400	1,100	1,000	4,700	4,700	5,700	5,700
1976	2,500	<50	<50	1,500	1,100	1,800	1,100	2,500	4,500	4,500	7,000	7,000
1977	2,600	<50	<50	600	2,500	900	2,500	1,200	5,400	5,400	6,600	6,600
1978	3,200	<50	<50	300	2,200	700	2,200	3,200	3,200	3,200	6,500	6,500
1979	2,500	<50	<50	200	2,000	200	2,000	3,900	1,000	1,000	4,900	4,900
1980	1,000	<50	<50	200	900	400	900	1,700	800	800	2,600	2,600
1981 ^{e/}	1,000	<50	<50	100	800	300	800	1,700	500	500	2,200	2,200
<u>Fall</u>												
1973	5,000	NA	NA	300	4,700	-	4,700	10,100	-	-	10,100	10,100
1974	3,800	NA	NA	300	2,300	-	2,300	6,400	-	-	6,400	6,400
1975	2,300	<50	<50	700	2,100	<50	2,100	4,500	500	500	5,100	5,100
1976	2,200	<50	<50	600	2,100	<50	2,100	4,600	400	400	5,000	5,000
1977	5,300	<50	<50	300	3,000	200	3,000	7,300	1,600	1,600	8,900	8,900
1978	1,400	<50	<50	500	4,600	300	4,600	6,400	400	400	6,700	6,700
1979	2,600	<50	<50	400	4,700	100	4,700	7,400	200	200	7,700	7,700
1980	1,400	<50	<50	500	6,600	<50	6,600	7,700	700	700	8,400	8,400
1981 ^{e/}	1,300	<50	<50	200	5,700	100	5,700	7,000	400	400	7,400	7,400

a/ Gillnet and ceremonial and subsistence catches provided by the Quillayute tribe; other statistics provided by the Washington Department of Fisheries.

b/ Assumed to be predominantly fish less than 28 inches in length.

c/ Includes hatchery strays.

d/ Excludes hatchery strays.

e/ Preliminary.

conditions in late September. Mainstem spawners appear to be significantly less than in 1980. Approximately 80 million summer/fall chinook eggs were collected, representing 87% of the number needed to fulfill artificial production needs. Puget Sound chinook stocks constitute a minor portion of the Washington ocean chinook catch.

Washington Coho

Willapa Bay

Willapa coho are managed on the basis of hatchery run strength. Escapements in 1981 were excellent and will meet all hatchery program needs. Terminal run size information for 1973-81 is presented in Table III-26.

Grays Harbor

Grays Harbor coho are managed on the basis of natural run strength. It is not known if the natural spawning escapement goals established by WDF will be met. Hatchery escapement will meet all program goals. Terminal run size information for 1973-81 is presented in Table III-27.

North Washington Coast

The northern Washington coastal region is managed to achieve natural spawning escapement goals for all coho stocks except the Quillayute River summer coho and Quinault River coho which are managed on the basis of hatchery production. All natural coho stocks returned to the coastal rivers below preseason expectations. Hatchery coho stocks returned at or slightly above expected levels with the exception of Quillayute summer and fall coho. Preliminary estimates of natural spawning escapements are presented in Table III-28. Terminal run size data for north coastal coho stocks are provided in Tables III-29 through III-32 for the years 1973-81.

Actual coho spawning escapements past terminal fisheries in 1981 were regulated on the basis of guidelines established by the U. S. District Court which established a floor on escapement equal to 115% of brood year levels. Terminal area fisheries were managed on the basis of inseason run size estimates. Terminal area returns of natural coho to all north coastal rivers were below the state's escapement goals. Natural spawning escapements were below 1980 levels for the Queets, Hoh, and Quillayute fall stocks. Estimated escapements were generally half the state's goals on the Hoh, Queets, and Quillayute fall stocks. Spawning escapement exceeded brood year escapements by 48% and at least 14% for the Queets and Hoh stocks, respectively. Although terminal fisheries for Quillayute coho were managed on the basis of inseason run size estimates to meet escapement goals in accordance with the orders of the U. S. District Court, post-season spawning ground surveys indicate that actual escapement was 17% below the brood year level.

Puget Sound

Puget Sound coho runs are managed on the basis of six regional units -- Strait of Juan de Fuca, Nooksack-Samish, Skagit, Stillaguamish-Snohomish, South Sound, and Hood Canal. Harvest from these units is managed to achieve either the natural spawning escapement goal or hatchery program needs, depending on the system. Hatchery program needs will be fulfilled in 1981.

Table III-26. Estimated terminal run size, catch and escapement of Willapa Bay coho, 1973-81.

Year	Catch		Escapement		Terminal Run Size
	Gillnet	River Sport ^{a/}	Natural	Hatchery	
1973	16,700	1,200	NA	17,500	35,400
1974	15,800	1,100	5,000	11,300	33,200
1975	7,400	300	2,300	4,400	14,400
1976	9,000	800	8,900	10,100	28,800
1977	3,100	600	3,300	4,400	11,400
1978	7,000	700	4,100	7,600	19,400
1979	31,900	4,900	10,000	20,000	66,800
1980	25,700	800	4,800	13,100	44,400
1981	29,800	NA	7,400	22,800	60,000
1981 Goal	-	-	-	8,000	-

a/ Adult fish only, no jacks included.

Table III-27. Estimated terminal run size, catch, and escapement for Grays Harbor coho, 1973-81.

Year	Catch		Escapement		Terminal Run Size
	Gillnet	River Sport ^{a/}	Natural	Hatchery	
1973	43,400	3,400	6,300	4,300	57,400
1974	54,400	4,200	53,800	17,500	129,900
1975	25,000	1,200	10,800	1,800	38,800
1976	25,600	2,600	38,500	2,300	69,000
1977	5,600	900	26,500	500	33,500
1978	6,900	2,300	11,800	7,300	28,300
1979	8,700	5,100	30,400	28,400	72,600
1980	37,800	1,700	29,900	8,200	77,600
1981	30,500	NA	NA	19,700	NA
1981 Goal	-	-	35,400	-	-

a/ Adult fish only, no jacks included.

Table III-28. Coho salmon natural spawning escapements for north Washington coastal stocks, 1973-81 (estimates provided by Washington Department of Fisheries).

Stock	1973	1974	1975	1976	1977	1978	1979	1980	1981 ^{a/}	1981 ^{b/} Goal	115% of 1978 Brood ^{c/}
Queets ^{d/}	3,300	2,100	2,200	1,500	2,300	3,300	8,500	5,800	4,800	9,800	3,800
Hoh	NA	3,700	2,200	2,200	2,300	2,100	5,200	2,400	e/	4,800	2,400
Quillayute:											
Summer ^{f/}	1,300	1,000	700	800	700	1,100	1,000	600	600	12,000	1,300
Fall	13,700	4,600	3,900	3,900	3,100	10,100	20,400	10,200	8,400	16,000	11,600

a/ Preliminary.

b/ Washington Department of Fisheries goal.

c/ Calculated and then rounded to the nearest hundred, using the rounded escapements in this table. May not correspond exactly to the guideline escapement figures established for the U. S. District Court for 1981.

d/ 1973 tribal estimate. Remaining yearly catches jointly agreed to by state and tribe. Actual spawning escapements in 1981 were regulated on the basis of guidelines established by a U. S. District Court order.

e/ Spawning escapement estimates not agreed upon. WDF estimate: 2,400. Hoh tribal estimate: 2,700.

f/ This stock is managed for hatchery production.

Table III-29. Estimated in-river run size, catch and escapement of Quinault River coho, 1977-81.

Year	Catch		Escapement		Terminal Run Size		
	Gillnet	River Sport	Natural	Hatchery	Natural	Hatchery	Total
1977	1,900	NA	1,500	300	3,000	600	3,600
1978	6,900	NA	2,500	1,600	6,600	4,200	10,900
1979	17,800	NA	7,200	4,700	18,000	11,700	29,700
1980	12,400	NA	3,500	3,200	10,100	9,100	19,100
1981	10,100	NA	NA	NA	NA	NA	NA

Table III-30. Estimated in-river run size, catch and escapement of Queets River coho and chum stocks, 1973-81.

Stock/Year	Catch ^{a/}				Escapement		Terminal Run Size	
	Ceremonial &		River Sport ^{b/}	Natural	Hatchery	Natural	Hatchery ^{c/}	Total
	Gillnet	Subsistence						
<u>Fall Coho</u>								
1973	9,000	NA	100	NA	NA	NA	NA	NA
1974	12,000	NA	100	2,100	N1	14,200	NA	14,200
1975	2,900	NA	100	2,200	NA	5,200	NA	5,200
1976	2,800	NA	100	1,500	100	4,300	300	4,600
1977	1,000	NA	100	2,300	300	3,200	500	3,700
1978	2,300	NA	100	3,300	600	4,800	900	5,700
1979	2,700	100	200	8,500 ^{e/}	1,600	10,800	2,100	12,700
1980	3,200	<50	200	5,800 ^{e/}	2,400	7,200	4,400	11,600
1981 ^{d/}	4,200	NA	100	4,800	2,400	6,100	4,500	10,700
<u>Chum</u>								
1973	100	NA	NA	NA	NA	NA	NA	NA
1974	200	NA	NA	NA	NA	NA	NA	NA
1975	300	NA	NA	NA	NA	NA	NA	NA
1976	100	NA	NA	NA	NA	NA	NA	NA
1977	300	NA	NA	NA	NA	NA	NA	NA
1978	100	NA	NA	NA	NA	NA	NA	NA
1979	100	NA	NA	NA	NA	NA	NA	NA
1980	500	NA	NA	NA	NA	NA	NA	NA
1981 ^{c/}	200	NA	NA	NA	NA	NA	NA	NA

a/ Gillnet and Ceremonial and Subsistence catches provided by Quinault Tribe (includes Dip-In Hatchery fish); other statistics provided by Washington Department of Fisheries.

b/ Assumed to be predominantly fish under 24 inches in length (jacks).

c/ Excludes hatchery dip-in fish.

d/ Preliminary.

e/ Average of state and tribal estimates.

Table III-31. Estimated in-river run size, catch and escapement of Hoh River coho and chum stocks, 1973-81.

Stock/Year	Catch ^{a/}			River Sport ^{b/}	Escapement		Terminal Run Size		
	Gillnet	Ceremonial & Subsistence			Natural	Hatchery	Natural	Hatchery	Total
<u>Coho</u>									
1973	6,700	100	300	NA	NA	NA	NA	NA	NA
1974	5,700	100	300	NA	3,700	9,600	9,600	9,600	9,600
1975	2,400	400	300	NA	2,200	4,900	4,900	4,900	4,900
1976	1,800	<50	200	NA	2,200	4,200	4,200	4,200	4,200
1977	1,000	<50	200	NA	2,300	3,400	3,400	3,400	3,400
1978	2,800	100	100	NA	2,100	5,100	5,100	5,100	5,100
1979	3,100	100	300	NA	5,200	400	7,300	1,800	9,100
1980	1,400	100	200	NA	2,100	100	3,200	600	3,800
1981 ^{c/}	2,000	<50	<50	NA	d/	100	3,900	700	4,600
<u>Chum</u>									
1973	NA	NA	NA	NA	NA	NA	NA	NA	NA
1974	<50	<50	NA	NA	NA	NA	NA	NA	NA
1975	100	<50	NA	NA	NA	NA	NA	NA	NA
1976	<50	<50	NA	NA	NA	NA	NA	NA	NA
1977	200	<50	NA	NA	NA	NA	NA	NA	NA
1978	100	<50	NA	NA	NA	NA	NA	NA	NA
1979	100	<50	NA	NA	NA	NA	NA	NA	NA
1980	100	<50	NA	NA	NA	NA	NA	NA	NA
1981 ^{c/}	<50	0	NA	NA	NA	NA	NA	NA	NA

a/ Gillnet and Ceremonial and Subsistence catches provided by Hoh Tribe; other statistics provided by Washington Department of Fisheries.

b/ Predominantly fish under 28 inches in length.

c/ Preliminary.

d/ Estimates of natural run size and escapement have not been agreed upon. Washington Department of Fisheries estimates for natural run size and escapement are 3,900 and 2,400 respectively. Hoh tribal estimates for natural run size and escapement are 3,900 and 2,700 respectively.

Table III-32. Estimated in-river run size, catch and escapement of Quillayute River coho stocks, 1973-81.

Stock/Year	Catch ^{a/}			Escapement		Terminal Run Size		
	Gillnet	Ceremonial &		Natural ^{c/}	Hatchery ^{d/}	Natural	Hatchery ^{e/}	
		Subsistence	River Sport ^{b/}					Total
<u>Summer</u>								
1973	1,100	NA	700	1,300	NA	3,100	NA	3,100
1974	1,600	NA	200	1,000	1,100	1,800	2,000	3,800
1975	700	<50	500	700	100	1,500	400	1,900
1976	1,300	<50	400	800	900	1,600	1,800	3,400
1977	1,400	<50	200	700	1,000	1,500	1,900	3,300
1978	300	<50	200	1,100	1,000	1,400	1,300	2,700
1979	11,200	100	800	1,000	9,700	2,000	20,700	22,800
1980	13,600	100	700	600	9,000	1,600	22,600	24,200
1981 ^{f/}	2,400	<50	100	800	500	2,200	1,500	3,700
<u>Fall</u>								
1973	42,800	NA	2,300	13,700	29,300	28,000	60,000	88,100
1974	28,000	NA	500	4,600	2,500	23,000	12,700	35,600
1975	7,400	100	800	3,900	600	11,100	1,700	12,800
1976	7,400	100	700	3,900	1,200	10,200	3,100	13,300
1977	2,700	<50	300	3,100	400	5,800	700	6,500
1978	4,500	<50	400	10,100	3,500	13,800	4,700	18,600
1979	6,600	100	400	20,400	5,000	24,300	8,100	32,400
1980	5,500	100	200	10,200	2,100	14,900	3,200	18,000
1981 ^{c/}	3,700	<50	200	8,400	600	12,200	800	13,000

a/ Gillnet and Ceremonial and Subsistence catches provided by Quilleute Tribe; other statistics provided by Washington Department of Fisheries.

b/ Predominantly fish under 28 inches in length.

c/ Includes hatchery strays.

d/ Adults only.

e/ Excludes hatchery strays.

f/ Preliminary.

Escapement estimates for the 1965-81 period are presented in Table III-33.

Of the regions managed for natural stocks in 1981, natural spawning escapements were well below escapement goals in the Skagit and Stillaguamish-Snohomish systems while Hood Canal received adequate escapement.

Sockeye

The Quinault River sockeye run is managed for natural production. The spawning escapement goal for this stock is 26,500. Escapement for 1981 is estimated at 28,000 utilizing acoustical counting techniques. Historical terminal net catch and escapement estimates for this stock are presented in Table III-34.

Washington Hatchery Returns

Adult salmon escapement estimates to Washington Department of Fisheries salmon culture facilities from 1971-81 are provided in Table III-35. It appears that hatchery returns in 1981 exceeded or met minimum egg-take requirements except for Willapa Bay and Grays Harbor chinook and Quillayute summer coho.

ALLOCATION

Several of the Council's management objectives fall under the general category of allocation. Allocation is required to achieve treaty Indian fishing opportunity. In 1980, the Council adopted the additional guideline objective to allocate the ocean harvest between the two ocean user groups, troll and recreational fisheries, where feasible.

U. S. Supreme Court review and general confirmation of the Western Washington U. S. District Court Treaty Indian allocation case ("Boltd Decision") reaffirmed a standard for management. A specific objective of 1981 PFMC management for the north Washington coastal coho was to achieve allocation on a regional aggregation basis versus (1) river-by-river, stock-by-stock basis, or (2) regional species aggregate basis.

Late in 1981, in litigation brought against the Secretary of Commerce by three Washington coastal tribes, the U. S. District Court specified the approach to be taken in allocating Washington coastal coho stocks in 1981 and subsequent years:

"The rule of law which governs application of the allocation provisions with respect to treaty Indian fisheries is that such allocations are generally determined separately for each run of fish on a river-system by river-system basis, but this is not an inflexible rule. If special circumstances warrant, it may be modified by an agreement among the affected parties or by specific prior judicial determination.

While either the Secretary or the State of Washington (or both) may by an appropriate agreement with the affected tribes or judicial determination manage the fisheries under its jurisdiction so as to consider more than one run or one river system together for purposes of allocating the affected stocks of fish between

Table III-33. Puget Sound coho escapement estimates for natural and hatchery origin fish, 1965-81.

Year	Natural	Hatchery		Total
		On-station returns	Off-station returns	
1965	138,000	76,100	36,000	250,100
1966	187,000	98,600	45,000	330,600
1967	116,000	68,100	41,000	225,100
1968	147,000	141,200	7,000	295,200
1969	70,500	165,800	1,000	237,300
1970	208,000	265,000	8,000	481,000
1971	127,500	174,600	4,000	306,100
1972	61,500	110,900	31,000	203,400
1973	100,000	112,700	20,000	232,700
1974	154,000	215,100	18,000	387,100
1975	90,000	164,500	12,000	266,500
1976	103,000	146,400	8,000	257,400
1977	193,000	163,700	17,000	373,700
1978	126,000	122,600	11,000	259,600
1979	271,000	119,200	47,000	437,200
1980	209,000	207,400	24,000	440,400
1981 ^{a/}	121,800	208,500	23,200	353,500

a/ Preliminary.

Table III-34. Estimated terminal run size, catch and escapement of Quinault River sockeye, 1973-81.

Year	Escapement Estimate	Harvest	Terminal Run Size
1973	15,200	12,400	27,600
1974	25,000	25,600	50,600
1975	60,500	73,800	134,300
1976	26,400	14,800	41,200
1977	34,900	30,500	65,400
1978	28,500	21,000	49,500
1979	60,800 ^{a/} (18,000)	4,700	65,500 ^{a/} (22,700)
1980 ^{b/}	30,000	16,800	46,800
1981 ^{b/}	28,000	21,700	49,700
1981 Goal	26,500		

a/ Tribal estimate. State estimate shown in parentheses. 1979 was the first year in which an acoustical counting methodology was used by the Quinault Tribe to estimate escapement.

b/ Preliminary.

Table III-35. Summary of adult escapements to Washington Department of Fisheries salmon hatcheries on the Columbia River, Washington coast and Puget Sound, 1971-81.

	Washington Coast			Puget Sound			Columbia River	
	Chinook ^{a/}	Coho	Chum	Chinook ^{a/}	Coho	Chum	Chinook ^{a/}	Coho
1971	2,900	23,500	1,500	31,400	174,600	4,500	42,600	130,000
1972	2,700	12,400	1,600	33,700	110,900	5,900	24,800	65,400
1973	5,600	51,200	1,000	37,000	112,700	8,500	31,200	48,300
1974	4,800	23,400	1,100	24,400	215,100	20,400	35,100	99,400
1975	5,500	6,900	1,600	21,200	164,500	6,300	39,600	67,400
1976	5,300	14,500	2,200	24,800	146,700	33,700	40,000	82,300
1977	7,400	6,700	4,700	27,700	163,700	25,500	37,500	33,100
1978	4,900	19,300	5,700	23,200	122,600	42,200	34,300	71,200
1979	4,590	66,700	600	34,200	119,200	52,500	37,400	57,000
1980	6,000	32,500	7,200	42,500	192,300	57,300	36,200	69,800
1981 ^{b/}	4,000	42,600	2,100	42,000	181,300	24,800	43,900	56,300

a/ Includes spring, summer and fall chinook.

b/ Preliminary.

treaty and non-treaty fishermen, the tribes, in the absence of such agreement or judicial determination, are entitled to take their harvestable share from each run of fish that returns to each of the separate river systems or waterways involved in this case."

The parties to the litigation were directed by the Court to confer and develop provisions for a long-term plan for managing Washington coastal coho involved in the litigation. Representatives from the Hoh, Quileute, and Quinault tribes, the State of Washington, and the United States are presently attempting to fulfill the Court's mandate.

Puget Sound salmon stocks in which there is a tribal treaty fishing right are managed according to a five-year Puget Sound Management Plan which is effective until May 30, 1982, and other court orders. The 1981 plan for ocean fishing, adopted by the Council and Secretary of Commerce recognizes that, while overall Puget Sound natural coho spawning escapement and allocations in other Puget Sound areas would be achieved at the 1981 ocean harvest level, Skagit River natural coho spawning escapements would not be achieved. No ocean fishing north of Cape Falcon in 1981, as well as state closure of the Puget Sound sport fishery, still would not have provided the Skagit River natural spawning objective.

In 1981, the Council addressed the question of treaty Indian allocation for Columbia River stocks by stating that the desired in-river run sizes as set forth in the Columbia River Management Plan were to be considered goals and not management standards. The Columbia River agreement is due to expire in February 1982 before ocean fisheries affecting these stocks will occur. It is unknown at this time what type of allocation scheme will be implemented after the present Columbia River agreement terminates.

The Council has also addressed the question of allocation between ocean and inside fisheries and between troll and ocean recreational fisheries by stating its objective to "provide all ocean and 'inside' fisheries the continuing opportunity to harvest salmon." In 1980 and 1981, this general objective was more exactly quantified for the two ocean fisheries as well as for the Puget Sound commercial net fisheries.

While data are presently unavailable to comprehensively evaluate allocations achieved in 1980 and 1981, analysis of trends is useful and will be presented. As more information becomes available, the Salmon Plan Development Team (SPDT) will prepare additional reports on this subject.

Treaty Indian Allocation

Specific allocations for treaty Indian obligations are unavailable for most areas at this time but will be included in future versions of the plan.

Columbia River

The status of upriver Columbia River salmon stocks in 1981 was such that an allocation between treaty Indian and other than treaty Indian commercial fisheries occurred only on the upper river fall chinook run. The guidelines for management of these stocks are defined in the Columbia River Agreement. This agreement sets forth the goal to achieve an in-river run size of 300,000

upriver origin fall chinook, 100,000 for escapement, with the harvestable surplus to be allocated 60/40 between treaty Indian and other than treaty-Indian fisheries. Due to the requirement of a zero deficit by the fifth year of the Columbia River Management Plan, the 1981 fishery was managed such that the treaty tribes harvested 92% of the total in-river catch of upriver fall chinook. The treaty catch of 45,100 adults substantially reduced the Court defined deficit of 25,200 fish that existed at the start of the 1981 season.

Columbia River harvest management staffs of the Washington Department of Fisheries and Oregon Department of Fish and Wildlife have defined four stock components of the Columbia River fall chinook run for management purposes, two of which are subject to treaty allocation requirements in the Columbia River. These are the upriver hatchery stock essentially originating from the complex of state and federal hatcheries in Bonneville Dam Pool (commonly called "tule") and the upriver bright stock essentially originating from the Hanford Reach natural production area above McNary Dam. The river timing of these stocks are shown in Figure III-2, while the ocean distribution is shown in Figure III-3. The availability of harvestable numbers of upriver brights is the major constraint placed upon the in-river manager to achieve necessary allocations of upriver origin fish. The ability of the Pacific Fishery Management Council (PFMC) and Washington/Oregon/California management to solve this problem is diminished because of the ocean distribution of the upriver bright fall chinook stock versus "tule" stock.

The 1981 Amendment^{1/} sets forth the analysis which indicates the goal of achieving an in-river run size of 300,000 upriver origin fall chinook is not possible, given current stock status, even if the ocean fishery north of Cape Falcon to the Canadian border were totally closed. All available information indicates this conclusion is still valid. Estimates of upper Columbia River fall chinook ocean catch are presented in Table III-36. The methodology to develop these estimates is currently being reviewed and new data will be provided when available. The question then becomes whether the "spirit" of the Columbia River Agreement is still being followed relative to management of the Washington/Oregon coastal harvests despite the depressed condition of the upriver Columbia River fall chinook resource.

One means of addressing this question is to review the trend in ocean harvest and in-river run sizes for recent years compared to the 1971-75 base period (prior to PFMC management and Columbia River Agreement). This information is presented in Table III-37.

This simplistic analysis shows that the ocean catch north of Cape Falcon has been reduced by a greater percentage than has the return to the Columbia River of upriver origin fall chinook.

1/ An amendment to the "Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978," April 1981.

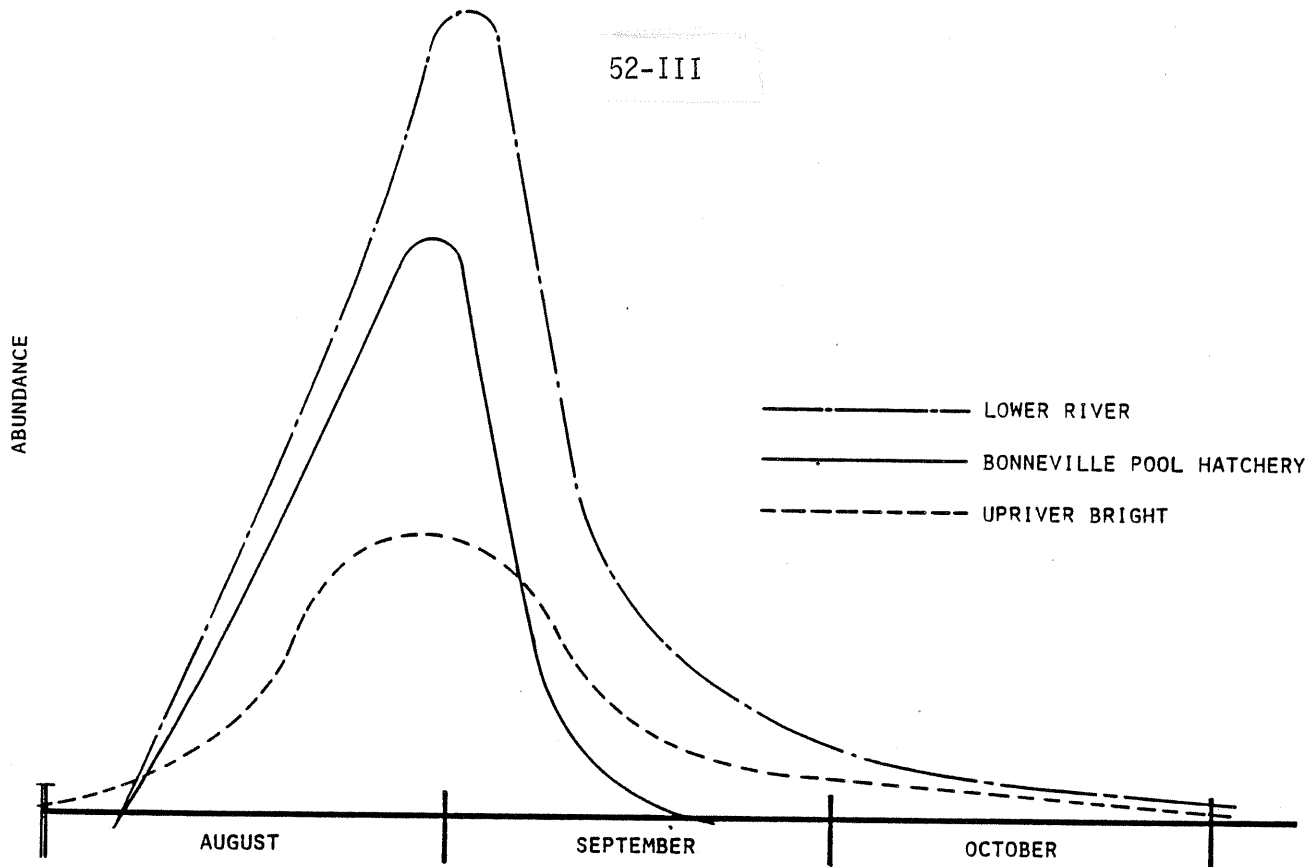


Figure III-2 Abundance of adult fall chinook salmon in the Columbia River estuary, by stock.

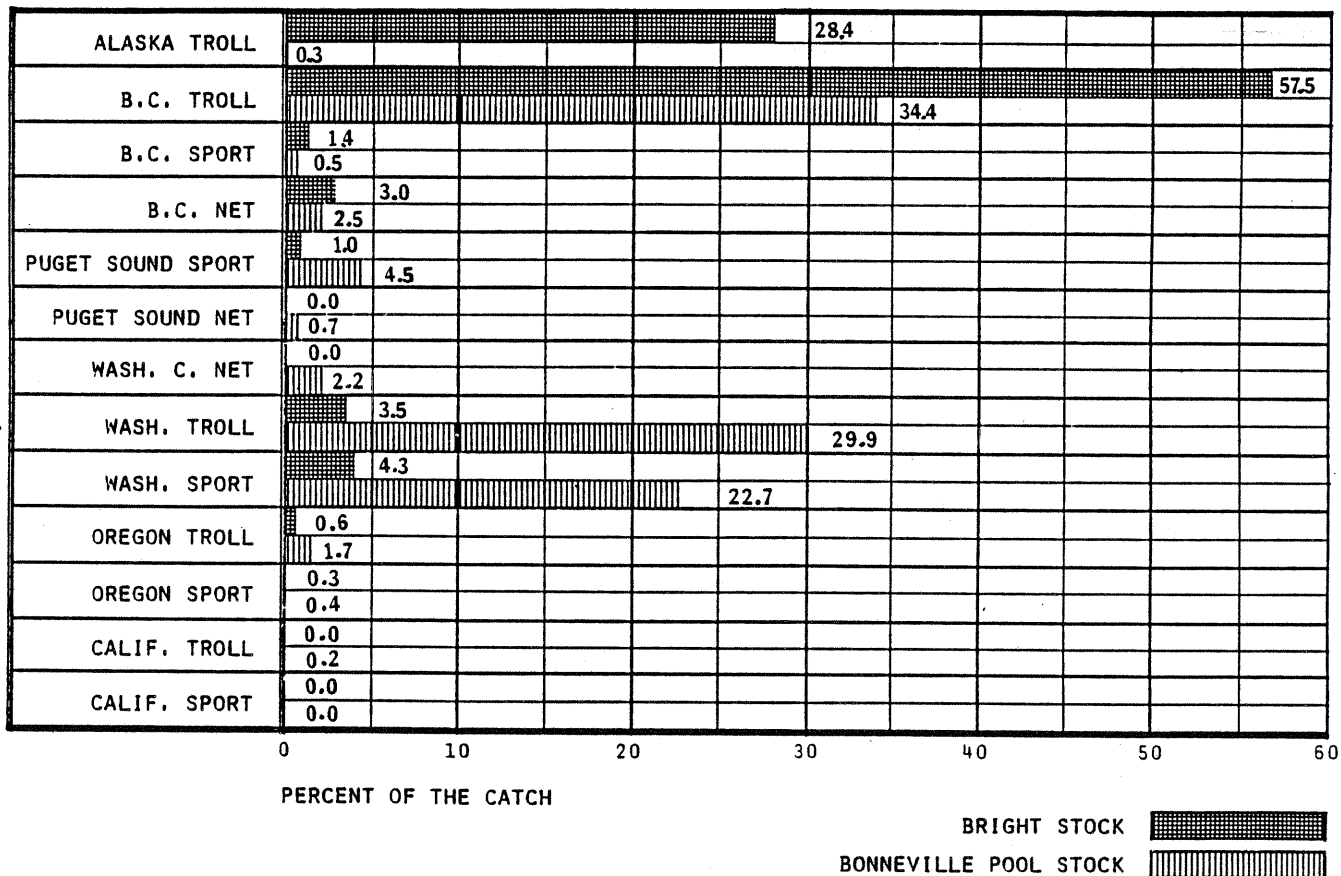


Figure III-3 Ocean catch distribution of Columbia River fall chinook based upon 1976 ocean regulation.

Table III-36. Preliminary estimates of 1979, 1980 and 1981 ocean fishery catches^{a/} of upper Columbia River fall chinook off the Washington and Oregon coast.

	1979	1980	1981
Washington ocean troll and recreational catch	209,300	181,800	197,900
x.70 to get Columbia River fall stock	146,500	127,300	138,500
x.485 to get upriver stock	71,100	61,700	67,200
Oregon ocean troll and recreational catch	262,900	224,300	186,100
x.05 to get Columbia River fall stock	13,100	11,200	9,300
x.485 to get upriver stock	<u>6,400</u>	<u>5,400</u>	<u>4,500</u>
Total Washington/Oregon ocean catch of upriver falls	77,500	67,100	71,700

a/ Catches not adjusted to adult equivalents.

Table III-37. Washington/Oregon ocean catch of chinook north of Cape Falcon and Columbia River returns of upriver origin fall chinook stocks for 1977-81 compared to 1971-75 base period.

	Wash./Ore. Catch		In-River Adult Run of Upriver Origin ^{b/}					
	N. of Cape Falcon ^{a/}		Columbia River					
		% of		% of		% of		% of
	Chinook	Average	Bright	Average	Tules	Average	Total	Average
1971-75 Average	495,300	-	116,800	-	105,200	-	222,000	-
1977	428,500	86.5	96,300	82.4	103,400	98.3	199,700	90.0
1978	257,100	51.9	82,800	70.9	99,800	94.9	182,600	82.3
1979 ^{c/}	218,800	44.2	90,000	77.1	89,900	85.5	179,900	81.0
1980 ^{c/}	191,700	38.7	76,700	65.7	97,100	92.3	173,800	78.3
1981 ^{c/}	206,000	41.6	63,900	54.7	94,100	89.4	158,000	71.2

a/ Includes all chinook harvested in the ocean north of Cape Falcon regardless of origin and not only those of upper Columbia River origin. Excludes Oregon recreational catch which is unavailable for entire base period.

b/ Based on new stock distribution model developed in 1980.

c/ Preliminary.

North Washington Coast

The sharing of the 1981 harvest of these stocks currently is being reviewed by state, tribal, and federal technical representatives.

Puget Sound

Allocation requirements to meet Indian treaty obligations for Puget Sound stocks are computed on the basis of six regions of origin in Puget Sound and Canada. Canadian stocks are also subject to allocation requirements. A summary of 1977-1981 Puget Sound treaty allocations, as computed by the Washington Department of Fisheries, is presented in Table III-38. The treaty tribes do not agree that the statistics contained in Table III-38 accurately represent allocations.

Recent harvest trends in the Washington ocean fisheries and the Puget Sound net fisheries are shown in Figure III-4.

In 1982, if an allowable ocean harvest is established for the area north of Cape Falcon, the expected treaty Indian catch will be deducted from the allowable ocean catch and the remainder will be allocated between the troll and recreational fisheries on a 60/40 basis. If the treaty ocean catch exceeds preseason estimates, adjustments will be made in the allowable catches by the inside treaty net fisheries.

Table III-39 lists the treaty Indian and treaty non-Indian coho net catches in Puget Sound.

Other Allocation Considerations

Numerical management goals were established for allocation of the ocean harvest of coho salmon between the troll and recreational fisheries in 1981.

For the area south of Cape Falcon, harvest guidelines were established which provided for a 71% and 29% allocation of the coho salmon harvest between the troll and recreational fisheries, respectively, including California. The 1981 allocation of the coho catch (820,400) between the troll and recreational fisheries was 81% and 19%, respectively, compared to the guideline of 71% and 29% established for the 1981 Plan (Table III-40). Even though the 1981 allocation (81:19) did not meet the preseason objective, it is similar to the 1971-75 average share between fisheries of 83:17.

For the area north of Cape Falcon, harvest guidelines were established which provided for a 60% and 40% allocation of the coho salmon harvest between the troll and recreational fisheries, respectively, north of Cape Falcon. The 1981 ocean catch was 725,600 (Table III-41). The actual 1981 allocation of the coho catch between the troll and recreational fisheries was 60:40 for the respective fisheries.

Table III-38. Treaty Indian catches (including commercial, ceremonial and subsistence, hatchery fish by agreement, and opportunity fish not caught) of Puget Sound-origin salmon and Federally mandated allocations as computed by the Washington Department of Fisheries during each fishing season, 1977-81.

Region of Origin	Year	Summer/Fall Chinook a/						Sockeye						Coho						Chum						Total Diff.					
		Treaty Indian			Treaty Indian			Treaty Indian			Treaty Indian			Treaty Indian			Treaty Indian			Treaty Indian											
		Catch	Alloca.	Diff.	Catch	Alloca.	Diff.	Catch	Alloca.	Diff.	Catch	Alloca.	Diff.	Catch	Alloca.	Diff.	Catch	Alloca.	Diff.	Catch	Alloca.	Diff.	Catch	Alloca.	Diff.		Species Exc.				
Strait of Juan de Fuca (tributaries)	1977																														
	1978 ^{b/}																														
	1979	183	376	-193				13,458	21,911	-8,453																					
	1980 ^{d/}	252	1,667	-1,415				1,941	3,653	-1,712																					
	1981 ^{b/}	435	2,043	-1,608				15,399	25,564	-10,165																					
TOTAL																															
Nooksack-Samish	1977																														
	1978 ^{b/}																														
	1979																														
	1980 ^{d/}	59,723	51,365	+8,358				44,372	39,453	+4,919																					
	1981 ^{b/}	50,476	52,515	-2,039				29,370	20,950	+8,420																					
TOTAL	110,199	103,880	+6,319				73,742	60,403	+13,339																						
Skagit	1977																														
	1978 ^{b/}																														
	1979	2,430	4,651	-2,221				152,606	192,467	-39,861																					
	1980 ^{d/}	12,401	17,366	-4,965				107,434	83,824	+23,610																					
	1981 ^{b/}	14,831	22,017	-7,186				260,040	276,291	-16,251																					
TOTAL	16,775	13,903	+2,872				32,450	45,076	-12,626																						
Stillaguamish/Snohomish	1977																														
	1978 ^{b/}																														
	1979																														
	1980 ^{d/}	16,775	13,903	+2,872				37,493	33,770	+3,723																					
	1981 ^{b/}	15,881	19,361	-3,480				69,943	78,846	-8,903																					
TOTAL	32,656	33,264	-608				32,656	33,264	-608																						
South Puget Sound	1977																														
	1978 ^{b/}																														
	1979																														
	1980 ^{d/}	30,054	30,904	-850				24,792	21,996	+2,796																					
	1981 ^{b/}	23,928	53,701	-29,773				19,389	31,908	-12,519																					
TOTAL	53,982	84,605	-30,623				36,900	24,850	+12,050																						
Hood Canal	1977																														
	1978 ^{b/}																														
	1979																														
	1980 ^{d/}	6,639	4,365	+2,004				2,334	5,742	-3,408																					
	1981 ^{b/}	9,705	10,890	-1,185				2,660	6,143	-3,483																					
TOTAL	16,074	15,255	+819				4,994	11,885	-6,891																						
All Puget Sound Regions of origin	1977																														
	1978 ^{b/}																														
	1979																														
	1980 ^{d/}	115,534	105,564	+9,970				270,012	326,645	-56,633																					
	1981 ^{b/}	112,643	155,500	-42,857				198,287	180,248	+18,039																					
TOTAL	228,177	261,064	-32,887				468,299	506,893	-38,594																						
SPEICES TOTAL	1977																														
	1978 ^{b/}																														
	1979																														
	1980 ^{d/}	520,400	506,600	+13,800				520,400	506,600	+13,800																					
	1981 ^{b/}	503,881	482,256	+21,625				503,881	482,256	+21,625																					

a/ Chinook allocation numbers calculated since August 8, 1980, per recent court order by Judge Craig. No commercial net allocations prescribed for spring chinook.

b/ Preliminary ("soft") data; subject to change.

c/ No commercial net allocation prescribed.

d/ Allocation prescribed for terminal areas only for sockeye salmon.

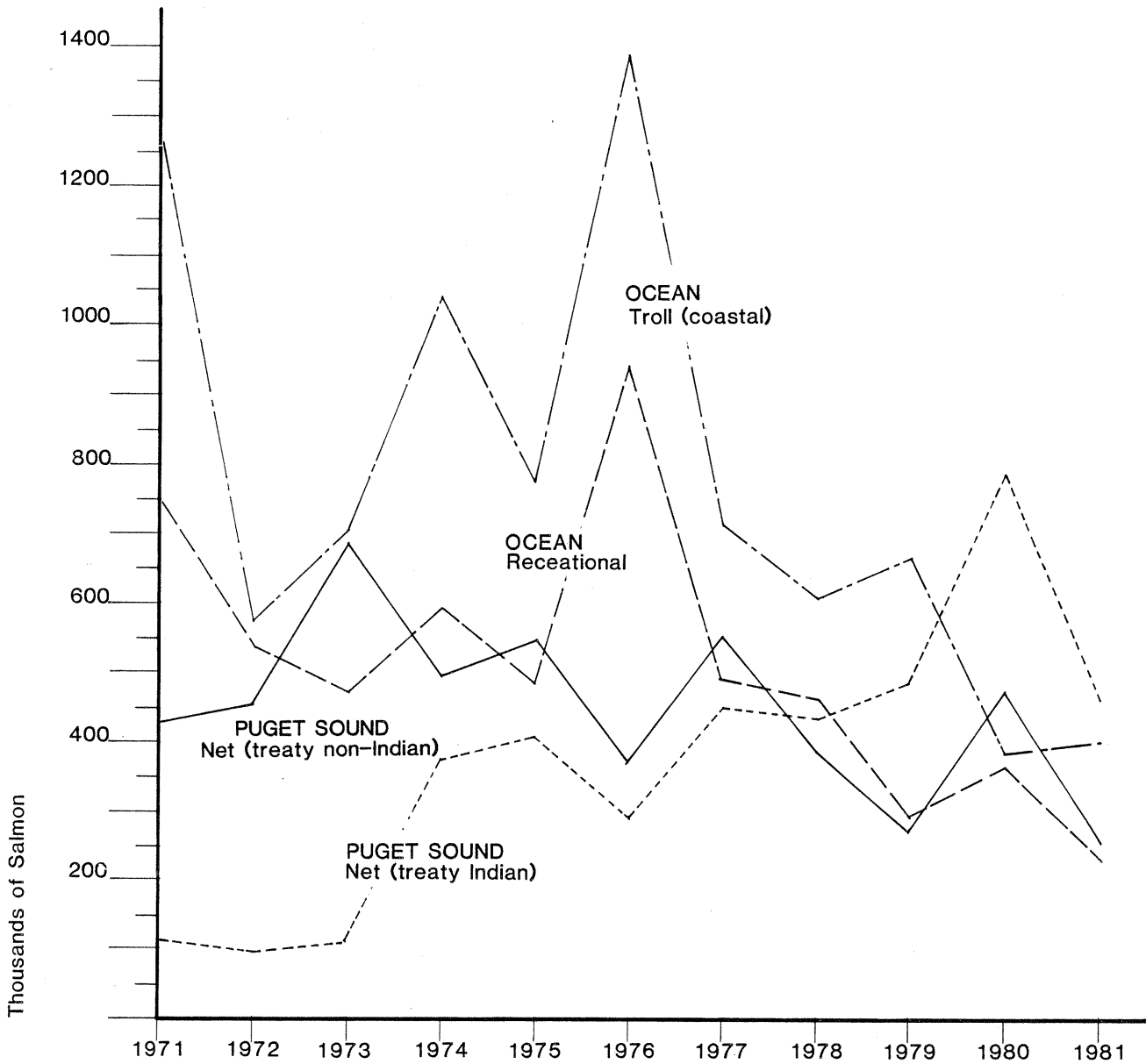


Figure III-4. Washington catch of coho in the ocean and Puget Sound net fisheries 1971 through 1981.

Table III-39. Annual treaty Indian and non-Indian Puget Sound commercial net coho catches in pre-terminal and terminal areas.

Year	Pre-Terminal Catch ^{a/}			Terminal Catch ^{b/c/}			Grand Total
	Treaty Indian	Non-Indian	Subtotal	Treaty Indian	Non-Indian	Subtotal	
1971	5,900	250,700	256,600	112,600	184,400	297,000	553,600
1972	1,500	219,900	221,400	95,700	233,800	329,500	550,900
1973	3,300	349,200	352,500	114,200	335,100	449,300	801,800
1971-73 average	3,600	273,300	276,900	107,500	251,100	358,600	635,500
1974	20,600	397,300	417,900	358,300	97,100	455,400	873,300
1975	11,100	377,800	388,900	400,100	172,500	572,600	961,500
1976	31,700	347,000	378,700	258,600	29,400	288,000	666,700
1977	36,500	306,600	343,100	411,000	249,100	660,100	1,003,200
1978	25,100	245,400	270,500	409,800	137,900	547,700	818,200
1979	63,700	148,000	211,700	417,800	128,500	546,300	758,000
1980	107,400	283,500	390,900	680,600	191,800	872,400	1,263,300
1981 ^{c/}	80,000	139,700	219,700	390,500	133,800	524,300	744,000

a/ Includes Canadian- and U. S.-origin fish.

b/ Puget Sound-origin fish.

c/ Preliminary.

Table III-40. Estimated ocean harvest of coho salmon south of Cape Falcon in 1981.

Area	Fishery		Total
	Recreational	Troll	
Oregon Coast (S. of Falcon)	145,500	587,200 ^{a/}	732,700
California Coast	<u>9,700</u>	<u>78,000</u>	<u>87,700</u>
TOTAL	155,200 (19%)	665,200 (81%)	820,400

a/ Includes 19,300 fish caught off Oregon and landed in Washington.

Table III-41. Estimated ocean 1981 harvest of coho salmon in the area north of Cape Falcon.

Area	Fishery		Total
	Recreational	Troll	
Columbia River area	172,800	117,900	290,700
Washington coast	<u>119,100</u>	<u>315,800^{a/}</u>	<u>434,900</u>
TOTAL	219,900 (40%)	433,700 (60%)	725,600

a/ Includes 10,400 caught off the Washington coast but landed in Oregon.

Allocation goals between ocean and "inside" non-Indian fisheries were not established for any stocks. Some level of harvest occurred in all "inside" commercial and recreational fisheries but not necessarily on all runs, i.e., upper Columbia River spring and summer chinook due to their depressed status. Allocation to "inside" fisheries is within the purview of the states. The trend of "inside" fishery catches is presented in various sections of this 1982 Salmon Plan Amendment: upper Columbia River fall chinook, Table II-33; Grays Harbor coho, Table II-37; and Puget Sound coho, Table II-44.

For California, the 1981 Plan had separate chinook quotas for the troll and recreational fisheries north and south of Pt. Arena. For the area north of Pt. Arena, the allocations were approximately 5% (15,000) for recreational and 95% (300,000) for the troll compared with actual landings of about 4% (11,300) for recreational and 96% (292,000) for troll (Table III-1).

For the area south of Pt. Arena, the allocations were approximately 30% (115,000) for recreational and 70% (265,000) for troll compared with actual landings of about 22% (72,400) for recreational and 78% (256,800) for troll.

SUMMARY OF 1981 MANAGEMENT

Table III-42 summarizes the degree to which management goals were met in 1981.

Table III-42. Summary of 1981 performance by river system and stock in relation to goals.

System	1981 Goal	Was Goal Met in 1981?
1. Klamath Fall Chinook	Escapement 86,000 adults (115,000 long-term) plus provide for inside harvest.	No. Escapement was 36,700 adults or 43% of short-term goal.
2. Sacramento River		
Upper River Fall Chinook	Natural escapement of 74,000 adults (99,000 long-term).	No. Natural escapement was 57,000 or 77% of short-term goal.
Lower River Fall Chinook	Natural escapement of 71,000 (American River: 24,000; Feather River: 27,000; Yuba River: 20,000).	Yes and no. Escapement goal met or exceeded except for Yuba River. American River: 39,000 or 162% of goal; Feather River: 40,000 or 148% of goal; Yuba River: 11,000 or 55% of goal.
3. Oregon Coastal Chinook	Escapement of 150-200,000 adults.	Yes.
4. Columbia River		
Upper River Fall Chinook	Exceed 1980 in-river run size (175,000). Escapement of 40,000 adults above McNary Dam.	No. In-river run size of 158,000 was smallest on record. McNary escapement was 21,200 or 53% of goal.
Upper River Spring Chinook	Escapement of 100-120,000 adults above Bonneville Dam (not attainable) plus meet treaty obligations. Escapement of 30,000 minimum to Snake River.	No. Bonneville escapement 61,300 or 61% of minimum goal. Snake River escapement 13,100 or 44% of goal.
Upper River Summer Chinook	Escapement of 80-90,000 adults above Bonneville Dam (not attainable) plus meet treaty obligations.	No. Escapement of 27,000, or 34% of minimum goal, was lowest on record.
Lower River Fall Chinook	Mainly managed for hatchery production.	Yes, but below average.
Lower River Spring Chinook (Willamette)	Escapement 30-35,000.	Yes.
5. Washington Coastal Fall Chinook	Natural escapement of 28,000 plus meet treaty obligations.	Close to meeting state goals in all areas except Grays Harbor.
6. Washington North Coastal Spring/Summer Chinook	Natural escapement of 4,100 plus meet treaty obligations.	Did not meet state goals but did meet revised F.A.B. goals.
7. Puget Sound Chinook	Minor part of Washington coastal catch.	
8. Columbia River and Oregon Coastal Coho (OPI)	OPI escapement of 300,000 (575,000 long-term) while achieving natural escapement of 125,000 (200,000 long-term).	No. Oregon coastal natural escapement 72,700 or 58% of goal. OPI escapement of 194,300 or 65% of goal.
9. Washington Coastal Coho	Natural escapement of 71,000 plus meet treaty obligations.	Did not meet state goals but generally met court-ordered goals.
10. Puget Sound Coho	Natural escapement of 152,000 plus meet treaty obligations.	121,800. Goal not met on Skagit or Stillaguamish-Snohomish and met on Hood Canal.

IV. OCEAN MANAGEMENT OF SALMON IN 1982

STATUS OF CHINOOK AND COHO RESOURCE FOR 1982

The purpose of this assessment is to provide the most current information available relative to the salmon stocks which will contribute to the 1982 salmon fisheries. This report is necessarily preliminary due to the nature of much of the data available for analysis. This report contains the best information available to the Salmon Team as of early March 1982.

California Chinook

Coastal Streams

The last of the drought-impacted north coast fall-run chinook returned during the fall of 1980. In 1981, both 3- and 4-year-old chinook year classes were expected to be in good shape, similar to 1978 when the north coast ocean harvest was 299,300 chinook and the Klamath in-river run size was 96,400 fall-run chinook. In 1981, the north coast ocean harvest was 303,900 chinook and the Klamath in-river run size was 76,100 chinook, which was below expectations.

In 1982, 4-year-old progeny from 1978 Klamath River fall chinook spawners are expected to be of about average strength. However, fewer than average 3-year-old Klamath River chinook, progeny of 1979 spawners, are expected to be present due to the poor spawning escapement in 1979 of only 34,100 fish. Increased hatchery yearling production as well as excellent water conditions during spawning should help offset the low natural spawning escapement in 1979. Overall, 1982 Klamath River chinook abundance should be similar to 1981.

Sacramento-San Joaquin River System

San Joaquin River System - San Joaquin River chinook face unfavorable environmental conditions almost every year (1981 was an exception). The 1982 runs should be comparable to recent years (3,000-10,000 chinook).

Sacramento River Winter Run Chinook - The outlook for 1982 is better than for the previous three drought-impacted years. In-river run size in 1982 should be up from the lows of 1,200 and 2,300 fish in 1980 and 1979 respectively, but will fall short of the 40,000 winter run chinook goal. In 1981 the winter-run adult chinook escapement was 20,000 fish.

Sacramento River Spring Run - Spring runs should show continued improvement in 1982 over the low abundance in 1981, 1980, and 1979 due to the drought years. The escapements in the previous years were: 1981 - 21,000; 1980 - 9,700; and 1979 - 1,200 fish. However, it is not expected that 1982 escapement will reach the goal of 29,000 spring run chinook.

Sacramento River Fall Run - It is expected that the 1982 fall chinook production from the Sacramento River should be similar to 1981. The 4-year-old chinook (1978 brood) will be of about average strength, based on the catch and escapement of 3-year-olds in 1981. Although the 1979 escapement was above

average, survival of the 3-year-olds from the 1979 brood appears to be down, based on sampling of the smolts in the delta.

Oregon Coastal Chinook Stocks

Oregon coastal chinook stocks primarily contribute to the ocean fisheries off Oregon, Washington, British Columbia, and Southeastern Alaska. Portions of these runs are also harvested off Northern California. The status of coastal chinook stocks from Coos Bay south including the Coos River system, the Coquille, Sixes, Elk, Rogue, and Chetco rivers is of particular concern in setting regulations off the Oregon coast and Northern California. Most of the other Oregon coastal stocks contribute to the ocean fisheries off Washington, British Columbia, and Alaska, and these stocks will primarily be influenced by regulations in these northern areas.

Oregon coastal natural chinook stocks remain in a generally favorable status, showing recent upward trends in spawning escapement since 1952. These stocks have stabilized at optimal spawning levels in recent years. Spawning escapements for the 1977-79 brood years were average to good and the overall abundance of Oregon coastal chinook stocks is expected to be average in 1982. The Rogue River spring chinook stocks should be of above average abundance in 1982, while the fall run will be average. The status of other south coast stocks will be average in 1982. Hatchery returns in 1981 were less than adequate for fall chinook at some coastal stations.

Columbia River Chinook Stocks

Columbia River chinook are the predominant chinook stocks found off Oregon north of Cape Falcon and along the Washington coast. Of the stocks originating from the Columbia River, the fall chinook "tule" stock is the largest single contributor to the Oregon-Washington coastal fisheries, with spring and summer and upriver "bright" fall chinook contributing lesser amounts.

Status of specific stocks of Columbia River chinook is presented by current, in-river management components as follows:

Lower River Spring Chinook

The major lower river spring chinook runs originate in the Willamette and Cowlitz Rivers with minor runs also originating in the Lewis, Kalama, and Sandy Rivers. The Willamette run is expected to be above average: about 65,000 fish returning to the Columbia River in 1982 compared to the 1971-75 average of 54,700 fish.

The Cowlitz run is expected to be slightly above average, about 25,000 fish in 1982 compared to the 1971-75 average of 21,400 fish.

Upriver Spring/Summer Chinook

Despite the achievement of the desired spawning escapement goal for the Snake River spring chinook run component in 1977 and 1978, the 1982 in-river run is projected to be 49,000 fish, a run of the magnitude observed in 1979 (record low). This projection is based upon a relationship between returning numbers of jacks at The Dalles Dam and adult in-river run size. There are no

indications that the summer chinook will improve above record low runs seen since 1979.

Upriver Fall Chinook

Based on a relationship between a jack index at The Dalles and John Day Dams and the returning adult run of the same brood, the preliminary forecast for the 1982 upriver bright fall chinook return to the river is 63,000 adults, a record low. This follows record low adult returns of 77,800 in 1980 and 63,900 in 1981.

A relatively large return of two-year-old males of the Bonneville pool hatchery fish (a component of the tule stock) occurred in 1981, but no strong relationship exists between jacks and adult production within the same brood for these fish. The Bonneville Pool hatchery run to the river in 1982 is expected to be similar to the 1979-1981 average of 92,600 adult fish.

Lower River Fall Chinook

The lower river hatchery chinook (a component of the tule stock) are not expected to be significantly greater than the poor returns of recent years. The 1979-80 average run to the river of hatchery fish was 106,100 adult fish; the 1981 return is not available at this time.

Columbia River and Oregon Coastal Coho Stocks

These stocks are important to ocean fisheries off the southern Washington coast as well as to fisheries off the coasts of northern California and Oregon. A conservation problem is expected in 1982 for these stocks with the abundance of adult coho in the Oregon Production Index (OPI) area predicted to be depressed. The OPI includes Oregon coastal and Columbia River coho stocks from Ilwaco, Washington, south to California.

The pre-season estimate of the 1982 coho stock size in the OPI area was developed by using the OPI abundance predictor (jack index) and an independent estimate of the private hatchery contribution. The number of three-year-old adult coho in the OPI area can be predicted by the number of two-year-old jack coho returning to selected facilities in 1981. The assumption is made that three-year-old fish will return in the same proportion as two-year-old fish and for coho this is generally true. The predictor compares the number of coho jacks returning to selected hatcheries and dams with the catches and returns of adults making up the OPI, as previously described (Chapter III). New production sources, such as private hatcheries, are not estimated in the OPI abundance predictor since they have not been a part of the historic data base from which the predictor was developed. Therefore, it was necessary to make a separate estimate of the private origin fish contributing to the ocean catch in the OPI area using the 1980-81 average survival rate and expected 1982 harvest rate. Production of coho from private hatcheries was estimated independently and added to the OPI stock predictor to determine the total number of coho contributing to the OPI area.

The OPI abundance predictor was modified for application in 1982 by the addition of 1981 data to the jack vs. adult relationship bringing to eight the number of data points in the relationship. Table IV-1 and Figure IV-1 show

Table IV-1. Relationship of Columbia River and Oregon coastal coho jack index to the Oregon Production Index for coho adults in thousands of fish, 1972-82 and 1982 prediction.

Year of Adult Production	Jacks ^{a/} of Previous Year			Adult Production Index ^{b/}	
	Columbia	Coastal ^{c/}	Total	Expected	Observed
1972 ^{d/}	99.4	14.3	113.7	-	2,041.9
1973	83.0	6.5	89.5	1,963.6	1,998.3
1974	128.4	20.9	149.3	3,331.2	3,126.1
1975	72.8	4.0	76.8	1,672.9	1,758.4
1976	144.0	32.7	176.7	3,958.0	4,109.9
1977 ^{e/}	46.1	10.7	56.8	1,215.4	1,127.1
1978 ^{d/e/}	98.5	5.1	103.6	-	1,783.7
1979 ^{e/}	63.4	11.7	75.1	1,634.0	1,542.5 ^{f/}
1980 ^{e/}	51.1	5.8	56.9	1,217.7	1,254.1 ^{f/}
1981 ^{e/}	40.3	10.9	51.2	1,087.3	1,163.4 ^{f/}
1982 ^{e/}	34.8	8.1	42.9	897.5	-

a/ Components of jacks are ODFW and WDF hatcheries below Bonneville, Bonneville and Willamette dam counts, Oregon coastal hatcheries and Tenmile Lake counts.

b/ Oregon production index includes: (1) ocean catches off the Columbia River, Oregon and California, (2) Oregon coastal hatchery and Tenmile Lake returns; and (3) the gillnet catch, Bonneville and Willamette dam counts and hatchery returns to the Columbia River below Bonneville Dam.

c/ Includes estimated returns of jacks and adults to Oregon coastal areas from off-station hatchery releases. These estimated returns are based on the percentage of the total smolt releases liberated off-station and the actual return to the hatchery. The basic assumption is that the survival is identical to hatchery releases and the fish return to the liberation site in the same proportion.

d/ Omitted from regression due to bias in jack counts.

e/ Data are preliminary.

f/ OPI has been adjusted to exclude the catch of coho originating from private hatcheries.

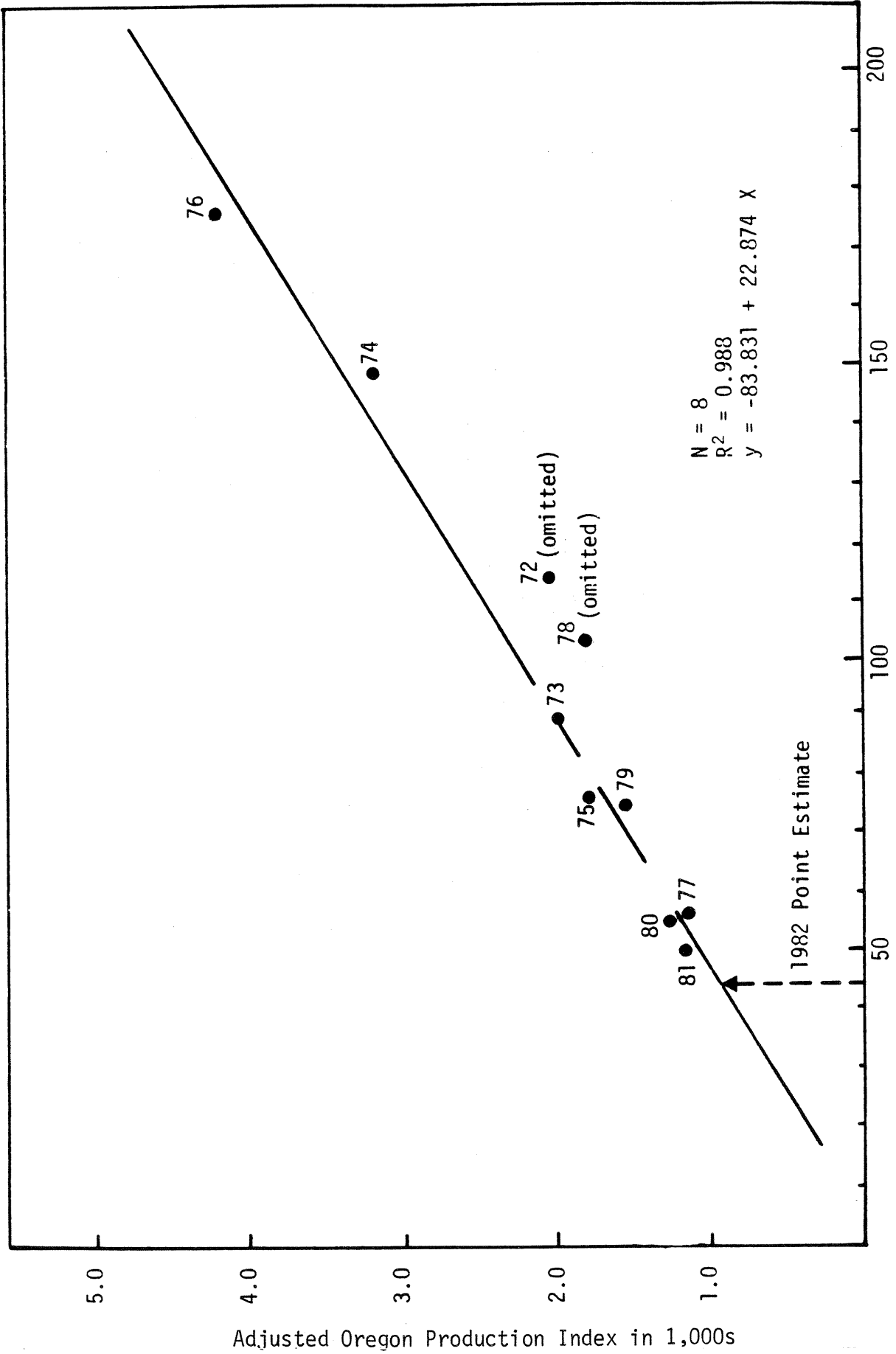


Figure IV-1. Relationship between Columbia River and coastal jack index and the coho adult production index, 1972-81 and 1982 prediction. (Data points for 1972 and 1978 were omitted from the regression.)

the data and regression calculation which made up the 1982 abundance predictor. It should be noted that due to the addition of 1981 data to the jack vs. adult relationship, the data base in the 1982 relationship varies slightly from that utilized in the 1981 relationship (Table III-4 and Figure III-1). The 1982 predictor has an R^2 value of 0.988. The potential accuracy of the revised predictor is best indicated by comparing the expected and observed values of the OPI for individual years from 1973-81 (Table IV-1). Observed stock sizes deviate a maximum of 205,100 ($\pm 7\%$) from expected values for a population which varied between 1.1 and 4.1 million fish. The deviations range between 2% and 7%.

Jack returns to index areas during the fall of 1981 were the lowest recorded since 1965. A total of 42,900 jacks returned to Columbia River and coastal index areas in 1981 (Table IV-1). Based on the relationship of jacks to adults (Figure IV-1), the total adult production for the OPI in 1982 is expected to be 897,500, which is a near record low level.

A separate estimate was made of the private hatchery origin fish contributing to the ocean catch in the OPI area. Returns from releases of 24.8 million coho at coastal facilities can be expected in 1982. It is difficult to predict the contribution of private hatchery fish to the OPI area because of limited information on anticipated survival and catch rates. However, if the 1980-81 average survival rate (1.51%) and expected 1982 harvest rate (52%) is applied to 1981 releases it is estimated that private hatcheries will add an additional 193,300 fish to the catch in the OPI area. This would bring the total number of fish contributing to the OPI area to 1,090,800 (Table IV-2). Fish of private hatchery origin would then comprise about 24% of the ocean catch. Since experience with private hatchery fish is limited, actual contribution rates could vary considerably from that predicted. Therefore, it will be necessary to verify the contribution of private hatchery coho to the ocean catch by inseason analysis of micro-tags in order to separate private production from the remaining sources of production contributing to the ocean catch of coho in the OPI area.

The 1982 coho abundance of 1.1 million is forecasted to be below that in 1981 (1.3 million) and similar to the failure of 1977. There is particular concern for natural stocks returning to coastal streams in 1982 because of the rebuilding program for these stocks. An improved escapement of 172,000 adults was achieved in the 1979 brood year and adequate protection is needed to maintain this improved cycle year.

Current levels of coho production are similar to those achieved in the early 1960s despite the large increases in coho hatchery production. This depression of the coho resource has required severe regulatory restrictions in recent years to maintain adequate escapement. ODFW currently is reviewing the coho problem to identify factors causing the declining production and to develop management procedures which will improve future coho production.

Table IV-2. Preseason estimate of coho stock size in the OPI area in 1982.

Component of Stock Size Estimate	1982 Preseason Estimate
OPI Abundance Predictor (Jack Index)	897,500
Private Hatchery Ocean Catch	<u>193,300</u>
Total OPI Area Stock Size	1,090,800

Washington Coastal Chinook Stocks

Willapa Bay

Hatchery releases of 1978 brood fall chinook, which will make up the bulk of the 1982 return to Willapa Bay, were 3.23 million, down from the 4.32 million 1977 brood releases though still above the recent five-year average. The 1979 brood releases, which will contribute as 3-year-olds, were 3.4 million. Based on these releases, the 1982 run is not expected to be as large as in 1981.

Grays Harbor

The 1982 chinook returns to Grays Harbor will result primarily from the wild escapements in 1978 and 1979. Escapements in both those years were well below the desired level, although the 1979 escapements may provide some optimism since they were the highest since 1970. Based on this, an improved natural run of chinook is expected in 1982, but the run is not expected to be sufficiently large to provide a directed terminal chinook fishery. Hatchery returns likely will continue to provide no substantial harvest, as they will be needed to develop hatchery broodstock programs.

North Coast

Natural chinook stocks on the north coast are expected to continue the recent increasing trend, as indicated by juvenile abundance indices. Returns of hatchery chinook should be comparable to those experienced in 1981.

Washington Coho Stocks

In the past, the term Washington Production Projection (WPP) has been used to identify the area north of Cape Falcon. This term is no longer used. A preliminary forecast as well as information on the status of stocks which contribute to the fisheries north of Cape Falcon is presented in Table IV-3. Final preseason abundance forecasts for the stocks in the area north of Cape Falcon will not be available until May and may require a revision in any ocean coho quotas for this area established in March by the Council.

Willapa Bay

Willapa Bay is managed for hatchery coho production. The bulk of the return in 1982 will be from 1979 brood releases which were the largest ever made in Willapa Bay, primarily due to the new Naselle Hatchery. These 1979 brood releases totaled 5.23 million yearlings compared to 2.1 million for the 1978 brood (which returned well in 1981), and to the recent five-year average of 2.2 million. Preliminary jack return information appears favorable, and the 1982 terminal run is projected to be 104,000.

Grays Harbor

Grays Harbor is primarily managed for wild coho, but has a strong hatchery component. The 1979 escapement goal was met but production from these fish probably was detrimentally affected by the floods of 1979. To mitigate for this impact, and to improve the distribution of returning adults, an extensive program of fed fry releases is expected to contribute to the run in 1982. The

Table IV-3. Preliminary pre-season abundance forecasts for coho salmon stocks expected off the Washington coast in 1982. ^{a/}

Production Area	Coho Salmon Stock	Type of Prediction	Estimated No. of Adults (x1,000)		1982 Prediction Methodology	Prediction Base Years	Source
			1982	1981 ^{b/}			
CA and OR coasts and Columbia River	OPI	Ocean catch south of Leadbetter Point plus ocean escapement to index area	897.5	1,069.3	Relationship of jack returns to adult production following year	1973-1977, 1979-1981	ODFW
Oregon coast	Private aquaculture facilities	Ocean catch south of Leadbetter Point	193.3	140.0	Juvenile to adult survival rate from coded-wire tag experiments and expected harvest rate	1980, 1981	ODFW
WA coast	Willapa	Ocean fishery escapement	104.0	54.7	Average juvenile to adult survival rate	1967-1981	WDF
	Grays Harbor fall run	Ocean fishery escapement (N)	66.0	55.6	Average return per spawner off-station returns at 1/2 hatchery return rate	1978-1980	WDF
		(H)	26.0	27.0	Average juvenile to adult survival rate including off-station returns	1978-1980	WDF
	Grays Harbor summer run	Ocean fishery escapement (H)	6.5	-	Average juvenile to adult survival rate (90% of Soleduck rate)	1974-1980	WDF
	Quinalt	Ocean fishery escapement (N)	5.9	9.9	Assumed similar to Queets	1977-1981	Quinalt Tribe
		(H)	9.7	10.1	Average juvenile to adult survival rate trend		
	Queets	Ocean fishery escapement (N)	5.9	10.4	Relationship of jack to adult returns	1974-1978, 1980, 1981	WDF
		(H)	5.4	4.2	Average juvenile to adult survival rate	1977-1981	Quinalt Tribe

Table IV-3. (continued)

Production Area	Salmon Stock	Coho Type of Prediction	Estimated No. of Adults (x1,000)		1982 Prediction Methodology	Prediction Base Years	Source
			1982	1981 ^{b/}			
WA coast (cont'd.)	Hoh	Ocean fishery escapement (N)	4.3	4.7	Relationship of jack to adult returns	1974-1979	WDF
		(H)	0.6	0.6	Average juvenile to adult survival rate	1977-1981	Hoh Tribe
	Quillayute fall run	Ocean fishery escapement (N)	13.2	18.0	Relationship of jack to adult returns	1974-1981	WDF
		(H)	1.8	1.5	Relationship of jack to adult returns	1974-1981	WDF
	Quillayute summer run	Ocean fishery escapement (N)	2.2	2.9	Relationship of adults to peak cycle year redd counts	1974-1981	WDF
		(H)	7.9	4.7	Relationship of jack to adult returns	1974-1981	
WASHINGTON COASTAL TOTAL			259.4	204.3			
Puget Sound	Strait	U. S. Puget Sound net catch plus escapement	65.8	31.8	c/ d/		WDF
	Mooksack/Samish	U. S. Puget Sound net catch plus escapement	188.9	114.4	c/ d/		WDF
	Skagit	U. S. Puget Sound net catch plus escapement	76.4	44.4	c/ d/		WDF
	Stillaguamish/Snohomish	U. S. Puget Sound net catch plus escapement	137.0	134.7	c/ d/		WDF
	South Sound	U. S. Puget Sound net catch plus escapement	498.6	384.8	c/ d/		WDF
	Hood Canal	U. S. Puget Sound net catch plus escapement	101.5	55.9	c/ d/		WDF
PUGET SOUND TOTAL			1,068.2	766.0			

Table IV-3. (continued)

Production Area	Salmon Stock	Coho	Type of Prediction	Estimated No. of Adults (x1,000)		1982 Prediction Methodology	Prediction Base Years	Source
				1982	1981 ^{b/}			
Southern B. C.	W. Coast Vanc. Island		Spawning escapement	51.5	92.9	Cycle year spawning escapement, hatchery releases, stream flow, and weather and environmental conditions	Varied	e/
N. Georgia Strait			Spawning escapement	235.25	168.0	Cycle year spawning escapement, hatchery releases, stream flow, and weather and environmental conditions	Varied	e/
S. E. Coast Vanc. Island			Spawning escapement	31.25	34.4	Cycle year spawning escapement, hatchery releases, stream flow, and weather and environmental conditions	Varied	e/
Fraser River and vicinity			Spawning escapement	73.0	100.0	Cycle year spawning escapement, hatchery releases, stream flow, and weather and environmental conditions	Varied	e/
Capilano			Spawning escapement	25.0	40.0	Cycle year spawning escapement, hatchery releases, stream flow, and weather and environmental conditions	Varied	e/
SOUTHERN B. C. TOTAL				416.0	435.3			

a/ 1982 forecasts represent expected returns given recent ocean regulatory controls, except for Puget Sound and Southern B. C.

b/ 1981 pre-season forecast - not actual.

c/ Natural prediction: relationship of summer stream flows to adult returns two years later, 1965-1978.

d/ Hatchery prediction: average juvenile to adult survival rates from CWT experiments, 1973-1977.

e/ Canadian Department of Fisheries and Oceans, "1982 Salmon Expectations".

total 1982 natural return is predicted to be 66,000 coho including 11,000 returning from off-station hatchery yearling releases (Table IV-3).

Hatchery on-station yearling releases expected to return as adults in 1982 are much higher than the historical levels in Grays Harbor. Nearly 1.9 million of these releases were of imported Quillayute River summer coho stock, which has a different ocean distribution and returns earlier to the river than native stocks. The 1982 projected return of fall hatchery coho is 26,000 while 6,500 summer coho are predicted to return (Table IV-3).

North Coast

Natural coho abundance is estimated generally on the basis of jack to three-year-old returns. Spawning escapement levels in 1979 were substantially above average; however, severe flooding during the winter of 1979 may have adversely affected survival. Natural coho abundance is expected to be lower than 1981 pre-season forecasts. Hatchery fall coho abundance is expected to be comparable to the 1981 level. Quillayute summer coho are expected to survive at a rate higher than the unusually low rate experienced in 1981. A summary of predicted returns to individual systems is presented in Table IV-3.

Puget Sound

Above average summer stream flows in 1980 as well as adequate 1979 brood year escapement levels indicate that 1982 natural coho production should be above average. The 1979 summer flows were the fourth highest since 1963. The preliminary 1982 estimate for that natural run size at point of entry into Puget Sound (Strait of Juan de Fuca) -- without adjustment for 1982 ocean regulations -- is 369,000 coho (80% confidence interval is 280,000-446,000). In addition, 1979 brood wild juvenile outmigrants observed in 1981 were near or above the high 1977 brood levels.

The 1982 terminal return of hatchery-origin coho is expected to be 699,200. This prediction is based on average return rates from coded-wire tag experiments.

A summary of 1982 Puget Sound terminal run predictions, by region of origin, is presented in Table IV-3.

1982 MANAGEMENT GOALS

Before regulation options can be developed for the 1982 ocean fishery, the relevant 1982 management goals must be defined. The options and goals are related to the preliminary assessment of the 1982 resource, and are subject to change as new data and analysis become available.

The management goal/options are addressed on a species-by-species basis although the overall impact of the ocean regulations have an effect on both chinook and coho.

California Chinook

Coastal Chinook - The long-term escapement goal of 115,000 adult fall chinook in the Klamath system may be difficult to achieve in 1982. For the last three years, terminal run size to the Klamath River has not been large enough to meet the interim fall chinook escapement goal of 86,000 (75% of the long-term goal of 115,000). In 1981, it is estimated that the in-river Indian net fishery harvested approximately 47% of the terminal run compared to 28% in 1980. The actual Klamath River adult chinook spawning escapements for 1978, 1979, 1980, and 1981 were 70,000, 34,000, 30,000, and 37,000, respectively (Table IV-4). Until the nature of the Indian fishing right is defined and adequate regulatory measures are instituted on the in-river fishery, it will not be possible to insure that any specific escapement goal can be met.

There has been tremendous pressure from some ocean salmon fishermen not to use the Klamath River for ocean management purposes. There has been additional testimony that the escapement goal is too high for the Klamath River. The significance of the Klamath River to the ocean fisheries cannot be ignored. Recent tagging data from the Klamath supports an ocean harvest to in-river run size relationship of from 2:1 to 3:1. This indicates that even with an average of the low in-river run sizes in 1980 and 1981, the Klamath River contributed from 100,000 to 160,000 fish yearly to the ocean harvest, with the vast majority caught off northern California and southern Oregon.

Numerous stream clearance programs have increased available spawning areas and these, as well as other areas, remain underutilized by salmon.

The Klamath River, in spite of depressed chinook stocks, is still the most significant producer of salmon along the north coast of California. It is obvious that this system cannot be ignored in the 1982 management plan.

Three years have passed since the Council adopted as a goal that a Klamath River spawning escapement of 115,000 adult fall chinook would be met in two brood cycles (eight years). The Council adopted an interim goal of 86,000 spawners (75% of the long-term goal). It would seem logical that the interim goal should be raised this year if the long-term goal is to be attained within two brood cycles. However, for the last three years, escapement has ranged from 30 to 37 thousand fall-run chinook, far short of even the interim goal. Additional lowering of the Klamath River escapement goal would result in reduced production for the salmon users in future years. Therefore, if the Council's long-term goal is to be achieved, the only reasonable approach is to at least maintain the interim escapement goal of 86,000 spawners in 1982.

The 1982 spawning escapement goal for the Klamath River system cannot be assured without knowledge of the magnitude of the 1982 in-river Indian fisheries. The legality of Klamath River Indian commercial fisheries is still under litigation; however, their right to subsistence fishing has been established. It is recognized that the 1982 in-river run size must exceed 86,000 adults to accommodate this subsistence fishery and a small non-Indian sport fishery, if the spawning escapement goal is to be achieved.

Table IV-4. California adult fall run chinook salmon long-term and 1982 escapement goals, compared to escapements in earlier years (in thousands).

River System	Goal		Escapement				
	Long-Term	1982	1981	1980	1979	1978	1970-79 Average
Total Sacramento River System	170	146	147	119	154	112	143
Upper Sacramento	99	75	57	47	82	65	61
Lower Sacramento	71	71	90	72	72	47	82
Klamath River System	115	86	37	30	34	70	NA

Sacramento River System Fall-Run Chinook

In the Sacramento River system, fall-run chinook stock abundances should be similar to 1981. In 1981, the spawning escapement goal was met in the lower Sacramento; however, the 56,000 escapement into the upper Sacramento fell 25% short of the 74,000 chinook goal. In 1982, upriver Sacramento River stocks are still facing environmental problems. Major problem areas are:

- (1) loss of spawning gravel below Keswick Dam;
- (2) altered fish passage at Red Bluff diversion dam; and
- (3) stream flow fluctuation below Keswick Dam.

Achievement of long-term escapement goals in 1982 for upper Sacramento fall-run chinook would require the imposition of additional severe restrictions and consequential severe short-term economic impact on the ocean troll fisheries. In addition, the lower Sacramento would probably exceed escapement goals in all areas.

The current upper Sacramento River long-term escapement goal of 99,000 fall run chinook is not in excess of what the current environment can support. The interim goal (75% of the long-term goal) was adopted to lessen immediate economic hardships on the ocean salmon fisheries.

Therefore, since Sacramento River chinook abundance is expected to be similar to 1981, the 1981 goals seem appropriate for 1982. This would set the upriver goal for 1982 at 74,000 adult fall-run (75% of the long-term goal) and result in achievement of 100% of the lower Sacramento River fall-run chinook long-term goal of 71,000 chinook. In the lower river, it should be recognized that the American and Feather River tributaries will probably exceed the long-term goal. However, this usually occurs due to the high contribution of the hatcheries to these two tributaries.

Oregon Coastal Chinook

The 1982 management objective for Oregon coastal chinook stocks is to achieve the natural spawning escapement goal of 150,000 to 200,000 adult fish. At the present time, the Oregon coastal area is managed to achieve full production of natural spawning areas. In recent years, escapements of chinook salmon to Oregon coastal streams have been adequate to meet management goals for maximum production. Spawning ground counts from 1977-79 have ranged from 73 to 84 fish per mile and it is anticipated that counts for 1982 should fall within this range, indicative of adequate escapement.

Columbia River Chinook

Apparently some of the tribes have given formal notice of their intent to withdraw from the five-year Columbia River Management Plan. The U. S. District Court directed the Secretary of Commerce to confer with state, federal, and tribal representatives and examine alternatives for the regulation of ocean fisheries so as to increase in-river returns of upriver Columbia chinook.

The 1982 escapement goal for Columbia River fall chinook is 40,000 adults above McNary Dam. No specific allocation goals for 1982 are defined for these stocks.

Columbia River and Oregon Coastal Coho

Columbia River and Oregon coastal coho are managed as one stock unit within the framework of the Oregon Production Index (OPI) since these stocks are essentially intermixed in the ocean fishery. Columbia River stocks are managed for full utilization of hatchery production while Oregon coastal stocks are managed to achieve full production from natural spawning. Management objectives for these stocks must address: (1) the need for a viable inside net fishery in the Columbia River; (2) adequate hatchery escapement for full production at Columbia River and Oregon coastal hatcheries; and (3) the long-range objective of rebuilding natural stocks of Oregon coastal coho.

Due to the expected severe depression of these stocks in 1982, it is unlikely that escapements greater than those achieved in 1979 could be realized without severely disrupting the ocean fishery. Therefore, the desired objective is to achieve a measured escapement in 1982 of at least 300,000 adult coho to the OPI area. This escapement level would be comparable to that achieved in 1979 and 1980 and would provide for an inside net fishery on the Columbia River and meet hatchery production needs as well. For natural stocks of Oregon coastal coho, the 1982 escapement objective should prevent any decline in spawning ground counts below the improved level experienced in the 1979 brood year (172,000 adults). This escapement objective is consistent with the long-term goal of rebuilding natural runs of Oregon coastal coho to a level of 200,000 adult fish escapement by 1987.

Washington Coastal Chinook

For Washington coastal chinook stocks originating north of the Columbia River, the management objective, at a minimum, should be the achievement of natural spawning escapement goals and meeting treaty obligations. As with Columbia River stocks, these stocks are also important contributors to Canadian and Southeastern Alaskan troll fisheries. All Washington coastal chinook stocks are managed for natural spawning escapement goals except Willapa Bay, Quinault River and spring/summer chinook of Quillayute River origin. Washington Department of Fisheries escapement goals for these stocks are outlined in Table 1V-5.

Washington Coho

The ocean fishery management goals for the Washington coho are:

1. Provide sufficient escapement from the ocean fisheries to achieve spawning escapement goals for those regions managed for natural production.
2. Provide sufficient escapement from ocean fisheries to achieve treaty obligations.
3. Provide for continuance of ocean and inside commercial and recreational fisheries at equitable levels.

For the Washington coast (from Grays Harbor northward), a long-term management plan, which will define management objectives more specifically, is being

Table IV-5. Natural chinook spawning escapement goals for Washington coast, 1982. ^{a/}

	Spring/Summer	Fall
Grays Harbor	NA	14,600
Queets River	1,400	4,200
Hoh River	1,500	2,400
Quillayute River	1,500	6,000

a/ Washington Department of Fisheries goals. Includes jacks.

developed by representatives from federal, state, and tribal agencies under the direction of the U. S. District Court. This plan has not yet been completed and goals for 1982 have not been agreed to. Goals will have to be developed before the Council can take final action on the 1982 season.

For Puget Sound, six regional management units exist which have separate conservation and allocation requirements. (In addition, treaty allocation requirements exist for Canadian stocks.) Specifically, 1982 ocean fishery management objectives will be quantified for these regional units based upon preseason abundance expectations.

SUMMARY OF 1982 RESOURCE STATUS AND MANAGEMENT GOALS

The status of the chinook and coho resources for 1982 and the management goals presented in this report are summarized in Table IV-6.

1982 REGULATION OPTIONS TO ACHIEVE GOALS

This 1982 Management Plan, which is the fourth amendment to the 1978 ocean salmon management Plan, contains a number of proposed options to manage the troll and recreational ocean salmon fisheries during the 1982 season. These options should, in general, be considered as representative of a limited range of management possibilities available if objectives are to be achieved, but some additional options are included at the specific direction of the Council. The options are presented separately for the troll and recreational fisheries and can be paired in any manner. The presentation of these options does not preclude the modification of an individual troll or recreational option in a particular management area so long as the option so modified is reasonably calculated to achieve management objectives. This presentation is not meant to preclude consideration of management alternatives outside the range of options here presented which:

1. arise from the public comment period;
2. arise from Court-ordered planning processes in Hoh Indian Tribe, Quinault Indian Nation, Quileute Indian Tribe v. Baldrige, Civ. No. C81-742R (W.D. Wash., filed Sept. 24, 1981);
3. arise from the Court-ordered review of ocean interceptions of upper Columbia River fall chinook in Confederated Tribes and Bands of the Yakima Indian Nation v. Baldrige, Civ. No. C80-342T (W.D. Wash., filed June 30, 1980).

Any alternative considered must, however, be reasonably calculated to attain the goals as specified in this Fishery Management Plan Amendment and be consistent with other applicable law. No priorities have been assigned to the options listed in this report.

Table IV-6. Summary of 1982 resource status and management goals.^{a/}

System	Stock Prediction 1982	1982 Goal	Long-Term Goal
1. Klamath River Fall Chinook	Increased yearling hatchery production from 1978 & 1979 brood years. Natural stocks depressed. Overall abundance similar to 1981.	Escapement 86,000 adults plus provide for inside harvest.	Escapement 115,000 adults. Goal to be reached by 1988 given average environmental conditions.
2. Sacramento R. Upper River Fall Chinook	Natural stocks depressed, similar to 1981.	Natural escapement 74,000 adults.	Escapement 99,000 adults. Goal to be reached by 1988 given average environmental conditions.
Lower River Fall Chinook	Similar to 1981.	Natural escapement 71,000 adults.	Escapement 71,000 adults.
3. Oregon Coastal Chinook	At optimal level.	Escapement 150-200,000 adults.	Escapement 150-200,000 adults.
4. Columbia R. Upper River Fall Chinook	Similar to 1981, stocks depressed.	Escapement of 40,000 adults above McNary Dam, plus meet treaty obligations.	Escapement of 40,000 adults above McNary Dam, plus meet treaty obligations.
Upper River Spring Chinook	Near record low (depressed), minor part of Washington coastal ocean catch.	Escapement 100-120,000 adults (not attainable), plus meet treaty obligations.	Escapement 100-120,000 adults, plus meet treaty obligations.
Upper River Summer Chinook	Near record low (depressed), minor part of Washington coastal ocean catch.	Escapement 80,000 adults (not attainable) plus meet treaty obligations.	Escapement 80-90,000 adults plus meet treaty obligations.
Lower River Fall Chinook	Mainly managed for hatchery production.		
Lower River Spring Chinook (Willamette)	Slightly above average, minor part of Washington coastal ocean catch.	Escapement 30-35,000	Escapement 30-35,000.
5. Washington Coastal Fall Chinook	Hatchery production equal to or better than 1981, wild production average. Ocean distribution primarily north of Washington.	Natural escapement 28,000 plus meet treaty obligations.	Natural escapement 28,000 plus meet treaty obligations.
6. Washington North Coastal Spring/Summer Chinook	Hatchery stocks comparable to 1981, natural stocks expected to return above average.	4,100 natural escapement plus meet treaty obligations.	4,100 natural escapement plus meet treaty obligations.
7. Puget Sound Chinook	Minor part of Washington coastal ocean catch.		
8. Columbia R. & Oregon Coastal Coho (OPI)	Near record low, below 1981	300,000 OPI ocean escapement, while achieving 172,000 adult natural coastal spawning escapement.	575,000 OPI ocean escapement, while achieving 200,000 adult natural coastal spawning escapement. To be reached by 1987.
9. Washington Coastal Coho	Natural stocks similar to actual 1981 return; hatchery stocks similar to 1981 or slightly above.	Goals will be developed in Court-ordered planning process.	Goals will be developed in Court-ordered planning process.
10. Puget Sound Coho	Hatchery stocks similar to 1981; natural stocks above 1981 and the average.	152,000 natural escapement plus meet treaty obligations.	152,000 natural escapement plus meet treaty obligations.

a/ In most instances, these goals were developed by the state fishery management agencies.

Management Boundaries

Because of the expected regional differences in the status of the salmon resource, the following management boundaries are presented for consideration in 1982 to provide maximum flexibility in setting regulations (Figure IV-2):

Point Arena, California	38°57'15"N
Cape Vizcaino, California	39°43'20"N
Cape Blanco, Oregon	42°50'20"N
Cape Falcon, Oregon	45°46'00"N
Leadbetter Point, Washington	46°38'10"N
Split Rock	47°24'06"N
Carroll Island	48°00'03"N

Point Arena - Point Arena is used as the management boundary for separation of Sacramento River and Klamath River fall-run chinook. This boundary is especially applicable if seasons are the same for both northern and southern California and if quotas are adopted. If chinook quotas are adopted for northern and southern California, and if the Cape Vizcaino boundary is used, then appropriate adjustments would have to be made in the chinook quotas.

Cape Blanco to Cape Vizcaino or Point Arena - There is a lack of definitive, historic Klamath River chinook distribution and contribution data. Coded-wire tag information from the 1976, 1977 and 1978 brood year Trinity River fall-run chinook salmon recovered in the ocean fisheries provides new data on the distribution of these stocks. Evaluation is from ocean troll and recreational recoveries of coded-wire-tagged hatchery releases made in October and November at a size of 8 to 14 lbs. Recoveries from all age classes are now complete for 1976 brood year releases (tag code 06-61-01). For the 1977 brood (tag code 06-61-05), the 3- and 4-year old recoveries have been completed. Recoveries of 3-year-olds are available from the 1978 brood, with tag code 06-61-14 from the Trinity River Hatchery and tag code 06-59-01 from the Iron Gate Hatchery being used. Tables IV-7 and IV-8 summarize recoveries from the 1976 and 1977 brood years while Tables IV-9 to IV-11 summarize recoveries made in 1981 for various age groups.

It should be emphasized that these stock distribution data are preliminary and represent only partial returns from three brood years. Additional information from several complete brood years will be necessary before more definitive information on the distribution of Klamath River stocks will be available. Also, the tag recoveries are by port of landing and not area of catch; therefore, the actual distribution of marks might be different than shown. Due to the depressed nature of the Klamath River stocks and the need for regulatory protection, this preliminary stock distribution information is presented as the best currently available information.

For 3-year-olds in 1981, 70% of the total recoveries were made from Brookings to Eureka, with recoveries lower for Coos Bay and Fort Bragg than in 1979 or 1980. Similar to 1979 and 1980, the split between Oregon and California was approximately even, with 46% of the 1981 recoveries from Oregon. In the three years of data now available, the predominant time of contribution as 3-year-olds seems to range from July through September, with no consistent peak (Figure IV-3).



Figure IV-2. Geographic reference points for management boundaries.

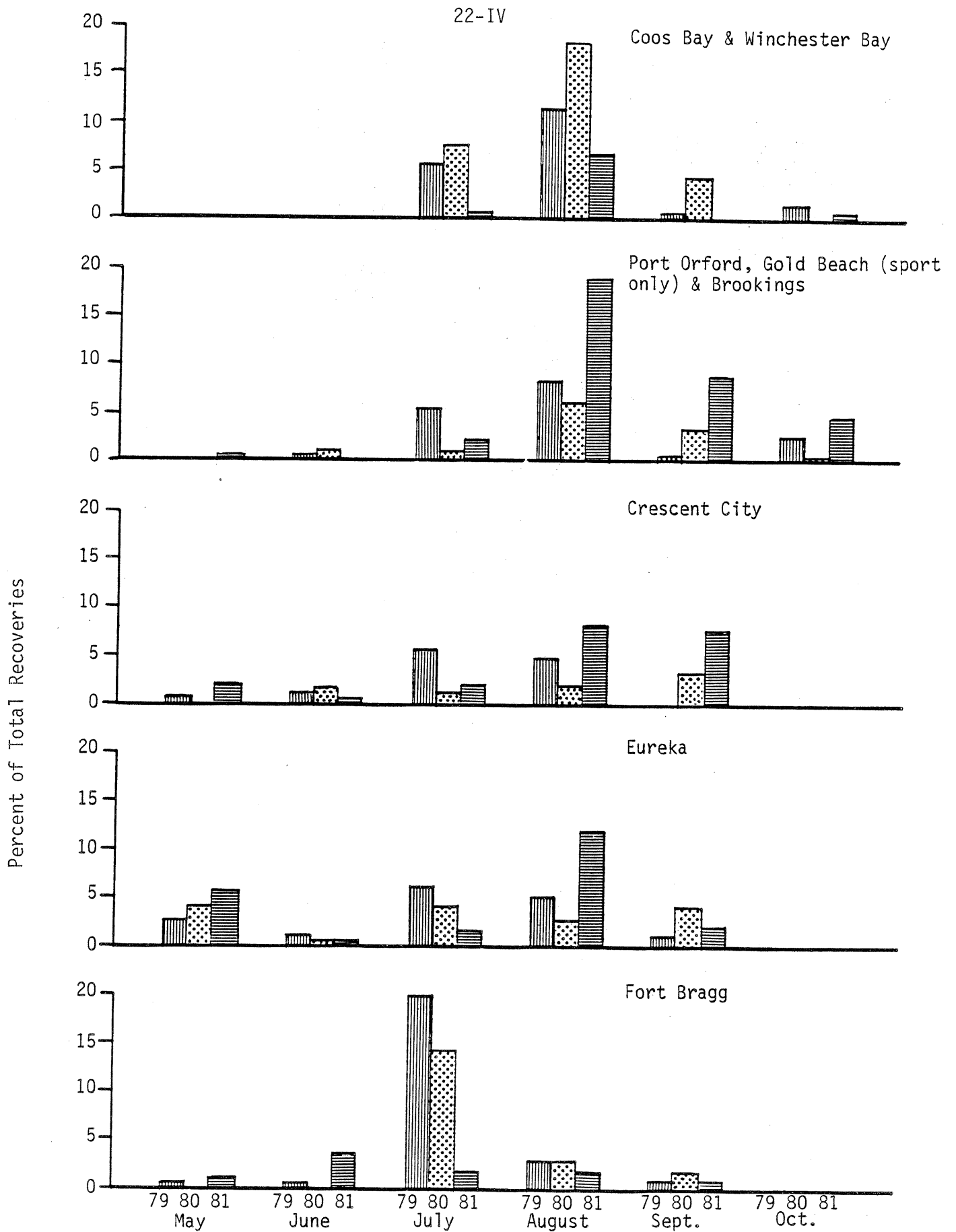


Figure IV-3. Estimated percent of 1979-81 Oregon and California ocean recoveries of 3-year old coded wire tagged Klamath River fall chinook. Tag codes used during 1979, 80 and 81 respectively are 6-61-01, 6-61-05 and 6-61-14 & 6-59-01. Tag recoveries by port of landing and expanded for sampling rates.

Table IV-7. Estimated^{a/} 1979-81 Oregon and California ocean recoveries of 1976 brood year Trinity River fall chinook salmon (tag code 06-61-01).

Age/Area Landed	Month						Season
	May	June	July	August	Sept.	Oct.	
<u>1979 (3-yr.-old)</u>							
Oregon	6	19	361	926	43	124	1,479
California	<u>135</u>	<u>71</u>	<u>986</u>	<u>378</u>	<u>95</u>	<u>0</u>	<u>1,665</u>
TOTAL	141	90	1,347	1,304	138	124	3,144
<u>1980 (4-yr.-old)</u>							
Oregon	5	116	142	316	98	0	677
California	<u>1,439</u>	<u>25</u>	<u>349</u>	<u>47</u>	<u>42</u>	<u>0</u>	<u>1,902</u>
TOTAL	1,444	141	491	363	140	0	2,579
<u>1981 (5-yr.-old)</u>							
Oregon	0	0	3	0	0	0	3
California	<u>48</u>	<u>13</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>81</u>
TOTAL	48	13	3	10	10	0	84
<u>Combined ages</u>							
Oregon	11	135	506	1,242	141	124	2,159
California	<u>1,622</u>	<u>109</u>	<u>1,335</u>	<u>435</u>	<u>147</u>	<u>0</u>	<u>3,648</u>
TOTAL	1,633	244	1,841	1,677	288	124	5,807

a/ CWT recoveries expanded for sampling rates at ports sampled.

Table IV-8. Estimated^{a/} 1980 and 1981 Oregon and California ocean recoveries of 1977 brood year Trinity River fall chinook salmon (tag code 06-16-05).

Age/Area Landed	Month						Season
	May	June	July	August	Sept.	Oct.	
<u>1980 (3-yr.-old)</u>							
Oregon	0	9	100	269	66	2	446
California	<u>38</u>	<u>12</u>	<u>193</u>	<u>63</u>	<u>74</u>	<u>0</u>	<u>380</u>
TOTAL	38	21	293	332	140	2	826
<u>1981 (4-yr.-old)</u>							
Oregon	37	1	34	136	0	2	210
California	<u>380</u>	<u>81</u>	<u>87</u>	<u>78</u>	<u>11</u>	<u>0</u>	<u>637</u>
TOTAL	417	82	121	214	11	2	847
<u>Combined ages</u>							
Oregon	37	10	134	405	66	4	656
California	<u>418</u>	<u>93</u>	<u>280</u>	<u>141</u>	<u>85</u>	<u>0</u>	<u>1,017</u>
TOTAL	455	103	414	546	151	4	1,673

a/ CWT recoveries expanded for sampling rates at parts sampled.

Table IV-9. Estimated^{a/} 1981 Oregon and California ocean recoveries of 3-year-old 1978 brood year Klamath River fall chinook salmon (tag codes 06-59-01 and 06-61-14), by area landed and month.

Area Landed	Month						Season
	May	June	July	August	Sept.	Oct.	
Depoe Bay & Newport	0	0	0	24	31	0	55
Winchester Bay	N.S.	0	0	0	1	0	1
Coos Bay	5	1	4	195	0	19	224
Port Orford & Gold Beach	N.S.	0	10	67	27	0	104
Brookings	4	0	44	499	234	129	910
Unsampled areas ^{b/}	0	0	5	89	7	1	102
OREGON TOTAL	9	1	63	874	300	149	1,396
Crescent City	58	4	53	239	231	0	585
Eureka	166	7	43	355	56	0	627
Fort Bragg	31	104	50	53	20	0	258
San Francisco	52	0	89	16	0	0	157
Monterey	0	0	3	5	0	0	8
CALIFORNIA TOTAL	307	115	238	668	307	0	1,635
COMBINED TOTAL	316	116	301	1,542	607	149	3,031

a/ CWT recoveries expanded for sampling rates at ports sampled.

b/ To estimate recoveries at unsampled ports and time periods, the monthly statewide contribution level (recoveries divided by total landings) was applied to monthly unsampled landings.

N.S. - Not sampled.

Table IV-10. Estimated^{a/} 1981 Oregon and California ocean recoveries of 4-year-old 1977 brood year Klamath River fall chinook salmon (tag code 06-61-05), by area landed and month.

Area Landed	Month						Season
	May	June	July	August	Sept.	Oct.	
Depoe Bay & Newport	19	1	0	3	0	0	23
Winchester Bay	N.S.	0	0	3	0	0	3
Coos Bay	7	0	14	12	0	2	35
Port Orford & Gold Beach	N.S.	0	7	16	0	0	23
Brookings	9	0	10	88	0	0	107
Unsampled areas ^{b/}	2	0	3	14	0	0	19
OREGON TOTAL	37	1	34	136	0	2	210
Crescent City	108	4	10	38	11	0	171
Eureka	236	14	20	40	0	0	310
Fort Bragg	36	63	42	0	0	0	141
San Francisco	0	0	15	0	0	0	15
Monterey	0	0	0	0	0	0	0
CALIFORNIA TOTAL	380	81	87	78	11	0	637
COMBINED TOTAL	417	82	121	214	11	2	847

a/ CWT recoveries expanded for sampling rates at ports sampled.

b/ To estimate recoveries at unsampled ports and time periods, the monthly statewide contribution level (recoveries divided by total landings) was applied to monthly unsampled landings.

N.S. - Not sampled.

Table IV-11. Estimated^{a/} 1981 Oregon and California ocean recoveries of 5-year-old 1976 brood year Klamath River fall chinook salmon (tag code 06-61-01), by area landed and month.

Area Landed	Month						Season
	May	June	July	August	Sept.	Oct.	
Depoe Bay & Newport	0	0	0	0	0	0	0
Winchester Bay	N.S.	0	0	0	0	0	0
Coos Bay	0	0	3	0	0	0	3
Port Orford & Gold Beach	N.S.	0	0	0	0	0	0
Brookings	0	0	0	0	0	0	0
Unsampled areas ^{b/}	0	0	0	0	0	0	0
OREGON TOTAL	0	0	3	0	0	0	3
Crescent City	10	0	0	0	5	0	15
Eureka	30	0	0	4	5	0	39
Fort Bragg	8	13	0	0	0	0	21
San Francisco	0	0	0	6	0	0	6
Monterey	0	0	0	0	0	0	0
CALIFORNIA TOTAL	48	13	0	10	10	0	81
COMBINED TOTAL	48	13	3	10	10	0	84

a/ CWT recoveries expanded for sampling rates at ports sampled.

b/ To estimate recoveries at unsampled ports and time periods, the monthly statewide contribution level (recoveries divided by total landings) was applied to monthly unsampled landings.

N.S. - Not sampled.

For 4-year-olds in 1981, as in 1980, peak time and areas of recovery were off Crescent City and Eureka in May (Figure IV-4). 4-year-old recoveries were again made predominantly in California, with less than 25% of the total coming from Oregon.

Based on the best preliminary stock distribution information, it appears that the management unit from Cape Blanco to Point Arena for Klamath River stocks is appropriate for 1982.

The southern boundary (Cape Vizcaino or Point Arena) will be determined by the regulations set for northern and southern California. If regulations are the same for the entire California coast, and if quotas are adopted, Point Arena would be utilized. However, if there are different regulations off the northern and southern California coast, either Point Arena or Cape Vizcaino could be utilized. In the latter case, if quotas were also implemented, the quotas would need to be adjusted accordingly.

Cape Falcon - This is used as the southern boundary for Columbia River chinook management.

Leadbetter Point - The Oregon Production Index includes ocean coho catches at the Columbia River mouth and south to and including California. Leadbetter Point is the northern boundary of Washington's Management and Catch Reporting Area #1 (Columbia River mouth) and the northern boundary of the OPI.

Specific Options

Five troll and three recreational options are presented for management of the 1982 ocean salmon fisheries (Figures IV-5 and IV-6). Figure IV-7 presents the actual 1981 troll and recreational seasons for comparative purposes. Recreational option 3 and troll options 1 and 2 were developed by the Salmon Advisory Subpanel; all other options were developed by the Salmon Plan Development Team. Any of the three recreational options can be paired with each of the troll options. Any of the troll or recreational options can be implemented in conjunction with any of the inseason management options discussed later in this chapter. If a quota (fixed or adjustable) is implemented, it may not be necessary to specify season ending dates in advance.

Recreational Options

Recreational Option 1 - Recreational option 1 has the same seasons as were adopted by the Council in 1981 except for the area from Cape Falcon to the California border. That area opened slightly earlier (May 15) in 1981 compared to the proposed May 22 date in 1982.

Recreational Option 2 - Recreational option 2 has more restrictive seasons than adopted in 1981 for all areas north of California in that the all-species season would start three weeks later than in recreational option 1. Option 2 would increase the possibility of the season extending through the Labor Day weekend.

It should be noted both recreational option 1 and 2 for California could have either a two- or a three-fish bag limit. Likewise, for Oregon south of Cape

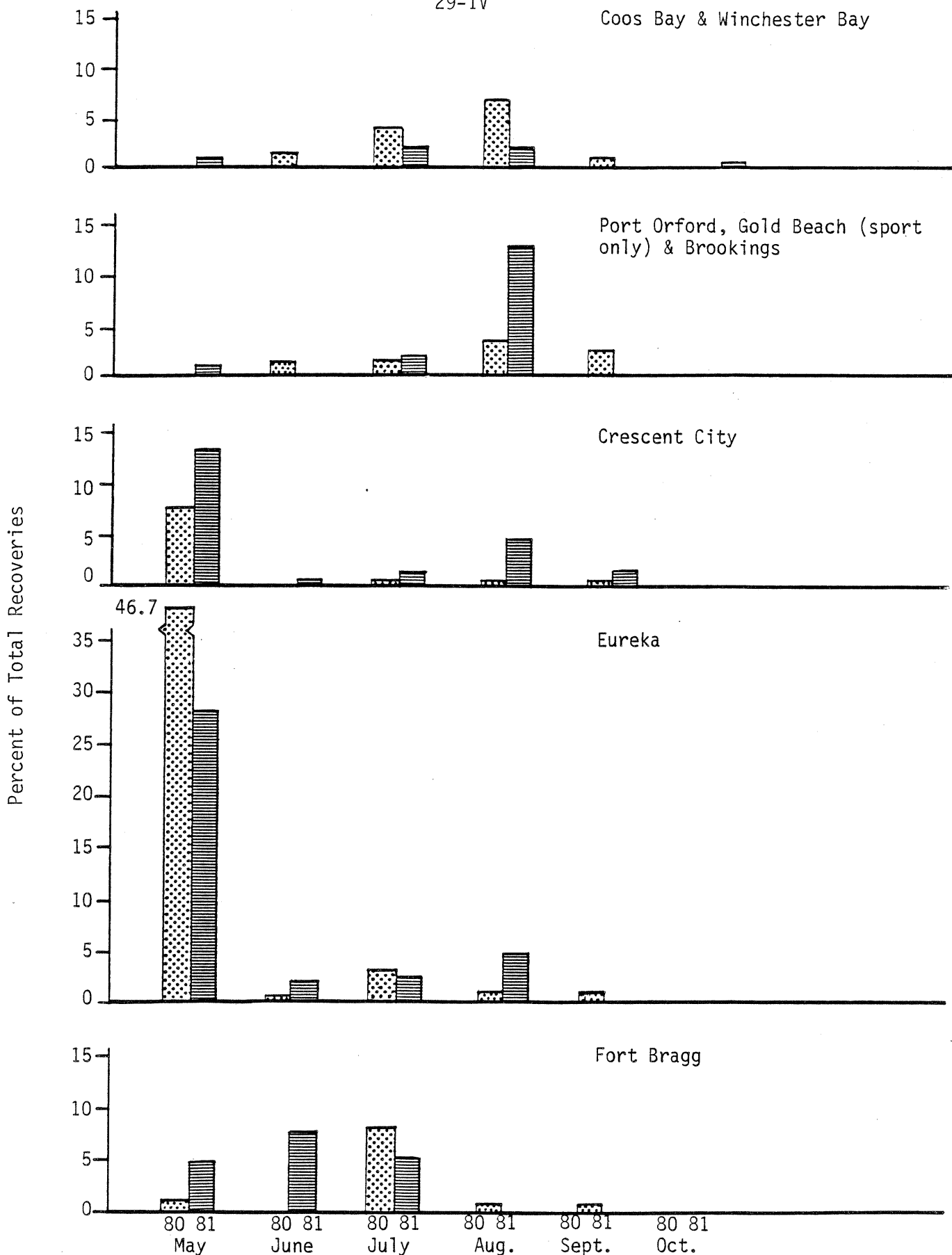


Figure IV-4. Estimated percent of 1980 and 81 Oregon and California ocean recoveries of 4-year old coded wire tagged Klamath River fall chinook. All data by port of landing and expanded for sampling rate. Tag codes 6-61-01 and 6-61-05 were used in 1980 and 81 respectively.

1982 RECREATION OPTIONS ^{d/}

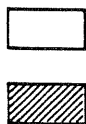
d/ The presentation of the options on this page does not preclude Council consideration of more or less restrictive options based on information and proposals received during the public comment period as long as the options are based on up-to-date technical information regarding the status of the fishery and are reasonably calculated to achieve the goals of this plan amendment.

DATES	1 (Similar to 1981)					2					3							
	CA	OR		WA		CA	OR		WA		CA	OR		WA				
	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.
February 13-May 15		///	///	///	///		///	///	///	///		///	///	///	///	///	///	///
May 16-31		///	///	///	///		///	///	///	///		///	///	///	///	///	///	///
June 1-15							///	///	///	///								
June 16-30																		
July 1-15																		
July 16-31																		
August 1-15																		
August 16-31																		
September 1-15				///	///				///	///					///	///	///	///
September 16-30		///	///	///	///		///	///	///	///		///	///	///	///	///	///	///
October 1-15		///	///	///	///		///	///	///	///		///	///	///	///	///	///	///
October 16-31		///	///	///	///		///	///	///	///		///	///	///	///	///	///	///
November 1-15	///	///	///	///	///	///	///	///	///	///	///	///	///	///	///	///	///	///
BAG LIMIT	a/	2		2		a/	2		2		3	2		2				
SIZE LIMIT	Coho	b/	16" c/	16"	16"	b/	16" c/	16"	16"	16"	b/	c/	16"	16"				
	Chinook	b/	22" c/	24"	24"	b/	22" c/	24"	24"	24"	b/	22" c/	24"	24"				

a/ This option can be either 2 fish, or 3 fish which would increase catches about 10%.

b/ There is a 22-inch minimum size limit on chinook and coho in California, except that one may be less than 22 inches but not less than 20 inches.

c/ This option could also be with no size limit (first two fish).



All salmon



All salmon except coho

Closed

Figure IV-6:
1982 TROLL OPTIONS a/

DATES	1				2				3 <small>(Similar to 1981)</small>				4				5						
	CA	OR	WA	CA	CA	OR	WA	CA	CA	OR	WA	CA	CA	OR	WA	CA	CA	OR	WA				
April 15-30	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	No. of Leadbetter Pt.	No. of Leadbetter Pt.	No. of Leadbetter Pt.	No. of Leadbetter Pt.	No. of Leadbetter Pt.	No. of Cape Falcon	Cape Blanco to Cape Falcon	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	Pt. Arena to OR/CA Border	Pt. Arena to OR/CA Border	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	No. of Leadbetter Pt.	No. of Leadbetter Pt.	No. of Leadbetter Pt.
May 1-15																							
May 16-31																							
June 1-15																							
June 16-30	b/																						
July 1-15	b/																						
July 16-31																							
August 1-15																							
August 16-31																							
September 1-15																							
September 16-30																							
October 1-15																							
October 16-31																							
November 1-15																							

a/ The presentation of the options on this page does not preclude Council consideration of more or less restrictive options based on information and proposals received during the public comment period as long as the options are based on up-to-date technical information regarding the status of the fishery and are reasonably calculated to achieve the goals of this plan amendment.

b/ Klamath River mouth closure, three miles either side of river mouth, six miles out into the ocean.

c/ In season management, adjustable quotas, and a 75% of quota triggering mechanism for stock evaluation are mandated for coho in all areas north of the OR/CA border.

d/ Middle coast area closure (between Carroll Island and Split Rock) when 75% of troll quota north of Cape Falcon is met.



 All salmon
 All salmon except coho, with gear restrictions
 All salmon except coho
 Closed

Figure IV-7. Actual 1981 troll and recreational seasons.

TROLL

		1981 (Actual)			
DATES	a/	C	O	a/	W
		OR/CA BORDER TO CAPE SEBASTIAN	CAPE SEBASTIAN TO CAPE FALCON	NO. OF CAPE FALCON	SO. OF LEADBETTER PT.
APRIL 1-30					
MAY 1-15					
MAY 16-30					
JUNE 1-15					
JUNE 16-30					
JULY 1-15					
JULY 16-31					
AUG 1-15					
AUG 16-31					
SEPT 1-15					
SEPT 16-30					
OCT 1-15					
OCT 16-31					
NOV 1-15					

ALL SALMON
 CLOSED
 ALL SALMON EXCEPT COHO
 COHO ONLY (out to 12 miles only, maximum ten boats, coho gear only).

a/ Troll harvest guidelines:
 California south of Point Arena: 265,000 chinook
 California north of Point Arena: 300,000 chinook
 Oregon and California south of Cape Falcon: 548,000 coho
 Oregon and Washington north of Cape Falcon: 372,000 coho
 b/ ALL SALMON EXCEPT COHO, whole bait or 5-inch plugs, after coho catch reaches harvest guideline.

RECREATION

		1981 (Actual)			
DATES	a/	C	O	a/	W
		ALL CALIFORNIA	OR/CA TO CAPE BLANCO	C. BLANCO TO C. FALCON	NO. OF CAPE FALCON
FEB 14-MAY 15					
MAY 16-31					
JUNE 1-15					
JUNE 16-30					
JULY 1-15					
JULY 16-31					
AUG 1-15					
AUG 16-31					
SEPT 1-15					
SEPT 16-30					
OCT 1-15					
OCT 16-31					
NOV 1-15					
BAG LIMIT		2	2	2	2
SIZE LIMIT		b/	16"	20"	20"
CHINOOK		b/	22"	24"	24"

OPEN
 CLOSED
 ALL SALMON EXCEPT COHO

a/ Recreational harvest guidelines:
 California south of Point Arena: 115,000 chinook
 California north of Point Arena: 15,000 chinook
 Oregon and California south of Cape Falcon: 224,000 coho
 Oregon and Washington north of Cape Falcon: 248,000 coho
 b/ There is a 22-inch minimum size limit on chinook and coho in California, except that one chinook or coho may be less than 22 inches but not less than 20 inches.

Falcon, the recreational size limit could be either 16" for coho and 22" for chinook or there could be no size limits.

Recreational Option 3 - This option has the same regulations south of Cape Blanco, Oregon as in 1981. From Cape Blanco to Cape Falcon, the season opened earlier in 1981 (May 15) compared to the proposed May 29 opening date in 1982, with a similar Labor Day ending date. The season north of Cape Falcon to Leadbetter Point would open one week later in May than in 1981. In addition, this option liberalizes the chinook size limit from 24" to 22" off the Columbia River mouth. North of Leadbetter Point, the 1982 recreational season would be the same as in 1981, except that the first week of the season would be for chinook only.

The differential chinook size limit north of Cape Falcon would result in a significantly increased recreational chinook harvest as well as causing significant enforcement problems. In addition, the feasibility of a one-week May chinook-only fishery north of Leadbetter Point is questionable in terms of incidental coho mortality and chinook management needs that may be identified.

Troll Options

Troll Option 1 - For California, this option is a modified version of the historic troll season, with an April 15 opening for chinook. An early two-week all-species season would occur during June 1-15, fishing for chinook-only would follow during June 16-30, and the regular all-species season would begin on July 1. This option provided six additional weeks of chinook fishing (April 15-30 and June 1-30) and shifts the early all-species season two weeks later compared to the regulations adopted in 1981. A Klamath River mouth closure extending three miles on either side and six miles out into the ocean would be instituted during the period June 15-July 15. This is a very limited closure, approximately doubling the present river mouth closure in state waters.

For Oregon south of Cape Falcon, this option also adds six weeks to the early chinook-only season (April 15-30 and June 1-30) compared to the 1981 adopted season. The June chinook-only fishery would be limited to using whole bait or five-inch minimum plugs. The all-species season would be similar to that adopted in 1981, except that, for the area from Cape Blanco to the Oregon/California border, the all-species season would continue through October 31 rather than changing to chinook-only after September 5. Inseason management, adjustable quotas, and a 75%-of-quota triggering mechanism for stock evaluation are mandated for coho. In addition, upon reaching the coho quota, a chinook-only fishery utilizing whole bait or five-inch minimum plugs through September 5 would be authorized. After that date, these gear restrictions would no longer apply to the chinook-only fishery.

For the area north of Cape Falcon, this option opens the all-species season two weeks earlier (July 1) and closes the season one week later (September 5) than was adopted by the Council in 1981. In addition, a Washington middle coast area closure from Carroll Island to Split Rock would be triggered when 75% of the total troll quota north of Cape Falcon was met.

In California, this option, compared to 1981, would allow substantially increased fishing pressure on Sacramento and Klamath River chinook stocks

which are expected to be of similar abundance as in 1981. The escapement goals for the upper Sacramento, Yuba, and Klamath Rivers were not achieved in 1981.

In Oregon south of Cape Falcon, this option would allow increased fishing pressure on OPI coho stocks and Klamath River and Oregon coastal chinook stocks compared to the 1981 adopted season, probably resulting in an early coho closure. Abundance of Oregon coastal chinook in 1982 is expected to be similar to that in 1981, while the OPI coho stocks are expected to be at a near record low. The coho season was closed early and the OPI escapement goals were not met in 1981.

For the area north of Cape Falcon, this option would allow increased fishing pressure on OPI and Washington coho, probably resulting in an early coho closure. Washington coastal coho abundance is expected to be similar and Puget Sound coho abundance above that in 1981. The coho season was closed early and the preseason escapement goals for north coast natural coho stocks were not met in 1981.

Troll Option 2 - For California, this option provides for an April 22 opening for chinook, nine days earlier than in 1981. An early two-week all-species season would occur during June 1-15, but, unlike troll option 1, June 16-30 would be closed. The regular all-species season would begin July 1, as in 1981. This option provides three additional weeks of chinook fishing (April 22-30 and June 1-15) and shifts the early all-species season two weeks later compared to the regulations adopted in 1981.

For Oregon south of Cape Falcon, this option also adds three weeks to the early chinook-only season (April 22-30 and June 1-15) compared to the 1981 adopted season. The June 1-15 chinook-only fishery would be limited to using whole bait or five-inch minimum plugs. The all-species season would be similar to that adopted in 1981. Inseason management, adjustable quotas, and a 75%-of-quota triggering mechanism for stock evaluation are mandated for coho. In addition, upon reaching the coho quota, a chinook-only fishery utilizing whole bait or five-inch minimum plugs would be authorized. From September 6 to October 31, the chinook-only fishery would continue, but these gear restrictions would no longer apply.

For the area north of Cape Falcon, as in troll option 1, this option opens the all-species season two weeks earlier (July 1) and closes the season one week later (September 5) than was adopted by the Council in 1981. A Washington middle coast closure, the same as that described in troll option 1, would be triggered when 75% of the troll quota north of Cape Falcon was met.

This option is more liberal in all areas than regulations adopted in 1981 and will increase fishery impacts on Sacramento and Klamath River chinook, as well as OPI coho. The 1982 status of these stocks is expected to be similar to 1981 and management goals were not achieved in 1981.

Troll Option 3 - This option has the same troll seasons as were adopted for 1981. (Any minor differences are due to weekends and, for example, Labor Day falling on different dates in 1982 than in 1981.)

Troll Option 4 - This option generally is more restrictive than the regulations adopted in 1981 for all troll areas north of Point Arena, California except for the Cape Falcon to Leadbetter Point area. For California north of Point Arena, this option would permit coho fishing from May 16-31 but would extend the closure in early July by two weeks. For Oregon south of Cape Falcon, this option also imposes an additional two-week closure in early July. For the troll fishery north of Cape Falcon, this option would be the same as last year from Cape Falcon to Leadbetter Point, but the all-species season north of Leadbetter Point would open two weeks later on August 1. Whether an option as severe as option 4 or option 5 will be appropriate will depend on the specific stock abundances expected in 1982 as well as the results of the Court-ordered reviews for Columbia River upriver bright chinook and Washington north coastal coho.

Troll Option 5 - This option is more restrictive than option 4 for California north of Point Arena in that the May chinook-only fishery is closed. It also has additional restrictions north of Cape Falcon in that the May chinook fishery is also eliminated. However, north of Leadbetter Point the all-species season begins July 15 rather than August 1 as in option 4. Again, the appropriateness of this option will be dependent on stock abundance and the result of the Court-ordered reviews for Columbia River upriver bright chinook and Washington north coastal coho.

Recreational Options

Option 1

<u>California</u>			
Entire state	all salmon	2- or 3-fish bag limit	Feb. 13-Nov. 14
<u>Oregon</u>			
South of Cape Blanco to the OR/CA border	all salmon	2-fish bag limit	May 22-Sept. 19
	all salmon except coho	2-fish bag limit	Sept. 20-Oct. 31
South of Cape Falcon to Cape Blanco	all salmon	2-fish bag limit	May 22-Sept. 19
<u>Washington and Oregon</u>			
North of Cape Falcon	all salmon	2-fish bag limit	May 22-Sept. 6

Option 2

<u>California</u>			
Entire state	all salmon	2- or 3-fish bag limit	Feb. 13-Nov. 14
<u>Oregon</u>			
South of Cape Blanco to the CA/OR border	all salmon	2-fish bag limit	June 12-Sept. 19
	all salmon except coho	2-fish bag limit	Sept. 20-Oct. 31
South of Cape Falcon to Cape Blanco	all salmon	2-fish bag limit	June 12-Sept. 19
<u>Washington and Oregon</u>			
North of Cape Falcon	all salmon	2-fish bag limit	June 12-Sept. 6

Option 3California

Entire state	all salmon	3 fish	Feb. 13-Nov. 14
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Oregon

South of Cape Blanco to OR/CA border	all salmon	2 fish	May 15-Sept. 19
	all salmon except coho	2 fish	Sept. 20-Oct. 31

Washington and Oregon

North of Cape Blanco to Leadbetter Pt. ^{a/}	all salmon	2 fish	May 29-Sept. 6
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North of Leadbetter Pt. ^{b/}	all salmon except coho	2 fish	May 22-May 28
	all salmon	2 fish	May 29-Sept. 6

a/ Size limits in this area: Coho - 16"
Chinook - 22".

b/ Size limits in this area: Coho - 16"
Chinook - 24".

Troll Options

Option 1California

(Dates are inclusive)

Entire state	all salmon except coho	April 15-May 31
	all salmon	June 1-June 15
	all salmon except coho	June 16-June 30
	all salmon	July 1-Sept. 30
(Klamath River mouth closure)		June 16-July 15

Oregon

South of Cape Blanco to OR/CA border	all salmon except coho	April 15-May 31
	all salmon except coho (gear restrictions)	June 1-June 30
	all salmon	July 1-Oct. 31
Cape Blanco to Cape Falcon	all salmon except coho	April 15-May 31
	all salmon except coho (gear restrictions)	June 1-June 30
	all salmon	July 1-Sept. 5
	all salmon except coho	Sept. 6-Oct. 31

Washington and Oregon

North of Cape Falcon	all salmon except coho	May 1-May 31
	all salmon (mid-area closure at 75% of coho quota)	July 1-Sept. 5

Option 2California

Entire State	all salmon except coho	April 22-May 31
	all salmon	June 1-June 15
	all salmon	July 1-Sept. 30

Oregon

South of Cape Falcon to OR/CA border	all salmon except coho	April 22-May 31
	all salmon except coho (gear restrictions)	June 1-June 15
	all salmon	July 1-Sept. 5
	all salmon except coho	Sept. 6-Oct. 31

Washington and Oregon

North of Cape Falcon	all salmon except coho	May 1-May 31
	all salmon (mid-area closure at 75% of quota)	July 1-Sept. 5

Option 3California

Entire state	all salmon except coho	May 1-May 15
	all salmon	May 16-May 31
	all salmon	July 1-Sept. 30

Oregon

South of Cape Falcon	all salmon except coho	May 1-May 31
	all salmon	July 1-Sept. 5
	all salmon except coho	Sept. 6-Oct. 31

Washington and Oregon

North of Cape Falcon	all salmon except coho	May 1-May 31
	all salmon	July 15-Sept. 1

Option 4California

South of Point Arena	all salmon except coho	May 1-May 15
	all salmon	May 16-May 31
	all salmon	July 1-Sept. 30

North of Point Arena	all salmon except coho	May 1-May 15
	all salmon	May 16-May 31
	all salmon	July 15-Sept. 30

Oregon

South of Cape Blanco to OR/CA border	all salmon except coho	May 1-May 31
	all salmon	July 15-Sept. 5

South of Cape Falcon to Cape Blanco	all salmon except coho	May 1-May 31
	all salmon	July 15-Sept. 5
	all salmon except coho	Sept. 6-Oct. 31

Washington and Oregon

South of Leadbetter Pt. to Cape Falcon	all salmon except coho	May 1-May 31
	all salmon	July 15-Aug. 31

North of Leadbetter Pt.	all salmon except coho	May 1-May 31
	all salmon	Aug. 1-Aug. 31

Option 5California

South of Point Arena	all salmon except coho	May 1-May 15
	all salmon	May 16-May 31
	all salmon	July 1-Sept. 30
North of Point Arena	all salmon	July 1-Sept. 30

Oregon

South of Cape Blanco to OR/CA border	all salmon except coho	May 1-May 31
	all salmon	July 15-Sept. 5
South of Cape Falcon to Cape Blanco	all salmon except coho	May 1-May 31
	all salmon	July 15-Sept. 5
	all salmon except coho	Sept. 6-Oct. 31

Washington and Oregon

North of Cape Falcon	all salmon	July 15-Aug. 31
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CONSIDERATION OF INSEASON MANAGEMENT

In 1980, the first inseason management system was initiated for the ocean. The purpose of inseason management under the Salmon Plan is to provide a mechanism other than individual state action in state waters to adjust either seasons or allocation between harvesters early after the season opening. This mechanism, when refined, provides the ability to manage the fishery more effectively based on each year's actual harvest data. The alternative to inseason management would be a more conservative season without inseason flexibility, based upon projections which cannot anticipate weather, disproportional catches between harvest groups, and stock abundance that is greater or smaller than predicted.

Three problem areas arose during the implementation of the 1980 inseason management process: (1) lack of common understanding of the decision criteria; (2) scheduling of data analysis and administrative decisions; and (3) availability of data to the general public and various review groups. An additional problem arose in 1981 in trying to accomplish specific tasks on a predetermined date. The process for 1982 inseason management will attempt to correct the problems encountered in 1980 and 1981.

Scheduling and Availability of Data

Inseason management decisions are based upon analysis of data gathered during the fishing season. These data are compared with data which were anticipated or which are defined as the norm. It is not realistic to develop a rigid time schedule for decisions due to the timing of availability of inseason data and complexities which normally are encountered.

Inseason stock and catch evaluation can detect extreme deviations relatively early in the season. The need to reduce the recreational fisheries bag limit inseason in 1980 is a good example. Early evaluation of the performance of the recreational fishery resulted in the states of Oregon and Washington reducing the bag limit from three to two salmon on July 16, approximately two weeks before the Council was scheduled to consider this question. Detection and interpretation of less extreme deviations usually require a gradual accumulation of data. This example further illustrates the problem of scheduling a specific date before the season starts on which to make inseason management decisions.

Early evaluation of fishing stocks and catch requires a minimum amount of data. To detect and interpret changes in coho stock abundance requires a minimum of three statistical weeks of troll coho catch data. An additional 10 days are required to receive, compile, and analyze these three weeks of data. Inseason adjustment for stock abundance is not possible until a minimum of 33 days after the Monday following the opening of the all-species troll fishery. There is currently no assurance that stock abundance changes can even be detected in this length of time.

Compilation of data occurs as rapidly as feasible but data are not available until Thursday of each week. With two days necessary for Salmon Plan Development Team review and report preparation, any proposed hearing or Council meeting cannot be scheduled prior to late on the Friday after the previous week's ending date (Sunday). Even with this schedule, 19 days of

fishing would have occurred in addition to time required to obtain the data base being used for analysis and the decision.

Decision Process

Prior to application of inseason management, the mechanism for review and decision-making processes needs to be concisely defined and understood by all parties. In defining this process, the need to react in the minimum time while maximizing time available for data retrieval and analysis must be kept as the highest priority. Once a management problem which requires regulation modification is identified, Oregon and Washington state agencies can make the necessary change within 24 hours. Although such a standard is unrealistic for Council/NMFS action, this standard should be the ultimate goal in inseason management procedures.

The SPDT's original concept for inseason management in 1980 envisioned that management staffs of the state agencies would present their case directly to the Regional Director and staff of NMFS through their respective state agency directors. It was contemplated that the Regional Director of NMFS would consult with the PFMC prior to modification of regulations as well as review public comments received during the two weeks of Federal Register review process. There also were requests to present analyses, data, and management recommendations to the SSC and Council's Salmon Advisory Subpanel prior to presentation to the Council and Regional Director of NMFS.

In 1980, regulation changes announced on August 22 did not become effective until August 26, a delay of four days. This delay occurred due to Federal Register requirements associated with the weekend and did not include sufficient review time by the Salmon PDT, SSC, and Salmon Advisory Subpanel of a report, finalized late in the evening on August 20, by WDF's Harvest Management Division staff. The length of this delay from August 20 to 26 was due in part to the occurrence of a weekend. The SSC has suggested that harvest data not be used for inseason management unless it has been available to all user groups through Washington Department of Fisheries' computerized coastwide soft data system for 48 hours. Coastwide catch statistics through the previous week will be available to all user groups with computer access on Thursday morning of each week. Using data available prior to Thursday greatly increases the probability of error.

The procedure prepared for 1981 follows. After the opening of the all-species season, a total of 20 to 21 days elapsed before reliable information was available to the state agencies to make preliminary assessment of their catch and effort data. The data were published in the Federal Register. After an additional seven days of data accumulation, plus six more days of agency analysis; final assessments were completed and recommendations were proposed by the state agencies. Agency reports were available on day 36. Two days were required for Team review and reports preparation, a process that was omitted in 1980, bringing the total elapsed time to 38 days for 1981. This was the absolute minimum for agency and Team action. The SSC and Advisors met with the Council on the 39th day, and the Regional Director of NMFS was originally supposed to make his decision on the 40th day. Allowing two days for drafting decision documents, the decision would have been filed with the Federal Register and become effective on the 43rd day. However, in 1981, the nature of the fishery north of Cape Falcon was such that the Regional Director

had to close the fisheries just a few days before the Council met to discuss this issue.

A more flexible inseason management procedure is presented for 1982 as follows:

ALTERNATIVES FOR INSEASON SALMON MANAGEMENT FOR 1982

Early season estimates of salmon stock strength are, in many instances, of limited reliability. Projections of total ocean harvest and effort over the course of the season are uncertain and subject to a variety of independent variables outside the Council's control (e.g., availability of albacore, weather conditions, salmon prices, and vessel operations costs). For these reasons, the Council, as it has the past two years, should consider adopting a system for inseason modification of regulations to achieve escapement goals for spawning and to fulfill legal requirements for allocation of up to 50% of the harvestable run of relevant stocks to certain treaty Indians, where appropriate.

Such a system should provide flexibility to respond to situations during the season when it becomes apparent that either low stock abundance, higher effort, or increased ocean harvest will preclude attainment of ocean escapement goals and/or allocation requirements, or, conversely, that high stock abundance, reduced effort, or lower ocean harvest rates than originally anticipated will warrant less restrictive management measures. Likewise, the system could allow a means of balancing the catch between the ocean recreational and commercial fisheries. There are several alternative approaches to resolve the problem of changing circumstances during the season.

QUOTAS

Inseason management for 1982 could consist of quotas (either fixed or adjustable) for various management areas and species. These quotas would be established by the Council after receiving recommendations from the Salmon Team and advice from the SSC and the Salmon Advisory Subpanel. If quotas are chosen for use in 1982, it may be necessary to consider a projection scheme which can take into account any unanticipated fisheries in state waters.

Coho quotas, fixed or adjustable, can be developed for any of the recreational and/or troll options presented in this 1982 Plan.

In addition, under a quota system, there may be no need to specify season ending dates in advance of the season. In the past, specified season ending dates have been misleading and have caused confusion, since actual season ending dates were determined by attainment of the quota. Finally, under any quota system, inseason changes in the bag limit might or might not be allowed.

A. FIXED QUOTAS

Under the fixed quota alternative, quotas would be set at the beginning of the season based on preseason estimates. This type of quota was used for chinook off California in 1981. If these quotas are projected to be met before the

regularly scheduled season ends or if no season ending date has been specified, the fishery would be closed by field order at the time the quota is expected to be met. There would be no provision for adjusting fixed quotas during the season based on inseason data. If it was determined that either the troll or recreational fishery in any subarea would not reach its fixed quota, and the other fishery could harvest more fish during its regularly scheduled season, any surplus to the quota of one fishery could be reallocated to the other fishery by field order. However, it is important that each fishery be given every opportunity to reach its quota before a reallocation is made. The Salmon Team would be requested to participate in catch projections and possible reallocation, and the Council Chairman and State Fisheries Directors would be consulted prior to any reallocation or closure. The Council as a whole would not be involved in this process, due to time constraints.

Advantages and disadvantages of a fixed quota procedure are as follows:

Advantages

1. Process is less complex and more easily understood.
2. Less costly than the adjustable quota system.
3. Possibly less subject to inseason controversy than adjustable system.
4. May reduce uncertainty as to actual length of seasons.

Disadvantages

1. Inflexible, does not allow use of inseason data.
2. Management under the system possibly not as precise, relative to assurance of meeting objectives.

B. ADJUSTABLE QUOTAS

If the adjustable quota alternative were to be selected, quotas would still be set at the beginning of the season based on preseason estimates. However, these quotas would be subject to review and possible adjustment during the season. This type of quota was used for coho in 1981, although a predetermined decision date was used that year. In 1982, a new variation would be used: automatically upon attainment of 75 or more percent of an adjustable quota, the accuracy of the preseason quota and underlying abundance estimate would be reviewed by the Salmon Team based on the most recent data. If the review provided sufficient data to indicate the need for an adjustment (upward or downward) in the preseason quota, such an adjustment would be made and a notice of determination issued to that effect. The Council Chairman and State Fishery Directors would be consulted prior to making any adjustment in preseason quotas. The Council as a whole would not be involved in this process, due to time constraints. The fishery with the adjusted quota would be closed automatically by field order when and if that adjusted quota was met before the end of the regularly scheduled season if a season closing date has been set. If no adjustment was made in the preseason quota (existing data indicated no need to change), the fishery would be closed automatically when the quota was met. As with the fixed quotas, if it is determined that either the troll or recreational fishery in any subarea would be unable to reach its quota, while the other fishery in the same subarea was likely to reach or exceed its quota, any projected surplus to the quota of one fishery may be reallocated to the other fishery by field order.

The following criteria would be used for inseason coho stock size adjustment:

1. Effort relative to recent year trends.
2. Catch per unit of effort relative to recent years.
3. Catch relative to recent year trends and preseason estimate of allowable catch.
4. Stock distribution data from CWT returns relative to expected distribution from prior years.
5. Relative contribution of various hatchery or wild release groups contributing to ocean fishing compared to hatchery or wild stocks used to predict stock abundance.
6. Inseason estimate of private hatchery contribution compared to preseason estimate, utilizing CWT information.
7. Estimates of effort shifts.
8. Sea surface temperatures and oceanographic conditions (upwelling) relative to fish availability and catchability.
9. Availability of albacore and impact on salmon effort.
10. Weather and subsequent impact on fishing effect.
11. Any other information, such as targeting on other species, etc., that may become available.

Adjusting stock size and changing quotas require a judgment by the SPDT based on the complex aggregation of the above data. This inseason assessment consists of a key indicator analysis since no reliable inseason run size updating methodology currently exists which is comparable to preseason stock abundance predictive techniques.

Advantages and disadvantages of an adjustable quota system are as follows:

Advantages

1. Flexible, more opportunity to correct for the unavoidable inaccuracies of preseason projections.
2. Allows use of inseason data, more precise and more current.

Disadvantages

1. More costly, more time consuming than fixed quota system.
2. Procedures more confusing, possibly more controversial.
3. Possibly introduces more uncertainty relative to length of seasons.

C. MIXED QUOTAS (fixed and adjustable)

It is possible that a mix of alternatives A and B would be appropriate: a fixed quota may be more suitable to some species and some areas, while adjustable quotas better suited to others. For some species and some areas no quotas may be preferable.

Advantages

1. Provides flexibility to respond to chinook and coho problems individually by subarea of concern.
2. Other advantages as in B above.

Disadvantages

1. Disadvantages as in B above.

NO QUOTAS

Having no quotas at all, either fixed or adjustable, of course, is another alternative. Under this alternative, seasons would be set based on the pre-season estimates of stock strength and projections of ocean harvest and effort. This system would have the advantage of being less costly, of not requiring inseason data, and of being simple to understand. It could, however, be the least accurate of the alternatives, and could introduce an overly conservative bias into the setting of the seasons in order to compensate for possible errors.

Regardless of the approach preferred, all alternatives have been included in the draft Plan so that public comments can be solicited on these alternatives, as well as on the issues of (1) a specified vs. unspecified season ending date under any quota system, and (2) whether sport bag limits should be adjustable inseason.

PROBLEMS ASSOCIATED WITH DEVELOPING CHINOOK QUOTAS

A comprehensive discussion of the quota concept was presented in the 1980 and 1981 Amendments. These discussions are still relevant in 1982 but do need some expansion relative to the development of a chinook quota.

A technique has yet to be developed to accurately predict the abundance of chinook available to the ocean fisheries in any single year. This is in contrast to abundance predictions which have been made for coho the last three years. The reason a chinook abundance predicting technique has not been developed is due to the lack of a reliable system for accurately predicting chinook year class strength and the fact that multiple year classes are recruited to the fishery in a given year. In contrast, only a single year class of coho contributes significantly to a given year's fishery. In addition, there is also a lack of information available relating to stock distribution for several major chinook stocks.

Despite the problems outlined above, a quota could be developed for chinook salmon. However, unlike the current use of a quota for coho, the chinook quota could not be based upon the current year's forecasted abundance. This quota would be developed through use of recent harvest and escapement numbers, analysis of trends in these parameters, and other factors such as environmental conditions and parent-brood spawning escapements or hatchery production levels. Such an analysis was presented for the California ocean fishery in the 1980 Amendment. The chinook quota implemented in California in 1981 was based on a similar analysis. This method was also used by the North Pacific Fishery Management Council in 1981 for the S.E. Alaskan chinook fishery.

Due to the lack of predictive capabilities for chinook salmon abundance, the use of a chinook quota should only occur if the system developed increases the probability of achieving specific chinook management objectives. Such a quota should also reflect the status of stocks present in the region to which the quota is applied. Otherwise, the fishery will be unduly restricted and stocks not needing protection will be allowed to escape the fishery.

Coho quotas, or more realistically harvest guidelines, can be developed for any of the options presented.

OTHER REGULATION CONSIDERATIONS

All other regulations in effect for 1981 would also apply in 1982 (e.g., minimum size limit; prohibition of net fishing for salmon in the FCZ; prohibition of steelhead retention by trollers; use of barbless hooks during the chinook-only seasons in the troll fishery; and retention of heads on marked salmon caught by freezer boats.

In the discussion of specific options, all reference to the early season was with respect to a chinook-only fishery. The intent is that this early fishery as well as the late season chinook-only fishery should be open to all salmon species except coho.

Other regulations that might be considered for 1982 include:

1. One-Pole Regulation for California Recreational Fishery - Another option that could be considered is adoption of a one-pole-only regulation in the California sport fishery. If adopted, this would have little impact, if any, on escapement, but would have the advantage of presenting a uniform definition of sport gear in FCZ waters.
2. Review of recreational size limit in California allowing one fish between 20 and 22 inches.
3. Late-season experimental coho fishery - A late-season experimental coho fishery off the Columbia River mouth area, similar to the one that occurred in 1981, may be considered again for 1982. Further consideration will be contingent on evaluation of 1981 results plus availability of sufficient funding to provide for observers on each boat. A report to the Council on the 1981 fishery will be forthcoming in early 1982.
4. Early-season chinook-only recreational fishery - In view of the disproportionate abundance of coho present off Washington in May, the Team recommended that this option not be considered for 1982. In 1980, approximately 10 coho were caught for each chinook by the recreational fishery.
5. Cape Alava line for coho management boundary - This boundary line might be considered as a Puget Sound stock separation point, north of which this stock predominates in September.
6. Coho allocation formula between ocean fishery participants - In general, the Council has attempted to manage the ocean recreational fisheries on the premise that fishing time is a more important factor than number or poundage of fish caught. Because of the expected depressed nature of the coho resource in 1982, percentage allocation between ocean troll and recreational fisheries based on the 1971-75 average may not provide adequate fishing time for the recreational fishery. It may be desirable to consider different approaches to developing allocation schemes between ocean fishery participants consistent with the 1982 Amendment's management objectives and socio-economic impacts on each ocean fishery.

Other management measures outlined in the 1978 Salmon Plan or in subsequent amendments also could be considered for 1982.

SPECIFICATION OF OY FOR THE FISHERY

The optimum yield of chinook, coho, pink, chum, and sockeye salmon is that amount of fish (in numbers or weight) caught by United States fishermen in the FCZ adjacent to the States of Washington, Oregon, and California, and in the waters (including internal waters) of those States, and Idaho, which will, to the greatest extent practicable, fulfill the following:

- (1) the annual spawning escapement goals for natural and hatchery stocks, as adopted by the Council;
- (2) the obligation to provide for treaty Indian harvest opportunity, as mandated by applicable decisions of the Federal courts;
- (3) the requirements of the Indian subsistence fishery for chinook on the Klamath River;
- (4) the allocation goals between or among ocean fisheries, as adopted by the Council;
- (5) the allocation goals between other than treaty Indian ocean and "inside" fisheries, as recommended by the various States;
- (6) other socioeconomic goals of the FMP and its amendments.

For the 1982 season only, it is estimated that OY will fall somewhere in the range of 5,000,000 to 7,000,000 fish (including coho, chinook, pink, sockeye, and chum).

CAPACITY AND EXTENT OF U. S. HARVEST AND PROCESSING

At the highest conceivable level of present or future abundance, the salmon stocks can be harvested by U. S. fisheries. The domestic harvesting and processing capacity is sufficient to handle the entire anticipated allowable domestic harvest in 1982. There is no recent record of processors refusing fish from fishermen due to inadequate processing capacity.

ALLOWABLE LEVEL OF FOREIGN FISHING

In view of the adequacy of the domestic fishing industry to harvest the highest conceivable level of abundance, the total allowable level of foreign fishing is zero. The United States historically has allowed Canadian fishing in U. S. waters under a reciprocal agreement until 1978. Negotiations between the two governments are continuing to seek a resolution of all salmon issues. These negotiations are aimed at stabilizing and reducing where possible the interception by fishermen of one country of salmon originating from the other country. No U. S.-Canada reciprocal salmon fishing is presently contemplated for 1982.

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EDITORIAL

Recently, I came down with a case of what I thought was simple flu complicated by a hacking persistent cough. Innocently, I treated myself with a patented cough suppressant and a remedy reputed "to clear up symptoms of the flu overnight."

During the night, I had a weird technicolor dream that was, as the teen-agers say in their own special jargon "far out", and "cool". The next morning at work I could not do the simple act of counting up to 10 or even adding up a simple column of figures.

Needless to write, I was concerned about my condition, so I contacted my neurologist and discussed the situation with him. He thought the cough medicine and the flu medicine were the root of the problem and I should stop taking them. The next night I "slept like a baby."

The moral of this story is to be wary of any drugs and their interaction with the neurological medication you may be taking. Consult your physician before dosing yourself with "over the counter" drugs.

In conjunction with the above thought, may I humbly suggest that the patient follow the physician's suggestion as to the procedure for taking the pills he prescribes. None of us have enough medical background, training, or expertise to "fiddle" around with our dosages. What appears to be helping may not be the best technique in the long run.

ANDREW JAROS

HOUSEKEEPING HELP AND NURSES' AIDES

We now have a list of forty names available for those desiring help in the home. Call WILL-COPE office for a copy of your own--229-7717.

Never go to a Doctor whose office plants have died.

V. SOCIOECONOMIC TRENDS IN THE OCEAN SALMON FISHERIES AND POTENTIAL SOCIOECONOMIC IMPACTS OF PROPOSED MANAGEMENT MEASURES

A great deal of descriptive socioeconomic background information was provided in Appendix B ("Social and Economic Description of the Salmon Fisheries") of the 1981 Salmon Plan Amendment. That information is generally still valid, and is therefore incorporated into this 1982 Amendment by reference. Chapter V of this 1982 Amendment is intended to update and expand on the initial information provided in the 1981 Amendment, with newly available data.

This chapter generally focuses on social and economic factors not addressed in the 1981 Amendment, including: export trends, troll ex-vessel values by vessel size class, fishing vessel accidents at sea, and determinants of fishing effort levels such as albacore and crab availability, and weather patterns.

The chapter is divided into two parts: (1) descriptive historical trends in available socioeconomic data; and (2) potential socioeconomic impacts of some proposed management measures. A review of some of the socioeconomic conditions in the 1981 ocean salmon fisheries is available in Chapter II.

TRENDS IN AVAILABLE SOCIOECONOMIC DATA

World Salmon Production

Table V-1 places west coast salmon production in perspective relative to total U. S. and worldwide production of Pacific salmon. During the period 1975-77, the three west coast states harvested 38%-44% of the U. S. catch of chinook, 27%-53% of the U. S. catch of coho, and 2.0-3.6% of the world catch of all six species of Pacific salmon.

It is clear that west coast troll chinook and coho production is a minor part of world salmon production. In theory, if other Pacific salmon products were perfect substitutes for west coast troll salmon, this fact might indicate that incremental supply changes resulting from Pacific Council management measures would not be expected to impact salmon prices significantly. However, the degree of substitutability between west coast troll salmon and other salmon is not clearly understood. Demand for west coast troll products is a function of many factors, including consumer taste, real disposable incomes, exchange rates, prices for other salmon products, and prices of other protein substitutes. The market for troll chinook and coho apparently is somewhat differentiated from other salmon markets, but the relationships among the demand factors mentioned above are poorly understood.

Pacific Salmon Exports

Information on fresh, chilled, and frozen salmon exports from U. S. west coast customs districts is presented in Table V-2. Unfortunately, these data are only available by species for 1981; in prior years, and for fillets, steaks, and portions in all years, all salmon species were grouped together. In 1981,

Table V-1. Pacific salmon catch by region, harvesting nation and species, 1975-77 in contrast with Washington/Oregon/California salmon catch, 1975-77^{a/} (metric tons).

Region	Harvesting Group	Species	1975	1976	1977
WA/OR/CA	U. S. - Troll Vessels	Chinook	5,466	5,229	5,884
		Coho	4,946	9,267	3,407
WA/OR/CA	U. S. - All Gear Types	Chinook	10,765	9,695	8,936
		Coho	9,821	12,386	6,226
		All Salmon	29,702	29,843	26,460
Gulf of Alaska	U. S. - All Gear Types	Chinook	2,129	1,999	1,921
		Coho	2,787	4,473	4,222
		All Salmon	41,255	81,572	89,595
Eastern Bering Sea	U. S. - All Gear Types	Chinook	1,020	2,045	2,547
		Coho	447	590	2,185
		All Salmon	21,164	29,950	27,931
Subtotal:					
Total U. S. A.	U. S. - All Gear Types	Chinook	13,194	13,739	13,404
		Coho	13,055	17,449	12,633
		All Salmon	92,121	141,365	143,986
British Columbia	Canada - All Gear Types	Chinook	7,289	7,774	7,582
		Coho	7,736	9,325	9,857
		All Salmon	36,334	57,417	65,582
NW Pacific ^{b/}	Japan - All Gear Types	Chinook	1,115	1,609	908
		Coho	3,757	7,692	8,161
		All Salmon	159,406	129,488	116,546
	USSR - All Gear Types	Chinook	3,344	3,560	3,000
		Coho	3,310	3,556	3,898
		All Salmon	104,159	72,049	139,224
Total North Pacific	All Nations	Chinook	25,662	26,682	24,894
		Coho	27,858	38,022	34,549
		All Salmon	393,020	400,319	465,338
WA/OR/CA	Troll catch as % of Total USA catch	Chinook	39%	38%	44%
		Coho	38%	53%	27%
WA/OR/CA	Combined chinook and coho troll catch as % of total North Pacific all salmon species catch		2.6%	3.6%	2.0%

a/ Data (in metric tons) for 1978-80 is available only for U. S. troll vessels fishing off Washington, Oregon, and California, as follows:

Species	1978	1979	1980	1981
Chinook	4,456	5,337	4,477	3,935
Coho	3,491	4,776	2,286	2,865

b/ Salmon harvests made by Canadian vessels in U. S. waters are attributed to British Columbia.

c/ Japanese and Soviet harvests of salmon in the FCZ of the USA and Canada are attributed to the NW Pacific.

Sources: Miles, Sherman, Gibbs, Fluharty, et al., Atlas of Marine Use in the North Pacific Region, forthcoming.

1982 Salmon Plan Amendment, Chapter II.

Table V-2. Fresh, chilled, and frozen salmon exports from U. S. West Coast customs districts, 1978-1981 (January-October)

Customs District	Filets, steaks, and portions		Whole or eviscerated		Total Value (dollars)
	Value (dollars)	Major Destinations ^{a/}	Value (dollars)	Major destinations ^{a/}	
1981 (Jan.-Oct.)					
San Diego					
All species	445,500	Mexico	20,600	Mexico	66,100
Coho only ^{b/}			15,700		
Los Angeles					
All species	42,800	Japan	1,008,400	Japan	1,051,200
Coho only ^{b/}			363,100		
Chinook only			334,000	Japan	
San Francisco					
All species	179,800	France	7,655,100	Belgium/Luxemburg	7,834,900
Coho only ^{b/}			3,286,100	Japan	
Chinook only			25,900		
Portland					
All species	136,300	Japan	4,054,200	Japan	4,190,500
Coho only ^{b/}			852,000		
Chinook only			159,100		
Seattle					
All species	4,059,400	France	169,462,600	Japan	173,522,000
		Sweden		France	
		Japan		Italy	
		Canada		West Germany	
		United Kingdom		Canada	
Coho only ^{b/}			35,442,500		
Chinook only			12,978,200		
1981 WA/OR/CA Subtotal					
All species	4,463,800	France, Sweden, Japan, Canada	182,200,900	Japan	186,464,700
Coho only ^{b/}			4,516,900	France	
Chinook only			13,497,200		
Anchorage					
All species	0		147,307,700	Japan	147,307,700
Coho only ^{b/}			15,646,200		
Chinook only			6,811,600		
AK/WA/OR/CA Totals					
All species	4,463,800	France, Sweden, Japan, Canada	329,508,600	Japan	333,972,400
Coho only ^{b/}			55,605,600	France	
Chinook only			20,308,800		
1980 (all species)					
San Diego	4,800	Mexico	6,300	Mexico	11,100
Los Angeles	77,400	Sweden, Hong Kong	332,100	Japan, France	409,500
San Francisco	714,600	France, Venezuela	3,029,700	France, Japan	3,744,300
				Belgium/Luxemburg	
Portland	136,300	France, Netherlands	1,952,400	France	2,088,700
Seattle	6,050,000	France, Canada	128,004,500	Japan, France	134,054,500
		Japan, West Germany		Canada, United Kingdom, Italy	
Italy					
WA/OR/CA Subtotal	6,983,100	France, Canada	133,325,000	Japan, France, Canada, U. K.	140,308,100
		Japan, West Germany			
Anchorage	10,000	Japan	58,723,600	Japan	58,733,600
AK/WA/OR/CA Total	6,993,100	France, Canada	192,048,600	Japan, France, Canada, U. K.	199,041,700
		Japan, West Germany			
1979 (all-species)					
San Diego	26,000	Mexico	42,800	Mexico	68,800
Los Angeles	20,700	Taiwan	493,600	Sweden, Australia	514,300
				United Kingdom	
San Francisco	1,578,300	France, West Germany	3,373,100	France/Belgium	4,951,400
				Luxemburg	
Portland	42,000	Japan	3,823,700	France, Netherlands, United Kingdom	3,865,700
Seattle	3,547,600	Canada, France	166,975,800	Japan, France	170,523,400
		Japan		United Kingdom	
WA/OR/CA Subtotal	5,214,600	France, Canada	174,709,000	Japan, France, U.K.	179,923,600
Anchorage	2,969,900	Japan	116,152,600	Japan	119,122,500
AK/WA/OR/CA Total	8,184,500	Japan, France	290,861,600	Japan, France	299,046,100
		Canada		United Kingdom	
1978 (all species)					
Los Angeles	207,100	Australia	1,389,900	Japan	1,597,000
San Francisco	643,900	West Germany, France	5,245,600	Japan, France	5,889,500
Portland	72,100	Netherlands, U. K.	4,529,700	Japan, France	4,601,800
Seattle	6,432,600	Japan, France	215,461,300	Japan, France	221,893,900
WA/OR/CA Subtotal	7,355,700	Japan, France	226,626,500	Japan, France	233,982,200
Anchorage	98,300	Japan, Canada	39,298,100	Japan	39,396,400
AK/WA/OR/CA Total	7,454,000	Japan, France	265,924,600	Japan, France	273,378,600

a/ For all salmon species.

b/ Includes unclassified salmon as well as those classified as coho.

Source: National Marine Fisheries Service, unpublished data, 1981.

chinook and coho comprised 9.8% of the total fresh, chilled or frozen, whole or eviscerated salmon exports from Washington, Oregon, and California. A major portion of the exports from Seattle probably was comprised of Bristol Bay sockeye and other salmon from Alaska.

The value of west coast exports of fillets, steaks, and portions fluctuated between 1978 and 1981, but there appears to be a gradually decreasing trend. Japan has become slightly less important as an importer of these products, while France has become the number one importer. Sweden and Canada are also significant destinations for fillets, steaks, and portions. Although the data do not show exports by species, chum salmon steaks reportedly have become more and more popular as a substitute for chinook and coho steaks, in recent years, because of improved quality and relatively low prices.

The value of west coast exports of whole or eviscerated salmon was over 40 times the value of fillet, steak, and portion exports in 1981. Fresh/frozen whole or eviscerated salmon exports declined from 1978 through 1980 but recovered in 1981. Japan and France continue to be the major recipients of these salmon exports from the U. S. west coast.

Ex-vessel Prices and Values

Available salmon ex-vessel price and value data by species, compiled from state fish landing tickets and deflated to 1972 levels, are presented in Tables V-3, V-4, and V-5, and Figure V-1. Salmon prices have fluctuated greatly over the past ten years. The Oregon data show that coho prices have generally kept pace with inflation. (There has been a very slight decline in deflated coho prices since 1976, with the exception of the record year of 1979.)

After adjustment for inflation, chinook prices rose gradually from 1971 to 1976 and then appear to have fluctuated around an average price from 1977 through 1981.

Washington ex-vessel price and value data currently are not available. California data by species are only available since 1979. For coho, California ex-vessel troll prices have been very similar to those in Oregon in recent years, although in 1981, California coho prices were 17% higher than Oregon coho prices. California chinook prices were 2%-9% lower than Oregon chinook prices in recent years (after adjustment for inflation).

Fleet Size

As Tables V-6 and V-7 show, the California and Oregon troll salmon harvests are being shared among a commercial troll fleet that gradually grew until the implementation of license moratoria (in 1979 in California, and in 1979 in Oregon). No information currently is available for Washington. Table V-6 indicates a gradual increase in the number of troll vessels landing salmon in Oregon since 1974, with a slight decrease in 1981.

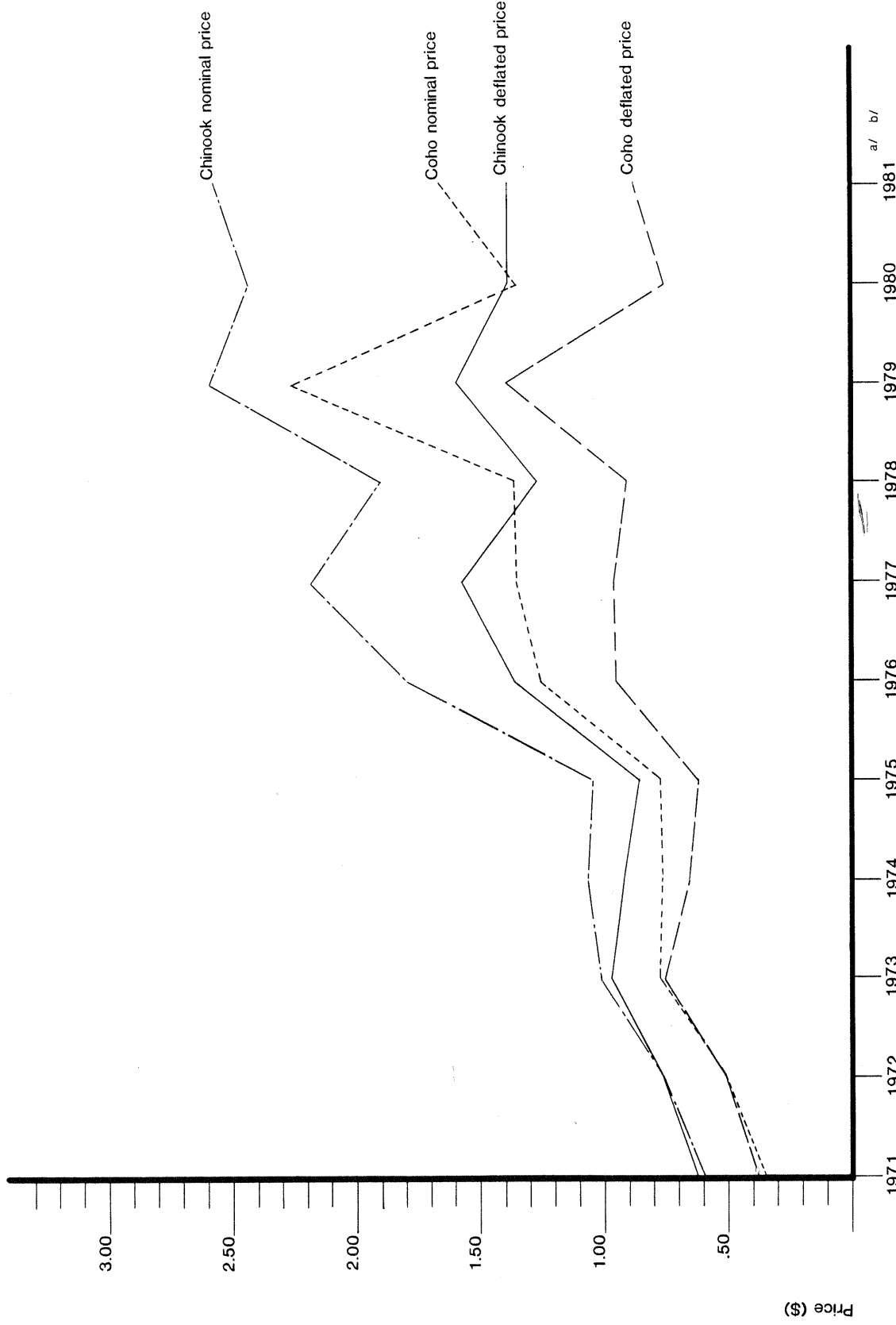
Table V-7 indicates a tripling in the size of the California troll fleet since 1960. Since total California troll salmon landings (in pounds) have been

Table V-3. Ex-vessel price trends (in dollars/lb.): Oregon, 1971-81.

Year	Price Deflator	Chinook		Coho	
		Nominal Price	Deflated Price	Nominal Price	Deflated Price
1971	96.0	0.59	0.61	0.36	0.38
1972	100.0	0.75	0.75	0.51	0.51
1973	105.7	1.02	0.96	0.78	0.74
1974	114.9	1.05	0.91	0.76	0.66
1975	125.6	1.04	0.83	0.77	0.61
1976	132.1	1.77	1.34	1.26	0.95
1977	139.8	2.17	1.55	1.34	0.96
1978	150.0	1.89	1.26	1.35	0.90
1979	162.8	2.57	1.58	2.26	1.39
1980	177.4	2.42	1.36	1.34	0.76
1981 ^{a/}	187.8 ^{b/}	2.57	1.37	1.66	0.88

a/ Preliminary.

b/ Since the 1981 Implicit GNP Price Deflator was not available at the time of writing, a 1981 figure was projected based on the average deflator increase for the past five years.



a/ Preliminary.
b/ Since the 1981 implicit GNP Price Deflator was not available in time for this draft, a 1981 figure was projected based on the average deflator increase for the past five years.

FIGURE V-1 Nominal and deflated ex-vessel price trends, Oregon, 1971-81

Table V-4. Ex-vessel value trends (in dollars/lb.): Oregon, 1971-81.

Year	GNP Price Deflator	Chinook		Coho		Total	
		Nominal Value	Deflated Value	Nominal Value	Deflated Value	Nominal Value	Deflated Value
1971	96.0	\$ 587,000	\$ 611,000	\$3,155,000	\$3,287,000	\$ 3,742,000	\$3,898,000
1972	100.0	982,000	982,000	2,476,000	2,476,000	3,458,000	3,458,000
1973	105.7	3,520,000	3,330,200	4,004,000	3,788,000	7,524,000	7,118,000
1974	114.9	2,412,000	2,099,000	5,525,000	4,809,000	7,937,000	6,908,000
1975	125.6	2,680,000	2,134,000	3,128,000	2,490,000	5,808,000	4,624,000
1976	132.1	3,410,000	2,581,000	11,458,000	8,674,000	14,868,000	11,255,000
1977	139.8	7,938,000	5,678,000	3,546,000	2,536,000	11,484,000	8,215,000
1978	150.0	3,584,000	2,389,000	3,756,000	2,504,000	7,340,000	4,893,000
1979	162.8	6,639,000	4,078,000	10,350,000	6,357,000	16,988,000	10,434,000
1980	177.4	5,259,000	2,964,000	2,926,000	1,649,000	8,185,000	4,614,000
1981 ^{a/}	187.8 ^{b/}	4,038,000	2,150,000	5,532,000	2,946,000	9,570,000	5,096,000

a/ Preliminary.

b/ Since the 1981 Implicit GNP Price Deflator was not available at the time of writing, a 1981 figure was projected based on the average deflator increase for the past five years.

Table V-5. Estimates of ex-vessel value^{a/} of California troll landings and average price per pound in 1979, 1980, and 1981.

Year	GNP Price Deflator	Chinook			Coho			Total			
		Nominal Value	Deflated Value	Nominal Price/lb.	Deflated Value	Nominal Price/lb.	Deflated Value	Nominal Value	Deflated Value		
1979	162.8	17,356,000	10,661,000	2.53	1.55	2,303,000	1,415,000	2.19	1.35	19,659,000	12,076,000
1980	177.4	12,741,000	7,182,000	2.27	1.28	408,000	230,000	1.36	0.77	13,149,000	7,412,000
1981	187.8 ^{b/}	13,417,000	7,144,000	2.45	1.30	905,000	482,000	1.94	1.03	14,322,000	7,626,000

a/ Dressed weight value (preliminary).

b/ Estimated.

Table V-6. Number of vessels landing troll caught salmon in Oregon, 1974-81.

Year	Number of Vessels	
1974	2,253	
1975	2,304	
1976	2,770	
1977	3,108	
1978	3,158	
1979	3,114	
1980	3,862 ^{a/}	(4,271) ^{b/}
1981	3,587 ^{c/}	(3,931) ^{b/}

a/ The establishment of a restricted vessel permit system drew a number of historically active vessels back into the fishery in 1980.

b/ Numbers of vessels qualified for troll salmon fishing under the state license moratorium, but not necessarily landing salmon, are noted in parentheses.

c/ Preliminary.

Table V-7. Commercial landings (lbs.) and value (\$) of salmon to California, and number of registered vessels making commercial salmon landings.^{a/}

Year	Landings	Ex-Vessel Value	Vessels Landing Salmon	Nominal Average Ex-Vessel Value/Vessel	Deflated Average Ex-Vessel Value/Vessel ^{b/}
1960	6,221,000	3,339,000	1,364	\$2,450	NA
1961	8,638,000	4,698,000	1,615	2,910	NA
1962	6,673,000	4,023,000	1,563	2,570	NA
1963	7,859,000	3,959,000	1,611	2,460	NA
1964	9,481,000	5,013,000	1,775	2,820	NA
1965	9,737,000	4,989,000	2,001	2,490	NA
1966	9,447,000	4,845,000	1,928	2,510	NA
1967	7,402,000	3,945,000	2,137	1,850	NA
1968	6,952,000	4,014,000	2,249	1,780	NA
1969	6,151,000	3,843,000	2,125	1,810	NA
1970	6,612,000	5,101,000	2,065	2,470	NA
1971	8,116,000	4,757,000	2,227	2,140	\$2,230
1972	6,423,000	4,830,000	2,395	2,020	2,020
1973	9,669,000	8,991,000	NA	NA	NA
1974	8,749,000	8,013,000	3,185	2,520	2,190
1975	6,925,000	6,972,000	3,150	2,210	1,760
1976	7,786,000	10,707,000	3,526	3,040	2,300
1977 ^{c/}	5,938,000	NA	3,797	NA	NA
1978 ^{c/}	6,537,000	NA	4,917	NA	NA
1979 ^{c/}	7,910,000	19,659,000	4,565	4,290	2,630
1980 ^{c/}	5,907,000	13,149,000	NA	NA	NA
1981 ^{c/}	5,964,000	14,322,000	3,854 ^{d/}	3,720	1,980

a/ Derived from vessel registrations and fish landing tickets.

b/ Using Implicit GNP Price Deflator.

c/ Preliminary.

d/ Through August 31, 1981.

variable but have not shown any similar increasing trend, the average landings per vessel have decreased significantly over this 21-year period. However, the fact that deflated prices have gradually risen and a greater proportion of the total catch in recent years is made up of the more valuable chinook rather than coho has generally compensated for the loss in poundage landed per vessel. It should be noted that the average poundages and values presented in Table V-7 are merely averages. There is great variability in the productivity and operating expenses of individual vessels in the California troll fleet so that these data are only a very gross indicator of economic conditions in the fishery.

Landings by Vessel Size Class

A somewhat more informative indicator of fishery economic conditions would be gross income from salmon fishing by vessel size class, since such data take into consideration one important variable in vessel productivity. California and Oregon landings data (in pounds) by vessel size class currently are available in Tables V-8 through V-15. In the future, it may be possible to convert these figures to ex-vessel value (gross income) by size class. No Washington data of this type are currently available. The California data show no clear trends in productivity of each size class since 1974. (Note: no data are available for 1980.) The 36-40 foot size class continues to harvest the greatest percentage of the total catch, while the 41-45 foot group took the greatest proportion of the catch relative to the number of vessels (i.e., greatest salmon productivity per vessel) in 1981 rather than the 51-55 foot class in most previous years. In 1981, there were slightly fewer small boats (30 feet long or less) than in 1980, and this reduced portion of the fleet took a proportionately reduced portion of the harvest.

Similarly, in Oregon, where data were provided by 10-foot vessel length increments, the 30-39 foot size class continues to take the greatest percentage of the total Oregon troll catch, while the 40-49 foot size class continues to be the most productive per vessel.

Tables V-8 through V-15 are provided as a basis for future monitoring of trends in fleet size class upgrading and of economic impacts on specific segments of the fleet (for instance, are Council regulations inadvertently favoring larger or smaller vessels?).

More Productive Segments of the Fleet

Table V-16 presents numbers of vessels landing 50% and 90% of the total Oregon troll catch each year for all salmon species combined. Such information is not yet available for California and Washington.

The data show that a small segment of the fleet (300-500 vessels) lands most of the total Oregon troll catch. In 1981, 9.6% of the fleet caught 50% of the total harvest, and 35.6% of the fleet caught 90% of the total harvest. In other words, most of the troll fleet lands very few fish, while a small group of fishermen are very productive. This small, highly productive segment of the fleet has become a smaller and smaller percentage of the fleet as a whole since 1974, while maintaining its large percentage of the total catch. It should be noted, however, that these data are for Oregon only. Many vessels are highly productive but spread their landings over two or more states; their individual state landings, therefore, may be relatively low.

Table V-8. California commercial salmon troll boat size - catch statistics 1974 (pounds-dressed).

Size Category Length (feet)	Number of Boats ^{a/}	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	823	26	671	552,384	6
21-25	564	18	868	489,442	6
26-30	480	15	2,276	1,092,628	12
31-35	386	12	3,986	1,538,442	18
36-40	485	15	4,821	2,338,275	27
41-45	202	6	5,822	1,176,056	13
46-50	143	4	5,840	835,085	10
51-55	50	2	7,957	397,875	5
56-60	36	1	6,044	217,571	2
61-65	9	0.3	3,448	31,031	.4
66-70	1	0.0	310	310	0.0
> 71	6	0.2	1,056	6,336	0.1
TOTALS	3,185			8,675,435	

a/ Derived from vessel registrations and fish landing tickets.

Table V-9. California commercial salmon troll boat size - catch statistics 1975 (pounds-dressed).^{a/}

Size Category Length (feet)	Number of Boats ^{a/}	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	743	24	408	303,500	4
21-25	605	19	597	361,276	5
26-30	463	15	1,545	715,533	10
31-35	369	12	3,029	1,117,701	16
36-40	500	16	3,797	1,898,493	27
41-45	215	7	4,957	1,065,844	15
46-50	155	5	5,040	781,154	11
51-55	51	2	7,190	366,694	5
56-60	33	1	6,599	217,771	3
61-65	10	0.3	4,748	47,485	0.7
66-70	2	0.1	3,436	6,872	0.1
> 71	4	0.1	1,442	5,769	0.1
TOTALS	3,150			6,888,200	

a/ Derived from vessel registrations and fish landing tickets.

Table V-10. California commercial salmon troll boat size - catch statistics 1976 (pounds-dressed).

Size Category Length (feet)	Number of Boats ^{a/}	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	900	25	624	561,951	7
21-25	787	22	835	656,927	8
26-30	516	15	1,805	931,483	12
31-35	378	11	3,110	1,175,477	15
36-40	496	14	3,846	1,907,765	24
41-45	206	6	5,276	1,086,932	14
46-50	143	4	5,452	779,617	10
51-55	48	1	7,382	354,349	5
56-60	32	0.9	6,376	204,043	3
61-65	15	0.4	3,606	54,093	0.7
66-70	3	0.1	1,893	5,678	0.1
> 71	2	0.1	830	1,660	0.0
TOTALS	3,526			7,720,000	

a/ Derived from vessel registrations and fish landing tickets.

Table V-11. California commercial salmon troll boat size - catch statistics 1977 (pounds-dressed).

Size Category Length (feet)	Number of Boats ^{a/}	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	990	26	456	451,075	8
21-25	856	22	634	542,979	9
26-30	549	14	1,334	732,426	12
31-35	412	11	2,188	901,315	15
36-40	513	13	2,723	1,397,010	23
41-45	231	6	3,692	852,814	14
46-50	142	4	3,761	534,135	9
51-55	45	1	5,026	226,163	4
56-60	38	1	3,767	143,141	2
61-65	18	0.5	1,603	28,862	0.5
66-70	2	0.1	5,132	10,265	0.2
> 71	1	0.0	1,171	1,171	0.0
TOTALS	3,797			5,821,400	

a/ Derived from vessel registrations and fish landing tickets.

Table V-12. California commercial salmon troll boat size - catch statistics 1978 (pounds-dressed).

Size Category Length (feet)	Number of Boats ^{a/}	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	1,236	25	446	551,626	8
21-25	1,167	24	620	723,635	11
26-30	705	14	1,158	816,157	12
31-35	440	9	1,794	789,316	12
36-40	640	13	2,527	1,617,440	24
41-45	313	6	2,961	926,904	14
46-50	239	5	3,607	862,064	13
51-55	83	2	3,597	298,562	4
56-60	60	1	2,692	161,536	2
61-65	19	<1	2,022	38,426	<1
66-70	11	<1	488	5,372	<1
> 71	4	<1	217	869	<1
Unknown				11,707	<1
TOTALS	4,917			6,803,610	

a/ Derived from vessel registrations and fish landing tickets.

Table V-13. California commercial salmon troll boat size - catch statistics 1979 (pounds-dressed).

Size Category Length (feet)	Number of Boats ^{a/}	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	996	22	529	526,516	6
21-25	1,162	25	709	823,320	9
26-30	720	16	1,211	871,739	10
31-35	421	9	2,160	909,395	10
36-40	599	13	3,406	2,040,360	23
41-45	279	6	4,421	1,233,430	14
46-50	209	5	4,393	918,225	10
51-55	78	2	6,057	472,426	5
56-60	52	1	4,294	223,307	3
61-65	21	<1	2,491	52,306	1
66-70	13	<1	768	9,979	<1
> 71	15	<1	116	1,735	<1
Unknown				725,661	8
TOTALS	4,565			8,808,400	

a/ Derived from vessel registrations and fish landing tickets.

Table V-14. California commercial salmon troll boat size - catch statistics 1981 (pounds-dressed).

Size Category Length (feet)	Number of Boats ^{a/}	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	658	17	348	229,273	4
21-25	956	25	493	471,055	8
26-30	635	16	978	621,175	11
31-35	375	10	1,787	670,070	12
36-40	579	15	2,809	1,626,550	29
41-45	276	7	3,421	944,306	17
46-50	228	6	2,762	629,820	11
51-55	74	2	2,836	209,879	4
56-60	45	1	2,589	116,488	2
61-65	18	<1	1,629	29,321	1
66-70	5	<1	98	488	<1
> 71	5	<1	175	875	<1
TOTALS	3,854			5,549,310	

a/ Derived from vessel registrations and fish landing tickets.

Table V-15. Oregon salmon troll boat size - catch statistics (pounds of fish).

Year	Length Category (feet)	Vessels		Poundage	
		Number	Percentage	Number	Percentage
1981 ^{a/}	< 20	136	3.8	57,156	1.1
	20-29	1,767	49.3	1,666,257	31.9
	30-39	828	23.1	1,855,456	35.5
	40-49	568	15.8	1,325,398	25.4
	≥ 50	235	6.6	286,036	5.5
	no length given	<u>53</u>	1.4	<u>37,393</u>	0.7
TOTAL		3,587		5,227,696	
1980	< 20	172	4.4	36,688	0.8
	20-29	1,899	48.4	1,046,565	24.0
	30-39	864	22.0	1,503,213	34.5
	40-49	640	16.3	1,338,240	30.7
	≥ 50	268	6.8	343,256	7.9
	no length given	<u>81</u>	2.1	<u>93,163</u>	2.1
TOTAL		3,924		4,361,125	
1979	< 20	129	4.1	95,119	1.3
	20-29	1,567	49.4	2,149,194	29.6
	30-39	718	22.6	2,401,024	33.0
	40-49	493	15.5	2,015,614	27.7
	≥ 50	177	5.6	532,875	7.3
	no length given	<u>90</u>	2.8	<u>78,773</u>	1.1
TOTAL		3,174		7,272,599	
1978	< 20	155	4.7	73,470	1.2
	20-29	1,599	48.3	1,451,587	3.1
	30-39	730	22.1	1,585,081	34.0
	40-49	481	14.5	1,111,362	23.8
	≥ 50	185	5.6	381,883	8.2
	no length given	<u>158</u>	4.8	<u>56,422</u>	1.2
TOTAL		3,308		4,659,805	

a/ Preliminary. Derived from vessel registrations and fish landing tickets.

Table V-16. Number of vessels landing 50% and 90% of total Oregon salmon troll catch each year, 1974-1980.

Year	Total Vessels ^{a/}	Number Landing 50% lbs. ^{a/}	Number Landing 90% lbs. ^{a/}
1974	1,914	326 (17.0%)	1,032 (53.9%)
1975	1,979	329 (16.6%)	1,054 (53.3%)
1976	2,770	453 (16.4%)	1,460 (52.7%)
1977	3,108	473 (15.2%)	1,597 (51.4%)
1978	3,157	446 (14.1%)	1,576 (49.9%)
1979	3,114	423 (13.6%)	1,449 (46.5%)
1980	3,862	372 (9.6%)	1,375 (35.6%)

a/ Includes licensed and properly identified vessels only. Total poundage on which the numbers are based is not equal to total aggregate troll landings because of landings by unlicensed or misidentified vessels. Percentages of total pounds not credited to licensed vessels were: 1974 - 19%; 1975 - 19%; 1976 - 9.4%; 1977 - 8.0%; 1978 - 1.4%; 1979 - 0.2%; 1980 - 1.7% (totals for 1980 are for permitted vessels only).

Out-of-State Vessels

Tables V-17, V-18, and V-19 present preliminary, hand-tallied data on home state of vessels registered to fish salmon in California, by vessel size class and landing area.

The data show that for California as a whole, out-of-state vessels remained a fairly constant percentage (11-12%) of the fleet for the period 1978-80. Most of these out-of-state vessels were registered to fish on the North Coast (Crescent City and Eureka); only 1-2% of vessels on the South Coast were from out of state in recent years. However, the composition of California's out-of-state portion of the fleet has varied. On the North Coast (Crescent City and Eureka only), where the longest time series of data is available, there has been great variability in the amount of out-of-state participation; however, out-of-state vessels appear to have become a more significant portion of the fleet in recent years. This is particularly true of the larger vessel size classes. In the 1978-80 period on the North Coast, out-of-state vessels comprised 55-59% of the vessels in the over-36-foot size class, compared with variable values as low as 43% in previous years.

Data on out-of-state vessels landing salmon in Oregon is available for the period 1977-1981 and is not separated by port area or vessel size class. The available information, presented in Table V-20, does not indicate any clear trends in state of residence of license holders.

Fuel Costs

One of the many factors influencing fishing effort levels and fleet mobility is fuel costs. Table V-21 and Figure V-2 present No. 2 diesel fuel prices from 1975 to 1981. Even after adjustment for inflation, these prices have risen significantly over the past few years. This increase probably has influenced both commercial and recreational fleet behavior and reduced net incomes for salmon fishermen.

Albacore and Dungeness Crab Availability

Another determinant of effort patterns in the troll fisheries is the availability of other fish species, including albacore and Dungeness Crab. Figures V-3 and V-4 show albacore landings on the Pacific coast for 1956-1981. Although landings have varied greatly over time, coastwide and by state, it is clear that the coastwide landings have severely declined since 1974. (The fishery recovered somewhat in 1981.)

Figures V-5 shows Dungeness crab landings by state for 1954-79. More recent landings will be included when available. However, in general, the west coast crab fishery is in a "down cycle" and preliminary indications are that the 1980-81 catches are well below landings in the past three years. Declines in the albacore and crab fisheries have increased many trollers' dependence on salmon fishing as a source of income.

Table V-17. California boat registrations by length and home state - combined north coast and south coast, 1978-80.^{a/}

Home State ^{b/}	Length	1978	1979	1980
California	< 25	2,756	2,346	2,602
	26-36	1,335	1,191	1,233
	> 36	479	910	769
	Sub-total	5,070	4,447	4,604
Oregon	< 25	84	58	73
	26-36	183	160	177
	> 36	291	227	257
	Sub-total	558	445	507
Washington	< 25	4	4	3
	26-36	15	11	16
	> 36	107	75	98
	Sub-total	126	90	117
Total	< 25	2,844	2,413	2,678
	26-36	1,533	1,362	1,426
	> 36	1,377	1,212	1,124
	Grand Total	5,754	4,987	5,228

a/ Preliminary, hand-tallied data compiled from commercial fishing license and commercial boat registration files. All fishermen/vessels stating on their registration forms that they intended to troll for salmon that year were included in these tallies, whether or not they eventually actually fished for salmon.

b/ "Home state" refers to the declared state of residence of vessel skipper, who, in most cases, was also the vessel owner.

Table V-18. California boat registrations - south coast (Fort Bragg - south) only, 1978-80.^{a/}

Home State ^{b/}	Length	1978	1979	1980
California	< 25	1,789	1,549	1,961
	26-36	1,098	969	996
	> 36	735	678	536
	Sub-total	3,622	3,196	3,493
Oregon	< 25	8	5	6
	26-36	6	7	2
	> 36	35	6	13
	Sub-total	49	18	21
Washington	<25	2	0	0
	26-36	6	4	4
	> 36	18	10	11
	Sub-total	26	14	15
Total	< 25	1,799	1,554	1,967
	26-36	1,110	980	1,002
	> 36	788	694	560
	Grand Total	3,697	3,228	3,529

a/ Preliminary, hand-tallied data compiled from commercial fishing license and commercial boat registration files. All fishermen/vessels stating on their registration forms that they intended to troll for salmon that year were included in these tallies, whether or not they eventually actually fished for salmon.

b/ "Home state" refers to the declared state of residence of vessel skipper, who, in most cases, was also the vessel owner.

Table V-19. California boat registrations - north coast (Crescent City - Eureka) only, 1978-80.^{a/}

State ^{b/}	Length	1972	1973	1974	1975	1976	1977	1978	1979	1980
California	< 25	288	339	435	509	455	695	967	797	641
	26-36	133	131	167	155	165	255	237	222	237
	> 36	145	140	140	190	216	245	244	232	233
	Sub-total	566	610	742	854	836	1,195	1,448	1,251	1,111
Oregon	< 25	17	15	32	32	24	50	76	53	67
	26-36	45	79	101	80	106	120	177	153	175
	> 36	79	116	130	152	144	190	256	221	244
	Sub-total	141	210	263	264	274	360	509	427	486
Washington	< 25	0	0	0	1	0	0	2	4	3
	26-36	2	5	2	3	2	4	9	7	12
	> 36	30	43	23	63	25	36	89	65	87
	Sub-total	32	48	25	67	27	40	100	76	102
Total	< 25	305	354	467	542	479	745	1,045	854	711
	26-36	180	215	270	238	273	379	423	382	424
	> 36	254	299	563	405	385	491	589	518	564
	Grand Total	739	868	1,030	1,185	1,137	1,595	2,057	1,754	1,699

a/ Preliminary, hand-tallied data compiled from commercial fishing license and commercial boat registration files. All fishermen/vessels stating on their registration forms that they intended to troll for salmon that year were included in these tallies, whether or not they eventually actually fished for salmon.

b/ "Home state" refers to the declared state of residence of vessel skipper, who, in most cases, was also the vessel owner.

Table V-20. Percentages of vessels landing troll salmon in Oregon by license holder's state of residence, 1977-81.

Year	Oregon	California	Washington	Other/Unknown
1977	82.5	6.9	8.7	0.6
1978	83.6	5.9	10.0	0.5
1979	83.8	6.5	10.3	0.7
1980	80.4	8.5	9.6	1.5
1981 ^{a/}	81.7	7.5	10.0	0.7

a/ Preliminary.

Table V-21. Average annual wholesale prices of No. 2 diesel fuel, 1975-81.

Year	GNP Price Deflator	Nominal Price/Gallon (¢)	Deflated Price/Gallon (¢)
1975 ^{a/}	125.6	30.8	24.5
1976	132.1	31.9	24.1
1977	139.8	36.1	25.8
1978	150.0	37.1	24.7
1979	162.8	58.2	35.7
1980	177.4	81.2	45.8
1981 ^{b/}	187.8	99.2	52.8

a/ July - December average only.

b/ January - June average only.

Source: National Energy Information Center.

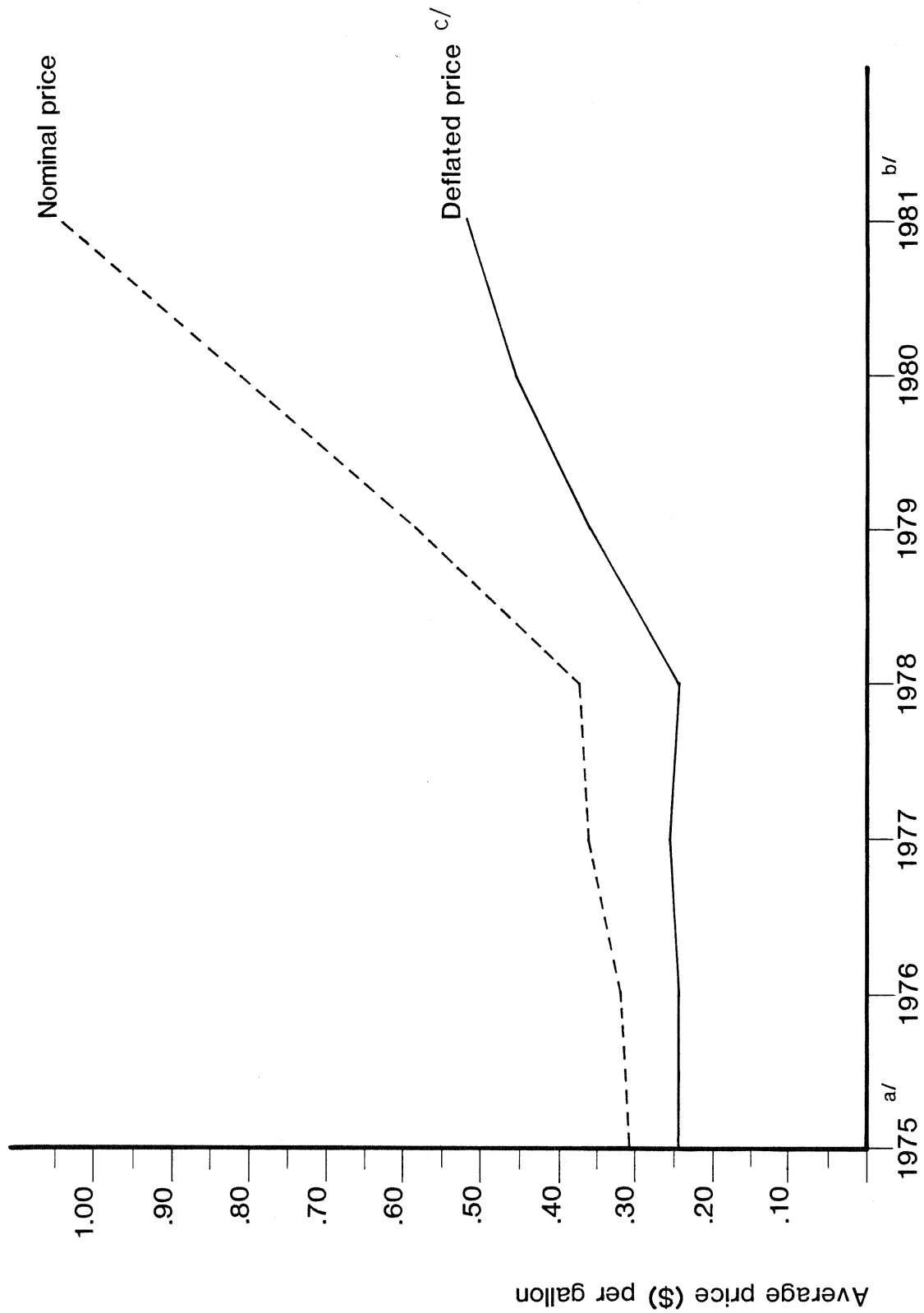


FIGURE V-2 Average annual wholesale price of no. 2 diesel fuel, 1975-81.

a/ July-December average only.

b/ January-June average only.

c/ Deflated to 1972 level.

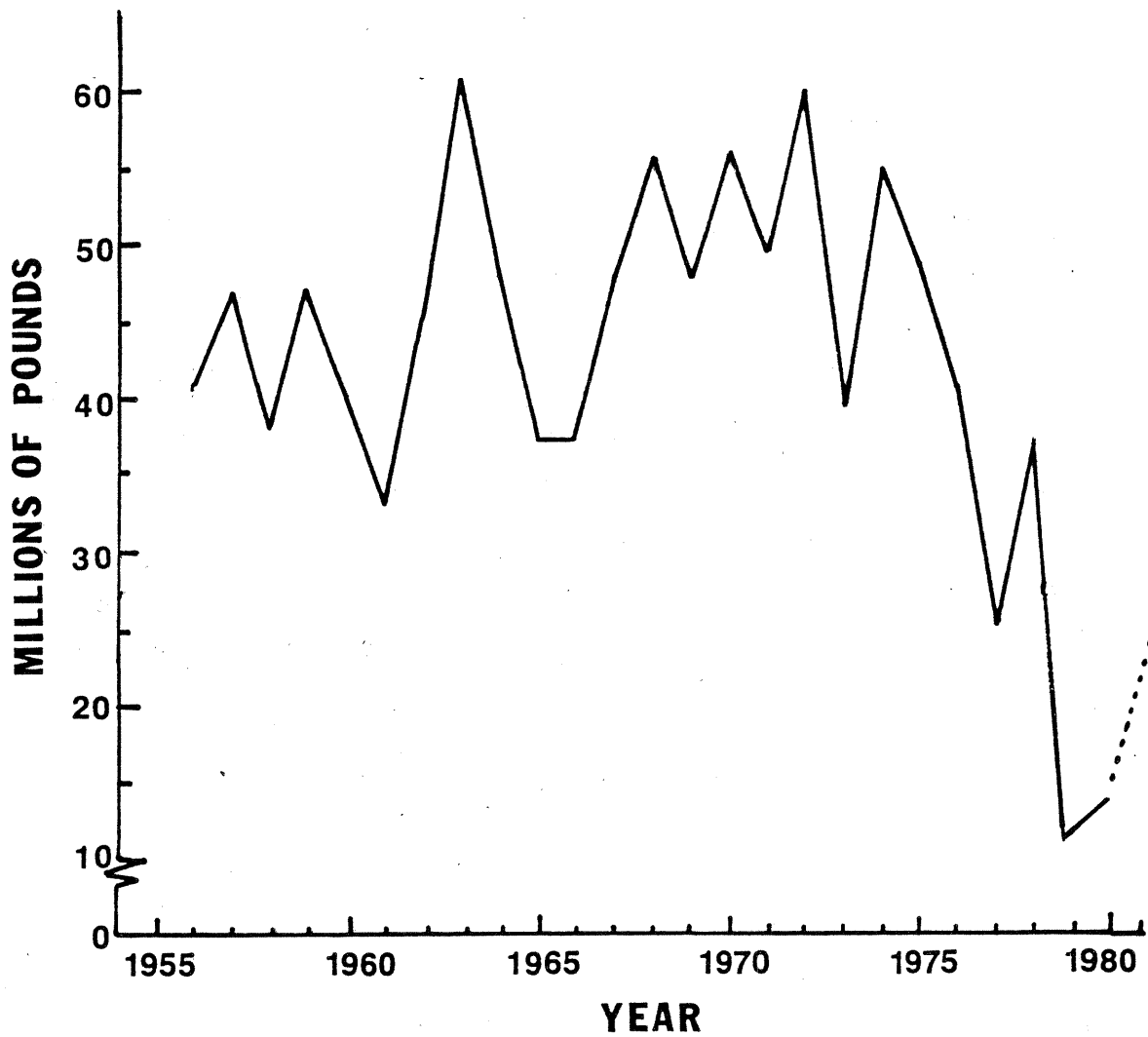


FIGURE V-3. Combined annual landings of albacore in California, Oregon and Washington, 1956 - 1981.

SOURCE: 34th Annual Report of the Pacific Marine Fisheries Commission, for the Year 1981, forthcoming.

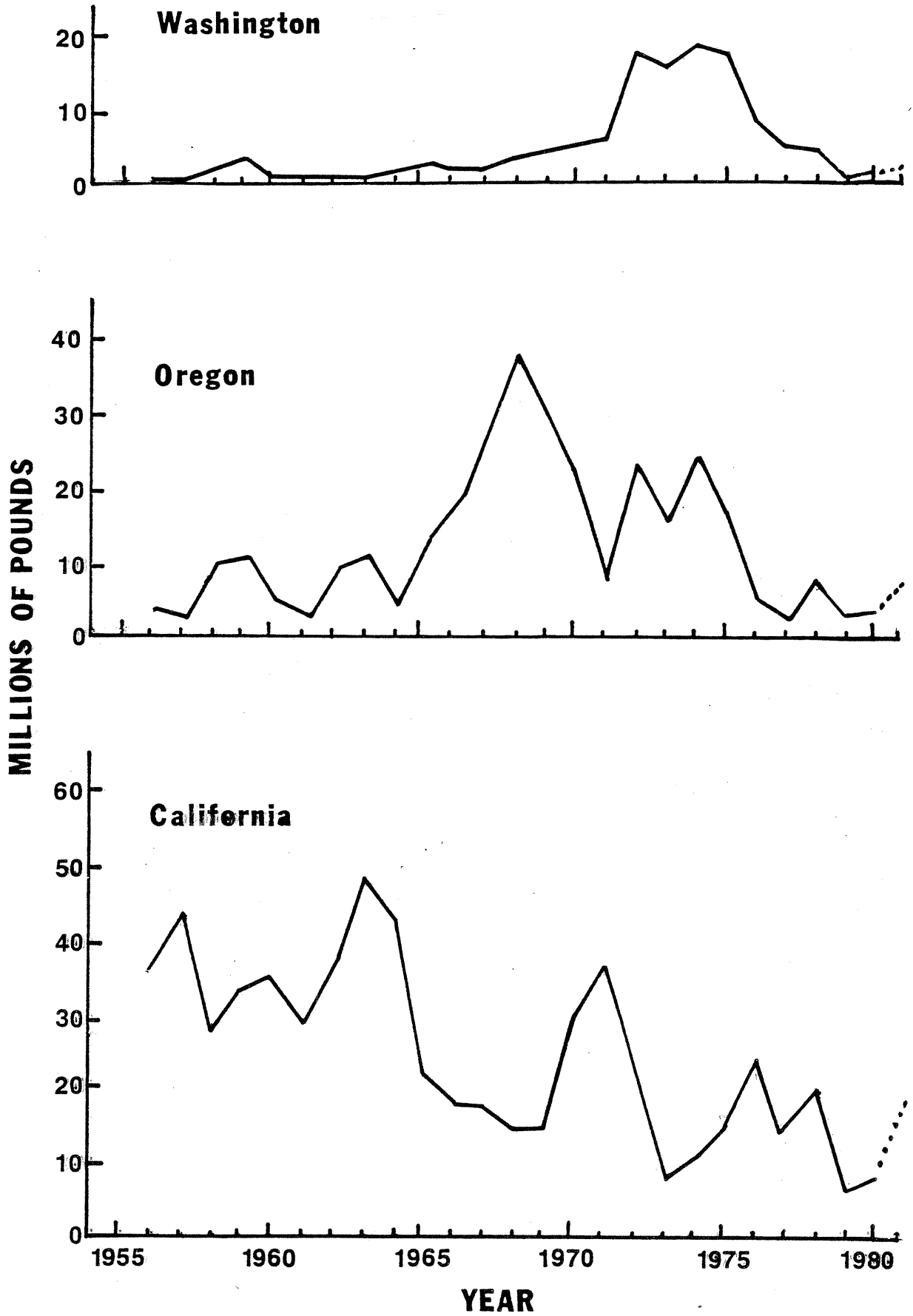


FIGURE V-4. Annual albacore landings by state, 1956-1981.

SOURCE: 34th Annual Report of the Pacific Marine Fisheries Commission, for the year 1981, forthcoming.

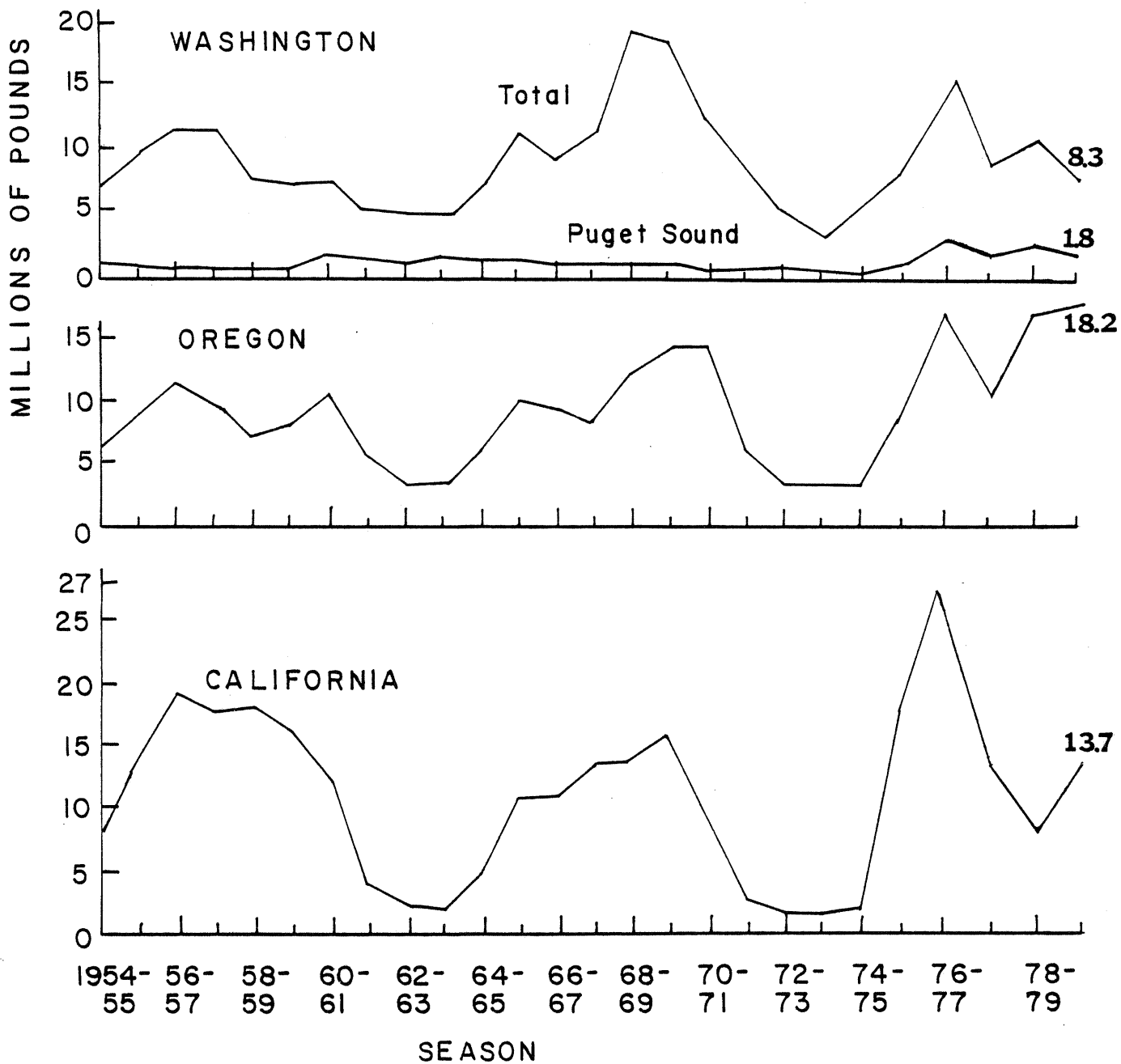


Figure V-5. Dungeness crab landings by season and state, 1954-55 through 1978-79.

SOURCE: 34th Annual Report of the Pacific Marine Fisheries Commission, for the year 1981, forthcoming.

Weather Patterns

Table V-22 and Figure V-6 present data on another important influence on salmon fishing effort levels: weather patterns. Data currently are available for the Washington coast only. Data on Oregon and California weather may be available in the near future.

The Washington data consists of numbers of days of gale warnings, rough bar condition advisories, and small craft advisories issued by the National Weather Service from 1977 through 1981. For the May through August period, the number of days of gale warnings ranged from zero to two days, the number of days of rough bar advisories ranged from zero to nine, and the number of days of small craft advisories ranged from 18 to 30.

Accidents at Sea

Extensive information on commercial fishing vessel accidents at sea off the Washington and Oregon coasts in 1981 was presented in Chapter II. Comparable information is not available for previous years. However, data from a study of U. S. Coast Guard records for the 1972-1977 period are provided as general background (see Tables V-23, V-24, and V-25).

During this period, the Pacific Northwest (Washington and Oregon) was third and Northern California was fifth in importance out of 20 fishing areas in terms of fishing vessels lost at sea. (In order of importance, the fishing areas were: Alaska, Texas, Pacific Northwest, Southern California, and Northern California.) In terms of lives lost due to commercial fishing vessel accidents at sea, the Pacific Northwest was third, and Northern California was fourth. (The order was: Alaska, Chesapeake Bay, Pacific Northwest, Northern California, Maine.) Some of these losses occurred in fisheries for species other than salmon. However, salmon fishing (in all areas, including Alaska) was the third most dangerous fishery out of 13 fisheries in terms of number of vessels lost in the 1972-1977 period (shrimping and groundfishing were more dangerous) and second most dangerous in terms of number of lives lost (more lives were lost in shrimping, while the same number were lost in the lobster fisheries).

Treaty Indian Fisheries

Only very limited information on socioeconomic aspects of the Northwest treaty Indian fisheries was available for inclusion in the 1981 Salmon Plan. Quantitative data remain difficult to obtain; however, the following descriptive information is presented as general background on treaty Indian participation in the salmon fisheries.

The salmon has a special place in the traditions and religions of the Pacific Northwest tribes and special ceremonies are still held to pay homage to the fish and insure their continued return to the rivers. In contrast to the highly mobile commercial troll and recreational fleets that operate in ocean waters, treaty Indian fisheries are generally place-oriented. Thus, while ocean fisheries may harvest a complex mixture of stocks over a larger geographic area, the treaty fisheries of each tribe are dependent upon the specific runs of fish that return to or pass through their recognized usual and accustomed fishing places.

Table V-22. Number of days per month during which small craft advisories (SCA), rough bar conditions advisories (RBA), and gale warnings (GW) were posted on the Washington coast, 1977-81.

Year	April	May	June	July	August	September	October
<u>1977</u>							
SCA	14	12	4	0	7	12	6
RBA	0	0	0	0	0	0	0
GW	0	2	0	0	0	0	9
<u>1978</u>							
SCA	14	12	1	0	5	18	10
RBA	0	0	0	3	3	0	0
GW	2	0	0	0	1	2	0
<u>1979</u>							
SCA	8	7	3	6	2	8	15
RBA	0	0	0	0	0	0	0
GW	1	1	0	0	0	2	4
<u>1980</u>							
SCA	17	11	7	5	7	8	17
RBA	0	0	3	5	1	0	0
GW	4	0	0	0	0	2	0
<u>1981</u>							
SCA	15	6	13	3	4	15	9
RBA	0	0	4	3	0	0	0
GW	1	0	0	0	0	2	5

Source: National Weather Service, unpublished data.

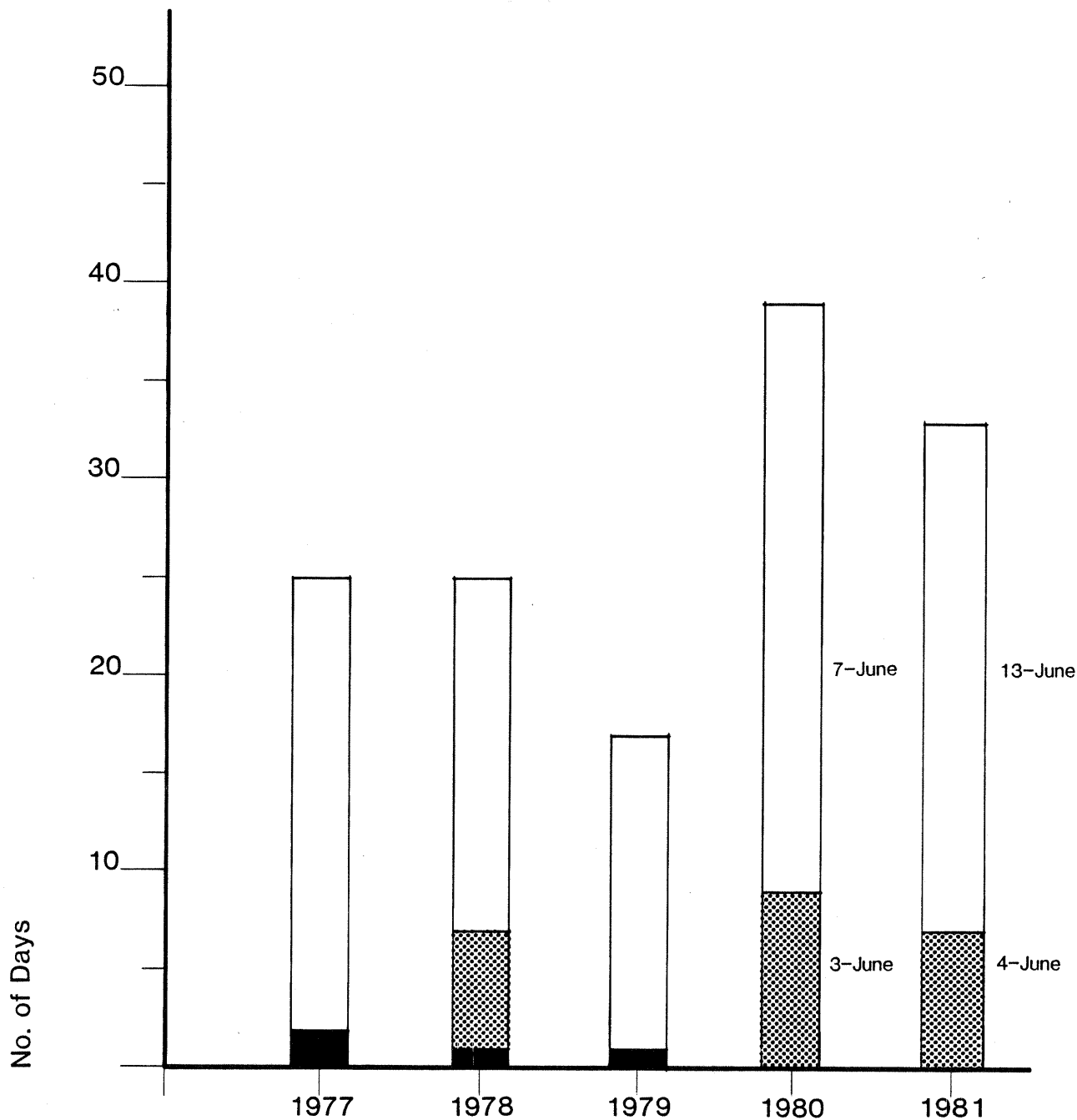


FIGURE V-6 Number of days per season (May-August) in which small craft advisories (SCA), rough bar advisories (RBA), and gale warnings (GW) were posted on the Washington coast, 1977-81.

SOURCE:
National Weather Service, unpublished data.

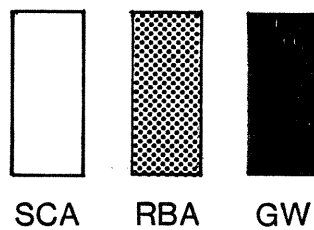


Table V-23. Number of fishing vessels involved in at-sea accidents (all commercial fisheries): 1972-77 totals.

	N. California	Pacific Northwest
Operational collisions	28	69
Groundings	57	194
Explosions/fire	8	63
Flooding/floundering/capsizing	16	52
Material failure	10	68

Source: U. S. Coast Guard.

Table V-24. Numbers of vessels and lives lost in fishing accidents at sea, by species fished, in all U. S. fisheries, 1972-76 totals.^{a/}

Vessel Activity/ Configuration	Number of Lost Vessels	Number of Persons Killed
Shrimping	294	59
Ground Fishing	124	18
Salmon	48	20
Tuna	36	15
Oystering	11	5
King Crab	26	11
Crab	12	5
Menhaden	1	3
Lobster	25	20
Clam	13	12
Scallop	4	-
Halibut	5	3
Snapper/Grouper	4	5

a/ When the species fished was specifically noted on the casualty report.

Source: U. S. Coast Guard.

Table IV-25. Numbers of lives and vessels lost in fishing vessel accidents at sea, by fishing area,^{a/} 1972-1979 totals.

LOCATION	OPERATIONAL COLLISIONS		GROUNDINGS		EXPLOSION/FIRE		FLOOD/FOUND/CAP.		MATERIAL FAILURE		TOTAL	
	DEATHS	VESS. LOST	DEATHS	VESS. LOST	DEATHS	VESS. LOST	DEATHS	VESS. LOST	DEATHS	VESS. LOST	DEATHS	VESS. LOST
MAINE		1		3		2	16	6	1		17	12
MASSACHUSETTS	4	3		5	1	7	11	21		8	16	44
RHODE ISLAND				2		1	6	8		4	6	15
CONN, NY, NJ	1	1		3		4	10	12		10	11	30
DEL. BAY		1		1			1	3			1	5
DEL, MD, VA COAST						1	1	2			1	3
CHESAPEAKE BAY	4	6		3	3		17	12	6	5	30	26
NORTH CAROLINA			4	3	3		4	7		2	11	20
SOUTH CAROLINA		1		9		2	1	5		5	1	22
GEORGIA		2		6		13	1	6	2	1	3	28
FLORIDA EAST		4	1	8	3	9	4	15	5	5	13	41
FLORIDA WEST	2	5		11		10	5	11	5	7	12	44
ALABAMA		2		4	3	9	1	4		1	4	20
MISSISSIPPI		2		1			4	2		2	4	9
LOUISIANA	1	9		5		10	1	8	6	2	8	34
TEXAS		25	1	32		16	11	16	1	19	13	108
SOUTHERN CALIF.		4		26		14	10	27		10	10	81
NORTHERN CALIF.	4	10	1	10	2	8	8	22	8	10	23	60
PACIFIC NORTHWEST	3	7	3	15	4	28	11	34	7	14	28	98
ALASKA	5	8	13	45	4	38	36	59	8	21	66	171

a/ ALL LOCATIONS NOT INCLUDED.

Source: U. S. Coast Guard.

Regulations governing treaty Indian fishing are established and enforced by individual tribal governments. Regulation of traditional tribal river fisheries is usually accomplished through the following methods: (1) limiting the number of fishermen; (2) establishing fixed fishing locations; (3) restricting the length of nets; (4) controlling mesh sizes; (6) closing the fishery for certain periods during the week; and (7) establishing fishing seasons to harvest different species. In addition, certain natural regulation of river fisheries occurs because of variations in water flow conditions, wind and tidal action, and debris accumulation.

Two major types of treaty fisheries exist; while a few tribes harvest salmon in ocean waters, predominant treaty fisheries are still conducted in or near the mouths of the major river systems. Although all the Indian tribes share an important dependence upon anadromous fish, the cultures of different tribes vary. It is not possible here to fully describe each of these cultures and tribal societies. However, a brief description of coastal Indian fishing communities in Washington is provided here.

There are several Indian fishing communities located on Indian reservations situated along the coast of Washington. The Makah Tribal village, Neah Bay, is the base for a predominantly marine troll and net fishery. Because of their location at the northwest tip of the Olympic Peninsula, Makah fishermen harvest fish bound for many different rivers. The fisheries conducted by other coastal tribes are principally directed at fish returning to the major river systems that are located on or near their reservations. Members of the Hoh Tribe live in a small fishing village located on their reservation at the mouth of the Hoh River. Members of the Quileute Tribe operate a small ocean troll fleet out of the port of LaPush, but the primary tribal fishery occurs on the Quillayute River system. The Quinault Tribe maintains fishing villages at the mouths of the Queets and Quinault Rivers and conducts fisheries on tributary rivers to Grays Harbor. (A very small number of Quinault fishermen also participate in the ocean troll fishery.)

The terminal area fisheries of the coastal tribes are small net types, principally involving gillnets operated from river skiffs. Other harvesting methods such as hand-operated dip nets may also be employed depending upon water conditions. When the salmon return to the rivers, nearly the entire community, from children to the elderly, participate in the fishery.

Terminal fisheries on the Hoh, Quillayute, Queets, and Quinault rivers are conducted principally on fixed fishing grounds that generally are considered the property of a single family. These grounds are handed down from generation to generation and the income derived from fishing is distributed to members of the community or family, depending upon such things as ownership interest, need, and compensation for the fisherman tending the net.

The coastal fishing villages are small and remotely located. In general, no occupation or source of employment besides fishing is readily available. The economic and cultural continuity of these communities is dependent upon the various runs of fish that return to the rivers at different times throughout the year. In recent times, traditional tribal fishing seasons have been severely restricted, frequently being reduced to fisheries conducted for the limited purpose of measuring the number of fish returning to the rivers.

Treaty fisheries in the Hoh River, for example, have been reduced by 92%, 89%, and 85% for spring-summer chinook, fall chinook, and coho, respectively (Table V-26).

Table V-26. Number of treaty fishing days on the Hoh River, by species, pre-1974 to 1980.

Year	Spring-Summer Chinook (no. of days)	Fall Chinook (no. of days)	Coho (no of days)
Pre-1974	153	91	91
1975	138	91	91
1976	148	91	91
1977	59	73	58
1978	53	37	52
1979	42	10	28
1980	12	10	14

Source: Mattson, R. W. & M. K. Leitka, July 1981. Annual Report #5, Fiscal year 1980, Contract No. P00C-1420-6230, Table 2.

Similar reductions in fishing seasons have been experienced by the Indian villages of Queets and LaPush. These reductions have severely disrupted the social fabric of the Indian communities that depend upon anadromous fisheries for tribal economies, community life, personal subsistence, and the emotional well-being of tribal members.

POTENTIAL SOCIOECONOMIC IMPACTS OF PROPOSED MANAGEMENT MEASURES
(REGULATORY IMPACT REVIEW/REGULATORY FLEXIBILITY ANALYSIS (RIR/RFA))

Executive Order 12291 and the Regulatory Flexibility Act of 1980 (P.L. 96-354) require that the social and economic impacts of regulations, particularly on small businesses and other "small entities," be taken into consideration in management decisions. These laws further require that the benefits of management measures exceed their costs. In compliance with these laws, this section briefly analyzes a few major 1982 management issues to determine socioeconomic impacts, benefits and costs. The issues have arisen from examination of the proposed 1982 management options; the analysis focuses on those issues which appear to be the most critical for management decisions and informed public comment.

This section does not deal with the biological impacts of management issues; these impacts are addressed in other parts of the Amendment.

Groups of People Affected by the Proposed Management Measures

For the purposes of this analysis, participants in the 1982 salmon fisheries were grouped into the categories presented in Table V-27. Most of these participants are small businesses or other small entities which could be directly or indirectly affected by the management measures proposed in this plan amendment.

The small entities that would be most directly impacted are the ocean trollers and ocean charterboat businesses. The numbers of entities in each of these categories in Washington, Oregon, and California are presented in Chapter II.

In addition, the following small entities may be indirectly affected by the 1982 Amendment:

- ° Treaty Indian fishermen, their families and other tribal members. For the 20 treaty tribes of western Washington, this includes 18-19,000 tribal members, 2,000-2,200 of which are tribal fishermen. (Source: Northwest Indian Fisheries Commission, 1980.) There are also four treaty tribes fishing in the Columbia River system.
- ° Salmon gillnetters, purse seiners, and reefnetters in Washington and Oregon. (A preliminary estimate of the number of licenses sold in these fisheries in 1980 is approximately 3,140. However, many fishermen have licenses to fish in several net fisheries, so this figure is an overestimate of the number of small entities involved in the net fisheries in 1980.)
- ° Salmon fishermen in Alaska.
- ° Harvesters of fish species other than salmon (coastwide).
- ° Fish processing companies, wholesalers, retailers, brokers, and distributors.

Table V-27. Categories of 1982 salmon fishery participants:

1. Commercial participants
 - Trollers
 - Washington-based
 - Oregon-based
 - California-based
 - Net fishermen
 - Oregon Columbia River gillnetters
 - Washington Columbia River gillnetters
 - Willapa Bay and Grays Harbor gillnetters
 - Puget Sound gillnetters
 - Puget Sound reefnetters
 - Puget Sound purse seiners
 - Private aquaculturists
 - Processors, marketing agents and consumers: the marketing sector
2. Recreational participants
 - Ocean charterboat operators and anglers
 - Washington, Oregon and California fleets
 - Private ocean sport fishermen
 - Washington, Oregon and California-based
 - Inland sports fishermen
 - Washington, Oregon, California and Idaho-based
3. Indian participants
 - Treaty commercial fishermen
 - Net fishermen: Columbia River, Washington coastal rivers, Grays Harbor and Puget Sound
 - Trollers: Washington based
 - Ceremonial and subsistence fishermen: Washington, Columbia River and Klamath River
4. Coastal communities
 - In Washington, Oregon and California
5. Other participants, including federal and state taxpayers

- Marine trade industries (e.g., boat builders, electronics businesses, machine shops, marine supply stores, bait suppliers).
- Support industries (e.g., restaurants, bars, grocery stores, hotels, motels, campgrounds, gift shops, gas stations, banks).

Estimates of the number of small entities in many of the above categories are not currently available.

Analytical Parameters

Although the management measures included in the 1982 Salmon Plan Amendment could affect any of the groups of people discussed above, data and time constraints require that this analysis focus on social and economic impacts on the ocean recreational and troll fisheries.

Analysis of recreational fishery management questions will focus on the following parameters:

- changes in angler effort levels and patterns;
- changes in the value of the ocean sport fisheries; and
- changes in gross revenues to the ocean charterboat fleets.

Analysis of troll fishery management questions will focus on the following parameters:

- changes in ex-vessel value/gross revenues to the troll fleets;
- distributional effects within the troll fleets (in cases where data are available).

Lack of information precludes analysis of changes in net income for both the troll and charterboat fleets. Furthermore, data are only generally available to analyze economic impacts on the fisheries as a whole while costs and benefits may be unevenly distributed. Changes in total costs and benefits may not reflect changes in costs and benefits to individuals.

In most cases, the depressed status of many salmon runs and the need to meet allocation and escapement requirements necessitate management options that are more restrictive than historic seasons. In order to achieve long-term objectives, these options will have negative short-term social and economic effects. Analyses in this chapter will attempt to estimate the magnitude of these short-term impacts.

Critical Issues to be Analyzed

The following socioeconomic questions will be analyzed:

1. What are the probable economic effects of shortening the Washington and Oregon recreational seasons and/or lowering recreational quotas (compared to 1981) while maintaining a two-fish bag limit?
2. What are the probable economic effects of reopening one or two weeks of April to chinook troll fishing in California and Oregon south of Cape Falcon?

3. What are the probable economic effects of eliminating the May troll fisheries north of Cape Falcon and off northern California?
4. What are the probable economic effects of allowing troll fishing for all or part of the month of June (all salmon fishing off California and chinook-only fishing off Oregon)?
5. What are the probable economic effects of opening the all-species troll fishery off Oregon on July 1 versus July 15?
6. What are the probable economic effects of reduced coho troll quotas north and south of Cape Falcon?
7. What are the probable economic effects of a Washington mid-coast troll closure (between Carroll Island and Split Rock) after 75% of the coho troll quota north of Cape Falcon is met?

Analysis of Issues

1. What are the probable economic effects of shortening the Washington and Oregon recreational seasons and/or lowering recreational quotas (compared to 1981) while maintaining a two-fish bag limit?

Effort level, rather than catch, is the primary factor in determining economic benefits of recreational fisheries (although effort level depends to some extent on catch). The more angler trips taken at a given value per trip, the greater the total economic value of the fishery. This is true, not only with regard to economic benefits to anglers, but also with respect to gross revenues to the charterboat fleet: charter fleet revenue levels are a direct function of numbers of charter angler trips taken.

The viability of the charterboat fisheries and many support industries (e.g., moorages, restaurants, etc.) and the value of the salmon sport fisheries depend to a large degree on fishing time, that is, a prolonged fishing season. The majority of angler effort is concentrated in the period from Memorial Day weekend through Labor Day weekend; cuts into this part of the season would have the most severe negative impacts on angler effort and economic benefits. The 1982 draft Amendment contains two recreational season options that would include the Memorial Day weekend at the risk of an inseason coho quota closure before Labor Day. A third option would open the recreational season 12 days after Memorial Day (thus, certainly foregoing the economic benefits of relatively high angler effort levels during that holiday weekend), in order to increase the possibility that the season would continue through Labor Day weekend before the quota is reached. This analysis will attempt to estimate the relative magnitudes of the contributions of the Memorial and Labor Day weekends to the recreational season.

Table V-28 presents levels of Washington and Oregon sport fishery effort (angler trips) during the Memorial and Labor Day periods, as a percentage of total season angler effort. Since Oregon and Washington fishery statistics are calculated on the basis of a statistical week running from Monday through Sunday, data are not available to fully evaluate the importance of the holiday weekends themselves (Sat.-Mon.) which overlap two statistical weeks. However, the data in Table V-28, which include the entire two-week period before and

after the holiday weekend in each case, give a general indication of the relative importance of the Memorial and Labor Day weekends.

It is difficult to interpret the data in the table, since there is variability between years with respect to season length, bag limit, weather, fuel costs and fish availability. However, at least in Oregon, it seems clear that effort during the Labor Day period has traditionally made more of a contribution to the total season recreational effort than has effort during the Memorial Day period. It should be noted, however, that the Memorial Day weekend (and May through early June in general) is of relatively greater importance in the Coos Bay and Brookings management areas than in the northern Oregon areas, since this is the only time that coho are available to the recreational fishery in significant numbers. Later in the season, the coho generally migrate further north, out of the range of the southern Oregon recreational fisheries.

An important element in setting the recreational salmon seasons is the need for a stable, guaranteed season length so that charterboat operators can honor preseason bookings and anglers can plan their vacations. With a low quota, managers may have to trade off the certainty of an open season on Memorial Day weekend against the possible risk of a Labor Day closure. Public comment may shed some light on this issue.

2. What are the probable economic effects of reopening one or two weeks of April to chinook troll fishing in California and Oregon south of Cape Falcon?

Until 1979, the annual troll season in California began on April 15. April 15 was also the troll season opening date in Oregon until 1976. Given data and time limitations, the only way to estimate the economic impact of reopening part of April to troll fishing is to indicate the approximate number of chinook that might be caught at that time.

In Oregon, the 1971-75 average April troll catch was only 500 chinook, or 2% of the total season chinook landings; thus, reopening part of April to trolling in Oregon might be expected to have a minimal economic impact.

In California, the 1971-75 average April catch was 38,800 chinook; 86% of this harvest occurred on the south coast (San Francisco and Monterey areas). In 1978, the April catch off California was 20,900 chinook. At the 1981 May average value per chinook (\$21.09/fish), the 1978 catch would have been worth \$440,800. However, some of the fish caught in April otherwise would have been caught later in the season at a higher value per fish (because of growth and increased prices later in the season). (See the discussion of the economic impact of elimination of the May troll fisheries.)

In addition, it is likely that an April troll fishery would incur a serious "shaker" problem: many three-year-old chinook smaller than the 26" size limit probably would be caught and have to be discarded. The mortality rate on these fish would be high; they essentially would be "wasted." In addition, the direct impact of 4-year-old Klamath fish would be greater earlier in the season. To take account of this loss, the total California chinook quotas probably would have to be significantly lower than in 1981, reducing the potential season length and economic benefits to be derived later in the season.

Table V-28. Angler effort during Memorial Day and Labor Day periods, as percentage of the total season angler effort in the Washington and Oregon recreational salmon fisheries.

Year	Week ^{a/}	Memorial Day & Labor Day Dates	Washington Percent.	Oregon Percent.	Actual Seasons & Bag Limits
1979	Pre-Memorial Day week	May 28	1.7	1.9	May 12-Sept. 3 north of Falcon ^{b/} May 12-Sept. 16 south of Falcon ^{b/} (2+1 north, 2-fish south)
	Memorial Day week		2.0	1.6	
	Pre-Labor Day week	Sept. 3	9.3	6.3	
	Labor Day week		0.8	1.0	
1980	Pre-Memorial Day week	May 26	1.3	0.5	May 10-Aug. 25 n. of Leadbetter
	Memorial Day week		1.4	1.5	May 10-Sept. 1 s. of Leadbetter ^{b/} (Sept. 14 in Ore. State waters) (3-fish chngd. to 2-fish July 16)
	Pre-Labor Day week	Sept. 1	7.8	7.5	
	Labor Day week		1.3	3.5	
1981	Pre-Memorial Day week	May 25	2.2	2.1	May 23-Aug. 26 north of Falcon ^{c/}
	Memorial Day week		2.6	2.9	May 15-Aug. 27 south of Falcon ^{b/} (Sept. 20 in Ore. State waters)
	Pre-Labor Day week	Sept. 7	-	7.3	(2-fish south of Queets R.)
	Labor Day week	(season closed)	-	2.1	(2+1 north of Queets R.)

a/ Since Oregon and Washington fishery statistics are calculated on the basis of a statistical week running from Monday through Sunday, data are not available to fully evaluate the importance of the Memorial Day and Labor Day weekends themselves (Sat.-Mon.) which overlap two statistical weeks. Thus the "pre-Memorial Day week" includes two days of the holiday weekend, while "Memorial Day week" includes the Monday holiday itself. The Labor Day weekend is treated in the same way.

b/ In the FCZ off parts of Oregon, a chinook-only fishery traditionally follows the all-species season.

c/ A small recreational fishery occurred inside the Columbia River and Straits of Juan de Fuca after the ocean closure.

3. What are the probable economic effects of eliminating the May troll fisheries north of Cape Falcon and off northern California?

The economic value of the ocean troll fisheries is based on the number of fish landed, the size and quality of those fish, and their price. This discussion attempts to identify the potential reductions in ex-vessel value of the troll catch associated with elimination of the May troll fisheries. Data on ex-vessel values often do not include consideration of end-of-season bonuses sometimes paid to fishermen by processors. However, this factor is considered negligible in light of the already large error margins in this analysis.

As Table V-29 shows, May chinook catches have made up a large proportion of total season chinook catches in both Washington and northern California in recent years. However, if the May troll season were eliminated, not all of these fish would be lost to the fisheries. Many of them would be recaptured later in the season, when prices per pound had increased and the fish had grown larger.

Most trollers who currently fish the May chinook-only season also fish the later all-species season to the fullest extent possible. Thus, with 1982 all-species seasons similar to 1981 and a similar catch-per-unit effort, many trollers would not be able to expand their effort in later periods to make up for time, catch, and revenues lost because of a May closure. Many of the large vessels that fish in May turn to albacore fishing later in the season. It is considered unlikely that these vessels would expand their effort on salmon at the expense of albacore fishing, unless albacore fishing was poor. However, some non-albacore trollers could be expected to "fish harder" later in the season to help make up for the loss of a May season.

In addition, preliminary data from the state fishery management agencies indicate that May closures would probably increase catch-per-unit effort later in the season, although the degree of increase would vary by area due to stock distribution and effort patterns. Thus, some level of "recapture rate" on fish not caught in May, estimated at about 60% in some areas, might be expected. Off Washington this percentage recapture would probably be less due to the shorter summer.

The Regulatory Impact Review for the 1981 Salmon Plan Amendment and the 1978 Salmon Plan presented substantial data to support the idea that salmon increase greatly in size (poundage) over the season, and that prices for both chinook and coho tend to increase gradually over the season. As Table V-30 shows, for northern California, the average value per chinook in 1981 was 20% higher in the June-September period than in May.

For California, assuming a 60% recapture rate, Table V-30 presents the net losses in ex-vessel value to the northern California troll fisheries that probably would have resulted from a May closure in 1980 (5.8% of the total season chinook and coho value) and in 1981 (7.2% of the total season value). Such a closure in 1982 could be expected to incur similar losses in ex-vessel value. Data are not available to assess the impacts of a May closure north of Cape Falcon; however, if price and fish growth trends are fairly similar to those in northern California, similar levels of ex-vessel value losses might be expected. However, if the troll coho quota and the all-species season north of Cape Falcon are reduced in 1982, the May chinook-only season will become relatively more important, and the recapture rate also will be reduced.

Table V-29. Percentage contribution of May fishery to total season chinook catches (numbers of fish).

Year	Northern California	Washington
1980	43.1%	35.0%
1981	32.9%	43.3%

Table V-30. Potential ex-vessel value loss to the northern California troll fisheries due to closure of fishing in May.

Year	Increase in ave. value/chinook in June-Sept. compared to May	Increase in ave. value/coho in June-Sept. compared to May	Net ex-vessel value loss	Loss as % of total season ex-vessel value
1980	38%	53%	\$403,500	5.8%
1981	20%	45%	\$537,000	7.2%

It should be noted that in all three states, some trollers specialize in chinook fishing, so the potential loss of ex-vessel value might be focused on a relatively small number of fishermen. Furthermore, the burden might or might not fall on local trollers, since some segments of the troll fleet are highly mobile. The above calculations were based on state landings data which include landings by mobile out-of-state vessels. In northern California, poor weather conditions often preclude participation in the May troll fishery by small local boats. Instead, most of the economic benefits of early season fishing accrue to the larger, more mobile boats, most of which have home ports in Washington and Oregon. Additional data and analysis are required in order to assess the distributional impacts within the troll fleet of a May season closure.

Another factor to be considered is the potential shift to Oregon of effort displaced from California and Washington. If the area from Cape Falcon to the Oregon/California border and California south of Point Arena are the only areas on the west coast with an authorized May troll fishery, a substantial shift of vessels from the closed areas might be expected. This effort shift could increase chinook catches off Oregon south of Cape Falcon and in southern California substantially, but also might cause benefits to be distributed among more participants.

Finally, it is important to note that losses to the ocean fisheries are sometimes gains to other fishery participants. Some of the "May fish" not recaptured in the ocean troll fisheries will contribute to improved spawning escapements and resultant long-term economic benefits for all fishery participants. Others will be transferred to "inside" fisheries, in some cases, at a higher value per fish because of increased fish poundages. Since several age classes of chinook contribute to the troll fisheries, some of the foregone "May fish" will be recaptured the following year, when they are more mature, larger, and more valuable. Still others will be "wasted" as hatchery surpluses. Although elimination of the May troll fisheries under consideration is likely to create short-term losses in economic benefits to the troll fleets, there may not be severe short-term losses to the state and national economies as a whole.

In all three states, potential economic losses will not be confined to changes in trollers' gross revenues. The importance of the commercial salmon industry to communities along the Pacific coast is discussed in Appendix B of the 1981 Salmon Plan Amendment.

4. What are the probable economic effects of allowing troll fishing for all or part of the month of June (all salmon fishing off California and chinook-only fishing off Oregon)?

Sufficient data currently are unavailable to answer this question thoroughly. However, the following information is presented to give the decision-maker a general idea of the importance of the month of June for California trollers.

The north coast of California (major ports of Crescent City, Eureka and Fort Bragg) was the focus of 90-95% of the California season's coho harvest (in numbers of fish) and 52-67% of the chinook harvest over the period 1977-1980.

Landings data are available in Table V-31 for the 1971-75 average, and 1978 when the entire month of June was open to coho and chinook fishing, as well as for 1979 and 1981 when there were partial June openings.

It is not clear whether troll fishermen in 1979, 1980, and 1981 were able to increase their catch later in the season to compensate for the loss of fishing time in June. Poundage, value, and distributional data are unavailable. However, the above information indicates that a reopening of the June all-species salmon season in California could substantially boost troll catch and revenues, particularly in the north coast area. Since June weather frequently prevents small, local dayboats from fishing, much of the benefit of a June season might accrue to the larger vessels, many of which are from out of state.

The coho that would be caught in a California June all-salmon fishery would be primarily from Oregon streams. Their average size increases as they migrate northward, so that, in general, coho caught in a California June fishery would be smaller and less valuable than if they had been caught later, in Oregon waters. Also, since coho caught in California would be counted against the coho quota south of Cape Falcon, large June catches could cause earlier quota closures in Oregon.

It should also be noted that openings in California in June could cause substantial shifts of effort from more northerly areas which might be closed during that period, thus causing the benefits of the June season to be distributed among more participants. Major effort shifts could also occur if only the southern California area was to be open in June. The magnitude of such potential effort shifts is not known.

If June were open for chinook-only fishing off Oregon, the effort shift to California would be reduced. Revenues to fishermen off Oregon could increase significantly with a June fishery. During the 1971-75 period, an average of 13.1% of the annual Oregon chinook landings were made in June. In 1978, the last year that all of June was open, 19.3% of the total season chinook ex-vessel value was landed in June (total season chinook value comprised 49% of the total season all-species value). In 1980, a special chinook-only fishery (with gear restrictions) was allowed off Oregon from June 16-30; 8.3% of the total season's all-species ex-vessel value was landed during this two-week period.

5. What are the probable economic effects of opening the all-species troll fishery off Oregon on July 1 versus July 15?

A later troll opening might be expected to increase ex-vessel revenues from coho somewhat because of increased fish growth and higher ex-vessel prices later in the season; ex-vessel revenues from chinook, however, might be expected to drop, since the chinook fishing season probably would have been reduced by two weeks.

In the case of coho, a set number of fish, determined by the quota, will be harvested. The choice of opening date, then, determines whether those fish will be harvested earlier or later. Table V-33 shows how the ex-vessel value per fish generally increases over the season. If a July 1 opening results in an early coho season ending date, fish are being harvested at a lower average

Table V-31. Salmon landings (numbers of fish) in California in June, as a percentage of total California season landings, by species.

Year	June Season Dates	June Coho Catch % of Season Coho Catch	June Chinook Catch % of Season Chinook Catch
1971-75 Ave.	June 1-30	37.6%	27.4%
1978	June 1-30	66.8	32.1
1979	June 1-15	31.0	13.8
1980	Closed	--	--
1981	open in state waters only June 1-30	8.6	9.5

Table V-32. June chinook landings in Oregon as a percentage of total season chinook landings (numbers of fish) and as a percentage of total season chinook ex-vessel value.

Year	Numbers of Chinook	Chinook Value
1971-75	13.1%	NA
1978	21.2%	19.3%
1980	14.2%	13.0%

Table V-33. Number of coho caught in Oregon, ex-vessel value and average ex-vessel value per coho, by week of the all-species season, 1979-81.

Year	Period	Number of Coho	Ex-vessel value (\$)	Average Value/Coho (\$)
<u>1979</u>	June 25-July 1	8,200	106,300	12.94
	July 2-July 8	210,800	2,762,100	13.10
	July 9-July 15	125,700	1,873,300	14.90
	July 16-July 22	131,000	1,884,700	14.38
	July 23-July 29	58,200	907,300	15.58
	July 30-Aug. 5	32,000	505,200	15.80
	Aug. 6-Aug. 12	31,300	486,700	15.57
	Aug. 13-Aug. 19	56,000	853,900	15.27
	Aug. 20-Aug. 26	39,400	620,500	15.76
	Aug. 27-Sept. 2	20,200	317,200	15.73
Sept. 3-Sept. 9	1,500	26,900	17.36	
<u>1980</u>	July 14-July 20	113,900	757,900	6.65
	July 21-July 27	66,400	463,400	6.97
	July 28-Aug. 3	48,400	360,200	7.44
	Aug. 4-Aug. 10	49,200	373,100	7.58
	Aug. 11-Aug. 17	41,700	367,700	8.81
	Aug. 18-Aug. 24	17,700	160,100	9.04
	Aug. 25-Aug. 31	28,900	272,600	9.43
	Sept. 1-Sept. 7	13,600	135,400	9.95
Sept. 8-Sept. 14	3,400	36,000	10.58	
<u>1981</u>	June 29-July 5	38,100	282,400	7.41
	July 6-July 12	83,900	641,100	7.64
	July 13-July 19	87,600	669,700	7.64
	July 20-July 26	63,700	483,600	7.59
	July 27-Aug. 2	77,000	692,500	8.99
	Aug. 3-Aug. 9	68,000	680,300	10.00
	Aug. 10-Aug. 16	120,500	1,228,200	10.19
	Aug. 17-Aug. 23	78,700	806,200	10.24
Aug. 24-Aug. 30	4,700	47,700	10.14	

value per fish than if the season had started and ended later. In 1979 and 1981, when the July 1-15 period was open, the end of season average values per fish were about 35% higher than the values per fish during July 1-15. Thus, in 1979, a July 15 opening (with a quota) might have increased coho ex-vessel revenues by as much as 35% of the July 1-15 ex-vessel value, an increase of about \$1,622,000. In 1981, this increase would have been about \$325,000.

In the case of chinook, however, where there is no pre-determined quota, a July 15 opening date cuts two weeks off the chinook fishing season. In 1979, \$1,199,700 worth of chinook was caught during the July 1-15 period (18% of the total season chinook ex-vessel value). In 1981, \$367,200 worth of chinook was caught during the July 1-15 period (9% of the total season chinook ex-vessel value). Although some of the chinook not caught in early July would be recaptured later in the season at a higher price per fish, or in the following year, about \$200,000-\$300,000 in chinook gross revenues might be lost to trollers fishing off Oregon, if 1982 fishery conditions are similar to 1981.

On balance, a July 15 opening off Oregon might be expected to increase troll gross revenues as long as trollers are allowed to fully harvest their allocated portion of the total quota. It should be noted, however, that a July 15 opening does increase the risk that the recreational fleet might overrun its own part of the quota, thus necessitating a corresponding reduction in the troll part of the quota, and in troll gross revenues.

6. What are the probable economic effects of reduced coho troll quotas north and south of Cape Falcon?

Depressed stock status of many runs in conjunction with allocation obligations may require the establishment of reduced coho quotas north and south of Cape Falcon in 1982. In the case of the recreational fisheries, economic benefits depend on angler effort levels which are only partially dependent on catch; the catch quota affects economic benefits primarily in terms of the length of season the quota allows. (See discussion under Issue No. 1.)

The link between the catch quota and economic benefits to the troll fisheries is more direct. A reduction in the coho quota can be expected to result in an approximately proportional reduction in the economic benefits derived from coho fishing. For example, a 20% reduction in the coho quota in a certain area could reduce ex-vessel revenues from coho fishing by about 20%, if prices are similar to previous years^{1/} and if the harvest occurs during the same period as in previous years. It may be possible to compensate for the negative economic impact of reduced coho troll quotas by shifting the season slightly later to take advantage of the increased average size of the fish. This possibility must be balanced against the contention by fishermen that the fish "bite" better, making operating costs lower, earlier in the season.

1/ Data presented in Table V-3 and Figure V-1 suggest that, at least in Oregon, coho prices have roughly kept pace with inflation in recent years.

Although changes in a coho troll quota are fairly directly linked to changes in troll gross revenues from coho fishing, the link with changes in gross revenues from chinook fishing is more complicated. As with the recreational fisheries, a reduced coho quota affects chinook troll benefits primarily through the length of season the quota implies. Coho and chinook are fished concurrently during July and August, and chinook-only fisheries during this period are considered undesirable because of high incidental coho mortalities. Thus, total fishing closures due to attainment of coho quotas effectively reduce chinook fishing time and benefits. The degree to which chinook fishery benefits are affected by low coho quotas depends upon the relationship between the coho quota and the all-species season length. This relationship is poorly understood; it depends on many factors, including weather, water temperature, stock distribution and availability, relative prices of chinook and coho, salmon seasons in other areas, and availability of other species such as albacore.

7. What are the probable economic effects of a Washington mid-coast troll closure (between Carroll Island and Split Rock) after 75% of the coho troll quota north of Cape Falcon is met?

The intent of this management measure is to reduce fishing pressure on depressed north Washington coastal coho stocks, while allowing trollers to harvest Puget Sound, southern Washington coastal, and Columbia River coho.

A closure in the mid-coast area could help prolong troll seasons north and south of this area, by delaying attainment of the total quota. Such a closure would transfer revenues from fish buyers in the port of La Push (which is within the closure area) and possibly Tahola (which is on the edge of the closure area) to buyers in Neah Bay to the north, and other ports to the south. There would be some concomitant community impacts on these Washington ports. For a discussion of the economic structure of these communities, see Appendix B of the 1981 Salmon Plan Amendment.

Fuel expenses would also increase somewhat for those vessels which choose to move north or south of the closed area. Some small local troll vessels that are limited in mobility might have less fishing time under this scheme than they otherwise would have had, while local trollers to the north and south might have slightly more fishing time.

Finally, any increased fishing pressure on Puget Sound, southern Washington, and Columbia River coho and chinook stocks could be at the expense of some "inside" fisheries.

The amounts of time and revenue involved in these transfers cannot be evaluated until more information on the biological impacts of this management measure are available.

The above discussion addresses the socioeconomic impacts of specified individual management measures. The interaction of these management measures when combined into option packages cannot be assessed at this time. Biological analysis as to the feasibility of the option packages and economic analysis of the impact of the options on fishery participants will be available at a later date.

Costs vs. Benefits of Salmon Management

The negative, short-term impacts described above can be considered to be part of the costs of salmon management. Table V-34 presents a preliminary estimate of the directed federal administrative and enforcement costs also associated with salmon management. Further costs are incurred by state and tribal fishery management agencies and by the public hatchery and research programs.

The long-term benefits of salmon management are more difficult to quantify. There are two major types of benefits: (1) the future economic and social benefits to be derived by all the fishery participants from the maintained and rebuilt salmon stocks; and (2) fulfillment of legally mandated treaty obligations. The options in this plan are designed to minimize the short-term costs of salmon management while achieving these important long-term benefits. Although data are not available to accurately quantify their economic value, it is possible to develop a crude estimate of monetary benefits to the commercial and sport fishery, assuming higher future catches as a result of stock rebuilding. In 1980, the commercial salmon fisheries of California, Oregon, and Washington harvested 47 million pounds of chinook and coho with a combined ex-vessel value of \$65.3 million. Net economic benefits to the Washington and Oregon sport fisheries (based on 1978 data) have been estimated at \$50 million.^{1/} (No estimate is available for the California recreational fisheries.) Increases in catch, given rebuilt stocks, will lead to higher total ex-vessel revenues and a greater amount of net benefits in the sport fisheries. If, for example, catches in the commercial and sport fishery increase by 20 percent, revenues to the commercial fisheries and the net benefits in the sport fisheries could grow by \$13 million and \$10 million, respectively, for each year the higher catches are maintained. The monetary value of these benefits is substantially higher than the costs incurred in developing and implementing the Salmon Plan.

^{1/} See 1981 Salmon Plan Amendment, Page B-38.

Table V-34. Estimated federal costs of developing, administrating and enforcing the Salmon Plan (\$000)

Management Unit	1978	1979	1980	1981	1982
<u>NMFS - Northwest Region</u>					
Administration	70.0	70.0	70.0	70.0	110.0
Data Collection and Monitoring	50.0	50.0	50.0	239.4	218.6
Enforcement	144.0	140.0	177.0	171.0	195.0
<u>NMFS - Southwest Region</u>					
Administration	10.0	15.0	15.0	25.0	25.0
Data Collection and Monitoring	--	--	65.0	105.0	255.0
Enforcement	27.0	27.0	27.0	27.0	45.0
<u>Pacific Council</u>					
Administration	NA	NA	NA	70.0	120.0
Programmatic					
Planning and Development	132.8	109.4	131.3	147.0	101.0
Data Collection and Monitoring	43.0	103.2	80.7	98.5	68.0
Stock Distribution	--	44.0	141.3	138.3	81.0
<u>Coast Guard</u>					
Enforcement	NA	NA	NA	1,442.9*	1,262.6
TOTAL	476.8	558.6	757.3	2,534.1	2,481.2

*Revised estimate.

APPENDIX A

ANALYSIS OF IMPACTS OF PROPOSED 1982 REGULATION OPTIONS
ON THE
OCEAN SALMON FISHERIES
OF CALIFORNIA, OREGON, AND WASHINGTON

Report to the
Pacific Fishery Management Council

Salmon Management Plan Development Team

March 16, 1982

ANALYSIS OF IMPACTS OF PROPOSED 1982 REGULATION OPTIONS
ON THE OCEAN SALMON FISHERIES
OF CALIFORNIA, OREGON, AND WASHINGTON

INTRODUCTION

The Salmon Plan Development Team presented five troll and two recreational options to the Pacific Fishery Management Council for consideration in managing the 1982 ocean salmon fishery. Two of the Team's troll options were modified by incorporating suggestions from the Advisory Subpanel and Council members and a third recreational option, based on the Advisors' recommendations, was accepted by the Council to go to public hearings.

PROCEDURE USED TO ESTIMATE IMPACTS OF PROPOSED REGULATIONS

California Chinook

The California Fisheries Populations Simulation Model (Taylor and Yost, 1979) was used to evaluate the effects of the various options on the California ocean fisheries and escapement.

The population parameters for chinook stocks were modeled using primarily Sacramento River chinook data (1971-75 data base). There is not an adequate data base to accurately model Klamath River and North Coast chinook stocks. The California Department of Fish and Game is currently in the middle of a major program designed to evaluate Klamath River chinook. A new data base for Klamath River chinook will be calibrated as soon as data become available.

The Klamath River fall chinook stocks were modeled by using a combination of the California model and hand-modeling. Klamath River stock abundance was set at 1981 levels. In 1981, the north coast ocean fisheries harvested 303,900 chinook (292,600 by trollers and 11,300 by recreational fishermen), with a resultant Klamath River adult fall chinook in-river run size of 76,100 chinook.

For the Sacramento River, 1982 stock abundance is projected to be similar to 1981. In 1981, the south coast ocean fisheries harvested 329,200 chinook (256,800 by trollers and 72,400 by recreational fishermen) with a resultant Sacramento River fall chinook run adult escapement of 147,000.

Oregon Coastal Chinook

The basic method of estimating impacts of the proposed regulations on ocean salmon catches and escapements from Oregon coastal fisheries is a simplified modeling procedure. Expected catches for proposed closure periods were first subtracted from base period catches, and the resultant values were then allocated to escapement or later capture by the same or other fisheries. Analyses used 1979-81 catch distribution statistics.

The impacts of proposed reductions in chinook minimum size for the recreational fishery were determined from sampler interview data on fish released and length frequency distributions. The average number of chinook released per

chinook retained under current regulations was determined from 1979-81 sampler interview data. The number of chinook released was partitioned to added catch for various minimum size limit reductions using length frequency distributions.

For each proposed option: (1) a base period catch was subtracted from the expected total catch; (2) the subtracted value was parceled into savings and later captures; (3) savings were parceled into California and Oregon coastal and Columbia River escapement; (4) later captures were parceled into capture by troll or sport fishery and added back into the expected total catch for each fishery; and (5) escapement values were summed (troll and sport savings origin) to give the total expected additional escapement.

Escapement from the fisheries was parceled into coastal and Columbia River escapement, natural mortality, and immatures that would reenter the fisheries in later years. Changes in escapements for chinook were determined for coastal streams only from the calculated increase in escapement for 1981 under the various regulation options and the recent escapement level (160,000 fish).

Columbia River and Washington Coastal Chinook

Impacts of last year's (1981) regulatory options on upper Columbia River fall chinook were evaluated with the WDF/NBS Catch Regulation Analysis Model. Current work to update and expand the model for 1982 analyses of all upriver stocks has not been finalized for use in this report. Therefore, 1982 assessments have been based upon the Team's 1981 impact analysis relative to the 1982 options, for fall chinook stocks only. It should be noted that regulatory impacts are not intended as run forecasts for 1982, but rather relate to steady stock size. Preliminary upper Columbia River fall chinook run size to the river for 1982 has been projected at 155,600 compared to the 1981 return of 158,000 without any change in ocean regulations. However, the Team has had an opportunity to review recent coded-wire tag data for upriver spring, summer and fall chinook. The ocean impacts on these stocks is an important issue the Council will have to address in 1982.

California - Oregon - Washington Coho

Oregon Production Index

Proposed 1982 ocean salmon fishery regulations off Washington, Oregon, and California were analyzed in the context that a coho quota would be applied in the OPI area. Recent catch/effort trends and modeling were used to evaluate (1) probable season ending dates for each fishery; and (2) relationship of catch levels by state. It was assumed that a reduction in the recreational coho minimum size from 16" to no size limit south of Cape Falcon would have no measureable impact on catches.

North of Cape Falcon

Regulatory options north of Cape Falcon were evaluated using the Washington Department of Fisheries Natural Bureau of Standards Catch/Regulation Analysis Model.^{1/} A specific discussion of the stocks modeled was presented in the 1981 draft amendment.^{2/} The basic input data used to calibrate the model for 1982 analyses were modified to include: (1) coho shaker mortality during May troll chinook fisheries; and (2) legal sized coho mortality in marine hook and line fisheries related to drop-off, predation, etc.

Before 1982 regulation proposals were analyzed, model stock specifications were adjusted to preliminary 1982 run size projections for coho (Table IV-3, 1982 Draft). Thus, regulation analysis for coho reflects actual anticipated 1982 stock size. Impacts of regulatory options north of Cape Falcon were evaluated assuming a fixed harvest rate in the OPI. The harvest off the Columbia River mouth was held equal to the recent average proportion of the total OPI catch. Regulations were varied north of Leadbetter Point to evaluate the total impacts of ocean harvest north of Cape Falcon on terminal returns for individual coho stocks.

REGULATORY ANALYSIS OF OPTIONS

To assist in the analysis of the various options, the troll and recreational options (Figures 1 and 2) have been paired in the following manner:

Fishery	1982 OPTIONS					
	A	B	C	D	E	F
Troll:	1	2	3	3	4	5
Recreational	3	3	1	2	2	2

1/ Function of model and references are provided in 1978 Salmon Management Plan. Additionally, current data input file is presented in the document, Basic Input Data for Washington Department of Fisheries-National Bureau of Standards Catch/Regulation Analysis Model, WDF, Harvest Management Division, February 1980.

2/ Appendix D, pages D-4 to D-6, 1981 Salmon Plan Amendment.

Figure 1.
1982 TROLL OPTIONS a/




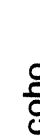

DATES	1					2					3 <small>(Similar to 1981)</small>					4					5				
	CA	OR	OR	WA	WA	CA	CA	OR	OR	WA	WA	CA	CA	OR	OR	WA	WA	CA	CA	OR	OR	WA	WA		
April 15-30	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	No. of Leadbetter Pt.	Pt. Arena to OR/CA Border	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	No. of Leadbetter Pt.	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	No. of Leadbetter Pt.	No. of Leadbetter Pt.	No. of Leadbetter Pt.	Pt. Arena to OR/CA Border	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	No. of Leadbetter Pt.	No. of Leadbetter Pt.		
May 1-15																									
May 16-31																									
June 1-15																									
June 16-30	b/																								
July 1-15	b/																								
July 16-31																									
August 1-15																									
August 16-31																									
September 1-15																									
September 16-30																									
October 1-15																									
October 16-31																									
November 1-15																									

a/ The presentation of the options on this page does not preclude Council consideration of more or less restrictive options based on information and proposals received during the public comment period as long as the options are based on up-to-date technical information regarding the status of the fishery and are reasonably calculated to achieve the goals of this plan amendment.

b/ Klamath River mouth closure, three miles either side of river mouth, six miles out into the ocean.

c/ In season management, adjustable quotas, and a 75% of quota triggering mechanism for stock evaluation are mandated for coho in all areas north of the OR/CA border.

d/ Middle coast area closure (between Carroll Island and Split Rock) when 75% of troll quota north of Cape Falcon is met.

 All salmon
 All salmon except coho, with gear restrictions
 All salmon
 All salmon except coho
 Closed

1982 RECREATION OPTIONS ^{d/}

d/ The presentation of the options on this page does not preclude Council consideration of more or less restrictive options based on information and proposals received during the public comment period as long as the options are based on up-to-date technical information regarding the status of the fishery and are reasonably calculated to achieve the goals of this plan amendment.

DATES	1 (Similar to 1981)					2			3				
	CA	OR		WA		CA	OR	WA	CA	OR		WA	
	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.	
February 13-May 15		■	■	■	■		■	■	■	■	■	■	
May 16-31		■	■	■	■		■	■	■	■	■	■	
June 1-15							■	■	■	■			
June 16-30													
July 1-15													
July 16-31													
August 1-15													
August 16-31													
September 1-15				■	■						■	■	
September 16-30		■	■	■	■		■	■	■	■	■	■	
October 1-15		■	■	■	■		■	■	■	■	■	■	
October 16-31		■	■	■	■		■	■	■	■	■	■	
November 1-15		■	■	■	■		■	■	■	■	■	■	
BAG LIMIT	a/	2		2		a/	2		2		3	2	
SIZE LIMIT	Coho	b/	16" c/	16"	16"	b/	16" c/	16"	16"	b/	16" c/	16"	16" 16"
	Chinook	b/	22" c/	24"	24"	b/	22" c/	24"	24"	b/	22" c/	22"	22" 24"

a/ This option can be either 2 fish, or 3 fish which would increase catches about 10%.

b/ There is a 22-inch minimum size limit on chinook and coho in California, except that one may be less than 22 inches but not less than 20 inches.

c/ This option could also be with no size limit (first two fish).

-  All salmon
-  All salmon except coho
-  Closed

Coho

Oregon Production Index (OPI)

Preseason estimates of abundance for the OPI and Oregon private hatchery production in 1982 have been completed and are presented in Chapter IV of the 1982 Salmon Plan. It is expected that the total stock size available in the OPI area (including the estimated catch of private hatchery fish) will be 1,090,800. Table 1 shows the expected stock size and harvest guidelines in the OPI area with an escapement goal of 300,000. Utilizing the allocation of 74% troll and 26% recreational, the harvest guidelines for the respective fisheries are 585,200 and 205,600. The total allowable harvest is 790,800 fish comprised of 597,500 public hatchery and wild fish and 193,300 fish originating from private hatcheries.

Table 1. Expected 1982 OPI area coho stock size, escapement component and allowable harvest.

Stock Component	Number of Fish Accountable by OPI	
OPI stock size (excludes private hatchery)	897,500	897,500
OPI escapement goal	- <u>300,000</u>	
Allowable Harvest ^{a/}	597,500	
Expected ocean contribution by private hatchery production	+ <u>193,300</u>	<u>193,300</u>
Allowable Harvest Total	790,800	
OPI Total Stock Size (including private hatchery)		1,090,800
Harvest guidelines:		
Troll	585,200	
Recreational	<u>205,600</u>	
Total Harvestable	790,800	

a/ From wild and public hatchery production only.

b/ Based on 1971-75 average coho catch distribution in ocean fishery of 74% troll and 26% recreational (including California).

Preseason allowable catches for the troll (585,200) and recreational (205,600) fisheries in 1982 will be 34% and 37%, respectively, below 1981 catches when early season closures were necessary. Analysis of seasons presented in the regulatory options for the OPI area south of Leadbetter Point indicates that all the options will result in catches exceeding allowable levels and will not meet escapement goals. Therefore quota application must be the governing factor in coho management in 1982. It is also likely that the harvest

guidelines for both the troll and recreational fisheries will be reached before the scheduled season ending dates.

It is recommended that the OPI area be managed as a unit in 1982 with a common opening date south of Leadbetter Point. It is expected that the catch distribution will be 188,600 in the Columbia River area (Cape Falcon to Leadbetter Point) and 602,200 south of Cape Falcon, including private aquaculture fish. In order to meet expected impacts on Oregon and Washington coastal coho, it is necessary that the Columbia River area catch be strictly limited to a level of 188,600. In order to insure that this anticipated catch distribution is achieved, it is recommended that separate quotas and allocations be adopted for the Columbia River area and the area south of Cape Falcon. Table 2 presents the suggested quotas for each area and allocations between fisheries based on the 1971-75 average.

Table 2. Recommended coho quotas for the OPI area as allocated for the Columbia River area and area south of Cape Falcon in 1982.

Area	Fishery	Allocation	
		1981 Observed	1982 ^{a/} Goal
S. of Falcon	Sport	155,200	102,400
	Troll	665,200	499,800
	Total	820,400	602,200 ^{b/}
Columbia River	Sport	172,800	100,000
	Troll	117,900	88,600
	Total	290,700	188,600 ^{c/}

a/ 1982 allocations based on 1971-75 average allocation between troll and sport:

S. of Falcon -	83:17% (including California)
Col. River -	47:53%

b/ 430,200 public hatchery and wild fish; 172,000 private hatcheries.

c/ 167,300 public hatchery and wild fish; 21,300 private hatcheries.

The impacts of options A through E on OPI coho in terms of estimated harvest, escapement from the ocean and estimated dates when quotas would be met are summarized in Table 3. With quota management, the allowable catches for both the troll and recreational fisheries south of Cape Falcon and in the Columbia River area will be met before the scheduled season ending dates. It is probable that closing dates for both fisheries would occur between August 2 and August 16 depending upon the opening date. It is not likely that the recreational fishery would extend through Labor Day without allocating more fish to that fishery than will occur using the 1971-75 average proportion.

Option selection will influence the troll catch of coho in California. Option A and B will result in a larger harvest of coho by the California troll fishery, while options E and F would provide for a larger share of the catch to occur in Oregon than was the case in 1981 (Table 3).

Options A and B provide for a chinook-only troll fishery south of Cape Falcon from the time that the coho quota is met through September 5, with gear restrictions (5" plugs and whole bait). Since the troll quota could be met as early as August 2, there could be an extended period of chinook fishing with associated coho hooking losses. Depending upon when the troll coho quota is met, these losses are estimated by ODFW to be between 6,000 and 18,000. Most of the coho hooking loss would occur north of Cape Blanco since coho abundance is reduced south of Cape Blanco in August and early September. Coho quotas will need to be adjusted to account for these anticipated losses. If similar provisions for chinook fishing are applied to options C, D, E, and F, quotas would be met somewhat later and coho losses would be closer to 6,000 fish. Options A and B would also increase coho hooking losses in the troll fishery during chinook fishing in June in California and Oregon.

Table 3. Impact of 1982 management options on OPI coho in terms of estimated harvest, escapement from ocean, and estimated dates when quotas would be met.

Area	Options						1981	1982
	A	B	C	D	E	F	Actual (x 1000)	Goal (x 1000)
<u>Ocean Harvest</u>								
California								
Troll	71.0	72.0	65.5	65.5	37.4	27.4	78.0	-
Sport	8.2	8.3	8.1	8.1	10.0	9.0	9.7	-
Total	79.2	80.3	73.6	73.6	47.4	36.4	87.7	-
S. of Falcon ^{b/}								
Troll	Aug. 2	Aug. 2	Aug. 9	Aug. 9	Aug. 16	Aug. 16	665.2	499.8
Sport	Aug. 9	Aug. 9	Aug. 9	Aug. 16	Aug. 16	Aug. 16	155.2	102.4
Total	-	-	-	-	-	-	820.4	602.2
Col. R. area ^{b/}								
Troll	Aug. 2	Aug. 2	Aug. 16	Aug. 16	Aug. 16	Aug. 16	117.9	88.6
Sport	Aug. 9	Aug. 9	Aug. 9	Aug. 16	Aug. 16	Aug. 16	172.8	100.0
Total	-	-	-	-	-	-	290.7	188.6
<u>Escapement from Ocean (x 1000)</u>								
OPI	300	300	300	300	300	300	194.3	300

a/ Preliminary.

b/ Assumes quota management for each option.

Option A provides for an all-species season south of Cape Blanco that extends through October 31. However, in 1982 surplus coho will not be available at Cole Rivers Hatchery (Rogue River) and such a fishery would potentially adversely impact wild coho. Even though coho abundance in the area after September 5 is low, a high proportion of the fish would be wild coastal stock.

The all-species troll fishery opening date associated with the options will potentially influence coho yield and dollar value of the catch. The July 15 opening date in options C, D, E, and F should allow for increased growth and yield to the fishery compared to options A and B.

It is expected that all options with quota management will meet the OPI escapement goal of 300,000 adults.

North of Cape Falcon - Allowable Coho Harvest

Washington coastal coho have been projected to return below WDF escapement goals in 1982, given recent ocean harvest patterns. Natural coho runs to the Queets, Quillayute and Hoh River are all expected at depressed levels.

Predicted river returns of these natural stocks at various levels of ocean harvest are presented in Figure 3. The maximum natural run returns to these systems, in absence of ocean harvest, would be 9,600 (Queets), 20,400 (Quillayute), and 6,600 (Hoh) compared to forecasts of 6,700, 14,400, and 4,600, respectively, based on recent fishing seasons and an ocean catch of about 725,000 north of Cape Falcon.

Long-range management of Washington coastal stocks currently is being discussed by coastal tribes, the federal government and Washington State as mandated in Hoh v. Baldrige. A finalized management plan had been expected prior to Council action on 1982 regulatory options, but negotiations will not be completed to provide direction on 1982 management objectives. For 1982, the coastal tribes have proposed an escapement goal range for each natural coastal stock within which the ocean fishery would be managed. Below this range the tribe has proposed an escapement floor which represents a minimum level for which inside coastal treaty net fisheries would be managed to equalize the harvest by non-treaty ocean fishermen.

The tribal analysis of ocean harvest levels related to expected 1982 Queets, Hoh, and Quillayute spawning escapements necessary to achieve treaty catch equalization is presented in Figure 4. The figure shows the tribes' proposed escapement range and floor for each system. The level of ocean catch which corresponds to the lower and upper ends of the range for each river is as follows:

	<u>Ocean Coho Harvest North of Cape Falcon</u>	
	<u>Tribes' Upper Range</u>	<u>Tribes' Lower Range</u>
Quillayute	480,000	650,000
Hoh	510,000	870,000
Queets	250,000	480,000

The relationships are based upon a season comparable to 1981. Different seasons would cause some changes in these relationships. The Indians may be able to target on hatchery coho in the terminal areas to achieve some of their allocation. The extent to which they are successful in doing this could reduce their impact on the natural stocks and permit a somewhat higher upper limit of allowable ocean harvest.

The coho quota adopted by the Council north of Cape Falcon will also affect ocean fishery escapements of Puget Sound and north Washington coastal coho. Predicted 1982 returns to these areas relative to various ocean harvest levels are presented in Table 4.

Figure 3. PREDICTED RELATIONSHIP IN 1982 BETWEEN OCEAN COHO CATCH NORTH OF CAPE FALCON AND NATURAL RUN TERMINAL RETURNS TO THE QUEETS, HOH, AND QUILLAYUTE RIVERS

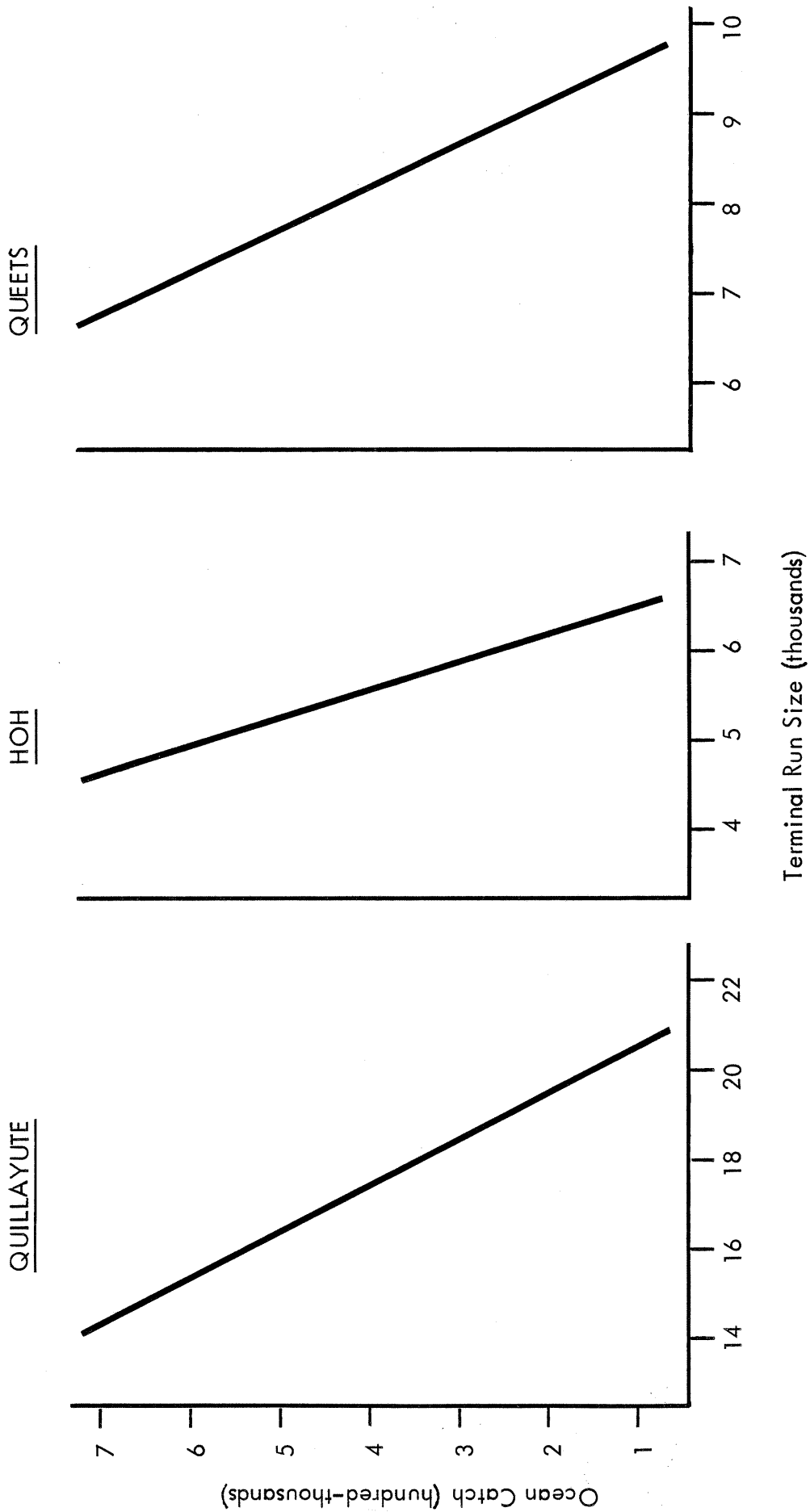


Figure 4. PREDICTED RELATIONSHIP IN 1982 BETWEEN OCEAN COHO CATCH NORTH OF CAPE FALCON AND NATURAL RUN ESCAPEMENTS TO THE QUEETS, HOH, AND QUILLAYUTE RIVERS AFTER ADJUSTING FOR EQUITABLE ALLOCATION TO TREATY INDIANS.

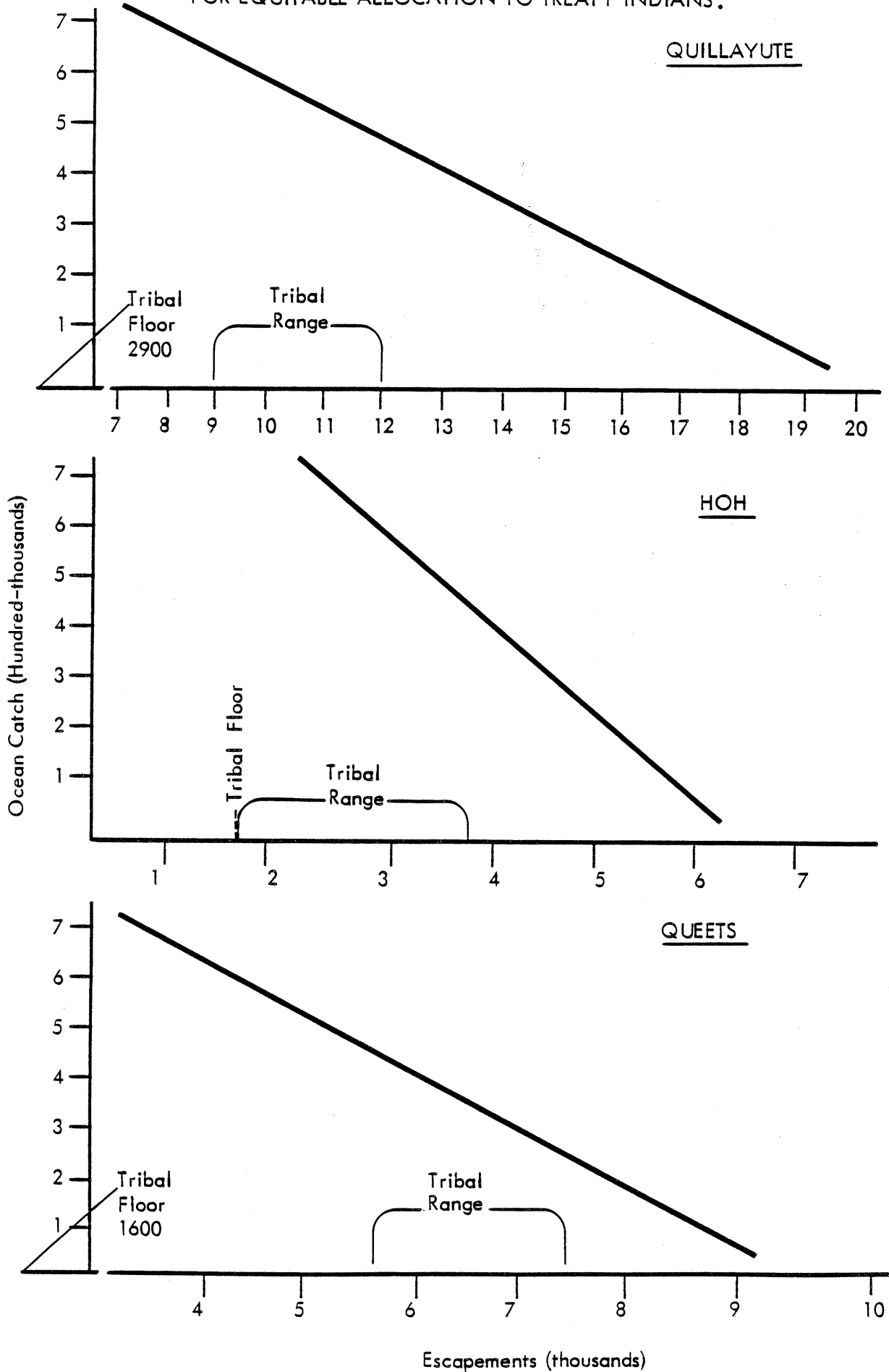


Table 4. Predicted 1982 ocean fishery escapements of Puget Sound and north Washington coast coho resulting from various ocean harvest levels north of Cape Falcon.^{a/}

Area	Ocean Coho Harvest North of Cape Falcon (x1000)				
	300	400	500	600	700
Puget Sound	1,500	1,450	1,390	1,340	1,290
Washington Coast (North of Willapa Bay)	185	177	169	163	153

a/ Assumes OPI harvest of 790,800 (including private aquaculture fish) with a fixed harvest of 188,600 between Cape Falcon and Leadbetter Point.

CHINOOK

California Chinook

Option A - This option would allow for an in-river run size of fall chinook salmon to the Klamath River that is only 76% of the escapement goal of 86,000 chinook. In the absence of all in-river fisheries, it would not meet the 1982 escapement goal. This option would result in escapement slightly below combined lower and upper Sacramento River escapement goals, but would be significantly below the upper Sacramento River escapement goal.

Option B - This option, again, would not allow for any significant in-river harvest of Klamath River chinook, and would not meet the 1982 Klamath River escapement goal of 86,000 fall run chinook in the absence of all in-river fisheries. It would come closer to meeting the combined Sacramento River chinook escapement goal, but would be well below the upper Sacramento River escapement goal.

Options C and D - For California these options are the same as adopted in 1981. For the Klamath River, providing there is no June fishery in state waters, this option would provide an in-river run size close to the escapement goal of 86,000 chinook but would not allow for any in-river fisheries. For the Sacramento River system, this option, as would options D through F, would meet the 1982 overall escapement goal, and would come closer to meeting the upper Sacramento River goals than options A or B.

Option E - This option, for the Klamath River area, would meet the escapement goal and allow for a minimal in-river harvest.

Option F - This option would provide for the largest Klamath in-river run size of any of the options and would result in an ocean harvest of about 200,000 chinook in northern California (north of Point Arena). Under this option, the Klamath in-river run size will be around 100,000 fish and would be even larger with the added restrictions on chinook fishing off southern Oregon after September 5.

California Chinook Quotas - The general mid-season closures off California in 1979, 1980, and 1981 have not been effective in reducing the ocean catch and increasing escapement into the Klamath and Sacramento Rivers. A major reason is that the troll fleet, in spite of more restrictive seasons, has maintained effort at the 1971-75 level. This is due to increased fleet size as well as harder fishing during the open seasons.

If more liberal options are adopted, such as options A or B, the ocean catch will increase and preclude any possibility of reaching escapement goals in the Klamath and upper Sacramento River systems.

Chinook quotas, regardless of fishing regulations, would assist in reaching escapement goals set by the Council.

Based on stock abundance projections, and catch and escapement data from recent years, the Klamath River runs are significantly depressed, whereas the Sacramento is in good condition, with the exception of the upper Sacramento River system.

For Klamath River chinook, the most restrictive option is option F. Based on modeling projections, if option F is adopted, it would result in an ocean troll harvest of about 200,000 fish (30% reduction assuming 1981 abundance) and an in-river run size of about 100,000 chinook. A quota of 200,000 (215,000 with sport) fish from Point Arena to the California-Oregon border would result in a similar in-river run size, providing the majority of the quota was not harvested in May and June.

If quotas are adopted for north of Point Arena, quotas would also be necessary south of Point Arena to prevent effort shifts as well as catch transfer.

Table 5 shows the 1971-75 average as well as 1977 to 1981 chinook landings and escapement for California both north and south of Point Arena. In 1981, the south coast ocean harvest was 329,200 chinook (256,800 troll and 72,400 recreational). The resultant Sacramento River escapement was 147,000 chinook which met the overall 1981 escapement goal but did not meet the upper Sacramento goal. However, the troll catch was 97% of the 1971 to 1975 average, whereas the recreational catch was only 47% of the average. If a quota is adopted for the south coast area, it is recommended that the troll catch not exceed 260,000 chinook. This would be slightly less than the 1971-75 average of 264,000 chinook.

Table 5. California ocean harvest and escapements of chinook salmon (numbers of fish) for the south coast and north coast fishing areas during the period 1977-81 and the average catches and escapements between 1971 and 1975.

SOUTH COAST (South of Point Arena - San Francisco - Monterey Port Areas)						
Year	Troll	%	Sport	%	Total	Adult fall-run Chinook Natural Spawning Escapement Sacramento R. System
1971-75 Average	264,000	63	153,800	37	417,800	N/A
1977	243,100	71	100,800	29	343,900	133,000
1978	226,800	75	76,300	25	303,100	106,000
1979	220,600	67	108,800	33	329,400	154,000
1980	276,100	78	78,500	22	354,600	124,000
1981	256,800	78	72,400	22	329,200	147,000
NORTH COAST (North of Pt. Arena - Crescent City, Eureka, Fort Bragg Port Areas)						
1971-75 Average	298,600	95	15,800	5	314,400	a/ N/A
1977	319,700	92	26,600	8	346,300	N/A
1978	291,800	97	7,500	3	299,300	96,400
1979	438,200	97	14,000	3	452,200	56,100
1980	299,000	97	8,000	3	307,000	45,500
1981	292,600	96	11,300	4	303,900	76,100

a/ Klamath River fall chinook adult in-river run size.

For the south coast recreational harvest a quota of 115,000 chinook is recommended. It should be kept in mind that this is a significant reduction (25%) from the 1971-75 average of 153,800 chinook, and lowers their percent of the harvest from 37 to 22%. In addition, it is important to note that the recreational fishery harvests primarily immature chinook, which in turn does not reduce that year's escapement to the same degree as the troll fishery. Therefore, it is recommended that the recreational quota, if it is not reached, not be added to the troll quota.

For the north coast area, if liberal seasons are adopted, a quota of 215,000 chinook (200,000 troll and 15,000 recreational) quota is recommended. However, given the size of the current troll fleet, and if the early season (June) is opened, this quota would be reached sometime from early to mid-July. In addition, the vast majority of the mature chinook are harvested

during the early seasons (May and June), based on recovery of 3- and 4-year-old Klamath River tag recoveries. To reduce harvest on matures and to guarantee a season after July, it is recommended that catch patterns from recent years be used to split the quota before and after July 1 (Table 6). Prior to July 1, for the north coast troll fishery, this would be 84,000 chinook (42% of the quota) and the south coast 117,000 chinook (45% of the quota). In the absence of this split, and based on the 1971-75 average, north coast trollers would land about 200,000 salmon by July 1 without early season closures. The 1971-75 average shows that 64% of the north coast catch of 300,000 chinook was landed by July 1. From 1979 to 1981, with the June closure, only 42% was landed before July 1. On the south coast, the troll fishery landed 56% of its catch by July 1 based on the 1971-75 average, which was reduced to 45% during the 1979-81 period with June closed. It should be kept in mind that the 1979-81 season total landings do not show a reduction when compared to 1971-75, but do show a shift in the landings to later in the season.

If restrictive chinook quotas are adopted for California, appropriate reductions or restrictions will have to be placed on the Oregon troll fishery south of Cape Blanco to prevent catch transfers and effort shifts. Either quotas or more restrictive seasons would help prevent these problems from occurring.

Table 6. Percent of chinook troll landings before and after July 1 for north and south coast of California for 1979-81 and the 1971-75 average and allowable harvest based on recommended quotas.

	North Coast Troll			South Coast Troll		
	Pre-July 1	Post-July 1	Season Total	Pre-July 1	Post-July 1	Season Total
1971-75 Average	.643	.357	1.00	.564	.436	1.00
1979	.389	.611	1.00	.572	.428	1.00
1980	.440	.560	1.00	.396	.604	1.00
1981	.450	.550	1.00	.401	.599	1.00
1979-81 Average	.421	.579	1.00	.449	.551	1.00
1982 Allowable Harvests	84,000	116,000	200,000	117,000	143,000	260,000

Oregon Coastal Chinook

For the troll fishery, options A and B, with the April opening dates and June chinook fisheries, expected Oregon catches would increase 2 to 5% (Table 7). Options C and D are the same as 1981 regulations and do not change expected catches relative to 1981. Options E and F with the July 15 all-species

Table 7. Impact of 1982 management options on California, Oregon, and Washington chinook in terms of estimated percentage change from 1981 ocean harvest and escapement.

	Options						1981 (fish x 1000)
	A	B	C	D	E	F	
<u>Ocean Harvest</u>							
California							
No. Pt. Arena							
Troll	+35	+20	0	0	-20	-30	292.6
Sport	-10	-5	0	0	+15	+10	11.3
Total	+35	+20	0	0	-20	-30	303.9
So. Pt. Arena							
Troll	+35	+20	0	0	0	0	256.8
Sport	-10	-5	0	0	0	0	72.4
Total	+20	+15	0	0	0	0	329.2
Oregon							
Troll	+5	+2	0	0	-13	-15	160.5
Sport ^{a/}	+7	+7	0	-11	-11	-11	28.5
Total	+6	+3	0	-1	-13	-14	189.3
Washington ^{b/}							
Total	+19	+19	0	-2	-11	-42	218.8
<u>Escapement</u>							
California - Fall							
Klamath ^{c/}	-20	-15	0	0	+15	+20	81 ^{c/}
Sacramento	-15	-10	0	0	0	0	147
Oregon Coast	-3	-1	0	+1	+7	+7	160
Upper Columbia River - Fall							
	-6	-6	0	+1	+3	+12	158

a/ Recreational fishery south of Cape Falcon modeled with 22" minimum size; with no minimum size limit catches would increase 30% over changes shown.

b/ Evaluated from anticipated impacts on Columbia River fall stocks. Impacts during all-species season will depend on the magnitude of coho quotas established in this area and the amount of effort directed at chinook to moderate progress toward allowable coho harvest. Includes Oregon catches north of Cape Falcon.

c/ In-river run size. The in-river run size was adjusted upward from the actual numbers to account for fish caught during June troll fishery in state waters (0-3 miles).

opening, September 6 closure south of Cape Blanco, and May closure north of Cape Falcon (Option F) reduce Oregon troll landings 13 to 15%. In the Columbia River area, the May closure proposed in Option F would reduce chinook landings by an estimated 61%.

Closure of the Oregon troll fishery south of Cape Falcon to chinook fishing after the coho quota is met would have a severe impact on the Oregon chinook troll fishery since the majority of the chinook catch normally occurs in August. A closure of the area south of Cape Falcon from August 2 to September 5 would result in a 41% reduction in Oregon's total chinook catch. If a similar closure were imposed only south of Cape Blanco, this would reduce Oregon's troll landings by 25% and landings south of Cape Blanco by 53%.

For the recreational fishery, options A and B would result in a 7% increase in catch; option C would result in no change in catch; and options D, E, and F would reduce expected catches 11% (Table 7). The reduction in minimum size limit from 24 to 22" in the Columbia River area would increase catches an estimated 38%, while no minimum size limit in this area would increase catches about 150%. With no minimum size limits south of Cape Falcon, catches would increase 30% over changes shown in Table 7. If coho quotas are met as early as August 9, closing the all-species season, recreational chinook catches would be reduced by an estimated 30 to 40%.

Oregon coastal chinook escapement goals can be met with all the options, with changes in escapements varying from a reduction of 3% to an increase of 7% with the various options (Table 7).

Columbia River ChinookColumbia River Fall Chinook

Table 8 presents an analysis of impacts on catches and escapements of upper Columbia River fall chinook stocks based on the Team's 1981 impact analysis relative to the 1982 options. Impacts on escapement of hatchery stocks range from a decrease of 7% to an increase of 14%, while impacts on natural stocks range from a decrease of 1% to an increase of 2% compared to 1981 with options A through F.

Table 8. 1982 regulation analysis compared to 1981 regulations for upper Columbia River fall chinook stocks.

Options	WA Coastal Ocean Catch of Upper Columbia R. Fall Chinook Stock	Adult Run Above Bonneville Dam	
		Hatchery Stock	Natural Stock
A	+19	-7	-1
B	+19	-7	-1
C	0	0	0
D	-2	+1	0
E	-11	+7	+1
F	-42	+14	+2

The differential ocean distribution of upriver brights compared to hatchery tute stocks was discussed in the 1981 Plan Amendment (also see Figure III-3, p. 50-III, 1982 Plan Amendment). While more refined analyses may be available in the near future, some estimates have been made on the contribution of upriver brights to Oregon/Washington fisheries north of Cape Falcon -- approximately 3% of the total chinook harvest in this area given recent stock status.

As pointed out in a technical report,^{1/} total closure of the ocean fisheries off Washington and Oregon north of Cape Falcon would increase the terminal run size of upriver Columbia River bright fall chinook by less than 4,600 fish. The total ocean chinook catch in this area in 1981 was 218,800 chinook.

1/ Report of the Technical Group, Confederated Tribes v. Baldrige dated January 22, 1982. (ATTACHED.)

Upriver Summers

Recent coded-wire tag information has indicated that upriver summers have a similar ocean distribution pattern as brights. One problem in evaluating recent tagging experiments is differences in migration patterns caused by size of juveniles released. Groups released from Wells Dam hatchery (1974-77) have ranged from fingerling to yearling size. Delayed or accelerated growth releases appear to show a somewhat more southerly tag recovery profile than do fingerling groups in the 80-120/lb. range. These experimental results must be equated to actual adult production from normal juvenile life history pattern of summer chinook in order to properly evaluate impacts of ocean fisheries on the overall stock. A preliminary composite of the ocean recovery of this stock computed by WDF is presented in Table 9, along with recent information on upriver bright falls. As a very preliminary estimate, approximately 1-2% of the total chinook catch north of Cape Falcon would be upper Columbia River summer chinook, given recent stock status. For May only this percentage would be about 3% which represents about 1,200 chinook out of a total May catch of 56,000 north of Cape Falcon.

Table 9. Ocean catch distribution of upper Columbia River bright and summer chinook as represented by weighted composite of six 1975-1977 brood year Priest Rapids (bright falls) and ten 1974-1977 brood year Wells Dam (summers) coded-wire tag experiments, respectively.

	Bright Falls ^{a/}	Summers
Alaska troll	.365	.329
B. C. troll	.477	.477
B. C. net	.084	.114
B. C. sport	.008	.010
Puget Sound sport	.014	.010
Puget Sound net	<.001	.000
Washington coastal net	<.001	<.001
Washington troll	.017	.025
Washington sport	.034	.031
Oregon troll	<.001	.004
Oregon sport	.000	.000
California troll	.000	.000
California sport	.000	.000
	1.000	1.000

a/ Updates previous distribution provided in Figure III-3 (1982 Salmon Plan Amendment) which was based on modeling upriver falls using Trask River coded-wire tag experiments.

Upriver Springs

Little distribution information has been available on upper Columbia River spring chinook until recently. Closures of April fisheries north of Cape Falcon were designed to protect mature spring chinook entering the Columbia. The basis for this regulation was primarily chinook scale analysis which indicated a higher incidence (compared to May) of the yearling-type life history patterns typical of upper Columbia spring chinook production. In general, scale analysis has become less useful for evaluating ocean harvests of this stock due to increased production of hatchery chinook yearlings on a coastwide basis.

Two potential sources of information exist on ocean migration patterns of this stock: (1) a 1970-71 brood year spring chinook hatchery evaluation study

coordinated by NMFS on the Columbia River; and (2) more recent coded-wire tag releases (1975-1977 brood) from Klickitat, Carson, Leavenworth, Entiat, and various Idaho hatcheries. Results from the first study, which incorporated a wide variety of fin mark combinations to identify experimental groups, have been recently published (Wahle, et al, 1981^{1/}). The report generally cautions that "The large number and variety of marks employed (both fin clips and the newer coded wire tags were used) significantly complicated mark recovery sampling and may have affected the reliability of sampling." The potential seriousness of this problem, however, was not specified. A review of fin marks assigned on a coastwide basis provide many examples of potential identification problems. For example, AdRV was assigned to 1970 brood Sacramento fall chinook, 1971 brood Little White Salmon springs and 1972 brood Kalama Falls fall chinook, while AdRVLM was used to identify a release of 1971 brood Alsea falls (Oregon coast). Similarly, AdLV was used for 1970 brood Sacramento falls, 1971 brood Carson springs, 1972 brood Spring Creek falls, while AdLVLM was assigned to 1971 brood Alsea falls. Differentiation between numerous experimental groups is questionable when identification of maxillary marks and scale aging is required, particularly involving hatchery fish. Additional examples could be provided which similarly limit the reliability and usefulness of these data for ocean management. In 1980, WDF independently reviewed mark recovery information from the NMFS study for intended modeling of upper river stocks but obvious deficiencies eliminated it from even the "best available data" category.

Recent coded-wire tag experimental results for upriver spring chinook all share a common characteristic -- lack of contribution to ocean fisheries in general. Idaho hatchery returns have not been available to evaluate whether or not the overall survival of Idaho CWT releases has been large enough to expect ocean fishery recoveries. Consistently, 90-95% of the total estimated recoveries of spring chinook CWT groups from Leavenworth, Entiat, Carson and Klickitat hatcheries (1974-1976 broods) were made in the Columbia River. Stocks produced at these hatcheries originated from brood stock taken out of the natural spring chinook run. The possible exception would be Klickitat, where some Cowlitz influence might be anticipated.

A summary of upriver spring chinook distribution as represented by three Klickitat CWT experiments is provided in Table 10. These groups were selected due to their high overall survival (relative to Leavenworth, Entiat, and Carson). The results of 1971 brood fin marking studies from Klickitat hatchery as reported by Wahle, et al (1981), are also provided for comparison. The most notable characteristic of recent CWT experiments appears to be their extremely low contribution rate to U. S. and B. C. ocean fisheries.

Washington Coastal Chinook

Washington coastal spring/summer and fall chinook contribute heavily off southeast Alaska and northern British Columbia, similar to upper Columbia River bright falls (see Figures 1-3 in Appendix D of 1981 Plan). The minor

1/ Wahle, R., E. Chaney and R. Pearson, 1981. Areal Distribution of Marked Columbia River Basin Spring Chinook Salmon recovered in Fisheries and at Parent Hatcheries. Marine Fisheries Review. 43(12): 1-9.

impacts Washington ocean fisheries had on these stocks prior to PFMC management occurred primarily in September. With recent September closures and direct controls on ocean fishing effort via coho quotas, potential impacts of 1982 regulatory options would be minor and have not been modeled.

Table 10. Comparison of the distribution of Klickitat spring chinook in ocean fisheries, based on various tagging studies.

		Estimated Recoveries				
		Alaska	B. C.	Washington	Oregon/ California	River Return

Wahle (1981)						
finclip						
71 brood	No.	2	127	241	36	34
2 release	%	0.4	28.9	54.8	8.2	7.7
time/sizes						
75 brood CWT	No.	11	13	0	0	482
13-11/13	%	2.1	2.6	0	0	95.3
76 brood CWT	No.	0	34	3	0	332
63-16/1	%	0	9.2	0.8	0	90.0
76 brood CWT	No.	16	5	5	0	276
63-16/2	%	5.3	1.7	1.7	0	91.4
Combined CWT	No.	27	42	8	0	1,090
75 & 76 broods	%	2.3	3.6	0.7	0	93.4

SUMMARY OF ANALYSIS OF OPTIONS

The impacts of the 1982 management options on escapements of fall chinook and coho in California, Oregon, and Washington are summarized in Table 11. Impacts for the various options are presented in relation to the 1982 goals. Estimates have been adjusted for predicted year class abundance. The summary does not include Washington coastal and Puget Sound coho since specific management goals have not been defined.

Table 11. Comparison of 1982 management goals for fall run chinook and OPI coho escapement with the level of achievement of goals under proposed 1982 regulatory options (thousands of fish).

Area/Species	1982 Goal	Level of Achievement Under Proposed Options					
		A	B	C	D	E	F
OPI Coho ^{a/}	300	300	300	300	300	300	300
Upper Columbia River Fall Chinook ^{b/}	158 ^{c/}	149	149	158	160	163	177
Oregon Coastal Chinook	150-200	155	158	160	160+	171	171
Klamath River Chinook ^{d/}	86	65	69	81	81	93	97
Sacramento River Chinook ^{e/}	145	125	132	147	147	147	147

a/ In-river run size estimates. Assumes harvest guideline management for all options.

b/ In-river run size estimates. Not a goal.

c/ Assuming 1981 stock size. Not really a goal -- just what happened.

d/ 1982 goal is fall run adult spawning escapement only. Level of achievement is expressed as total in-river run size. In-river run size must exceed escapement goal to allow for Indian and river sport harvest.

e/ Estimated using 1981 stock abundance. Expressed as numbers of adult fall run chinook spawners. 1982 goal is spawning escapement. Numbers under options are in-river run sizes.

California, Oregon Coastal and Columbia River Chinook and OPI Coho

Option A - Oregon coastal chinook escapement goals would be met under all the options as well as the OPI escapement with coho quota management. With this option, escapement goals would not be met in the Sacramento and Klamath Rivers and returns of fall chinook to the upper Columbia River would decline from 1981.

Option B - This option would slightly increase returns to the Sacramento and Klamath Rivers compared to option A but escapement goals would not be met. The decline in upriver fall chinook to the Columbia River would be the same as that in option A.

Option C - This option, like options D through F, would meet the overall Sacramento escapement goal; however, the upriver goal likely would not be achieved while the lower river goal would be exceeded. The Klamath River in-river run size would approach the 1982 goal but provide for no in-river

fisheries. The Columbia upriver fall chinook run size would be comparable to 1981 with this option.

Option D - This option would have the same impacts as option C except for a slight increase in the Columbia River fall chinook run size.

Option E - This option would provide an in-river run size in the Klamath River that slightly exceeds the escapement goal; however, the in-river fisheries would have to be severely restricted if the escapement goal is to be achieved. Returns of fall chinook to the Columbia River would increase slightly with this option.

Option F - This option would meet the escapement goal in the Klamath if the in-river fisheries did not harvest more than 10,000-14,000 fish. This option would provide the largest increase in returns to the Columbia River of the options presented.

Washington Coastal Chinook and Coho

Options A and B

Troll Fishery - For the area north of Cape Falcon, these options provide for an all-species season opening on July 1 and a mid-coast closure from Carroll Island to Split Rock when 75% of a coho quota is met in order to reduce impacts on coastal stocks. While these options would provide for a uniform opening date for the all-species season coastwide and minimize effort shifts, they would generally have greater impact upon Washington coastal stocks than a later season and could result in a lower allowable ocean harvest. In addition, the earlier season would reduce the potential poundage yield of the commercial harvest because fish would be harvested with growth potential remaining.

A mid-coast closure upon attainment of 75% of the allowable ocean coho harvest north of Cape Falcon would have negligible effects upon coastal stocks. The Team, however, has examined time area closures to minimize impacts of ocean fisheries on coastal coho while maximizing the harvest of more abundant Puget Sound stocks.

Run size projections indicate that the ocean harvest will be constrained by depressed status of Washington natural coastal coho stocks, particularly the Queets stock. Preliminary analysis indicates that the impact can potentially be minimized by reducing the harvest in the Grays Harbor area and delaying the opening until later in the season.

Recreational - These options provide for general opening of the recreational season on May 29 and a chinook-only fishery from May 22-28. During this period, there is a disproportionate abundance of coho present off the Washington coast. In 1980 and 1981 approximately 10 and 3 coho, respectively, were caught for each chinook landed by the recreational fishery. A May chinook-directed fishery would provide increased recreational fishing opportunity, harvest approximately 2,000 chinook, and could result in an incidental mortality loss of several thousand coho. Little chance exists that the fishery could extend through Labor Day with a May 29 opening.

Option C

Troll - This option would provide for a uniform opening of the all-species season north of Leadbetter Point. The later opening date would enable the troll fishery to harvest larger fish than under option A or B.

Recreational - This option provides for a recreational season opening on May 23 for the area north of the California border. Due to the depressed status of OPI stocks in the Columbia River area and other management constraints, there is little likelihood that this option would enable the recreational season to extend through Labor Day.

Option D

Troll - This option would provide for a uniform opening of the all-species season north of Leadbetter Point. The later opening date would enable the troll fishery to harvest larger fish than under option A or B.

Recreational - For all areas north of the California border the recreational season would open three weeks later than under option C. While the fishery would open after the Memorial Day weekend, the likelihood of having a season extending through Labor Day could be improved as a result of reduced catch rates caused by competition with the troll fishery for a greater portion of the season.

Option E

Troll - An August troll opening north of Leadbetter Point could potentially increase the allowable harvest in this area due to differential impacts between July and August fisheries on Washington coastal coho. Poundage yield could be maximized under this option which could moderate to some extent the adverse economic impacts of a limited allowable harvest. A later troll opening could accelerate early season recreational success and possibly increase the speed at which the recreational quota is met.

Recreational - Relative impacts would be similar to option D. Some increased likelihood exists that the recreational quota would be met before Labor Day due to the August 1 troll opening.

Option F

Troll - Option F for the area north of Cape Falcon is identical to option D except for the elimination of a May chinook-only fishery. Compared to option D, option F would reduce shaker mortality by approximately 20,000 coho.

General Comments

None of the paired options (recreational and troll) totally meets 1982 escapement and allocation goals in all areas. Within any particular option, some goals may be exceeded and/or not met. Inseason management and/or quotas will be needed for the 1982 season.

The majority of the Team does not support a chinook-only fishery during the scheduled all-species season after a coho quota is reached, particularly for the areas off Oregon south of Cape Blanco.

The majority of the Team does not support any chinook fisheries during the month of June north of Point Arena for the following reasons: (1) a June chinook fishery excessively impacts native Klamath River chinook; (2) a June chinook fishery causes unnecessary shaker loss of coho.

Table 12 lists the relative importance of its various options on certain factors relating to the Washington coastal coho runs. The ranking of the options is very subjective.

Table 12. Summary of relative impacts of 1982 ocean management options upon fisheries north of Cape Falcon.

	Option					
	A	B	C	D	E	F
<u>Troll Fishery</u>						
1. Impact on Washington coastal coho	4	4	3	3	1	2
2. Potential for effort shifts	1	1	2	2	3	1
3. Poundage yield	1	1	2	2	4	3
4. Potential for increased quota size	1	1	2	3	5	4
<u>Recreational Fishery</u>						
1. Fishing opportunity	2	2	1	4	3	4
2. Incidental mortality	3	3	2	1	1	1
<u>Management</u>						
1. Potential Troll/sport allocation problems	2	2	1	3	4	3
Scale: lowest - 1 highest - 5						

INSEASON MANAGEMENT

The Council has used coho harvest guidelines the past two seasons (1980 and 1981) to provide a more direct control on ocean harvests and thereby better insure achievement of its management objectives. In addition, chinook quotas were applied off California in 1981. The coho quotas have been adjustable. An inseason management period has been established to update preseason abundance forecasts and monitor harvest progress toward quotas. In the past, the

Salmon Team indicated that, through the collection of tag, catch, and effort data during the season, methods for inseason abundance updating techniques could be developed for both the OPI and individual coho stocks contributing off the Washington coast. In contrast, the Salmon Team clearly recognized in 1981 its inability to forecast chinook run strengths before and during the season and strongly recommended that chinook quotas off California be fixed. The Council subsequently adopted fixed chinook quotas in 1981 and the inseason management mechanism simply involved monitoring the progress of harvest toward allowable catch levels.

The experience of inseason management during the past two seasons has provided the Team with a good perspective on how well its expectations have been met. For coho several inseason abundance updating techniques have been examined using troll catch-per-unit effort (CPUE) data. An apparently reliable inseason estimator for the OPI was developed using Washington troll CPUE statistics for the Columbia River mouth area. Unfortunately this technique requires greater season length and stability than recent coho stock abundance has allowed. Cape Flattery, Quillayute, and B. C. troll CPUE estimators also were examined for potential updates of Puget Sound coho run strength but no good predictive relationships were discovered. During the 1981 season ODFW examined troll CPUE levels as one potential key indicator of abundance in the OPI, but a good relationship was not discovered with this preliminary analysis. Studies will be continued in trying to develop inseason estimators.

The Team has not had sufficient time or available data (complete coastwide CWT recovery summaries, for example) to perform sophisticated hindcasts of post-season versus preseason management forecasts. However, it is generally apparent that precision of inseason catch monitoring relative to allowable harvest levels has been as responsible for disparities in meeting ocean fishery escapement goals as have inaccuracies in preseason abundance forecasts. The OPI forecast has performed consistently to date and methodology does not exist to update this forecast inseason, especially within the narrow range of its variability. The 1981 post-season estimate, for example, was 7% higher than the preseason OPI forecast. In contrast, failure to anticipate correct fishery closing dates to keep harvests within allowable levels can have a significant impact on meeting preseason management objectives. Catch overruns in the areas north and south of Cape Falcon in 1981 resulted in substantially higher coho harvest rates than required for achievement of desired ocean fishery escapements.

While the Team feels that continued effort should be directed toward inseason abundance forecasting, it recognizes a current inability in this area for both chinook and coho. Past management experience along the Pacific coast indicates that if inseason estimators are not established before the season begins, the likelihood is small of discovering a new tool during the season and making sound management decisions regarding stock abundance levels. Within this context, the Team generally favors fixed quotas in 1982. This option would not override existing mechanisms in the MFCMA for emergency reaction to resource conservation requirements.

Specific Team recommendations regarding 1982 inseason management are as follows:

1. Fixed coho quotas in the OPI area should be established separately north and south of Cape Falcon based on the allowable harvest of OPI fish (i.e., no provision for inseason changes in OPI abundance forecast).
2. An inseason monitoring system should be developed for these fixed OPI quotas based on methodology established prior to the season for computing catch of private hatchery fish and separating them from the remaining stocks in the OPI area.
3. While the majority of the Team opposes chinook-only fishing during periods of peak coho abundance, an adjustment mechanism for the OPI troll quota south of Cape Falcon should be established before the season begins. The mechanism would outline the procedure for adjusting the quota downward to account for any coho shaker mortality incurred during chinook-only fisheries subsequent to achievement of coho harvest guidelines.
4. Fixed coho quotas should be established north of Leadbetter Point.
5. Additional inseason management efforts should concentrate on prompt and accurate monitoring of inseason catches relative to preseason quotas established by the Council.
6. Any chinook quotas that may be established should be fixed.



Reference footnote on page 19.

Date : January 22, 1982

Reply to Attn. of:

To : F/NWR - H. A. Larkins
F/AKR - Robert W. McVey

From : F/NWC2 - Ken Henry
F/AKR11 - Bill Robinson

Subject: Report of the Technical Group
Confederated Tribes v. Baldrige

On November 13, 1981, you instructed the technical group to undertake the following assignment based upon the best available information to date:

"To evaluate the reductions needed from various ocean fisheries in order to achieve a return of (1) 80,000; and (2) 100,000 upriver 'bright' fall chinook salmon to the Columbia River."

We have completed the assignment based upon the latest Washington Department of Fisheries (WDF) model simulations of 1981 ocean fishery regulatory impacts on upper Columbia River "bright" fall chinook. All of the estimates presented here should be considered as preliminary and are best treated as qualitative indicators of the impacts of various regulatory regimes. They are able only to provide the general magnitude and distribution of catch reductions necessary to achieve the terminal run sizes stated in the group assignment. The WDF computer model simulation results are limited by the steady-state aspect of the model. The model, by construction, holds constant such variables as stock size (as may be affected by ocean or freshwater survival), hooking mortality, natural mortality, fishing patterns and effort, and migration routes over the entire exposure of a brood to a particular regulatory regime. Annual variations in any of the above factors or any differences between the estimated and actual factors may result in returns to the river different from the model simulation. In light of declining trends of river returns, it is unlikely that the assumption of steady population size is valid. Therefore, caution should be used in interpreting model results as applying to any single year. The model is, however, the best available tool for use at this time. More precise analyses based on tag recoveries from the 1981 fisheries and 1981 fishing patterns are currently underway and should be available in March. Thus, the data presented here will be updated at that time. The model simulations presented here are still based upon tag recoveries from the 1975 brood upriver "brights" (culminating in 1980) and reflect estimated fishing intensities for the most recently available data^{1/}, 1981 regulations, and scaled to the actual 1981 terminal run size of 63,900 chinook salmon. The benefits

^{1/} Estimated fishing intensities were for: Washington ocean sport and troll--1981 preliminary data; Canadian troll--mean 1979-80 data; southeast Alaska troll--mean 1977-80 data.



described would be fully realized only after the regulatory regime was held constant for a 3-year period. Table 1 shows the most recent estimate of the distribution of the upriver "bright" catch and the total stock size compared to that reported by the technical group on October 17, 1981. It is apparent that the estimated size of the stock actually experienced in 1981 is considerably less than had been estimated earlier.

Table 1. Estimated long term distribution of the catch, terminal run size and total stock size for Columbia River upriver "bright" fall chinook salmon.

<u>Area/Catch</u>	<u>October 17, 1981</u>	<u>December 22, 1981</u>
Alaska	58,000	37,900
British Columbia	60,000	51,900
Washington-Oregon ^{1/}	7,000	4,600
Terminal Run Size	69,400	63,900
Total Stock Size	194,400	158,300

^{1/} North of Cape Falcon

The technical committee evaluation considers the following three categories of ocean fishery reductions for the specified terminal run sizes of 80,000 and 100,000 "brights":

- (1) Reductions confined to the Fishery Conservation Zone (FCZ);
- (2) Reductions confined to United States waters; and
- (3) Reductions including the British Columbia troll fishery.

RUN SIZE OF 100,000 "BRIGHTS"

The WDF harvest management staff has preliminarily estimated that a terminal run size of approximately 100,000 upriver "brights" would have been necessary to achieve the spawning escapement goal of 40,000 chinook at McNary Dam in 1981 with no inriver harvest. Thus, to have achieved a terminal run size of 100,000 "brights," the 1981 terminal run size of 63,900 "brights" would have needed to be increased by 36,100 "brights." We previously estimated that a total closure of the FCZ off Washington-Oregon (north of Cape Falcon) and southeast Alaska would increase the terminal run size by only 7,000-11,000 "brights" after a full brood cycle was exposed to the closure. Since the terminal run size actually experienced in 1981 was smaller than previous estimates resulting in the reduced estimated total stock size and distribution of catch to the various ocean fisheries expressed in the current analysis. Therefore, the savings from total closure of the FCZ north of Cape Falcon would most likely be somewhat less than the previous estimate of 7,100-10,000 "brights."

Total closure of the United States ocean fisheries north of Cape Falcon in both state and federal waters would increase the terminal run size by an estimated $37,900 \times 0.63 + (4,600 \times 0.7) = 27,100$ "brights" based on the 1981 stock size. The maximum run size achievable from closure of these U.S. fisheries is estimated to be about 91,000 (63,900 + 27,100) "brights," a number insufficient to achieve the spawning escapement goal with 1981 inriver conditions. To achieve the objective of a 100,000 terminal run size, some modification of the Canadian ocean fisheries would also be required.

Table 2 offers a perspective of "order of magnitude" of U.S./Canada regulatory actions which might be necessary to achieve approximately a 100,000 terminal run size. The two WDF computer model simulation results presented here are for: (1) no troll fishery chinook retention allowed from Alaska to central British Columbia and all other troll fisheries closed during June (assuming no effort shifts); and (2) the Alaskan and northern British Columbia troll fisheries completely closed (again no effort shift).

Table 2. Estimated distribution of Columbia upriver "bright" fall chinook salmon under two different sets of regulations.

<u>Area/Catch</u>	<u>(1) No Chinook Retention</u>	<u>(2) Alaska and Northern British Columbia Closed</u>
Alaska	0	0
British Columbia	19,000	31,100
Washington-Oregon	4,800	4,800
Terminal Run Size	106,000	106,000

In the case of both alternatives, the spawning escapement goal would appear to be exceeded only slightly under 1981 conditions. It appears substantial reductions in the Alaska and British Columbia troll fisheries would have been needed under 1981 conditions to meet spawning needs for upriver "brights." The magnitude of the catch reductions shown in Table 2 would also begin to address the issue of treaty Indian/non-Indian sharing requirements assuming the 40,000 fish escapement goal at McNary Dam is achieved.

RUN SIZE OF 80,000 "BRIGHTS"

Achievement of a terminal run size of 80,000 upriver "brights" would require an increase of 16,100 from the 1981 terminal run size of 63,900 "brights." As previously stated, total closure of the FCZ north of Cape Falcon would increase the terminal run size by something less than 7,000-11,000 "brights," and thus would be inadequate to achieve the 80,000 goal.

Two alternatives were considered that would increase the terminal run size under 1981 conditions by an estimated 16,100 "brights." First, if no further troll fishery reductions occur off Washington-Oregon, then the necessary reduction in the Alaskan troll catch is estimated to be $16,100 \div 0.63 \div 37,900 = 67$ percent. Second, if no troll fishery is allowed off Washington-Oregon (north of Cape Falcon), the necessary reduction in the Alaskan troll catch is estimated to be $[16,100 - (0.7 \times 4,600)] \div 0.63 \div 37,900 = 54$ percent. These estimates assume no effort shifts and the savings off Alaska is distributed evenly throughout the season.

Achievement of the 80,000 "bright" goal could also be achieved through proportional reductions in both U.S. and Canadian troll fisheries. However, estimates involving proportional reductions from the fisheries of both countries that would achieve an 80,000 terminal size under 1981 conditions have not been made at this time. Based on the 1981 inter-dam loss rate, an 80,000 terminal run size would yield only about a 32,000 fish escapement with no inriver harvest.

APPENDIX B

ANALYSIS OF IMPACTS OF TENTATIVE 1982 REGULATORY PROPOSALS
(including quotas)

FOR THE
OCEAN SALMON FISHERIES
OF CALIFORNIA, OREGON, AND WASHINGTON

AS ADOPTED BY THE PACIFIC FISHERY MANAGEMENT COUNCIL
ON MARCH 18, 1982

Salmon Management Plan Development Team

March 18, 1982

INTRODUCTION

The tentative 1982 ocean salmon regulatory proposals adopted by the Council on March 18, 1982 are outlined in Figure 1 and Table 1. This report summarizes the preliminary impacts of these tentative proposals as related to management goals adopted by the Council.

RECREATION

TROLL

DATES		3/18/82				
		CA	OR		WA	
		All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.
February 13-May 15						
May 16-31						
June 1-15						
June 16-30						
July 1-15						
July 16-31						
August 1-15						
August 16-31						
September 1-15						
September 16-30						
October 1-15						
October 16-31						
November 1-15						
BAG LIMIT		2	2	2	2	2
SIZE LIMIT	Coho	b/	None	16"	16"	16"
	Chinook	b/		24"	24"	24"

DATES		3/18/82					
		CA	OR		WA		
		So. of Pt. Arena	Pt. Arena to OR/CA Border	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.
April 15-30							
May 1-15							
May 16-31							
June 1-15							
June 16-30							
July 1-15							
July 16-31							
August 1-15							
August 16-31							
September 1-15							
September 16-30							
October 1-15							
October 16-31							
November 1-15							

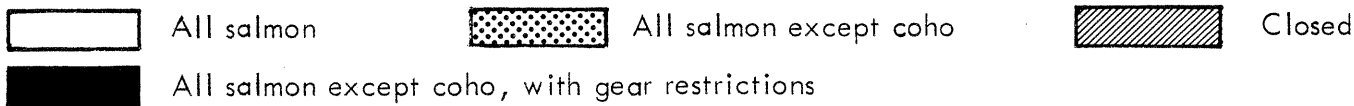


Figure 1. Tentative 1982 regulatory proposals for the ocean salmon fisheries of California, Oregon, and Washington as adopted by the Pacific Fishery Management Council on March 18, 1982.

Table 1. Tentative 1982 ocean salmon fishing regulations off Washington, Oregon, and California.

Area	Season	Species	Size Limit	Bag Limit	Coho Quota
<u>North of Leadbetter Point</u>					
Rec. -	May 29-June 11 June 12- (coho quota)	chinook all species	24" 16" coho 24" chinook	2 fish 2 fish	116
Troll -	May 1-31 July 15- (coho quota)	chinook all species	28" 28" chinook 16" coho		205
<u>Cape Falcon to Leadbetter Point</u>					
Rec. -	May 29-June 11 June 12- (coho quota)	chinook all species	24" 16" coho 24" chinook	2 fish 2 fish	100
Troll -	May 1-31 July 1-Sept. 5 (coho quota)	chinook all species	28" 28" chinook 16" coho		89
<u>Cape Blanco to Cape Falcon</u>					
Rec. -	May 29-June 11 June 12-Sept. 6 (coho quota)	chinook all salmon	no size no size	1st 2 fish 1st 2 fish	114 ^{a/}
Troll -	April 22-May 31 June 1-June 15 July 1-Sept. 5 (coho quota) ^{b/} Sept. 6-Oct. 31	chinook chinook all salmon chinook	26" 26" (special gear) 16" coho 26" chinook 26" chinook	-	488 ^{a/}
<u>OR/CA Border to Cape Blanco</u>					
Rec. -	May 29-Sept. 19 Sept. 20-Oct. 31 (coho quota)	all salmon chinook	no size no size	1st 2 fish 1st 2 fish	
Troll -	(same as listed above for Cape Blanco - Cape Falcon for troll)				
	After coho quota - 28" chinook limit south of Cape Blanco to OR/CA border.				
<u>California</u>					
Rec. -	Feb. 13-Nov. 14	same as 1981		2 fish	
Troll -	April 22-May 31 June 1-June 15 June 16-June 30 July 1-Sept. 30	chinook all species closed all species	26" 26" chinook 22" coho 26" chinook 22" coho		
	3 miles each side - 6 miles to sea, closure off Klamath mouth. 28" size after coho quota is reached.				

a/ For total area south of Cape Falcon including California.

b/ Chinook-only fishing to September 5, with special gear, after reaching coho quota.

SEASONS

North of Leadbetter Point - The proposed early recreational season of May 29-June 11 chinook-only represents one less week chinook fishing time and three weeks less coho fishing time as compared to 1981. Increased effort on chinooks can be expected, however, as a marked change in fishing patterns would occur. This regulatory option was proposed by the Washington charter-boat industry on the basis that coho could be avoided during the early season by fishing nearshore areas off Grays Harbor. An estimated 4,000 chinook would be caught during this period. The Team estimates that 2,500 coho shakers would be killed in this fishery. The recreational quota would have to be adjusted downward accordingly. The Team opposes new, selective fisheries (troll and recreational) without strict monitoring through an observer program so that the fishery's impact and performance can be properly evaluated.

The recreational all-species season would begin June 12 under the Council's proposed action. The Team estimates that the allowable coho harvest could be reached by mid-August, depending on effort and coho availability.

Cape Falcon to Leadbetter Point - The proposed early recreational season of May 29-June 11 for chinook only represents one less week of chinook fishing and three weeks less coho fishing during the May to mid-June period as compared to 1981. This option was initially proposed by the Washington charterboat industry only for the area north of Leadbetter Point, since the potential for avoiding coho at the Columbia River mouth is relatively poor. In addition the availability of legal-sized chinook (24") in this area is low. Considering these factors, the Team strongly opposes a recreational chinook-only fishery in this area. If the Council chooses to adopt this option, then, the recreational coho quota should be adjusted downward to account for coho shaker mortality during this fishery. The Team estimates that 4,800 coho would be killed during this two-week period.

The recreational all-species season would begin June 12 under the Council's proposed action. The Team estimates that the allowable coho harvest could be reached by mid-August, depending on effort and coho availability.

The Council's tentative 1982 salmon management proposals north of Cape Falcon reflect no change in the historic May troll chinook fishery. Reduced effort on chinook can be expected during the all-species season, since coho quotas established in this area will result in less fishing time. The primary Columbia River stocks benefiting from all-species effort reductions would be hatchery and natural fall chinook. Some reduction of early season recreational impact on upper Columbia River summer chinook can be anticipated. Generally, due to the low proportion of these stocks in the Washington catch, large improvements in the returns of these stocks could not be expected from any Council action.

Oregon/California Border to Cape Falcon - For the troll fishery, the Council's proposed action reflects troll option 2 with the provision that when the coho quota is met, the chinook minimum size south of Cape Blanco would increase to 28". With the April opening dates and June chinook fisheries, expected Oregon catches would increase 2 to 5%. For the recreational fishery, the Council's proposed action is similar to option D with the first two-fish bag limit. This option adds a chinook-only fishery from Cape Falcon to Cape Blanco during

the period of May 29-June 11. This option would increase catches of chinook by about 30% due to the reduction in minimum size from 22 to no size limit. For coho, quota management will apply and it is expected that quotas would be met from August 2 to 16.

A recreational chinook fishery from May 29 to June 11 between Cape Falcon to Cape Blanco would impose additional hooking losses on coho salmon. The season would result in the catch of an additional 1,700 chinook. It is estimated that coho hooking losses would approach 3,300 fish based on the recent year average ratio of coho hooked/legal chinook. If a season similar to 1980 recurred with high June coho availability, these losses could be as high as 14,000 fish.

California - This option for the troll fishery is similar to option B (troll option 2). The major differences are: (1) a six-mile square closure off the mouth of the Klamath River, and (2) that when the coho quota is reached south of Cape Falcon (approximately the first week in August), the troll minimum size limit would be increased from 26" to 28".

It is not possible for the Team to quantify increases in escapement due to the six-mile closure; however, the increases would be minimal. Currently there is a year-round three-mile closure around the mouth of the Klamath; this new addition would extend this closure to six miles for the period July 1 to 15.

COHO QUOTAS

Under the seasons proposed by the Council for the area north of Cape Falcon, a coho quota of 540,000 would be allocated according to Table 2 and Figure 2. Based on a total allowable coho harvest of 540,000 north of Cape Falcon, the commercial and recreational quotas for the area from Cape Falcon to Leadbetter Point would be 89,000 and 100,000, respectively. For the area north of Leadbetter Point, the allocation would be 205,000 troll and 116,000 sport after subtracting out an anticipated treaty Indian troll catch of 30,000. Management of the ocean fishery will be constrained by its impact upon the natural coho run returning to the Queets River. The Queets Band of the Quinault Tribe has indicated that it would be willing to attempt to target its fishery on the hatchery coho run returning to the Queets River in order to minimize the impact on the natural coho run. Differences in timing between the runs can be expected to result from a remnant Puget Sound stock influence in the hatchery brood stock for the Queets River. Available information indicates that differential harvest rates on Queets hatchery and wild fish could reasonably be expected to permit an allowable ocean harvest north of Cape Falcon of 540,000 and still achieve a spawning escapement within the range proposed by the coastal tribes.

Given the proposed season, a 540,000 coho quota north of Cape Falcon, and hatchery run targeting by the Queets in-river fishery, spawning escapements for coastal coho runs, after allowances for in-river harvest by treaty Indians, are estimated as follows:

Run	Estimated Spawning Escapement ^{a/}	Tribal Range	
		Lower End	Upper End
Queets	5,900	5,600	7,500
Hoh	3,500 ^{b/}	1,800	3,700
Quillayute Fall	11,100	9,000	12,100

a/ Adults only.

b/ 4,000 if tribes harvest hatchery fish at rate similar to 1981.

These spawning escapements lie in the lower, upper, and middle portions of the tribal ranges for the Queets, Hoh, and Quillayute runs, respectively. The anticipated Queets escapement is 5% above the lower end of the range.

The 1971-75 allocation for the area south of Cape Falcon to the Oregon/California border between commercial and recreational fishermen was 81:19. The Team recommends that this percentage allocation be applied to the total allowable harvest south of Cape Falcon, including California. With the total allowable catch south of Cape Falcon of 602,000, the commercial/recreational split would be 488,000 and 114,000, respectively. California, however, would not close after the coho quota was reached.

OTHER FACTORS

Additional Klamath Run Size of 12,000

Impact of Adding 12,000 Adult Fall Run Chinook to Klamath In-River Run Size

The Team has added 12,000 chinook to the in-river run size for this analysis. This was done at the request of the Council. We feel that it should be pointed out that U. S. Fish and Wildlife methodology for estimating Indian net harvest includes the total net harvest regardless of disposition of the catch.

The impacts of adding 12,000 adult chinook are shown in Table 3. It should be emphasized that the gains or losses to the in-river run size shown here are based on a 1981 in-river run size of 93,000 chinook instead of the 81,000 used in the Team Impact Analysis. Both the projected recreational river catch as well as the Indian net harvest would have to be subtracted to obtain estimated spawning escapements.

Delay of Troll Opening from April 22 to May 1

California - The expected catch between April 22 and May 1 would be approximately 1% of total landings north of Point Arena and 6% south of Point Arena,

Table 2. 1982 coho quotas (1,000s).

Area	Fishery			Total
	Recreational	Troll	Treaty Indian	
North of Leadbetter	116 (36%)	205 (64%)	[30 ^{a/}]	321 [351]
Cape Falcon - Leadbetter ^{b/}	100 (53%)	89 (47%)	--	189
South of Cape Falcon ^{c/} including California	114 (19%)	488 (81%)	--	602

a/ Anticipated ocean harvest, not part of quota. If treaty ocean harvest deviates from this estimate, in-river harvest allocations will be adjusted accordingly.

b/ Private aquaculture contribution for this area is estimated at 11,000 and 10,000 for the recreational and troll fisheries, respectively.

c/ Private aquaculture contribution for this area is estimated at 33,000 and 139,000 for the recreational and troll fisheries, respectively.

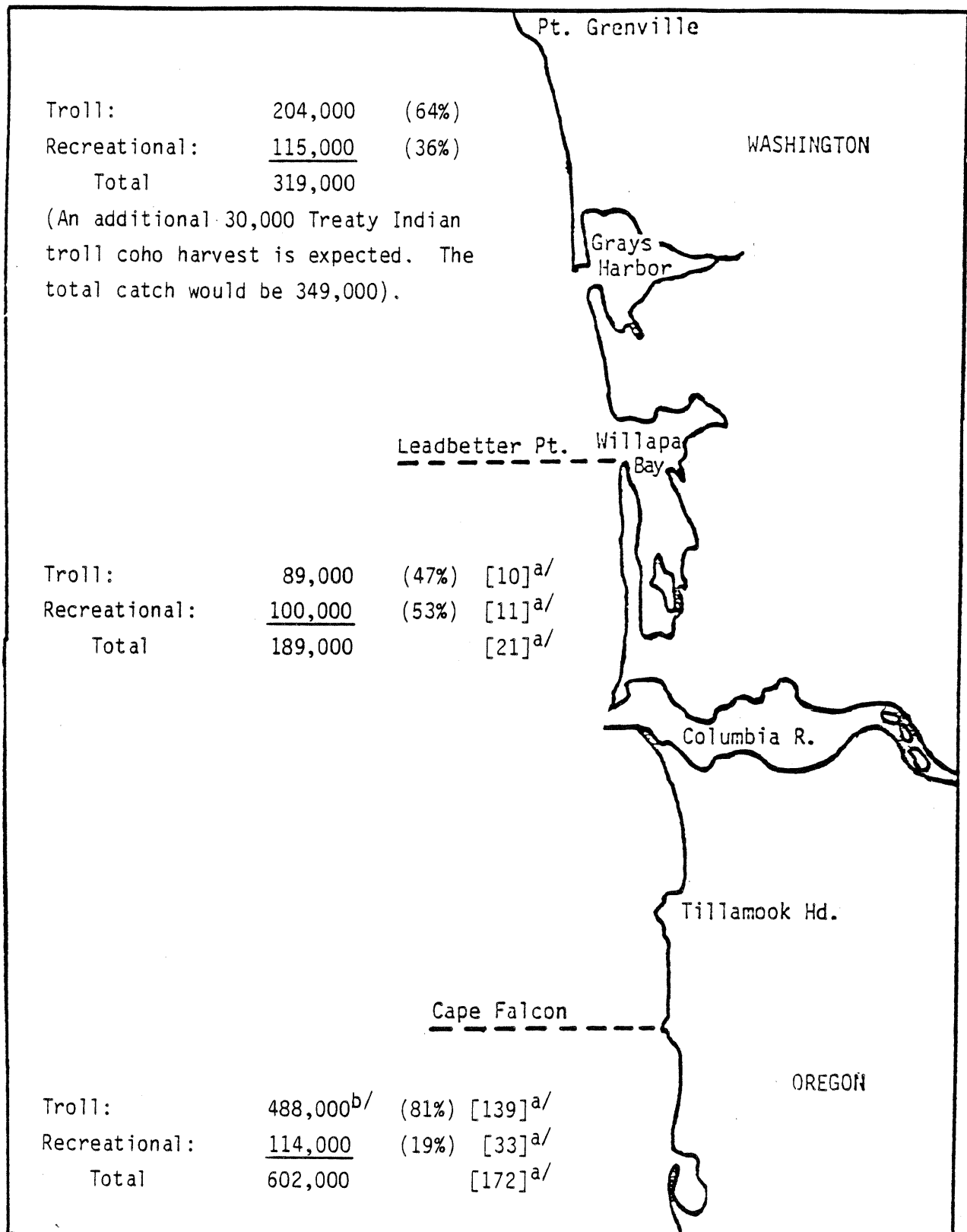


Figure 2. 1982 coho quotas adopted by the Pacific Fishery Management Council on March 19, 1982.

a/ Numbers in [] represent expected catch of private aquaculture fish included in the quota (in thousands).

b/ Troll quota will be reduced by 6,000 to 18,000 fish depending on when the coho quota is met due to hooking loss during chinook fishery prior to September 6.

Table 3. Comparison of Klamath River adult fall run chinook in-river run sizes under proposed 1982 regulatory options assuming 1981 stock abundance and a 1981 in-river run size increased by 12,000 adult fall run chinook.

	Level of Achievement Under Proposed Options					
	A	B	C	D	E	F
1981 abundance	65	69	81	81	93	97
1981 plus 12,000 chinook	74	79	93	93	107	112
Percentage of change	-20	-15	0	0	+15	+20

based upon 1971-1975 averages (Table 4). This assumes that one half the historic catch would be taken during the last week of April. If the troll season were delayed until May 1, a large majority of these fish would be caught later at a larger average weight. While no significant in-river savings could be expected, the delay of this April harvest until later in the season could result in a net poundage gain to the commercial troll fleet.

Oregon South of Cape Falcon - An April 22-30 chinook troll fishery in state waters off Oregon south of Cape Falcon would harvest an estimated 1,300 chinook, most of which would be captured later with a May 1 opening. A May 1 versus April 22 opening date would have little impact on the Oregon chinook catch and subsequent escapements.

Inseason Chinook Abundance Forecasts

The Salmon Team clearly recognized in 1981 its inability to forecast chinook run strengths before and during the season and strongly recommended that chinook quotas off California be fixed. The Council subsequently adopted fixed chinook quotas in 1981 and the inseason management mechanism simply involved monitoring the progress of harvest toward allowable catch levels. No chinook forecasting techniques are available to the Team for 1982 inseason run size assessments.

28" Size Limit

Impact of 28" Minimum Size for Chinook Troll Fishery South of Cape Blanco to Oregon/California Border When Coho Quota Met

A 28" minimum size limit for chinook for the Oregon troll fishery south of Cape Blanco after the coho quota is met would result in a large hooking mortality and would not result in increased escapement. Since the coho quota is expected to be met about August 2, such a regulation would affect chinook catches after that date through October 31. The increased minimum size would reduce chinook catches from August 2 to October 31 in the area about 50% and would reduce overall season landings 36% due to the higher "shaker" rate. Not only would such a regulation impose a wastage of fish due to hooking loss but it would add little to the 1982 Klamath River escapement since most of the fish would be immature two- and three-year-olds.

Impact of 28" Minimum Size for Chinook Troll Fishery off California

North of Point Arena - The impact on 1982 size limit on chinook from 26" to 28" on or about the first week in August would be negligible. The vast majority of mature Klamath River chinook are harvested before July 1, and the fish caught in August and September are primarily immatures that will not spawn until the following year.

It would increase the hook and release of "shaker" chinook tremendously. Klamath River chinook are a small race of fish, and essentially all of the three-year-olds in August and September are smaller than 28".

Data collected at sea on board commercial salmon trollers support the Klamath River coded-wire tag data included in Chapter IV of the 1982 plan with regard to harvest of mature Klamath River chinook.

Table 4. Average 1971-75 California troll catches with April landings compared to season totals.

	April	Season	% April of Season Total
Crescent City	176	35,559	0.49
Eureka	3,587	141,935	2.53
Fort Bragg	1,859	119,966	1.55
North Coast	5,622	297,460	1.89
San Francisco	24,243	181,195	13.38
Monterey	8,926	73,743	12.10
South Coast	33,169	254,938	13.01

Table IV-10 shows that off California in 1981, 60% of the four-year-old mature Klamath River chinook were harvested during May. By July 1, 72% were harvested. It should be remembered that June was closed in the FCZ that year.

Sea sample data collected off northern California from 1974-76, a period when June was open, indicates a high percentage of four-year-old chinook are still in the fishery in June (Table 5). In June, 55% of the fish were over 28" while 70% were over 26". By August, only 15% of the fish were over 28" and 25% were over 26".

Table 5. Percentage of chinook at or below various lengths based on on-board 1974-76 sample data collected off northern California.

Month	Length			Percentage of the catch over 26" that would be shaken with a 28" size limit
	>28	26-28	<26	
June	55	15	30	21
August	15	10	75	40

The percent of the legal catch thrown back by going from 26" to 28" is 21% in June and 40% in August.

South of Point Arena - This regulation would have little, if any, impact on the troll fishery in this area. The majority of Sacramento River chinook stocks are greater than 28" by August (this includes threes as well as fours). It might result in a slight reduction in the overall catch in this area.

Impact of 28" Minimum Size for California and Oregon

The Team estimated the savings of immature three-year-olds from August, September, and October by increasing the size limit from 26" to 28" through the first of June the following year (1983). Estimates include savings from both the California and Oregon troll fisheries. The analysis used 1981 abundance levels and utilized Klamath River coded-wire tag recoveries to determine the timing of the catch. Factors were applied for hooking mortality, natural mortality, fishing mortality in May of the following year and stock composition.

This analysis provides a rough approximation of the savings to June 1 of the following year (1983). After all factors are applied, the resultant savings for each 100 Klamath River fish released would be four fish. Based on 1981 abundance, this would result in an additional 3,000 Klamath River fish after the May fishery in 1983. The number of these fish that will actually enter the river would be impacted by regulations adopted in 1983 for June and July.

This regulation would have almost no impact on 1982 escapements and only a minimal impact on escapements in 1983. In view of the large number of shakers involved, the Team does not recommend this regulation.

Assessment of Chinook Quotas on Northern California Troll Fishery

The Council requested the Team to assess the impacts of quotas varying from 200,000 to 300,000 fish north of Point Arena on Klamath River escapement. Assuming a straight-line relationship between option C and option F (troll options 3 and 4), and assuming 1981 regulations and stock abundance, the following table was developed:

Thousands of Chinook	
Quota	Klamath River In-River Run Size
200	100
225	95
250	90
275	85
300	80

These figures are only valid if used in relation to recent catch patterns (seasons). Increases in June harvest over recent years (1979-81) would disproportionately impact that year's escapement into the Klamath River, because of the preponderance of mature fish in the ocean during the May-June period. Thus the Team again reemphasizes that the catch should be allocated on a 42%/58% basis before and after July 1 (page 16, 1982 Impact Analysis, Appendix A) in order to realize the increases in Klamath River escapement indicated in the quota table. These figures do not include the 12,000 chinook that were added into the earlier impact analyses.

APPENDIX C

ANALYSIS OF IMPACTS OF 1982 REGULATIONS
ON THE
OCEAN SALMON FISHERIES
OF CALIFORNIA, OREGON, AND WASHINGTON
ADOPTED BY THE PACIFIC FISHERY MANAGEMENT COUNCIL
ON MARCH 19, 1982

Report to the
Pacific Fishery Management Council

Salmon Management Plan Development Team
March 19, 1982

INTRODUCTION

On March 19, 1982 in Portland, Oregon, the Council adopted regulations for managing 1982 ocean salmon fisheries off the coasts of Washington, Oregon, and California. This report contains the Salmon Plan Development Team's analysis of the impacts of these regulations upon 1982 ocean fisheries and achievement of the Council's management goals. The analysis is presented by management boundaries for ocean fisheries and by major resource production areas (Tables 1 and 2).

Table 1. Impact of adopted 1982 regulations on California, Oregon and Washington coho in terms of estimated harvest and escapement (as adopted March 19, 1982).

Area	1981 ^{a/} Actual (in thousands)	1982 Council Adopted Regulations (in thousands)	1982 Goal (in thousands)
<u>OCEAN HARVEST</u>			
<u>California and Oregon South of Cape Falcon</u>			
California			
Troll	78	72	-
Recreational	<u>10</u>	<u>8</u>	-
Total	88	80	-
Oregon			
Troll	587	416	-
Recreational	<u>146</u>	<u>106</u>	-
Total	733	522	-
Total South of Cape Falcon			
Troll	665	488 ^{b/}	488 ^{b/}
Recreational	<u>156</u>	<u>114</u>	<u>114</u>
Total	821	602	602
<u>Washington and Oregon North of Cape Falcon</u>			
Cape Falcon to Leadbetter Pt.			
Troll	118	89	89
Recreational	<u>173</u>	<u>100</u>	<u>100</u>
Total	291	189	189
North of Leadbetter Pt.			
Troll	316	204	204
Recreational	<u>119</u>	<u>115</u>	<u>115</u>
Total	435	319	319 ^{c/}
Total North of Cape Falcon			
Troll	434	293	293
Recreational	<u>292</u>	<u>215</u>	<u>215</u>
Total	726	508	508
<u>ESCAPEMENT FROM OCEAN^{d/}</u>			
OPI	194	300	300
Washington Coast	152 ^{e/}	312	312
Puget Sound	NA	1,377	1,174

a/ Preliminary estimate.

b/ The quota of 488,000 would need to be reduced to account for anticipated coho losses which would occur during a chinook-only fishery after the coho quota is achieved.

c/ Anticipates an additional ocean troll catch by treaty Indians of 30,000.

d/ In-river size, net catch plus escapement only.

e/ Does not include Quinault and Grays harbor.

Table 2. Impact of adopted 1982 regulations on California, Oregon, and Washington chinook in terms of estimated percentage change from 1981 harvest and projected 1982 escapement from the ocean (as adopted March 19, 1982).^{a/}

Area	1981 Actual (in thousands)	1982 Council Adopted Regs. (% change from 1981) ^{b/}	1982 Goal (in thousands)
<u>Harvest</u>			
California - No. of Point Arena ^{c/}			
Troll	293	+20	-
Sport	<u>11</u>	<u>-5</u>	-
Total	304	+20	-
California - So. of Point Arena			
Troll	257	+20	-
Sport	<u>72</u>	<u>-5</u>	-
Total	329	+15	-
Oregon			
Troll	160	+2	-
Sport	<u>29</u>	<u>+19</u>	-
Total	189	+6	-
Washington	219 ^{d/}	-11	-
<u>Escapement (in thousands)</u>			
California			
Klamath	76 ^{e/}	69 ^{e/}	86 ^{f/}
Sacramento ^{f/}	147	132	145
Oregon Coast ^{g/}	160	155	150-200
Upper Columbia River ^{h/}	158	158	158 ^{i/}

a/ Increases in Canadian transfers of all Columbia River fall chinook are negligible.

b/ California estimates for 1982 are based on predicted 1982 stock abundance and availability. Oregon and Washington based on 1981 stock abundance.

c/ Primary area of Klamath River stock abundance.

d/ Includes Oregon north of Cape Falcon.

e/ Adult fall run escapement expressed as in-river run size. (In-river run size in 1982 will be 17,000 chinook less than escapement goal.)

f/ Expressed as adult fall run spawning escapement.

g/ Includes some spring chinook spawners.

h/ In-river run size of Columbia River upper fall stocks only. Information on other chinook stocks is not available. Predicted 1982 run sizes, before ocean regulation changes from 1981, total 155,600. Adopted Council regulations should at least produce an in-river return similar to 1981.

i/ Assuming 1981 stock size. Not a 1982 goal.

ADOPTED REGULATIONS

For California, the Council adopted regulations that are only slightly different from Option B as evaluated by the Team in its impact report of March 16. The recreational fishery for California would extend from February 13 through November 14 with a two-fish bag limit and have the same size limits as in 1981. The commercial fishery for all-salmon-except-coho would be from May 2-31 and the all-salmon season would extend from June 1-15 and July 1-September 30. The commercial size limits would be 26" and 22" for chinook and coho, respectively. This adds two weeks of chinook fishing in June to the season compared to 1981 and does not include chinook quota management. A six-mile square area (three miles each side -- six miles to sea) closure off the Klamath River mouth would be instituted during the period July 1-July 15.

For Oregon south of Cape Falcon, the Council adopted regulations that are most similar to Option B as evaluated by the Team in its impact report of March 16. For the troll fishing regulations, the all salmon except coho season extends from May 2-31, June 1-15, and September 6-October 31. Special gear (5-inch minimum plugs or whole bait) would be required during the June 1-15 fishery and through September 5 during a chinook-only fishery that is authorized after the coho quota is met. Barbless hooks would be required in the chinook-only fishery after September 5. The all-salmon season begins July 1 and proceeds until the coho quota south of Cape Falcon (488,000) is met. Size limits (26" for chinook and 16" for coho) are the same as in 1981. This season adds two weeks of chinook fishing (with special gear) compared to the 1981 season.

The adopted recreational regulations south of Cape Falcon are different for the areas from the California/Oregon border to Cape Blanco and Cape Blanco to Cape Falcon. For the area from the California/Oregon border to Cape Blanco, the recreational season would extend from May 29 until the coho quota south of Cape Falcon (114,000) is reached. The recreational fishery would then convert to a chinook-only fishery and extend through October 31. There would be no size limits and the bag limit would be the first two salmon landed during the all-salmon season and the first two chinook landed during the chinook-only fishery.

For the area from Cape Blanco to Cape Falcon, the adopted recreational regulations provide for an all-salmon season from June 12 until the coho quota south of Cape Falcon (114,000) is met. There is no provision for a recreational chinook-only fishery after the coho quota is met in this area. There would be no size limits and the bag limit would be the first two salmon landed.

The adopted recreational seasons open two and four weeks later this year than in 1981 for the areas from the California/Oregon border to Cape Blanco and Cape Blanco to Cape Falcon, respectively.

For Washington and Oregon north of Cape Falcon, the Council adopted regulations most similar to Option D as evaluated by the Team in its impact report of March 16. The major difference is that the troll season from Cape Falcon to Leadbetter Point opens two weeks earlier (July 1) than in 1981 and as analyzed in Option D. For the troll fishing regulations from Cape Falcon to

Leadbetter Point, the all-salmon-except-coho season extends from May 1-31 and the all-salmon season from July 1 until the coho quota for this area (89,000) is met. For the area north of Leadbetter Point, the all-salmon-except-coho season extends from May 1-31 and the all-salmon season from July 15 until the coho quota for this area (204,000) is met. The size limits are 28" for chinook and 16" for coho in both areas and there is no provision for chinook-only fishing after the coho quota is met.

The adopted recreational seasons north of Cape Falcon are different for the area between Cape Falcon and Leadbetter Point and the area north of Leadbetter Point. For Cape Falcon to Leadbetter Point, the recreational season begins June 12 and continues until the coho quota for this area (100,000) is met. For the area north of Leadbetter Point, the adopted recreational season begins with an all-salmon-except-coho season from May 29-June 11 and is followed by an all-salmon season from June 12 until the coho quota for this area (115,000) is met. The size limits are 24" for chinook and 16" for coho with a two-fish bag limit. There is no provision for a recreational chinook-only fishery after the coho quotas are met north of Cape Falcon. The adopted recreational seasons open three weeks later between Cape Falcon and Leadbetter Point and one week later north of Leadbetter Point than occurred in 1981.

PREDICTED IMPACTS OF ADOPTED REGULATIONS

California

Klamath River Chinook - Compared to the 1981 season and assuming a stock abundance similar to 1981, the regulations adopted by the Council will allow increased harvest of Klamath River chinook. The ocean harvest from Point Arena to the Oregon/California border will be increased by an estimated 20% and in-river run size will be reduced by 15%. The estimated 1982 in-river fall chinook run size, before any river harvest, is expected to be 69,000, compared to 76,000 in 1981. Actual spawning escapement will be substantially lower than 69,000 depending upon in-river harvest. The short-term spawning escapement goal of 86,000 (25% less than the long-term goal) is not expected to be met.

Analysis of impacts on Klamath River chinook are based upon the Team's assessment of paired option B of the March 16, 1982 impact report. No adjustment was made to compensate for the elimination of the April 22 to May 2 troll fishery or the expansion of a river mouth closure off the mouth of the Klamath from three to six miles during the two-week period from July 1 to July 15. The impact of these two modifications to option B will be negligible.

Sacramento River Chinook - Harvest of Sacramento River chinook is expected to be increased about 15% over 1981 landings. The troll harvest is expected to increase 20% and the sport harvest decrease by 5%.

The estimated fall run spawning escapement should be about 132,000 chinook which will be about 10% less than the 1982 goal of 145,000 fish. The lower Sacramento River escapement goal of 71,000 chinook will probably be met, with the main problem occurring in the upper Sacramento. Based on the projected stock abundance, the upper Sacramento will fall about 33% below the 1982 spawning escapement goal of 74,000 chinook.

Oregon

Coho - With the application of quotas, the 1982 regulations will meet the OPI escapement goal and allocation goals for coho salmon south of Cape Falcon. The anticipated 1982 catch for the OPI area south of Cape Falcon will be 602,000 fish with an allocation between troll and recreational users of 81% and 19%, respectively (Table 3 and Figure 1). The quota includes 430,000 public hatchery and wild fish and 172,000 coho originating from private hatcheries. The expected harvest by the commercial troll and recreational fishery will be 488,000 and 114,000, respectively. Of the total harvest south of Cape Falcon, 80,000 (13%) are expected to be harvested off California.

It is expected that quotas for both the troll and recreational fisheries will be reached between August 2 and August 16. Due to the early all-salmon troll opening (July 1), the quota for the troll fishery will probably be met around August 2. The quota for the recreational fishery will be achieved on or about August 16.

The adopted regulations provide for chinook-only, troll fishing south of Cape Falcon from the time that the coho quota is met through September 5, with gear restrictions (5" plugs and whole bait). Since the troll quota could be met as early as August 2, there could be an extended period of chinook fishing with associated coho losses. Depending upon when the troll coho quota is met, these coho losses are estimated to be as much as 18,100 (Table 4). Coho quotas will need to be adjusted downward to account for these anticipated losses during the chinook-only fishery.

Expected escapement to the OPI would be 300,000 adult coho, which is the stated 1982 goal. Escapement of natural spawning coho to Oregon coastal streams should approach 172,000 (1982 goal) compared to the long-term goal of 200,000 adults.

Chinook - Expected impacts of the adopted regulations on Oregon coastal chinook salmon will be similar to troll option 2 and recreational option 2. Assuming 1981 stock abundance and effort, the anticipated 1982 chinook troll catch for Oregon will approach 164,000 representing an increase of 2% from 1981. The recreational catch will approximate 34,000 representing a 19% increase over 1981, primarily due to the reduced minimum size limit. If the coho quota is met before September 6, closing the all-salmon season, the recreational chinook catches would be reduced somewhat. Estimated escapement to Oregon coastal streams will approach 155,000 which meets the 1981 goal of 150,000 to 200,000 adults.

Washington

Chinook - Ocean harvest pressure on chinook salmon stocks north of Cape Falcon will be reduced during the 1982 all-salmon season as compared to previous years. This will result from ocean coho quotas in this area being significantly lower than 1981. The main benefactors of the Council's proposed action will be lower Columbia River and Bonneville Pool hatchery chinook as well as upper Columbia River naturally spawning fall chinook (brights). While Columbia River hatchery stocks are the predominant ocean component of the catch north of Cape Falcon throughout the season, July and August appear to be the primary impact periods for brights.

Table 3. 1982 coho quotas (1,000s) by management area.

Area	Fishery			Total
	Recreational	Troll	Treaty Indian	
North of Leadbetter Point	115 (36%)	204 (64%)	[30 ^{a/}]	319 [349]
Cape Falcon - Leadbetter ^{b/}	100 (53%)	89 (47%)	--	189
South of Cape Falcon ^{c/}	114 (19%)	488 (81%)	--	602

- a/ Anticipated ocean harvest, not part of quota. If treaty ocean harvest deviates from this estimate, in-river harvest allocations will be adjusted accordingly.
- b/ Private aquaculture contribution for this area is estimated at 11,000 and 10,000 for the recreational and troll fisheries, respectively. These quotas are subject to adjustment if the private hatchery contribution departs significantly from the preseason estimates.
- c/ Private aquaculture contribution for this area is estimated at 33,000 and 139,000 for the recreational and troll fisheries, respectively. These quotas are subject to adjustment if the private hatchery contribution departs significantly from the preseason estimates.

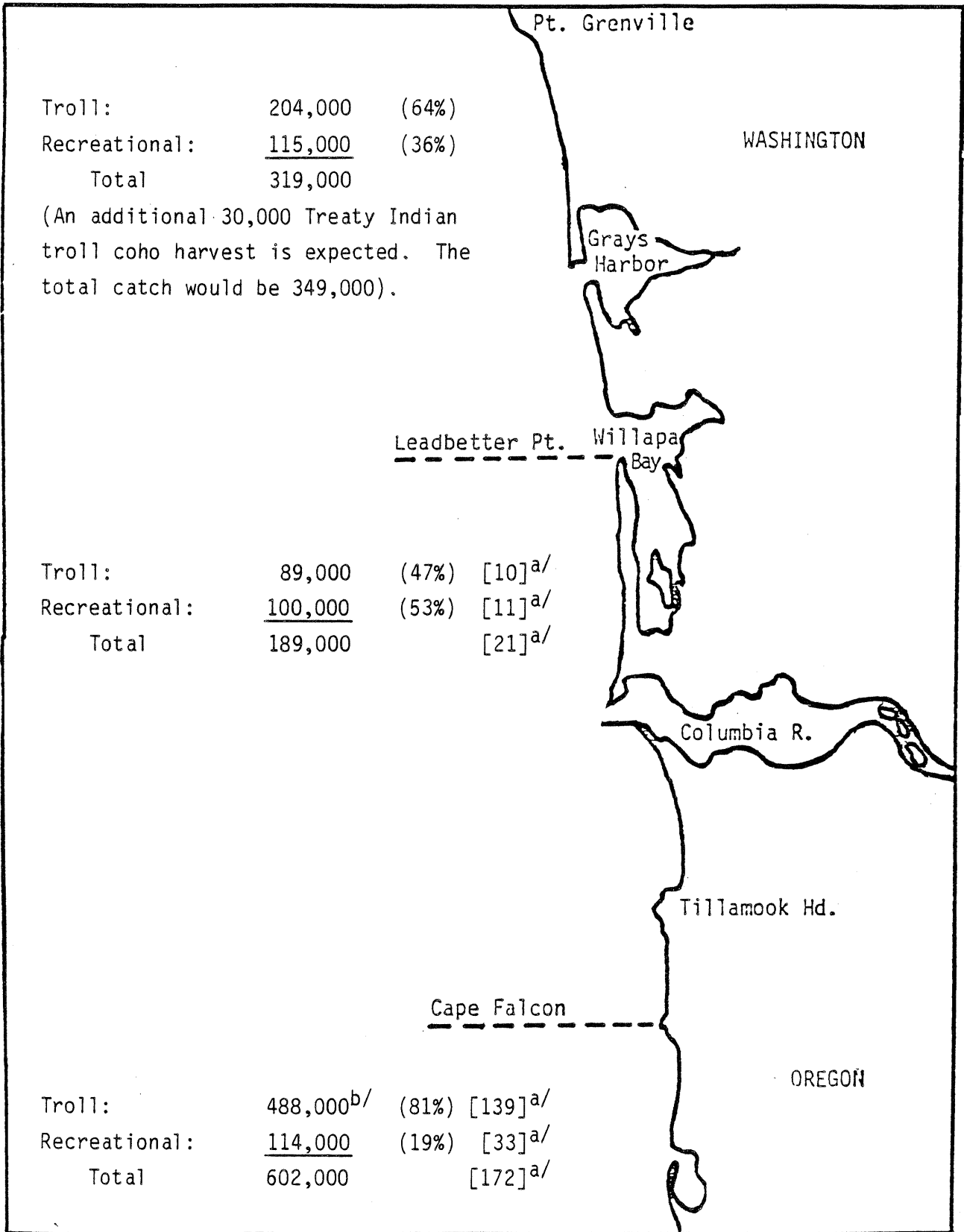


Figure 1. 1982 coho quotas adopted by the Pacific Fishery Management Council on March 19, 1982.

a/ Numbers in [] represent expected catch of private aquaculture fish included in the quota (in thousands).

b/ Troll quota will be reduced by 6,000 to 18,000 fish depending on when the coho quota is met due to hooking loss during chinook fishery prior to September 6.

Table 4. Estimated coho hooking mortality during chinook-only fishery south of Cape Falcon for various coho quota closing dates through September 5.

Week	Weekly Coho Hooking Mortality	Cumulative Hooking Mortality through September 5
August 2-7	5,000	18,100
August 8-15	6,700	13,100
August 16-23	3,100	6,400
August 24-31	1,900	3,300
September 1-5	1,400	1,400

Table 5 presents an analysis of impacts on catches and escapements of upper Columbia River fall chinook stocks based on the Team's 1981 impact analysis relative to the 1982 options and the Council's adopted action. The Team does not have the tools to evaluate specific impacts on 1982 chinook in-river returns. The relative impacts would fall somewhere between options C and E.

It should be noted that the percentage changes in Table 5 reflect 1981 stock abundance and are not 1982 forecasts. Since 1982 stock abundance is expected to be slightly less than 1981, percentage increases in Columbia River terminal run sizes would be less than shown in Table 5. Also projected changes reflect a long-term, steady state brood year analysis rather than a single-year change.

No significant changes in impacts on upper Columbia River summer chinook would be anticipated north of Cape Falcon. Three weeks less early season recreational fishing time will occur in 1982 off the Columbia River mouth as compared to 1981. While incidence of summers during this period is higher than later in the season, the potential savings is relatively small. North of Leadbetter Point, one less week will occur in the early recreational season but targeting on chinook in late May and early June will offset any potential savings. No changes were made in the May troll chinook season.

As a very preliminary estimate, approximately 1-2% of the total chinook catch north of Cape Falcon would be upper Columbia River summer chinook, given recent stock status. For May only this percentage would be about 3% which represents about 1,200 chinook which would be harvested in 1982.

The Council adopted an early recreational season north of Leadbetter Point from May 29 to June 11 for chinook only. This early season represents one less week chinook fishing time and three weeks less coho fishing time as compared to 1981. Increased effort on chinooks can be expected, however, as a marked change in fishing patterns should occur. This regulatory option was proposed by the Washington charterboat industry on the basis that coho could be avoided during the early season by fishing nearshore areas off Grays Harbor. An estimated 4,000 chinook would be caught during this period. The Team estimates that 2,500 coho shakers would be killed in this fishery. The Council proposed that the total quota be adjusted downward accordingly and this has been done. The Team opposes new, selective fisheries (troll and recreational) without strict monitoring through an observer program so that the fishery's impact and performance can be properly evaluated. The Council indicated that individual state agencies should have the responsibility and requested that they make an evaluation of this particular fishery.

Coho - The recreational all-salmon season would begin June 12 north of Cape Falcon under the Council's proposed action. The Team estimates that the allowable coho harvest could be reached by early to mid-August, depending on effort and coho availability. For the troll fishery, the all-salmon season will begin on July 1 off the Columbia River mouth and July 15 north of Leadbetter Point. The troll quotas could be reached in each area in early August.

Table 5. 1982 regulation analysis compared to 1981 regulations for upper Columbia River fall chinook stocks.

Options	WA Coastal Ocean Catch of Upper Columbia R. Fall Chinook Stock	Adult Run Above Bonneville Dam	
		Hatchery Stock	Natural Stock
A	+19	-7	-1
B	+19	-7	-1
C	0	0	0
D	-2	+1	0
E	-11	+7	+1
F	-42	+14	+2
Proposed Regulations by Council		+7	+1

COHO QUOTAS

Under the seasons proposed by the Council for the area north of Cape Falcon, a coho quota of 538,000^{1/} would be allocated according to Table 3 and Figure 1. Based on a total allowable coho harvest of 538,000 north of Cape Falcon, the commercial and recreational quotas for the area from Cape Falcon to Leadbetter Point would be 89,000 and 100,000, respectively. For the area north of Leadbetter Point, the allocation would be 204,000 troll and 115,000 sport after subtracting out an anticipated treaty Indian troll catch of 30,000 coho.

Forecasted ocean escapements to Washington production areas are presented in Table 1. For Puget Sound regions of origin stocks, a total of 1,377,000 coho are expected to be available inside the Strait of Juan de Fuca, exceeding the goal of 1,174,000 and satisfying Council objectives of providing sufficient numbers of fish to meet spawning escapement goals, Indian treaty obligations, and a non-treaty net harvest of 200,000. Management of the ocean fishery will be constrained by the resultant impact upon the natural coho run returning to the Queets River. The Queets Band of the Quinault Tribe has indicated that it would be willing to attempt to target its fishery on the hatchery coho run returning to the Queets River in order to minimize the impact on the natural coho run. Differences in timing between the runs can be expected to result from a remnant Puget Sound stock influence in the hatchery brood stock for the Queets River. Available information indicates that differential harvest rates on Queets hatchery and wild fish could reasonably be expected to permit an allowable ocean harvest north of Cape Falcon of 538,000 and still achieve a spawning escapement within the range proposed by the coastal tribes.

Given the proposed season, a 538,000 coho quota north of Cape Falcon, and hatchery run targeting by the Queets in-river fishery, natural spawning escapement estimates for coastal coho runs, after allowances for in-river harvest by treaty Indians, are presented in Table 6.

These spawning escapements lie in the lower, upper, and middle portions of the tribal ranges for the Queets, Hoh, and Quillayute runs, respectively. The anticipated Queets escapement is 5% above the lower end of the range.

Estimated ocean coho escapements to other production areas are:

Grays Harbor	101,000
Willapa Bay	146,000

Table 7 contains estimated coho ocean escapements by region of origin.

Anticipated impacts of 1982 adopted regulations on ocean fisheries and escapement from the ocean are summarized in Tables 1 and 2.

1/ The Council adjusted the adopted 540,000 total north of Cape Falcon downward by 2,000 fish to account for anticipated recreational shaker coho mortality north of Leadbetter Point from May 29 to June 11.

Table 6. Estimated impacts of regulations adopted for 1982 ocean fisheries upon north coastal coho stocks managed for natural production.

Run	In-river Run Size	1982 Estimated Spawning Escapement ^{a/}	1981 Spawning Escapement ^{b/}	Lower End of Tribal Range	Upper End of Tribal Range
Queets	7,000	5,900 ^{c/}	4,800	5,600	7,500
Hoh	4,900	3,500 ^{d/}	2,400-2,700	1,800	3,700
Quillayute Fall	14,400	11,100	8,400	9,000	12,100

a/ Adults only after allowance for in-river harvest and estimated treaty troll catch. River sport catches excluded.

b/ Adults and jacks.

c/ Assuming that the Queets in-river fishery can successfully target on returning hatchery fish.

d/ A spawning escapement of approximately 4,000 would result if the Hoh Tribe targets on hatchery fish.

Table 7. Estimated ocean escapement of three-year-old coho to Washington regions of origin under regulations adopted for 1982 ocean fisheries.

Region of Origin	Resident Component	Ocean Component	Total
Strait of Juan de Fuca	-	92,800	92,800
Nooksack/Samish	2,300	237,000	239,300
Skagit	2,100	96,500	98,600
Stillaguamish/Snohomish	14,000	159,100	173,100
South Sound	148,500	482,100	630,600
Hood Canal	22,000	120,500	142,500
TOTAL PUGET SOUND ^{a/}	188,900	1,188,000	1,376,900
Quillayute Summer	-	10,600	10,600
Quillayute Fall	-	17,000	17,000
Hoh	-	5,500	5,500
Queets	-	13,500	13,500
Quinault	-	18,700	18,700
Grays Harbor	-	101,000	101,000
Willapa Bay	-	145,600	145,600
TOTAL WASHINGTON COAST	188,900	311,900	311,900
GRAND TOTAL	-	1,499,900	1,688,800

a/ Does not include Puget Sound sport catch.

SUMMARY OF TEAM CONCERNS REGARDING 1982 SALMON REGULATIONS

The following are some of the concerns the Team has with the regulations adopted by the Council:

1. The small coho quota and expected resultant short seasons are going to provide a limited data base on which to make catch projections for dates when quotas will be reached.
2. The chinook-only fishery off Oregon, after any coho closure, will cause wastage of coho.
3. The more liberal season off California will reduce the chinook escapements into the upper Sacramento and Klamath Rivers and result in failure to meet escapement goals, and may well result in an escapement for the Klamath below last year's.
4. The lack of quota off California coupled with expected shorter seasons to the north could increase chinook catches off California.

Figure 3. 1982 and 1981 ocean recreation regulations.

DATES		1981 (Actual)					1982					
		CA	OR		WA		CA	OR		WA		
		All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Queets	No. of Queets	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.
February 13- May 15			hatched	hatched	hatched	hatched		hatched	hatched	hatched	hatched	hatched
May 16-31					hatched	hatched		hatched	hatched	hatched	hatched	hatched
June 1-15								hatched	hatched	hatched	dots	
June 16-30												
July 1-15							a/					
July 16-31												
August 1-15								Coho Quota Closure				
August 16-31					hatched	hatched						
September 1-15					hatched	hatched						
September 16-30			dots	hatched	hatched	hatched		Coho Quota Closure				
October 1-15			dots	hatched	hatched	hatched		Coho Quota Closure				
October 16-31			dots	hatched	hatched	hatched		Coho Quota Closure				
November 1-15			hatched	hatched	hatched	hatched		hatched	Coho Quota Closure			
BAG LIMIT		2	2b/		2	2c/	2	2		2		
SIZE LIMIT	Coho	d/	16"	16"	16"		d/	None	16"	16"		
	Chinook	d/	22"	24"	24"		d/	None	24"	24"		

- a/ All salmon except coho after coho fishery reaches quota.
- b/ Increase in bag limit to 3 fish after August 14, south of Cape Falcon.
- c/ North of Queets 1 additional salmon (other than chinook or coho) was permitted in the bag limit.
- d/ A 22-inch minimum size limit on chinook and coho in California, except that one may be less than 22 inches but not less than 20 inches.

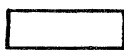

 All salmon
  All salmon except coho
  Closed

Table 8. Proposed 1982 ocean salmon fishing regulations as compared with 1981 regulations.

1982 Proposed Regulations (adopted by Pacific Council on 3/19/82)	1981 Regulations ^{a/}
*** NORTH OF LEADBETTER POINT TO WASHINGTON/CANADA BORDER ^{b/} ***	
<u>Commercial Troll Fishery</u>	
1. May 1-31, all salmon except coho.	1. May 1-31, all salmon except coho.
2. July 15 - all salmon. Automatic closure when coho quota projected to be reached.	2. July 15-Sept. 1, all salmon. Automatic closure when troll coho harvest guideline projected to be reached (if before August 26).
3. 28" minimum chinook (except 24" minimum chinook in Makah fishing area, 26" in other tribal fishing areas), 16" minimum coho.	3. 28" minimum chinook (except 24" minimum chinook in Makah fishing area), 16" minimum coho.
<u>Recreational Fishery</u>	
1. May 29-June 11, all salmon except coho.	1. May 23-Sept. 7, all salmon. If coho recreational harvest guideline projected to be reached before Aug. 26, automatic closure.
2. June 12 - all salmon. Automatic closure when coho quota projected to be reached.	2. 2-fish bag limit south of Queets River mouth and 3-fish bag limit, only 2 of which may be coho or chinook ("2+1") north of Queets River mouth (Areas 3 and 4).
3. 2-fish bag limit.	3. 24" minimum chinook, 20" minimum coho off Washington.
4. 24" minimum chinook, 16" minimum coho.	
*** NORTH OF CAPE FALCON, OREGON TO LEADBETTER POINT, WASHINGTON ^{b/} ***	
<u>Commercial Troll Fishery</u>	
1. May 1-31, all salmon except coho.	1. May 1-31, all salmon except coho.
2. July 1 - all salmon. Automatic closure when coho quota projected to be reached.	2. July 15-Sept. 1, all salmon. Automatic closure when troll coho harvest guideline projected to be reached (if before August 26).
3. 28" minimum chinook, 16" minimum coho.	3. Sept. 20-Oct. 9, coho only with maximum of 10 boats and coho gear, between Cape Falcon and Leadbetter Point out to 12 miles.
	4. 28" minimum chinook (except 24" minimum chinook in Makah fishing area), 16" minimum coho.
<u>Recreational Fishery</u>	
1. June 12 - all salmon automatic closure when coho quota projected to be reached.	1. May 23-Sept. 7, all salmon. If coho recreational harvest guideline projected to be reached before Aug. 26, automatic closure.
2. 2-fish bag limit.	2. 2-fish bag limit.
3. 24" minimum chinook, 16" minimum coho.	3. 24" minimum chinook, 20" minimum coho off Washington, and 16" minimum coho off Oregon.
*** SOUTH OF CAPE FALCON, OREGON TO CAPE BLANCO, OREGON ^{b/} ***	
<u>Commercial Troll Fishery</u>	
1. May 2-May 31, all salmon except coho.	1. May 1-31, all salmon except coho.
2. June 1- June 15, all salmon except coho (special gear).	2. July 1-Sept. 8, all salmon. Automatic closure when troll coho harvest guideline projected to be reached (if before Aug. 12). If there is a closure for coho due to troll harvest guideline being reached, an all salmon except coho season will be allowed from Cape Falcon to Cape Sebastian using whole bait or 5" plugs, from the time of the coho closure through Sept. 8.
3. July 1-Sept. 5 all salmon. Automatic closure when coho quota projected to be reached. Chinook-only fishing with special gear after reaching coho quota.	3. Sept. 9-Oct. 31, all salmon except coho.
4. Sept. 6-Oct. 31 all salmon except coho, barbless hooks.	4. Size limits and other regulations same as in 1980.
5. Size limits same as 1981.	
<u>Recreational Fishery</u>	
1. June 12, all salmon. Automatic closure when coho quota projected to be reached.	1. May 15-Sept. 20, all salmon. If coho recreational harvest guideline projected to be met before August 12, automatic closure.
2. 1st 2 fish, no size limit.	2. Sept. 21-Oct. 31, all salmon except coho for Cape Blanco to Oregon/California border only.
	3. 2-fish bag limit.
*** SOUTH OF CAPE BLANCO TO OREGON/CALIFORNIA BORDER ^{b/} ***	
<u>Commercial Troll Fishery</u>	
1. Same as Cape Falcon to Cape Blanco.	Same as above.
<u>Recreational Fishery</u>	
1. May 29, all salmon. Automatic closure when coho quota projected to be reached, then chinook-only to October 31.	Same as above.
2. 1st 2 fish, no size limit.	
*** CALIFORNIA ***	
North of Point Arena	
<u>Commercial Troll Fishery</u>	
1. May 2-May 31, all salmon except coho.	1. May 1-15, all salmon except coho.
2. June 1-June 15, all salmon.	2. May 16-31, all salmon.
3. July 1-Sept. 30, all salmon.	3. July 1-Sept. 30, all salmon. Automatic closure when troll chinook harvest guideline projected to be reached.
4. Klamath River closure 3 miles each side of mouth and 6 miles to sea, June 15-July 15.	4. Same size limits and other regulations as in 1980.
5. Same size limit as in 1981.	
<u>Recreational Fishery</u>	
1. Feb. 14-Nov. 15, all salmon. Automatic closure when recreational harvest guideline projected to be reached.	1. Feb. 14-Nov. 15, all salmon. Automatic closure when recreational harvest guideline projected to be reached.
2. 2-fish bag limit.	2. 2-fish bag limit.
3. Same size limits and other regulations as in 1980.	3. Same size limits and other regulations as in 1980.
South of Point Arena	
<u>Commercial Troll Fishery</u>	
1. May 1-15, all salmon except coho.	1. May 1-15, all salmon except coho.
2. May 16-31, all salmon.	2. May 16-31, all salmon.
3. July 1-Sept. 30, all salmon. Automatic closure when troll chinook harvest guideline projected to be reached.	3. July 1-Sept. 30, all salmon. Automatic closure when troll chinook harvest guideline projected to be reached.
4. Same size limits and other regulations as in 1980.	4. Same size limits and other regulations as in 1980.
<u>Recreational Fishery</u>	
1. Feb. 14-Nov. 15, all salmon. Automatic closure when recreational chinook harvest guideline projected to be reached.	1. Feb. 14-Nov. 15, all salmon. Automatic closure when recreational chinook harvest guideline projected to be reached.
2. 2-fish bag limit.	2. 2-fish bag limit.
3. Same size limit and other regulations as in 1980.	3. Same size limit and other regulations as in 1980.

a/ 1981 regulations include inseason management.

b/ Unless otherwise specified.

APPENDIX D

CHANGES IN APPENDIX C, "ANALYSIS OF IMPACTS
OF 1982 REGULATIONS ON THE OCEAN SALMON FISHERIES
OF CALIFORNIA, OREGON AND WASHINGTON
ADOPTED BY THE PACIFIC FISHERY MANAGEMENT COUNCIL
ON MARCH 19, 1982
AS REQUIRED BY COUNCIL ACTION ON MARCH 31, 1982

Report to the
Pacific Fishery Management Council

Salmon Plan Development Team
March 31, 1982

INTRODUCTION

The Council reconvened on March 31, 1982 in Portland, Oregon and adopted changes to the regulations previously adopted on March 19, 1982. The changes and the analyses of these changes are shown in this document (Table 2). The only changes made were to the troll seasons off California and Oregon, south of Cape Blanco except for changing the chinook season opening date from Cape Blanco to Cape Falcon from May 2 to May 1.

This report provides only the changes and additions that were made to Appendix C. The specific pages where changes or additions were made are shown in parentheses at the top of each page in this Appendix D.

Table 2. Changes in impact of adopted 1982 regulations on California and Oregon, in terms of estimated percentage change from 1981 harvest and projected 1982 escapement from the ocean (as adopted March 31, 1982).

AREA	1982 Council Adopted Regulations Percentage Change from 1981
<u>HARVEST</u>	
California - North of Point Arena	
Troll	-7
Sport	<u>0</u>
Total	-7
Oregon	
Troll	-9
Sport	<u>+19</u>
	-5
<u>ESCAPEMENT</u>	
California	
Klamath ^{a/}	76 (81) ^{b/}
Sacramento	132
Oregon Coast	159

a/ Adult fall run escapement expressed as in-river run size.

b/ Assumes additional 5,000 chinook equivalents from raising an additional 1,000,000 yearlings from the 1982 brood.

ADOPTED REGULATIONS

For California, the Council adopted troll seasons different than those adopted on March 19 (see page C-5 of March 19 impact report). The seasons adopted on March 31 are as follows: The commercial fishery south of Point Arena for the all-salmon-except-coho season would extend from April 22-May 24 and the all-salmon season from May 25-June 15 and July 1-September 30. For California north of Point Arena, the all-salmon-except-coho season would extend from May 1-24 and the early all-salmon season from May 25-June 15 governed by a 140,000 chinook quota for May 1-June 15 for the area between Point Arena and Cape Blanco. The late all-salmon season for this area would extend from July 1-August 22, followed by a two-week closure from August 23-September 5 and a final all-salmon season from September 6-30 (no quota from July 1-September 30). All other regulations for California are the same as adopted by the Council on March 19.

For Oregon south of Cape Falcon, the Council adopted troll regulations on March 31 that are different in several respects from those adopted on March 19 (see page C-5 of March 19 impact report). These differences are as follows: The all-salmon-except-coho season south of Cape Falcon would begin on May 1 rather than May 2. A 140,000 chinook quota for the early part of the season (May 1-June 15) was established for the area from Cape Blanco to Point Arena. When this quota is met, all fishing will cease until July 1, including the chinook fishery with special gear in the area south of Cape Blanco to Oregon/California border. In addition, there would be a two-week closure from August 23-September 5 in the area from the Oregon/California border to Cape Blanco. All other regulations would be the same as adopted by the Council on March 19.

PREDICTED IMPACTS OF ADOPTED REGULATIONS

California

Klamath River Fall Chinook - Assuming a stock abundance similar to 1981, the chinook quota of 140,000 for the area from Point Arena to Cape Blanco from May 1 to June 15 would limit harvest during this period to a level comparable to 1981. A 1982 in-river run size of approximately 76,000 is projected. This represents an increase of 7,000 fish over the regulations adopted by the Council on March 19, 1982.

The projected 1982 in-river return is expected to produce an actual spawning escapement of 41,000, which is an increase of 4,400 or 12% above the 1981 level (Table 2a). This increase in spawning escapement will result entirely from a decrease in the expected in-river Indian harvest of 5,500 fish. The State of California has indicated that it will rear and release an additional 1,000,000 chinook yearlings (bringing the total for the Klamath system to 3,000,000) in order to increase production from the 1982 brood escapement. Fish from the additional hatchery production will be harvested primarily in 1985 and 1986; potential contribution of the increased hatchery production to natural spawning escapements cannot be estimated at this time.

The ocean chinook catch from Point Arena to the Oregon/California border, estimated for the entire season, is projected to be 7% lower than 1981 due to the two-week closure from August 23 to September 5.

The Team is concerned about the lack of a chinook quota south of Point Arena. The regulations adopted allow for a potential transfer of chinook catches from north of Point Arena, and a greater-than-anticipated impact on Klamath River stocks and escapement. This concern is greatest during the early season, due to the large number and size of the "albacore" boats that fish the early salmon season and head south when the albacore start "showing" off southern California.

Table 2a. Klamath River adult in-river fall chinook run size, spawning escapement, sport catch, and Indian net harvest (in numbers and percent of the total in-river run size) for 1981 compared with projected results for 1982.

Run Component	1981		Projected 1982	
	Numbers	Percent	Numbers	Percent
Spawning Escapement	36,700	48	41,000 ^{a/}	54
Sport Catch	3,900	5	5,000	7
Indian Net Harvest	<u>35,500</u>	47	<u>30,000</u>	39
In-River Run Size	76,100		76,000	

a/ By raising an additional 1,000,000 yearling hatchery fall chinook, this escapement might be mitigated by the equivalent of about 5,000 additional fall chinook.

The closure off northern California and Oregon south of Cape Blanco from August 23 to September 6 would involve an estimated catch of 47,000 chinook (25,000 off California and 22,000 off Oregon) of which approximately 30% or 14,000 would be Klamath River stock. Assuming a later capture of 20% on fish saved during this closure period, this would result in a net savings through the 1982 fishery of 11,300 Klamath River chinook. Most of this savings would be on immature three-year-old fish and would not significantly affect 1982 escapement. However, this reduction is a positive step toward protection of immature Klamath River chinook and will affect 1983 spawning escapement levels.

Klamath River fall chinook are harvested primarily as three- and four-year-olds. For the next several years, production and river returns are expected to be depressed due to very low brood year spawning escapement levels. (Table 2b).

Table 2b. Brood year spawning escapement for river returns of adult Klamath River fall chinook.

Year of Return	Brood Year Escapement	
	3-year-olds	4-year-olds
1981	69,700	NA
1982	34,100	69,700
1983	29,900	34,100
1984	36,700	29,900
1985	41,000*	36,700
1986	?	41,000*

*Projected.

For example, brood year spawning escapement levels for three- and four-year-old chinook returning in 1983 are 12% and 51% below comparable levels for 1982.

Sacramento River - The regulations adopted on March 31, 1982 allow one additional week of fishing south of Point Arena on Sacramento River stocks. This additional week, the last week in April, would not make any measurable differences in catch or escapement than those shown in the March 19 analysis. The total catch would change less than 1% and escapement would be reduced slightly. There would be a slight increase in the troll harvest from Monterey south; however, this would result in a slight loss to the fisheries north of Monterey.

Coho - The additional week of fishing for the all-salmon troll fishery in California from May 25 to June 15 is not expected to significantly change the coho catch in California over regulations adopted on March 19. The chinook quota of 140,000 is likely to be met prior to June 15 resulting in a coho catch similar to or less than that which would occur with the earlier proposed June 1-15 season.





Oregon

Chinook - Expected impacts of the adopted regulations on Oregon coastal chinook salmon will be greater than regulations adopted March 19. Assuming 1981 stock abundance and effort, the anticipated 1982 chinook troll catch for Oregon will approach 146,000, representing a reduction of 9% from 1981 (Table 2). The recreational catch will approximate 34,000, representing a 19% increase over 1981, primarily due to the reduced minimum size limit. If the recreational coho quota is met before September 6, closing the all-salmon season, the recreational chinook catches would be reduced somewhat. Estimated escapement to Oregon coastal streams will approach 159,000 chinook, which meets the 1982 goal of 150,000 to 200,000 adults.

The revised 1982 troll regulations are shown in Figure 2 and Table 8.

Figure 2. Revised 1982 troll regulations.

DATES	1982						
	CA		OR		WA		
	So. of Pt. Arena	Pt. Arena to OR/CA Border	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.
April 15 -30	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines
May 1-15	Stippled	Stippled	Stippled	Stippled	Stippled	Stippled	Stippled
May 16-31	Stippled	Stippled	a/	Stippled	Stippled	Stippled	Stippled
June 1-15		a/	Black	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines
June 16-30	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines
July 1-15		b/					Diagonal lines
July 16-31							
August 1-15			c/	d/			
August 16-31		Diagonal lines			Coho Quota Closure	Coho Quota Closure	Coho Quota Closure
September 1-15		Diagonal lines	Stippled	Stippled			
September 16-30			Stippled	Stippled			
October 1-15	Diagonal lines	Diagonal lines	Stippled	Stippled			
October 16-31	Diagonal lines	Diagonal lines	Stippled	Stippled			
November 1-15	Diagonal lines	Diagonal lines	Diagonal lines	Diagonal lines			

 All salmon
  All salmon except coho
  Closed
 All salmon except coho, with gear restrictions

a/ Chinook quota of 140,000 up to June 16.

b/ Closure 3 miles each side and 6 miles seaward of Klamath River mouth from July 1 - July 15.

c/ Chinook only fishing to August 22, with special gear, after reaching coho quota.

d/ Chinook only fishing to September 5 with special gear, after reaching coho quota.

Table 8. Changes in proposed 1982 ocean salmon fishing regulations (adopted March 31, 1982).

California and Oregon

South of Point Arena

Commercial Troll Fishery

1. April 22-May 24, all salmon except coho.
2. May 25-June 15, all salmon.
3. July 1-September 30, all salmon.
4. Same size limit as in 1981.

North of Point Arena to OR/CA Border

Commercial Troll Fishery

1. May 1-May 24, all salmon except coho.
2. May 25-June 15, all salmon (140,000 chinook quota from Point Arena to Cape Blanco from May 1 to June 15).
3. July 1-August 22 all salmon.
4. September 6-September 30 all salmon.
5. Klamath River closure 3 miles each side of mouth and 6 miles to sea, July 1-15.
6. Same size limits as in 1981.

OR/CA Border to Cape Blanco

Commercial Troll Fishery

1. May 1 to May 31, all salmon except coho.
2. June 1-June 15, all salmon except coho with gear restrictions (140,000 chinook quota from Point Arena to Cape Blanco from May 1 to June 15).
3. July 1 - coho quota, all salmon. After coho quota is reached, chinook-only fishery to August 22.
4. September 6-October 31, all salmon.
5. Same size limits as in 1981.

APPENDIX E

SUPPLEMENT TO THE DRAFT REGULATORY IMPACT REVIEW/
REGULATORY FLEXIBILITY ANALYSIS (RIR/RFA) CONTAINED
IN THE 1982 SALMON PLAN AMENDMENT

Pacific Fishery Management Council

April 1982

SUPPLEMENT TO THE DRAFT REGULATORY IMPACT REVIEW/
REGULATORY FLEXIBILITY ANALYSIS (RIR/RFA) CONTAINED
IN THE 1982 SALMON PLAN AMENDMENT

The draft RIR/RFA contained in Chapter V of the 1982 Salmon Plan Amendment analyzes seven issues of socio-economic importance in choosing a salmon management regime for 1982. During the public comment period on the amendment, other issues arose which require analysis to determine economic impacts. This supplement to the draft RIR/RFA addresses the following questions:

- (A) What are the probable economic effects of eliminating the recreational salmon size limits for Oregon south of Cape Falcon?
- (B) What are the probable economic effects of allowing a two-week chinook-only recreational fishery immediately before the June 12 all-species season opening, north of Leadbetter Point?
- (C) What are the probable economic effects of maintaining or eliminating California chinook quotas?
- (D) What are the probable economic effects of closing August 23-September 5 to troll fishing off California and Oregon south of Cape Blanco?

In addition, this draft RIR/RFA supplement examines the socio-economic impacts of the Council's adopted salmon management regime for 1982 (adopted March 31, 1982), focusing on the interaction of the issues analyzed here and in Chapter V.

ANALYSIS OF ADDITIONAL ISSUES

- (A) What are the probable economic effects of eliminating the recreational salmon size limits for Oregon south of Cape Falcon?

The major intent of the elimination of the recreational size limit off Oregon south of Cape Falcon is to reduce wastage of hooked and released fish. The Salmon Team has estimated that the no size limit regulation off Oregon south of Cape Falcon would result in an increase of about 19% (5,000 fish) over the 1981 chinook catch. However, the impact of a no size limit regulation on the rate of attainment of the coho quota, the length of the recreational season and the level of economic benefits to the recreational fisheries is unclear.

With no size limit, the probability that an angler will catch his/her bag limit will increase. This increased probability may, in turn, make ocean salmon fishing more desirable, so that angler effort levels may increase.

On the other hand, the greater likelihood of catching a smaller fish may discourage anglers from fishing, and decrease angler effort levels. Information on the importance of fish size in determining angler participation is unavailable.

Finally, an increase in the number of small chinook kept may reduce the number of coho caught. This slowing of the coho catch rate may extend somewhat the length of the recreational season.

The net effect of these socio-economic impacts is unclear.

(B) What are the probable economic effects of allowing a two-week chinook-only recreational fishery immediately before the June 12 all-species season opening, north of Leadbetter Point?

During each of the equivalent two-week periods in 1980 and 1981, approximately 7,600 angler trips were taken in the area north of Leadbetter Point (Neah Bay, LaPush, and Westport areas). Most of these trips were charterboat trips; very few private vessels participate in the Washington recreational fisheries so early in the season. If angler effort levels are similar to 1980 and 1981, and assuming a price per charterboat trip of \$45, this special early recreational season could be worth as much as \$340,000 in gross revenues to the charterboat fleet. Net economic benefits to anglers from this two-week fishery would be approximately \$380,000 (\$50 per angler trip^{1/}). Additional economic benefits would be derived by the coastal communities through multiplier effects.

However, this estimate assumes that chinook-only fishing is as desirable as all-species fishing, so that 1982 angler effort levels will be similar to 1980 and 1981. Weather and other factors could also affect angler effort levels. In addition, the above estimate assumes that all of the anglers who fish in the early season (May and early June) are lost to the fishery when that period is closed. It is possible that some of these anglers would shift their effort to later in the season. However, as explained in Appendix A of the 1981 Salmon Plan, it appears that early season anglers are often retired or semi-retired and generally prefer to fish in the early and late parts of the season to avoid mid-season crowds. Thus, \$350-400,000 is probably a reasonable approximation of the net economic benefits to be derived by anglers from an early chinook-only recreational fishery north of Leadbetter Point.

It should also be noted that this early season chinook-only recreational fishery will be serving as a test fishery. If anglers are successful in minimizing their coho "shaker" catch in 1982, there may be more support in the future for similar early chinook-only fisheries in other areas.

(C) What are the probable economic effects of maintaining or eliminating California chinook quotas?

In 1981, the imposition of chinook quotas apparently did not greatly affect economic benefits from California troll and recreational fishing. The quotas were based on recent historical catch averages. In 1981, chinook catches

1/ Brown, W., Sorhus, C., Gibbs, K., Estimated Expenditures by Sport Anglers and Net Economic Values of Salmon and Steelhead for Specified Fisheries in the Pacific Northwest, Oregon State University/Pacific Northwest Regional Commission, September 1980.

amounted to 98% and 97% of the northern and southern troll quotas, respectively, and 67% and 64% of the northern and southern recreational quotas, respectively. These catch levels were governed by the seasons (e.g., June troll closure), weather and other conditions in effect. For example, the California charterboat fleet size has declined so much in recent years, because of general economic conditions, that even with their historical season, they fell far short of their quota.

In theory, the chinook quota system has long- and short-term benefits and costs. For the long term, it is intended that the quotas provide for larger future salmon harvests by achieving California chinook spawning escapement goals for 1982. In the short term, the quota system provides benefits in two major areas: fishing flexibility and assurance that allocation ratios will be maintained. As in the case of the coho quota system, the chinook quota system may provide more flexibility in achieving harvest guidelines and escapements than would be allowed under time/area closures alone. With a quota in combination with longer seasons than could otherwise be allowed, troll and recreational fishermen have more flexibility in choosing where and when to fish, according to price levels, fish availability, weather patterns, and other variables. On the other hand, it has been suggested that the chinook quota system may create a rush by each fisherman to catch as many fish as possible before the quota is reached, resulting in carelessness in vessel handling, fish handling (with subsequent reduced quality), and release of undersized fish. There was no evidence that this was occurring in 1981.

There are other potential socio-economic problems associated with implementation of the chinook quota system. For instance, if the "highliners" of the fleet catch the California troll chinook quotas quickly, fishermen who operate smaller vessels and fish salmon all season (rather than shifting to albacore late in the season as many of the "highliners" do) could be deprived of their late season fishing due to premature closures. This situation did not occur in 1981, since neither of the troll quotas were met.

Effort shifts may also become a problem. If the troll quota in one area is met, many fishermen may move to the other area, causing its quota to be reached more quickly. There may also be effort shifts by Oregon and Washington boats moving into the California quota areas. Common season opening dates in California and Oregon should help minimize such shifts.

In addition, chinook quota implementation may encounter problems of data collection and enforcement. It may be difficult to collect landings data on a sufficiently timely basis to monitor harvests and know when a quota has been met, although this did not appear to be a problem in 1981. Furthermore, the quota system creates the incentive to misreport landings and to transfer catches out of the quota areas (e.g., chinook caught in the northern California quota area may be landed in southern Oregon to prevent these catches from being counted against the quota).

A split chinook quota with "sub-quotas" for the early and late parts of the season, or a partial chinook quota, applied to the early season only, might tend to spread chinook catches more evenly throughout the season, than would a full-season quota. This would provide for a more constant flow of fresh salmon to market. Such an early season quota would probably impact the larger vessels most in terms of reduced catches and revenues. It might have fewer

negative impacts on the small boat fleet than the full-season quota described above.

(D) What are the probable economic effects of closing August 23-September 5 to troll fishing off California and Oregon south of Cape Blanco?

The purpose of an August 23-September 5 California troll closure would be to reduce interceptions of 3-year-old chinook, to increase poundage yield and escapements in 1983. Little or no impact is expected on gross revenues from coho fishing, since Oregon coho fishing probably would already be closed due to attainment of the coho quota, and California coho catches during this period are negligible. According to the Salmon Team, such a closure could be expected to reduce troll chinook catches south of Cape Blanco by about 37,400 fish in 1982. At the 1981 average California price per fish during this period, \$24.24, this translates into a reduction in 1982 ex-vessel revenues to the troll fleet of \$806,600. Most of this short-term loss would fall on a small vessel fleet, since the larger vessels tend to fish heavily in the early season and then leave to fish albacore.

SOCIO-ECONOMIC ANALYSIS OF COUNCIL'S ADOPTED REGULATIONS

On March 31, 1982, the Council adopted the troll and recreational seasons described on pages D-7 through D-8 of Appendix D of the Amendment (see also pages C-17 through C-19 of Appendix C).

Recreational Fisheries

There will be some similarities between the 1982 and the 1981 ocean recreational fisheries: 1982 will be similar to 1981 in that all bag limits will essentially remain the same, and in Oregon south of Cape Blanco, a late season chinook-only fishery will follow the close of the all-species season. However, the 1982 adopted regulations do include the following changes from the 1981 recreational management regime:

- (1) Opening dates for the Washington and Oregon recreational all-species fisheries will be:
 - ° 3 weeks later than in 1981 for the area north of Cape Falcon;
 - ° 4 weeks later than in 1981 for the area between Cape Falcon and Cape Blanco;
 - ° 2 weeks later than in 1981 for the area between Cape Blanco and the Oregon/California border.

Thus in 1982, there will be a common opening date for all recreational coho fisheries north of Cape Blanco. The area from Cape Blanco to the Oregon/California border will, however, open two weeks before the common opening date to allow a significant coho fishery there. (See question 1, Chapter V.)

- (2) A two-week early season chinook-only recreational fishery will be allowed for the first time, in the area north of Leadbetter Point. (See question B of this Supplemental RIR/RFA.)

- (3) The recreational coho quotas will be significantly reduced compared to 1981. South of Cape Falcon, the recreational quota will be 7% lower than the catch in 1981. North of Cape Falcon, the recreational quota will be 26% below the 1981 catch level. In 1982, for the first time, this northern quota will be divided into two parts: a Cape Falcon to Leadbetter Point quota which is 42% less than the 1981 catch in that area, and a quota for the area north of Leadbetter Point, which will be 3% less than the 1981 catch. (See question 6, Chapter V.)
- (4) Unlike 1981, there will be no recreational chinook quotas in California in 1982. (See question C.)
- (5) In Oregon south of Cape Falcon, there will be no recreational size limits. (See question A.)
- (6) North of Cape Falcon, there will be no specified recreational season ending dates. The seasons will close when the coho quotas are reached.

As discussed in question 1 of the Amendment's Chapter V, the period from Memorial Day to Labor Day is the heart of the Washington and Oregon recreational season. The late opening dates provided for in the Council's adopted regulation package cut into this important period. The discussion in question 1 showed that the Labor Day weekend period is generally more important in terms of angler effort levels than the Memorial Day period. Even so, in 1981 about 25,000 ocean angler trips were taken in Washington, and 38,000 ocean angler trips were taken in Oregon by mid-June. Net economic benefits per angler trip have been estimated at \$50.00 in Washington, and \$51.80 in Oregon.^{1/} Assuming that these early season anglers are lost to the fisheries when this part of the season is closed, the short-term loss in net benefits resulting from June 12 openings in 1982 could be as high as \$1,250,000 in Washington and \$1,970,000 in Oregon, if 1982 fishery conditions are similar to 1981.

The Council's adopted management regime mitigates some of these potential losses by allowing the recreational fisheries in Oregon south of Cape Blanco to open on May 29. As discussed in question 1, the early season is particularly important to the fisheries in this area since it is the only time that coho are available there in abundance. In the first two weeks of June, 1981, approximately 12,000 angler trips were taken in this area with net economic benefits valued at about \$620,000.

The Council's adopted management regime also helps mitigate potential economic losses in Washington by allowing a chinook-only recreational fishery north of Leadbetter Point from May 29 to June 11. Question B of this supplemental RIR/RFA estimates angler net benefits of this chinook-only fishery to be about \$380,000.

1/ Brown, W., Sorhus, C., and Gibbs, K., Estimated Expenditures by Sport Anglers and Net Economic Values of Salmon and Steelhead for Specified Fisheries in the Pacific Northwest, Oregon State University/Pacific

Probably even more critical to the economic survival of the Oregon and Washington charterboat businesses, and to angler net economic benefits, are the low coho quotas that will be in place in 1982. The Salmon Plan Development Team estimates that the 1982 recreational coho quota south of Leadbetter Point will be reached and the fishery will close by about August 16. No closing date estimate is available for the area north of Leadbetter Point.

In recent years, 30-40% of the Washington and Oregon angler effort has occurred in the month of August, with effort distributed more or less equally between the first and last halves of the month. In 1981, 58,700 angler trips occurred in Oregon and 46,200 angler trips occurred in Washington in the last half of August, and similar levels might be expected in 1982 (although a 10-20% per year decline in August angler trips has been observed in Washington in recent years, probably due to general economic factors). Since a mid-August coho quota closure would come with little warning, it is reasonable to assume that most of the late August angler effort would be lost to the fisheries. At an average net economic value of \$51.80 per angler trip in Oregon and \$50.00 per angler trip in Washington, such a closure could result in a loss of net economic benefits of as much as \$3,040,000 to Oregon anglers and \$2,310,000 to Washington anglers. The charterboat fleets would suffer corresponding losses in gross revenues. However, the size of the charterboat fleet in Washington fell by approximately 25% following the 1981 season, so that it is possible that the northern quota may not be reached until after Labor Day, and average gross revenues per charterboat may remain at an acceptable level.

The impacts of the elimination of recreational size limits and California recreational chinook quotas are discussed in questions A and C of this supplemental RIR/RFA, respectively. The socio-economic impact of the no size limit regulation is unclear. The impact of the elimination of the California chinook quotas probably will be minimal, since, even with their historical seasons, the California recreational fisheries have only been able to catch 67% and 64% of the northern and southern recreational quotas, respectively. Apparently the low catches are due to rising fuel costs and general economic conditions, which have greatly reduced the size of the California charterboat fleet.

The decision to refrain from specifying recreational season ending dates for all areas north of the Oregon/California border probably will have a generally positive socio-economic impact. It will reduce the confusion caused by scheduling a season ending date and then closing early, when the quota is met. It is difficult for anglers to plan vacations, and for charterboat operators to take bookings with the uncertain closing date associated with a quota. But given the existence of a quota, it is probably more realistic not to schedule a closing date in advance.

Troll Fisheries

The 1982 adopted troll fishery management regime is similar to 1981 in that it includes a May chinook-only season coastwide (see question 3 of Chapter V) and does not include any mid-coast troll closures off Washington or changes in troll size limits. (See question 7 of Chapter V.) However, the 1982 adopted regulations do include the following changes from the 1981 troll management regime:

- (1) The California troll chinook-only season south of Point Arena will open nine days earlier than in 1981. (See question 2 of Chapter V.)
- (2) There will be two extra weeks of troll fishing in June (June 1-15) and a scheduled shift and extension of the early coho troll season (from May 16-31 to May 25-June 15) in California, compared to 1981. (See question 4 of Chapter V.)
- (3) In Oregon south of Cape Falcon, there will be two extra weeks of chinook-only fishing (with special gear) from June 1-15. This period was closed in 1981. Thus, in 1982, all of California and Oregon as far north as Cape Falcon will be open for the first two weeks of June. (See question 4 of Chapter V.)
- (4) The regular all-species troll season will open on July 1 in all areas south of Leadbetter Point. This opening is two weeks earlier than in 1981 for the area from Cape Falcon to Leadbetter Point. (See question 5 of Chapter V.)
- (5) The troll coho quotas will be significantly reduced compared to 1981. South of Cape Falcon, the troll quota will be 25% less than the 1981 catch in that area. North of Cape Falcon, the troll quota will be 32% below the 1981 catch level. In 1982, for the first time, this northern quota will be divided into two parts: the Cape Falcon to Leadbetter Point coho troll quota will be 25% lower than the 1981 catch in that area, and the quota for the area north of Leadbetter Point will be 35% less than the 1981 catch. (See question 6 of Chapter V.)
- (6) Unlike 1981, there will be no full-season troll chinook quotas in California in 1982. However, for the area from Point Arena to Cape Blanco, a partial season troll chinook quota of 140,000 fish will be in effect until June 15 only. If the quota is met, the troll fisheries in this area will close to all salmon fishing until July 1. (See question C.)
- (7) Between Point Arena and Cape Blanco, a closure will be implemented from August 23 through September 5. (See question D.)
- (8) North of Cape Falcon, there will be no specified troll season ending dates. The seasons will close when the coho quotas are reached.
- (9) The Oregon special gear chinook-only fishery following a troll coho quota closure will be expanded slightly to include the small area from Cape Sebastian to the Oregon/California border.

- (10) A troll closure will be implemented in a six-mile square area (three miles each side and six miles out to sea) off the Klamath River mouth during the period July 1-15. This closure is actually an extension three miles further out to sea of the river mouth closure enforced in previous years.

Several of the elements of the Council's adopted management regime (e.g., retention of the May chinook-only fisheries, and opening June 1-15 fisheries in California and Oregon south of Cape Falcon) were discussed in the RIR/RFA's analysis of management issues. (See questions 2, 3, 4, 5, and 7 of Chapter V.) For the area from Cape Blanco to Point Arena, the Salmon Team has estimated that the 140,000 chinook quota will be reached by June 1. If this occurs, with the May 25 opening of the California early all-species season, the actual May and June 1982 seasons in the Point Arena to Cape Blanco area will be very similar to 1981.

The Salmon Team has determined the net result of these and other elements of the management "package", in terms of numbers of chinook and coho expected to be caught in 1982, compared to 1981. Using average 1981 prices per pound and, where necessary because of incomplete data, average 1981 pounds per fish, Table 1 translates the Team's estimates of expected changes in catch levels into expected changes in ex-vessel revenues to the troll fleets.

Table 1. Economic impact of 1982 regulations on California, Oregon, and Washington troll ex-vessel revenues, compared to 1981 levels.^{a/}

	Coho Revenues (\$)	Chinook Revenues	Total Revenues (\$)
California	-59,000	+763,000	+704,000
Oregon	-1,390,000	-364,000	-1,754,000
	(-1,349,000 for CA and OR So. of Falcon)		
	(-270,000 for Falcon to Leadbetter)		
Washington ^{b/}	-1,190,000	-330,000	-1,520,000
	(-1,020,000 No. of Leadbetter)		

a/ Assuming 1981 price levels.

b/ 1981 Oregon average prices/fish were used in calculations of Washington troll revenues, since no Washington price data were available.

This estimate of impacts is at the ex-vessel level. As many publications^{1/} have shown, the salmon fisheries are very important to the economies of many Pacific coast communities, so that economic impacts at the ex-vessel level are "multiplied" through the local and regional economies.

Many of the elements of the Council's adopted regime are not controversial or will not have significant social or economic effects. The lack of scheduled season ending dates north of Cape Falcon may help reduce the confusion involved in quota closures. The two-week Klamath River mouth closure is unlikely to have any significant socio-economic impact, since this is actually a limited area extension of an existing closure provision, and the area involved is not a highly concentrated fishing zone.

The Oregon area extension for chinook fishing after a coho closure, from Cape Sebastian to the Oregon/California border, is unlikely to be very different from 1981. The area involved is very small, and in 1981, only federal waters in this zone were closed; state waters remained open. Thus, this 1982 extension does not constitute a significant change from 1981.

The common troll all-species opening date (July 1) should help minimize effort shifts. A further discussion of the impacts of a July 1 opening can be found in Chapter V, question 1.

The division of the coho quotas north of Cape Falcon into two parts, separated at Leadbetter Point, will help maintain historic catch ratios between areas and between fisheries.

Clearly, all of the estimates of social and economic impacts discussed in the draft RIR/RFA (Chapter V) and this supplement are based on limited data and should, therefore, be interpreted with care. However, the RIR/RFA is intended to facilitate a general understanding of the economic and social implications of the salmon management actions considered and adopted by the Pacific Fishery Management Council.

1/ See, for example, Appendix B of the 1981 Salmon Plan Amendment, and Salmon 1982, published by the Pacific Coast Federation of Fishermen's Associations.

APPENDIX F
FINAL
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
ON THE
1982 AMENDMENT OF THE
FISHERY MANAGEMENT PLAN FOR
COMMERCIAL AND RECREATIONAL SALMON
FISHERIES OFF THE COASTS OF
WASHINGTON, OREGON, AND CALIFORNIA
COMMENCING IN 1978

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April 1982

COVER SHEET

() Draft

(x) Final

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Title of Proposed Action:

1982 Amendment of the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978

Abstract:

The proposed action is a modification of the fishery management plan for the ocean commercial and recreational salmon fisheries off the coasts of Washington, Oregon and California for the 1982 fishing season. The 1982 plan evaluates the current status of the coastwide salmon stocks, reviews the 1981 ocean salmon fishery, and presents the coastwide management regime for the 1982 ocean salmon fisheries and the alternatives considered. The specific management measures that comprise the coastwide management regime vary by area and fishery, but generally establish fishing seasons, provide harvest guidelines or quotas and other management modifications, and set daily catch limits for recreational fisheries and establish minimum size limits on fish. The 1982 management regime is intended to prevent overfishing in the ocean, to apportion equitably the ocean harvest between commercial and recreational fisheries, to allow more salmon to survive the ocean fisheries and reach the various inside fisheries, to meet the U.S. obligations to treaty Indian fisheries, and to achieve spawning escapement requirements.

During its March 17-19 meeting, the Council adopted the 1982 ocean salmon plan regulations and decided to send them to the Secretary of Commerce for his review and implementation. The 1982 management measures included a more liberal commercial fishing season for chinook salmon in northern California and southern Oregon than in 1981. A subsequent evaluation of the Council's proposal indicated that the ocean catch in that area would increase by 20% over 1981, and that the interim spawning escapement goal of 86,000 chinook to the Klamath River would not be reached.

Following the March 17-19 meeting, the Council received a letter from the Assistant Administrator for Fisheries, National Marine Fisheries Service,

which urged the Council to reconsider its action and "to forward a recommendation that would represent a significant step towards achievement of the Klamath River interim spawning escapement goal." Council members were polled by phone and agreed to meet to reconsider proposed regulations off northern California and southern Oregon.

During its March 31 meeting, the Council adopted a troll season from Point Arena, California to Cape Blanco, Oregon which has a two-week closure from August 22 to September 6. A quota of 140,000 chinook until June 15 was also established for the area. For the area south of Point Arena, the troll fishery will open on April 22, rather than May 2, and off California the all-species season will begin on May 25 rather than June 1 as adopted at the earlier March meeting. The opening date for the chinook-only fishery was changed from May 2 to May 1 for the area between Cape Falcon and Point Arena. Proposed regulations in northern Oregon and Washington are unchanged from the Council's earlier March meeting.

SUMMARY

I. Proposed Action:

The Pacific Fishery Management Council (Council) has adopted an amendment of the Fishery Management Plan (FMP) for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California for the 1982 fishing season. This is the Council's fourth amendment of the FMP.

The 1982 amendment consists of the following sections: 1) a discussion of 1982 salmon fishery management problems and objectives, 2) a review of the 1981 commercial and recreational salmon fisheries, 3) an evaluation of 1981 ocean salmon management including an assessment of harvest guidelines and quotas, 4) a report on the resource status in 1982, 5) a presentation of management alternatives and strategies for the 1982 fisheries, 6) a discussion of socioeconomic trends, 7) an analysis of the alternative management strategies, and 8) an analysis of the impacts of the preferred management regime adopted by the Council for the ocean salmon fisheries.

The most recent information on the status of the Pacific salmon stocks and fisheries indicates that respecification and adjustment of management measures were necessary in order to meet the 1982 fishery management plan goals and objectives. The 1981 California chinook quotas were specifically instituted for one year only. In the absence of a 1982 amendment, the 1980 regulations would have been reinstated for the FCZ area adjacent to California while the 1981 regulations would have been in effect in the FCZ off Oregon and Washington.

II. Major Issues (Controversies)

The major areas of public concern regarding the implementation of the 1982 management program were as follows:

- (1) The role of inseason management; when, where and under what conditions it is appropriate;
- (2) The propriety of using quotas for management of the fishery;

- (3) The length of fishing seasons and how they affect commercial and recreational-fishing patterns and actions;
- (4) The impacts of ocean harvests on depressed salmon stocks, particularly Washington and Oregon coastal coho, Columbia River chinooks, Klamath River chinooks and Upper Sacramento chinooks;
- (5) The socioeconomic impacts of potentially restrictive regulations on coastal communities;
- (6) The impacts of ocean salmon harvests on treaty Indian fishermen and other "inside" salmon fishing groups;
- (7) The means by which the Pacific Fishery Management Council will balance the impacts of resource management between the ocean and inside fisheries so that each group has an opportunity to harvest a fair and equitable share;
- (8) The impacts of recent Federal Court decisions regarding treaty Indian fishing rights on Federal and State salmon fishery management actions.

III. Management Alternatives

Before the Council adopted the management regime for the 1982 ocean fishing season at its March meetings in Portland, Oregon, it circulated for public comment a range of management options for the 1982 coastwide ocean salmon fisheries that included five management options for the commercial troll fisheries and three management options for the recreational fisheries.

Commercial Troll Options

Management option 1 recommended opening the California chinook-only season on April 15, two weeks earlier than in 1981. A two week all-species season was proposed for California from June 1-15 followed by chinook-only fishing June 16-30, and the regular all-species season opening on July 1. This option recommended about six more weeks of chinook salmon fishing (April 15-30, June 1-30) by the commercial troll fleet off California compared to the 1981 regulations.

Option 1 also recommended a commercial troll fishing closure around the mouth of the Klamath River from June 15 to July 15. The proposed closure would extend to three miles on either side of the river mouth and out to six miles in the ocean.

Option 1 recommended an additional six weeks of chinook-only fishing (compared to 1981) for the area off Oregon south of Cape Falcon (April 15-30 and June 1-30). For the area south of Cape Blanco to the California/Oregon border, coho fishing would have been extended approximately eight weeks longer than in 1981 because the closure of the all-species season was proposed for October 31 rather than on September 5. However, it is unlikely that coho fishing would have extended through October because inseason management, adjustable quotas, and a 75%-of-quota triggering mechanism for stock evaluation were mandated for coho salmon in this option.

For the area north of Cape Falcon, Oregon, to the Washington/Canada border, option 1 proposed an additional three weeks of the all-species season (compared to the 1981 regulations) by opening two weeks earlier, on July 1, and closing one week later, September 5. In addition, a Washington middle coast area closure from Carroll Island to Split Rock was proposed when 75% of the total troll coho quota north of Cape Falcon was achieved.

Option 2 was slightly more restrictive than option 1. This option proposed an April 22 opening of the chinook-only fishery off California, one week later than option 1 and nine days earlier than the 1981 regulations. In addition, the entire California troll fishery would have closed on June 16-30 under option 2. For California, this option provided three additional weeks of chinook salmon fishing compared to the 1981 regulations (April 22-30 and June 1-15) and shifted the early all-species season two weeks later.

For Oregon south of Cape Falcon, option 2 added three weeks to the early chinook-only season (April 22-30 and June 1-15) compared to the 1981 regulations. This was three weeks less than the season proposed in option 1. The June 1-15 fishery would have operated with the same gear restrictions as those proposed for the June 1-30 fishery in option 1. For all other areas, option 2 was the same as option 1, including season restrictions and inseason management proposals for coho salmon.

Option 3 presented essentially the same coastwide regulations as those adopted for the 1981 commercial troll fishing season.

Options 4 and 5 were more restrictive than the 1981 regulations. Option 4 recommended extension of the all-species season closure for the first two weeks of July for the area from Point Arena, California to Cape Falcon, Oregon. Thus the all-species season would have opened on July 15, rather than July 1, as in 1981. Option 4 also proposed a two-week delay (from July 15 to August 1) in the opening of the all-species season north of Leadbetter Point, Washington.

Option 5 proposed to eliminate the May chinook-only fisheries for the areas from Point Arena, California to the California/Oregon border and from Cape Falcon, Oregon to the Washington/Canada border. However, north of Point Arena to the Oregon/California border, the all-species season would have begun on July 1 rather than July 15, and north of Leadbetter Point the all-species season would have begun on July 15, rather than August 1, as in option 4.

Recreational Options

By proposing a May 22 opening date instead of a May 15 opening date, option 1 was slightly more restrictive than the 1981 regulations for the area from Cape Falcon, Oregon to the California/Oregon border. In all other areas option 1 was the same as the 1981 ocean recreational salmon fishing regulations.

Option 2 recommended a June 12 opening date for the all-species season north of the California/Oregon border to the Washington/Canada border. Compared with the 1981 season, this proposal represented a four-week delay in the opening of the recreational season south of Cape Falcon and about a three-week delay in the opening of the sport fishery north of Cape Falcon to the Washington/Canada border.

Option 3 proposed essentially the same seasons south of Cape Blanco, Oregon as the 1981 regulations. For the area from Cape Blanco to Cape Falcon, Oregon, the recreational season would have opened two weeks later (May 29) than the 1981 season (May 15). For the area from Cape Falcon to Leadbetter Point, Washington, the season would have been reduced a week compared to 1981 by opening one week later. North of Leadbetter Point, the 1982 recreational fishing season was similar to the 1981 season except that the first week of the season was for chinook only. In addition, option 3 proposed a reduction in the chinook salmon size limit from 24" to 22" off the Columbia River mouth (south of Leadbetter Point to Cape Falcon).

Adopted Management Measures for the 1982 Ocean Salmon Fishing Season

The Council met in Portland, Oregon on March 17-19, 1982 and tentatively chose among the management options by management area on Thursday, March 18. The Council asked its Salmon Plan Development Team (Team) to assess the impacts of the adopted management measures and report back to the Council on Friday, March 19. The Council then adopted management measures for 1982.

The Council reconvened in Portland, Oregon on March 31, 1982 in order to reconsider the management measures it had adopted for the California and southern Oregon fisheries. A summary of the management measures adopted by the Council is presented below.

Pacific Council Recommended 1982 Ocean Salmon Management
Measures off Washington, Oregon and California

AREA and FISHERY	SPECIES	DATES	SIZE LIMITS	DAILY BAG LIMITS	QUOTA
<u>US/Canada Border to Leadbetter Point</u>					
Rec.	All species except coho	May 29-June 11	Chinook - 24"	2 fish	None
	All species	June 12-till coho quota met	Chinook - 24" Coho - 16"	2 fish	115,000 coho
Troll	All species except coho (barbless hooks)	May 1-31	Chinook - 28"		None
	All species	July 15-till coho quota met	Chinook - 28" Coho - 16"		204,000 coho
<u>Leadbetter Point to Cape Falcon</u>					
Rec.	All species	June 12-till coho quota met	Chinook - 24" Coho - 16"	2 fish	100,000 ^{a/} coho
Troll	All species except coho (barbless hooks)	May 1-31	Chinook - 28"		None
	All species	July 1-till coho quota met	Chinook - 28" Coho - 16"		89,000 ^{a/} coho
<u>Cape Falcon to Cape Blanco</u>					
Rec.	All species	June 12-till coho quota met	None	First 2 fish	114,000 ^{a/b/} coho
Troll	All species except coho (barbless hooks)	May 1-31	Chinook - 26"		None
	All species except coho (special gear) ^{c/}	June 1-15	Chinook - 26"		None
	All species	July 1-till coho quota met	Chinook - 26" Coho - 16"		488,000 ^{a/b/}
	All species except coho (special gear) ^{c/}	After coho quota met - Sept. 5	Chinook - 26"		None
	All species except coho (barbless hooks)	Sept. 6-Oct. 31	Chinook - 26"		None
<u>Cape Blanco to OR/CA Border</u>					
Rec.	All species	May 29-till coho quota met	None	First 2 fish	a/b/
	All species except coho	After coho quota met-Oct. 31	None	First 2 fish	None
Troll	All species except coho (barbless hooks)	May 1-31	Chinook - 26"		140,000 ^{g/}
	All species except coho (special gear) ^{d/}	June 1-15	Chinook - 26"		None
	All species	July 1-till coho quota met ^{c/}	Chinook - 26" Coho - 16"		a/b/
	All species except coho (special gear) ^{d/}	After coho quota met-Aug. 22	Chinook - 26"		None
	All species except coho (barbless hooks)	Sept. 6-Oct. 31	Chinook - 26"		None

AREA and FISHERY	SPECIES	DATES	SIZE LIMITS	DAILY BAG LIMITS	QUOTA
<u>OR/CA Border to Point Arena</u>					
Rec.	All species	Feb. 13-Nov. 14	Chinook - 22" ^{e/} Coho - 22" ^{e/}	2 fish	None
Troll ^{f/}	All species except coho	May 1-May 24	Chinook - 26"		g/
	All species	May 25-June 15 ^{g/}	Chinook - 26" Coho - 22"		g/
	All species	July 1-Aug. 22	Chinook - 26" Coho - 22"		None
	All species	Sept. 6-30	Chinook - 26" Coho - 22"		None
<u>South of Point Arena to U.S./Mexico Border</u>					
Rec.	All species	Feb. 13-Nov. 14	Chinook - 22" ^{e/} Coho - 22" ^{e/}	2 fish	None
Troll ^{f/}	All species except coho	April 22-May 24	Chinook - 26"		None
	All species	May 25-June 15	Chinook - 26" Coho - 22"		None
	All species	July 1-Sept. 30	Chinook - 26" Coho - 22"		None

- a/ These quotas are subject to adjustment during the season based on the private hatchery contribution to the fishery.
- b/ Coho caught off California and in the area from the OR/CA Border to Cape Blanco will be counted toward the coho quota listed for the Cape Falcon to Cape Blanco area.
- c/ Chinook-only fishery to August 22, with special gear, after reaching coho quota.
- d/ Only hooks with whole, natural bait, or salmon plugs at least five (5) inches in length.
- e/ There is a 22-inch minimum size limit on chinook and coho in California, except that one chinook or coho may be less than 22" but not less than 20".
- f/ The California troll fishery will not be allowed to fish in the area off the Klamath River mouth (3 miles each side - 6 miles to sea) during open seasons from June 16 to July 16.
- g/ Chinook quota for the area between Point Arena, California and Cape Blanco, Oregon until June 15. If quota is reached before June 15, season will be closed to all species until July 1.

According to the Team's impact report the final recommended management measures would meet most of the Council's spawning escapement goals with the exception of the Klamath River and upper Sacramento River chinook salmon goals in California and upper Columbia River spring, summer and fall chinooks. However, the Team indicated that the spawning escapement goals for upper Columbia River chinooks would not be met even if the entire ocean salmon fishery was closed from Cape Falcon, Oregon to the Canadian border. The Council discussed the accuracy of the Klamath River chinook escapement goal with the Team and decided to retain the goal for 1982. However, the Council also decided to retain its adopted ocean salmon fishing management measures even though the expected ocean catch of Klamath River chinook salmon would likely preclude the run from successfully achieving the short-term spawning escapement goal of 86,000 fish.

IV. Inseason Management and Quotas

The Council did not indicate its preference for a specific inseason management system for 1982 in the February Draft Amendment. However, the 1982 draft amendment did include a discussion of alternative inseason management systems that emphasized the use of quotas (fixed or adjustable) for various management areas and species. The quota proposals were designed to be used with or without specified season closing dates.

With the fixed quota alternative, the quota is set at the beginning of the season based on preseason estimates (used for chinook salmon management off California in 1981). When the quota is reached, the fishery closes. There is no provision for adjusting fixed quotas during the season.

Adjustable quotas also are set at the beginning of the season but unlike fixed quotas, they can be modified or adjusted during the season if it is warranted. Such a quota was used for coho salmon management off Washington and Oregon in 1981.

Two other inseason management alternatives were proposed by the Council in the Draft Amendment. These were: mixed quotas (fixed for some species or areas, adjustable for other species or areas and no quotas for others); and no quotas, simply a setting of seasons based upon preseason estimates of resource abundance.

The Council decided to reduce the scope and complexity of the 1982 coho salmon inseason management procedures at its March meeting in Portland, Oregon. For the 1982 fishing season, coho salmon in the OPI and Washington coastal areas will be managed with fixed quotas. However, the coho quotas from Leadbetter Point, Washington southward through the entire OPI area may need to be adjusted during the season if the abundance of coho salmon that are produced by privately owned salmon hatcheries varies from preseason estimates.

The coho salmon quotas for the 1982 fishing season are:

U.S./Canada Border to Leadbetter Point

Troll - 204,000
Sport - 115,000

Leadbetter Point to Cape Falcon, Oregon

Troll - 89,000
Sport - 100,000

Cape Falcon to U.S./Mexico Border

Troll - 488,000
Sport - 114,000

The Council also decided to adopt a fixed quota for chinook salmon caught by the commercial troll fishery from Point Arena north of Cape Blanco, Oregon prior to June 15. The fixed quota is 140,000 fish. If the quota is reached prior to June 15, the troll fishery will be closed until July 1.

V. Analysis of Impacts of Alternatives and Proposed Action Alternatives

The estimated impacts of the 1982 regulations varied depending upon which management options or combination of options were selected by the Council (see Appendix A of the 1982 Amendment for an analysis of the impacts of the management options). The least restrictive options (commercial troll 1 and 2 and recreational 1) would have had the least adverse short-term socioeconomic impact on the ocean resource harvesters and would have provided the ocean harvesters the most flexibility in planning their fishing strategies. On the other hand, the most liberal ocean fishing regulations would have had the greatest adverse biological impact on certain depressed salmon stocks such as Klamath River chinooks, upper Sacramento River chinooks, Oregon and Washington coastal coho, and upper Columbia River chinooks and thus would also adversely impact ocean harvesters in future years. The least restrictive ocean fishing regulations would also directly restrict the harvests of "inside" commercial, sport and treaty fisheries especially if actual resource conditions are worse than preseason forecasts. They also would have increased the chances of not meeting obligations to treaty Indians north of Cape Falcon, Oregon.

With more restrictive regulations than those that governed the 1981 ocean salmon fisheries, and given similar ecological, biological and economic conditions that existed during the 1981 fishing season, the impacts of the 1982 regulations may be more severe on the ocean commercial and recreational fisheries and the small coastal communities that partially depend on those fisheries. However, when more salmon escape the ocean fisheries, more salmon will be harvested by "inside" commercial, sport and treaty Indian fisheries. The net effect is a transfer of fish from ocean to "inside" harvesters rather than a complete loss of the resource to all the groups. Also to the extent that the ocean fisheries must be restricted to provide for increased spawning escapement, the long-term benefits would be positive because future salmon

runs would be enhanced. The short term impacts will, however, be adverse to all fisheries.

In adopting its preferred management regime for the 1982 ocean salmon fisheries, the Council attempted to balance the impacts of the regulations between the ocean and "inside" fisheries with overriding emphasis on the conservation needs of the resource and Federal court mandates concerning allocations to Indian tribes with treaty fishing rights.

For a thorough discussion of the estimated socioeconomic impacts of the management alternatives and the management regime adopted by the Council at its March meeting, see Chapter V of the 1982 Amendment, and Appendix E, "Supplement to the Draft Regulatory Impact Review/Regulatory Flexibility Analysis (RIR/RFA)" contained in the 1982 Salmon Plan Amendment.

Impacts of the Proposed Action

A. Recreational Fisheries

For the recreational fisheries, the daily bag limits are about the same as the 1981 bag limits. The recreational season off California is similar to 1981. In Oregon south of Cape Blanco, a late season chinook-only fishery will follow the close of the all-species season. There will be a common opening date for all recreational all-species fisheries north of Cape Blanco. There will be a two-week chinook-only fishery north of Leadbetter Point before the all-species season. The area from Cape Blanco to the Oregon/California border will open two weeks earlier than the recreational fisheries north of Cape Blanco.

The recreational coho quotas will be significantly reduced compared to the 1981 coho quotas. South of Cape Falcon, Oregon, the recreational quota will be 7% lower than the catch in 1981. North of Cape Falcon, the recreational quotas will be 26% below the 1981 catch level.

In Oregon south of Cape Falcon, there are no size limits for salmon caught by recreational anglers. For the area north of the California/Oregon border there are no specified recreational season ending dates. The seasons will close when the coho quotas are reached except for the chinook-only fishery from Cape Blanco to the Oregon border.

The opening dates provided for in the Council's adopted regulations for the recreational fisheries off Oregon and Washington will reduce the fishing season considered so important to the charterboat owners and operators and recreational anglers, Memorial Day through Labor Day. However, the Council's adopted management regime reduces some of the adverse impacts by allowing the recreational fisheries in Oregon south of Cape Blanco to open on May 29, and a chinook-only recreational fishery north of Leadbetter Point from May 29 to June 11. With the exception of California, the recreational fisheries open later because of the reduced coho quotas.

In addition, the Council's decision to refrain from specifying recreational season ending dates for all areas north of the California/Oregon border is expected to have a positive socioeconomic impact because it will reduce the confusion caused by scheduling a season closure date and then closing early when the quota is reached.

The total impact of the elimination of the minimum size limit for Oregon south of Cape Falcon will increase the recreational catch by about 25 percent. The intent of the elimination of the minimum size limit is to reduce the mortality and wastage of juvenile fish that are hooked, landed, and subsequently released. Unlike 1981, there will be no recreational quotas for chinook salmon off California.

B. Commercial Troll Fisheries

The 1982 adopted troll fishery management regime is similar to the 1981 management regime in that it provides for a May chinook-only season coastwide, and there are no area closures off Washington or changes in the minimum size limits for troll-caught salmon. The most significant changes in the 1982 management package for the troll fisheries are as follows:

- (1) There may be two extra weeks of troll fishing in June (June 1-15), depending on how soon the chinook quota is reached between Point Arena and Cape Blanco, and a shift of the early coho troll season (from May 16-31 to May 25) in California, compared to 1981.
- (2) In Oregon south of Cape Falcon, there will be two extra weeks of chinook-only fishing (with special gear) from June 1-15. This period was closed in 1981. Thus, in 1982, California and Oregon as far north as Cape Falcon could be open for the first two weeks of June if the chinook quota is not reached before June 15. However, the Team has estimated that the quota may be reached earlier, and that the fishery between Point Arena and Cape Blanco may be closed sooner.
- (3) The regular all-species troll season will open on July 1 in all areas south of Leadbetter Point. This opening is two weeks earlier than in 1981 for the area from Cape Falcon to Leadbetter Point.
- (4) The troll coho quotas will be significantly reduced compared to 1981. South of Cape Falcon, the troll quota will be 27% less than the 1981 catch in that area. North of Cape Falcon, the troll quota will be 32% below the 1981 catch level. In 1982, for the first time, this northern quota will be divided into two parts: the Cape Falcon to Leadbetter Point coho troll quota will be 25% lower than the 1981 catch in that area, and the quotas for the area north of Leadbetter Point will be 35% less than the 1981 catch.
- (5) Unlike 1981, there will be no chinook quotas in California south of Point Arena.
- (6) North of Cape Falcon, there will be no specified troll season ending dates. The seasons will close when the coho quotas are reached.
- (7) The Oregon special gear chinook-only fishery following a troll coho quota closure will be expanded slightly to include the small area from Cape Sebastian to the Oregon/California border.
- (8) A troll closure will be implemented in a six-mile square area (three miles each side and six miles out to sea) off the Klamath River mouth during the period June 16-30. This closure is actually an extension

three miles further out to sea of the river mouth closure enforced in previous years.

- (9) A chinook salmon quota of 140,000 fish was adopted for the troll fishery from Point Arena, California to Cape Blanco, Oregon for the fishery prior to June 15. If the quota is reached prior to June 15, the fishery closes until the reopening on July 1.
- (10) The commercial troll fishery will be closed from August 22 through September 5 for the area from Cape Blanco, Oregon to Point Arena, California.

The lack of scheduled season-ending dates north of Cape Falcon may help reduce the confusion involved in quotas closures. The two-week Klamath River mouth closure is unlikely to have any significant socioeconomic impact, since this is actually a limited area extension of an existing closure provision, and the area involved is not a highly concentrated fishing zone.

The Oregon area extension for chinook fishing after a coho closure, from Cape Sebastian to the Oregon/California border, is unlikely to be very different from 1981. The area involved is very small, and in 1981, only federal waters in this zone were closed; state waters remained open. Thus, this 1982 extension does not constitute a significant change from 1981.

The common troll all-species opening date, south of Leadbetter Point, Washington (July 1) should help minimize effort shifts.

The division of the coho quotas north of Cape Falcon into two parts, separated at Leadbetter Point, will help maintain historic catch ratios between areas and between fisheries.

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PURPOSE AND NEED

The most recent information on the status of the Pacific salmon stocks and fisheries indicates that respecification and adjustment of the 1981 management measures are necessary in order to meet the plan goals and objectives for 1982. The 1981 California chinook quotas were specifically instituted for one year only. In the absence of a 1982 plan amendment, the 1980 regulations would have been in effect to the FCZ area off California while the 1981 regulations would have been in effect to the FCZ area off Oregon and Washington. The Council believed that the 1980 and 1981 regulations (and management boundaries) would not provide effective management given 1982 stock conditions. The Council also believed that there was a need to review and revise the process of inseason management for it to work more effectively than the process that existed during the 1981 fishing season.

On November 11, 1981 the Council held a scoping meeting for the purpose of receiving public comments about the major issues that should be addressed in the 1982 salmon plan amendment. After the meeting the Council reviewed the comments and determined the major items of public concern. The issues identified during the November 1981 scoping session remained as the major issues discussed during the public review period of the draft amendment.

These are:

- (1) The role of inseason management; when, where and under what conditions it is appropriate;
- (2) The propriety of using quotas for management of the fishery;
- (3) The length of fishing seasons and how they affect commercial and recreational fishing patterns and actions;
- (4) The impacts of ocean harvests on depressed salmon stocks, particularly Washington State coastal coho, Columbia River chinooks and Klamath River chinooks;
- (5) The socioeconomic impacts of potentially restrictive regulations on local coastal communities;
- (6) The impacts of ocean salmon harvests on treaty fishermen and other "inside" salmon fishing groups;
- (7) The means by which the Pacific Fishery Management Council will balance the impacts of resource management between the ocean and inside fisheries so that each group has an opportunity to harvest a fair and equitable share;
- (8) The impacts of recent Federal Court decisions regarding treaty Indian fishing rights on Federal and State salmon fishery management actions.

MANAGEMENT ALTERNATIVES

(For a complete discussion of the management alternatives see Chapter IV of the 1982 Draft Amendment.)

A. Management Goals and Objectives

The Council instructed the Salmon Plan Development Team (Team) to evaluate the management objectives that were presented in the 1978 Plan and to determine whether they were still appropriate or in need of modification. On the basis of the evaluation, the Team recommended that the management objectives be modified for the 1982 fishing season (and beyond) and expanded to include environmental and production objectives. The plan objectives can be distinguished from the management goals by their long-term applications. The management goals usually refer to the annual spawning escapements of individual or grouped coastal salmon stocks, e.g. Klamath River chinook or OPI coho. The plan objectives (management, environmental and production) cover a broad range of fishery related problems including the socioeconomic welfare of the fishery participants, cooperative efforts at salmon stock enhancement, restoration and protection of salmon spawning habitats, resource management considerations and other long-term resource maintenance goals. For a complete discussion of the proposed management, environmental and production objectives, see Chapter IV of the 1982 Draft Amendment or Chapter IV of the Final Amendment.

The Council's 1982 salmon management goals, like the 1981 management goals, were addressed on a species-by-river system or area basis instead of a coast-wide aggregate basis. The management goals are subject to modification if the preliminary stock status projections are found to be incorrect based on additional data and analysis.

California

The 1982 management goal is to retain the 1981 spawning escapement goals for Klamath River chinook (86,000 or 75% of the long-term goal) and for Sacramento River fall-chinook salmon (74,000 upriver and 71,000 lower river or 75% of the long-term escapement goals).

Oregon

The 1982 management goal for Oregon coastal chinook stocks is to achieve the natural spawning escapement goal of 150,000 to 200,000 adult fish. For Columbia River chinook, the states of Oregon and Washington established an escapement goal of 40,000 chinook adults above McNary Dam. Until modified or rescinded, the Columbia River Management Plan sets allocation goals for Columbia River chinook. As ordered by the Federal court, the Secretary of Commerce is currently examining ocean management measures which would return more upriver "bright" fall chinook to the Columbia River.

Columbia River and Oregon coastal coho are managed as one stock unit within the framework of the Oregon Production Index (OPI) because these stocks are intermixed in the ocean environment. The 1982 management goal for OPI coho is to achieve an OPI escapement of 300,000 fish. This is comparable to the escapements of 1979 and 1980 and is 115,000 fish greater than the 1981 escapement.

Washington

Washington coastal chinook stocks are managed for natural spawning escapement goals except Willapa Bay, Quinault River, and spring/summer chinook of the Quillayute River system. The natural chinook spawning escapement goals established by the State of Washington for coastal chinook stocks are:

Grays Harbor fall chinook	14,600
Queets River Fall chinook	4,200
Queets River spring/summer chinook	1,400
Hoh River fall chinook	2,400
Hoh River spring/summer chinook	1,500
Quillayute River fall chinook	6,000
Quillayute River spring/summer chinook	1,500

A long-term management plan for Washington coho salmon is being developed by representatives from federal and state agencies and from three treaty tribes with fishing rights to coastal coho salmon. A finalized management plan had been expected prior to the time the Council met to adopt a management regime for the 1982 ocean salmon fishing season. However, the plan has not been finalized at this time.

For 1982, the coastal treaty tribes proposed an escapement goal range for each natural coastal stock within which the ocean fishery would be managed to equalize the harvest by non-treaty ocean fishermen. The treaty tribes' proposed escapement ranges for Washington coho are given in the Team's impact analysis report of March 16, 1982.

B. Management Options

The Council proposed five management options for the coastwide commercial troll fishery and three management options for the coastwide recreational fishery. The commercial troll options ranged from being less restrictive than the coastwide 1981 regulations to more restrictive coastwide than the 1981 regulations.

1. Commercial Troll Options

Option 1

Management option 1 recommended opening the California chinook-only season on April 15, two weeks earlier than in 1981. A two-week all-species season was proposed for California from June 1-15 followed by chinook-only fishing from June 16-30, and the regular all-species season opening on July 1. This option recommended about six more weeks of chinook salmon fishing (April 15-30, June 1-30) by the commercial troll fleet off California compared to the 1981 regulations.

Option 1 also recommended a commercial troll fishing closure around the mouth of the Klamath River from June 15 to July 15. The proposed closure would extend to three miles on either side of the river mouth and out to six miles in the ocean.

Option 1 proposed an additional six weeks of chinook-only fishing (compared to 1981) for the area off Oregon south of Cape Falcon (April 15-30, June 1-30). For the area south of Cape Blanco to the California/Oregon border, coho salmon fishing would have been extended approximately eight weeks longer than in 1981 because the closure of the all-species season was proposed for October 31 rather than September 5. However, it was considered unlikely that coho fishing would have extended through October because inseason management, adjustable quotas and a 75%-of-quota triggering mechanism for stock evaluation were mandated for coho salmon in this option.

For the area north of Cape Falcon, Oregon to the Washington/Canada border, option 1 proposed an additional three weeks of the all-species season (compared to the 1981 regulations) by opening two weeks earlier, on July 1, and closing one week later, September 5. In addition, a Washington middle coast area closure from Carroll Island to Split Rock was proposed when 75% of the total troll coho quota north of Cape Falcon was achieved.

Option 2

Option 2 was slightly more restrictive than option 1. This option proposed an April 22 opening of the chinook-only fishery off California, one week later than option 1 and nine days earlier than the 1981 regulations. In addition, the entire California troll fishery would have been closed June 16-30. For California, this option provided three additional weeks of chinook salmon fishing compared to the 1981 regulations (April 22-30 and June 1-15) and shifted the early all-species season two weeks later to June 1-15 rather than from May 15-30 as in 1981.

For Oregon south of Cape Falcon, option 2 added three weeks to the early chinook-only season (April 22-30 and June 1-15) compared to the 1981 regulations. This was also three weeks less than the season proposed in option 1. The June 1-15 fishery would have operated with the same gear restrictions as those proposed for the June 1-30 fishery in option 1. For all other areas, option 2 was the same as option 1, including season restrictions and inseason management proposals for coho salmon.

Option 3

Option 3 presented essentially the same commercial troll fishing seasons as those that were adopted for the 1981 commercial troll fisheries.

Option 4

This option was more restrictive for the troll fishery from Point Arena, California north to Cape Falcon, Oregon (proposed a two-week delay in the July 1st opening of the all-species season) and north of Leadbetter Point, Washington to the Washington/Canada border (all-species season opens later than in 1981, on August 1). Option 4 proposed the same troll fishing seasons as the 1981 regulations for the area between Cape Falcon, Oregon and Leadbetter Point, Washington and south of Point Arena, California.

Option 5

Option 5 provided a closure of the May chinook-only fishery north of Point Arena, California to the California/Oregon border in order to protect the depressed Klamath River chinook stock. It also included a closure of the May chinook-only fishery from Cape Falcon, Oregon to the Washington/Canada border in order to reduce the ocean catch of Columbia River chinook stocks. However, option 5 would have permitted the all-species season to open two weeks earlier than the option 4 proposal for the area north of Leadbetter Point to the Washington/Canada border (July 15 instead of August 1).

In the discussion of specific options, all reference to the early season was with respect to a chinook-only fishery. The intent was that this early fishery as well as the late season chinook-only fishery should be open to all salmon species except coho. The number of other salmon (e.g. sockeye, chum) caught by the ocean fishery is small. Pink salmon in the Washington, Oregon, California area return every other year with 1982 being an off year.

2. Recreational Options

Option 1

This option was slightly more restrictive than the 1981 regulations for the area from Cape Falcon, Oregon to the California/Oregon border because it proposed a one-week delay in the May opening of the all-salmon species season (May 22 versus May 15 in 1981). For all other areas, i.e., north of Cape Falcon and south of the California/Oregon border, option 1 proposed the same seasons as those the Council adopted for the 1981 fishing season.

Option 2

This option proposed a June 12, 1982 opening date for the all-species season north of the California/Oregon border to the Washington/Canada border. Compared with the 1981 season, this proposal represented a four-week delay in the opening of the recreational season south of Cape Falcon and about a three-week delay in the opening of the sport fishery north of Cape Falcon to the Washington/Canada border.

Option 3

Option 3 proposed essentially the same seasons south of Cape Blanco, Oregon as the 1981 regulations. For the area from Cape Blanco to Cape Falcon, Oregon, the recreational season would have opened two weeks later (May 29) than the 1981 season (May 15). For the area from Cape Falcon to Leadbetter Point, Washington, the season would have been reduced a week compared to 1981 by opening one week later. North of Leadbetter Point, the 1982 recreational fishing season would have been similar to the 1981 season except that the first week of the season would have been for chinook salmon only. In addition, option 3 proposed a reduction in the chinook salmon size limit from 24" to 22" off the Columbia River mouth (from Leadbetter Point to Cape Falcon).

All of the recreational options provided for a two-fish daily bag limit north of the California/Oregon border. Options 1 and 2 provided for either a two- or three-fish daily bag limit off California while option 3 provided for a three-fish daily bag limit off California.

C. Management Boundaries

The 1982 Draft Amendment proposed that consideration be given to most of the management boundaries that were used for managing the 1981 ocean salmon fisheries as well as others that were considered to be appropriate for the 1982 fishing season based upon the latest stock status analyses. The specific geographic management boundaries that were proposed were:

Point Arena, California	38°57'15"N
Cape Vizcaino, California	39°43'30"N
Cape Blanco, Oregon	42°50'20"N
Cape Falcon, Oregon	45°46'00"N
Leadbetter Point, Washington	46°38'10"N
Carroll Island, Washington	48°00'03"N
Split Rock, Washington	47°24'06"N

The Council's Salmon Plan Development Team believed that Point Arena or Cape Vizcaino (depending on the timing of the ocean fishing seasons) may have been good geographical demarcations for separation of Sacramento River and Klamath River fall-run chinook salmon. The Team also believed that the most recent tag recovery data indicated that Cape Blanco, Oregon is an appropriate northern boundary for the distribution of Klamath River chinooks. Cape Falcon, Oregon was designated as the southern boundary for the distribution of Columbia River chinook stocks. Leadbetter Point, Washington was not intended as an absolute stock separation line but has been used as the northern boundary for the OPI management area. It has been suggested that closing the fishery in the area between Split Rock and Carroll Island may have helped minimize adverse fishery-caused impacts on Washington coastal coho salmon.

The Council adopted the following geographic management boundaries for management of the 1982 ocean salmon fisheries in addition to the international geographic boundaries between the United States and Canada and the United States and Mexico. They are:

Leadbetter Point, Washington	46°38'10"N
Cape Falcon, Oregon	45°46'00"N
Cape Blanco, Oregon	42°50'20"N
California-Oregon Border	42°00'00"N
Point Arena, California	38°57'15"N

D. Inseason Management and Quotas

The Council did not indicate its preference for a specific inseason management system for the 1982 fishing season in the Draft Amendment. The 1982 Draft Amendment included a discussion of several alternative inseason management systems that explored the use of fixed or adjustable quotas for the various management areas and species of salmon managed in the plan. A list of criteria for inseason coho stock size adjustment was also included in Chapter IV of the February Draft Amendment.

Fixed Quota Alternative

Under the fixed quota alternative the quota is set at the beginning of the season based upon preseason estimates of salmon abundance, as was done for chinook salmon management off California in 1981. When the quota is reached, the fishery would be closed automatically by field order from the NMFS Northwest Regional Director in Seattle, Washington. This system can be implemented with or without a specified season closing date. The major disadvantage of this system is that there is no provision for adjusting the fixed quota during the season if the actual stock conditions, as reflected in catch and effort data, vary from the preseason estimates. The major advantage of this process is that it is simple and inexpensive to administer.

Adjustable Quota Alternative

Adjustable quotas are also set at the beginning of the season but, unlike fixed quotas, they can be modified or adjusted during the season if actual stock conditions, as reflected in catch and effort data, vary from the preseason estimates of stock abundances. Adjustable quotas were used for coho salmon management off Washington and Oregon in 1981. The major advantage of the adjustable quota system is that it provides fishery managers the flexibility to correct any inaccurate preseason estimates of salmon abundance during the season on a timely basis. On the other hand, the process is more difficult and costly to administer and can be confusing to fishermen who plan their fishing strategies early in the fishing season.

Other Inseason Management Alternatives

Two other inseason management alternatives were proposed by the Council for consideration before the start of the 1982 ocean salmon fishing seasons. These are: mixed quotas (fixed for some species or areas, adjustable for other species or areas and no quotas for others); and no quotas, simply a setting of seasons based upon preseason estimates of resource abundance. The latter alternative would likely result in the setting of conservative ocean fishing seasons in order to afford maximum protection of some depressed salmon stocks.

Council Adopted Inseason Management Actions and Quotas for the 1982 Ocean Salmon Fisheries

The Council decided to reduce the scope and complexity of the coho salmon inseason management procedures it initiated for the 1980 fishing season and expanded for the 1981 fishing season. Coho salmon fisheries will be managed with fixed quotas during the 1982 fishing season. However, the coho quotas from Leadbetter Point, Washington southward may need to be adjusted during the season if the abundance of coho salmon that are produced by privately owned salmon hatcheries varies from preseason estimates.

Coho salmon that are produced in privately owned hatcheries are a recent entry into the ocean salmon management equation and the abundance of these fish in the ocean is uncertain. The private hatcheries that are producing coho salmon mark with coded-wire tags a representative sample of fish that are released to the marine environment each year. These marked fish will be recovered during the ocean fishing season and the abundance of privately produced coho salmon

will be estimated. When 75 percent of the coho quotas from Leadbetter Point southward to the U.S./Mexico border have been taken, the contribution of coho produced by private hatcheries will be assessed and, if necessary, the catch quotas will be adjusted. In all other respects, inseason management for coho salmon will consist of monitoring coho catches and announcing season closures when the preseason established quotas are reached.

The coho salmon quotas that the Council adopted for the 1982 fishing season are:

North of Leadbetter Point, Washington

Troll - 204,000
Recreational - 115,000

Cape Falcon, Oregon to Leadbetter Point

Troll - 89,000
Recreational - 100,000

South of Cape Falcon to the U.S./Mexico Border

Troll - 488,000
Recreational - 114,000

The Council also decided to adopt a fixed quota for chinook salmon caught by the commercial troll fleet from Point Arena, California to Cape Blanco, Oregon prior to June 15. The fixed chinook quota is as follows:

Point Arena, California to Cape Blanco, Oregon (Prior to June 15)

Commercial Troll - 140,000

The 1982 chinook quota for the area north of Point Arena to Cape Blanco was considered necessary in order to protect the Klamath River chinook run. No quota was established for the commercial fishery south of Point Arena or for the recreational fishery in either management area off California.

If and when the fishery reaches the chinook salmon quota, it will be closed automatically by Field Order from the Northwest Regional Director of the NMFS until the reopening of the all-species season on July 1.

OTHER REGULATION CONSIDERATIONS

Most of the other regulations that were in effect for the 1981 fishing season will apply in 1982. The exceptions are:

- (1) There is no minimum size limit for salmon caught in the Oregon recreational fishery south of Cape Falcon to the Oregon/California border.
- (2) The minimum size limit for coho salmon caught in the Washington recreational fishery has been reduced to 16" from 20" in 1981.

- (3) The treaty Indian fishing regulations for persons of the Quinault, Hoh, and Quileute tribes are modified by reducing the minimum size limit for chinooks to 26" and by closing the fishery on September 7, rather than October 31.

SPECIFICATION OF OY FOR THE FISHERY

The optimum yield of chinook, coho, pink, chum, and sockeye salmon was defined in the Draft Amendment as the amount of fish (in numbers or weight) caught by United States fishermen in the FCZ adjacent to the States of Washington, Oregon, and California, and in the waters (including internal waters) of those States, and Idaho, which will, to the greatest extent practicable, fulfill the following:

- (1) the annual spawning escapement goals for natural and hatchery stocks, as recommended by the various States and adopted by the Council;
- (2) the obligation to provide for treaty Indian harvest opportunity, as mandated by applicable decisions of the Federal courts;
- (3) the requirements of the Indian subsistence fishery for chinook on the Klamath River;
- (4) the allocation goals between or among ocean fisheries, as adopted by the Council;
- (5) the allocation goals between other than treaty Indian ocean and "inside" fisheries, as recommended by the various States;
- (6) other socioeconomic goals of the FMP and its amendments.

For the 1982 season only, it is estimated that OY will fall within the range of 5,000,000 to 7,000,000 fish (including coho, chinook, pink, sockeye, and chum).

AFFECTED ENVIRONMENT

Section 1.2 of the EIS in the March, 1978 FMP entitled Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978 describes the marine and freshwater environment used by the coastwide salmon resource managed by the plan, and the human environment, including a brief description of the coastal communities dependent on the fisheries and the ocean salmon fishery itself. In addition, Appendices A and B of the 1981 FMP Amendment provide a more current description of the origin, habitat and distribution of the salmon managed by the plan, and the fishery participants and communities most affected by the salmon regulations. These documents are available from the Pacific Fishery Management Council or the Northwest Regional Office of the National Marine Fisheries Service (see Cover Sheet for addresses). Finally, Chapters I and V of the 1982 Amendment provide the most recent analysis of problems facing the salmon resources and those most dependent upon them, as well as the socio-economic trends within the fisheries.

ENVIRONMENTAL CONSEQUENCES

Appendix A of the 1982 FMP Amendment discusses the Salmon Plan Development Team's analysis of the impacts of the management regime alternatives selected by the Council in January, 1982 for public review and comment. The alternatives ranged from less restrictive than the 1981 regulations to more restrictive. Generally, the most liberal ocean fishing regulatory options would have had the least negative short-term socioeconomic impact on the ocean fishery user groups but with the likelihood of having the most severe impact on the salmon spawning escapements and harvest opportunities of inside treaty and non-treaty fishing groups. Conversely, the most restrictive ocean fishing regulatory options would have had the most negative short-term socioeconomic impact on the ocean fishery user groups with the least adverse impact on the salmon spawning escapements and on the harvest opportunities of inside treaty and non-treaty fishing groups.

Appendix C of the 1982 FMP Amendment presents a complete evaluation of the expected impacts of the Council adopted regulations as revised on March 19, 1982. In addition, Appendix E of the 1982 Amendment presents a discussion of the socioeconomic impacts of the Council's ocean salmon fishing regulations for the 1982 season. Appendix D evaluates the Council's final action on March 31, 1982.

The table below summarizes the estimated impacts of the 1982 regulations on the ocean fisheries and the coastwide salmon resources and compares them to the 1981 fishing season.

<u>AREA</u>	<u>ESTIMATED IMPACTS</u>
<u>California</u>	
Klamath River	Ocean harvest will be about 7% below 1981; chinook inriver run size will be about the same as 1981; spawning escapement will increase above last year's escapement.
Sacramento River	Ocean harvest will increase by about 20%; chinook upper river fall chinook run will fall below the goal by about 33%; lower river runs will generally meet escapement goals.
Troll Fishery	Ex-vessel revenues will increase \$0.7 million over 1981; harvest north of Point Arena will decrease slightly.
Recreational Fishery	Seasons and harvests will be about the same as 1981.
<u>Oregon (South of Cape Falcon)</u>	
OPI Coho	Escapement goal of 300,000 fish to be reached due to a reduction in the ocean harvest quotas.
Chinook	Escapement goal of between 150,000-200,000 to be met.
Troll Fishery	Ex-vessel revenues decreased by \$1.6 million due to reduced coho quotas, 27% reduction in coho harvest, and the chinook closures.
Recreational Fishery	27% reduction in coho harvest estimated; 19% increase in chinook harvest estimated; slight economic gain due to no minimum size limits and an early opening (5/29) south of Cape Blanco. \$5 million reduction in net economic benefits.
<u>Washington and Oregon (north of Cape Falcon)</u>	
Coho	Increased spawning escapements due to reduced coho quotas for the ocean fisheries.
Chinook (including Columbia River)	Increased spawning escapements due to reduced coho quotas or the ocean fisheries and likely early fishing season closures; 11% reduction in ocean harvest estimated.
Troll Fishery	Ex-vessel revenues decreased by \$1.5 million due to reduced coho quotas; 33% reduction in coho harvest estimated.
Recreational Fishery	26% reduction in coho harvest estimated; likely early season closure as a result of coho quota in late August.

RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES,
AND CONTROLS OF THE AFFECTED AREA

Though this action applies only to the waters within the 3-200 mile zone, fishing within three miles of shore as well as processing and support activities on shore may be affected. The California Department of Fish and Game, the Oregon Department of Fish and Wildlife, and the Washington Department of Fisheries have been responsible for management of the fisheries inside three miles and for the licensing of vessels that land salmon for sale within the states. Coastal zone management (CZM) programs developed by each of these states have been approved under the Federal Coastal Zone Management Act of 1972. The NMFS made a determination of the consistency of the salmon plan and subsequent amendments with the policies that were established by the coastal zone management programs of the involved states. Each of the state coastal zone management commissions concurred. The NMFS has again issued determinations of consistency of the proposed Federal action (i.e., 1982 ocean salmon plan amendment) to the appropriate California, Oregon, and Washington coastal zone management agencies and is awaiting responses from those agencies.

LIST OF PREPARERS

<u>Name</u>	<u>Title, Discipline, Experience</u>
Robert Ayers	Fishery Biologist, NMFS B.S., Fisheries 26 years
Stacy Hall	Social Scientist, PFMC M.M.A., Marine Affairs 2 years
Kenneth Henry	Fishery Biologist, NMFS Ph.D., Fishery Biology 33 years
Harvey Hutchings	Chief, Fishery Management Div., NMFS Ph.D, Economics 26 years
Steven Lewis	Fishery Biologist, ODFW M.S., Fisheries 15 years
Rich Lincoln	Fishery Biologist, WDF B.S., Fisheries 8 years
Lee Morgan	Resource Management Specialist, NMFS M.M.A., Marine Affairs 5 years
Gary Morishima	Consultant, Quinault Indian Nation Ph.D., Quantitative Science 15 years
Pat O'Brien	Fishery Biologist, CDFG B.S., Fisheries 16 years
Tim Roth	Fishery Biologist, USFWS B.A., Fisheries 6 1/2 years

LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF
THE DRAFT STATEMENT WERE SENT

The Pacific Fishery Management Council mailed the proposed 1982 salmon plan amendment and DSEIS to over 2000 individuals who had requested copies of the document. In addition, the following Federal, state and local government agencies and other interested organizations received copies of the combined 1982 amendment/DSEIS:

Federal Agencies

U.S. Corps of Engineers
 U.S. Coast Guard
 Environmental Protection Agency
 Department of the Interior
 Fish & Wildlife Service
 Bureau of Land Management
 Bureau of Indian Affairs
 Fisheries Service of Canada
 Department of Agriculture
 Forest Service
 Soil Conservation Service
 Department of Energy
 Bonneville Power Admin.

State Agencies & Other Organizations

Fisheries Agencies, State of Oregon,
 Washington, California, Idaho, and
 Alaska
 Conservation Organizations
 Salmon Processing Industry
 Northwest Indian Fisheries Commission
 North Pacific Fishery Management Council
 Columbia River Inter-Tribal Fish
 Commission
 Trollers Associations
 Gillnetters Associations
 Labor Organizations
 Recreational Fishery Organizations
 Charterboat Associations
 Land Conservation and Development
 Commission (Oregon)
 California Coastal Zone Conservation
 Committee
 Washington Department of Ecology
 San Francisco Bay Conservation and
 Development Commission

SCHEDULE OF PUBLIC HEARINGS

Pacific Fishery Management Council
February 26, 27 and March 1, 1982

<u>Time/Day</u> <u>Date</u>	<u>Location</u>
February 26, Friday 7:00 P.M.	Park Hilton Hotel Sixth and Seneca Seattle, Washington 98101 Glacier-Yellowstone Room
February 26, Friday 7:00 P.M.	Astoria Middle School 1100 Klaskanine Astoria, Oregon 97103
February 26, Friday 7:00 P.M.	Eureka Inn 7th & J Streets Eureka, California 95501
February 27, Saturday 2:00 P.M.	California Department of Fish & Game Committee Room Resources Building 1416 Ninth Street Sacramento, California 95814
February 27, Saturday 2:00 P.M.	Pony Village Lodge Virginia Avenue North Bend, Oregon 97459
March 1, Monday 7:00 P.M.	Idaho State University Rooms 406 and 407 Student Union Building 8th Street Pocatello, Idaho 83201

COMMENTS AND RESPONSES

Over one hundred individuals, many of them representing organizations, user groups, and agencies submitted comments during the public review period on the February, 1982 draft plan for managing the 1982 ocean salmon fisheries (see List of Commenters).

In order to present in the FSEIS the many comments that were submitted to the Council and the NMFS during the public comment period, it was necessary to combine the comments into categories for each area beginning with Washington and proceeding to Oregon and California. It was not possible to present in the text all the comments that were submitted by all the individuals and organizations. Furthermore, the naming of any individuals or organizations below is not intended in any way to indicate the relative importance of any given testimony.

Most of the comments that were submitted during the public review period, either orally at the public hearings, or as written testimony received at the Council or NMFS, concerned the 1982 ocean salmon fisheries management options that were presented in the February draft plan, the potential impacts of the 1982 management regime on the ocean fisheries, the adequacy of the data used in the plan to set management goals and management options, and the need to protect and enhance the freshwater spawning habitat of salmon.

I. U.S./Canada Border to Cape Falcon, Oregon1. Comment:

Most commercial trollers favored management options 1 and 2. They spoke strongly in favor of the full May chinook fishery and for a July 1 opening of the all-species season. They viewed the analysis of the May closure in the amendment as unfair and faulty. It was their claim that the losses from a May closure would be greater than presented in the amendment, because of price and size changes and the assumption of a 60 percent recapture rate after the closure. The trollers stressed the heavy economic losses in 1981. Reference was made to a survey of 22 percent of the troller fleet which showed a drop of \$17.6 million for trollers in Washington in 1981.

Response:

The Council is concerned about the increasingly restrictive seasons being faced by the trollers north of Cape Falcon. It is aware of the adverse impact on the trollers of reduced catches, coupled with higher costs and the recession. The Council did everything it could to allow the trollers as much ocean harvest as possible given the status of the coastal salmon runs and the need to provide increased numbers of upriver chinook to the Columbia river and increased numbers of coho to the Washington coastal streams to meet Indian treaty obligations. The Federal District Court's ruling in August 1981 on river-by-river, run-by-run management required that the ocean harvest be constrained by its impact on the natural coho run returning to the Queets river. The trollers' coho salmon quota for the area north of Cape Falcon was reduced in 1982 to 293,000 fish (204,000 north of Leadbetter Point and 89,000 from Leadbetter Point to Cape Falcon) from 372,000 fish quota and a 434,000 fish catch in 1981 in order to meet necessary spawning escapements and to achieve treaty catch equalization.

The full May chinook (all-species-except-coho) fishery was continued in 1982 despite the desire of the Department of the Interior and the Confederated Tribes to abolish the May fishery for the trollers in the ocean north of Cape Falcon. The Council's action was based primarily on the Team analysis (pages 19-21 of Appendix A (March 16 document) and page 11-12 of Appendix C (March 19 document) which indicated that very few Columbia River upriver falls, summer and spring chinook are caught in the May ocean fishery. It also was based on the conclusion that ocean harvest pressures on chinook salmon stocks north of Cape Falcon will be reduced during the 1982 all-species season as compared to previous years because of the significantly reduced coho quotas and the shorter fishing time allowed in this area.

A July 1 all-species season was provided the trollers between Leadbetter Point and Cape Falcon as many of them requested, in order to have a common opening date for the OPI area. A July 15 opening was required, however, north of Leadbetter Point to maximize the catch of Puget Sound coho in the ocean and still protect Washington coastal coho stocks.

2. Comment:

Several trollers asked that the 26-inch minimum size limit for chinook be reinstated to reduce the waste presently occurring. They stated that a considerable number of 26- to 28-inch fish were being caught, measured and discarded, with significant mortalities resulting.

Response:

This issue was raised last year and the year before. In 1981 the Salmon Plan Development Team reviewed this restriction and the basis for it, including substantial research conducted by State, Federal and Canadian agencies over past years, and concluded that the increased poundage of fish caught (and increase in value as size increases) more than offset the increased loss of shorter fish from hooking mortality. The Team still stands by this conclusion. The measure is also necessary to protect immature portions of the populations and to increase escapement of chinook to the Columbia River.

3. Comment:

Several trollers and others stated that the Council should become more active in habitat protection and restoration since reductions in ocean harvests have not been successful in increasing the abundance of salmon.

Response:

The Council recognizes that reduction in ocean harvests is not the only step needed to increase the abundance of all runs of salmon; that other steps to protect the habitat and enhance the resource are also needed, particularly in the Columbia River. The Council is increasing its efforts to encourage, influence, and push Federal and State agencies charged with this responsibility to step up their actions to protect and enhance the salmon runs. The Council's responsibilities are statutorily limited with respect to what more it can do in this regard. It does not believe that actions to protect the habitat and enhance the resource necessarily substitute for ocean fishery regulations. Both are necessary.

4. Comment:

Non-treaty inside commercial net fishermen commented that their members had been faced with severe fishing restrictions during the past several years. They requested a separate 1982 salmon allocation for inside non-treaty commercial net fishermen.

Response:

Establishing a separate allocation for inside non-treaty commercial net fishermen is outside the jurisdiction of the Council. However, the reduced coho quotas and fishing time allowed the ocean fisheries should increase the in-river run size for most Washington runs, thereby increasing the opportunity for the Washington Department of Fisheries to allocate more salmon to the inside non-treaty net fishermen.

5. Comment:

Some representatives of treaty fishermen from the Columbia River area and the Washington coastal area recommended that the Council adopt the most restrictive ocean fishing management options in order to achieve the Council's long-term upriver chinook salmon spawning escapement goals and the treaty fishing harvest shares.

Response:

The Council adopted more restrictive seasons and quotas for the area north of Cape Falcon. These measures are expected to increase the number of fall chinook returning to the Columbia River, including upriver brights, as well as provide for adequate spawning escapements for coho to the Washington coastal streams. It is estimated that if the entire FCZ area north of Cape Falcon were to be closed all season the return of upriver brights to the Columbia River would increase by only 4,600 fish. It is estimated that for each additional upriver bright that escapes above McNary Dam, 161 other salmon will have to be foregone by the ocean fisheries off Washington. Canada and Alaska fisheries take many more upriver brights than do the Washington, Oregon and California salmon fisheries. Other alternatives for increasing the escapement of upriver brights should be evaluated.

6. Comment:

The Northwest Indian Fisheries Commission recommended that the Council utilize "evaluation fisheries" in the ocean. The commission proposal called for an ocean fishery that would be suspended after some specific amount of time, e.g., three weeks. Upon suspension of the fishery, the catch and effort data would be evaluated in order to determine the accuracy of the preseason estimates of salmon abundance. The ocean fisheries would reopen if the evaluation warranted such actions.

Response:

In view of the very short season allowed the ocean fisheries and the fixed coho quotas adopted north of Cape Falcon, the proposal by the Northwest Indian Fisheries Commission was not adopted.

7. Comment:

Trollers expressed concern that they were being forced to fish under more hazardous weather conditions because of the shorter fishing seasons, and that as a result there was a greater loss of life.

Response:

The Salmon Plan Development Team attempted to obtain and analyze data concerning the number of commercial fishing vessel accidents at sea the past several years (see pages 38-II, 39-II, and 27-V through 31-V of the draft amendment) in an effort to determine if there had been a decided increase in the number of accidents and fatalities. Limited data and resources did not permit an adequate analysis. Efforts in this area will be continued. Alternatives such as individual quotas that could be caught over an extended period, or five day per week fishing, were explored, but were judged impractical at this time. The trollers, for reasons expressed in the response to Comment 1, could not be given longer seasons or higher quotas.

8. Comment:

Representatives of the commercial trollers as well as representatives of the charterboat fishermen urged that separate allocations be made for ocean recreational and commercial fishermen. Some urged the maintenance of the traditional distribution of ocean harvests for commercial (60%) and recreational (40%) fisheries north of Cape Falcon. Some recreational fishermen urged the Council to adopt equal harvest shares for the sport and commercial fisheries. There was some objection to taking the Indian ocean catch off the top of the allowable ocean harvest before a 60/40 allocation north of Leadbetter Point before allocating between the recreational and commercial fishermen.

Response:

Separate coho quota allocations were assigned the commercial troll and recreational fisheries for the two management areas north of Cape Falcon based on the average historical (1971-75) catches for the two groups. For the area from Cape Falcon to Leadbetter Point the percentage distribution for the total coho quota was 53 percent for the recreational fishery and 47 percent for the trollers. For the area north of Leadbetter Point the recreational fishery was given 36 percent of the quota and the trollers 64 percent. The Council retained its belief that the predicted ocean catch by the treaty Indians should come off the top before the allocation to the recreational and commercial fisheries is made. This the Council believes is equitable in light of the fact that ocean catches by the treaty Indians are increasing.

April 1982

U.S. Department of Commerce
National Oceanic and
Atmospheric Administration
National Marine Fisheries Service
Northwest Region
7600 Sand Point Way N.E.
Seattle, Washington 98115

Prepared jointly by:
Pacific Fishery Management Council
526 S.W. Mill Street
Portland, Oregon 97201

FISHERY MANAGEMENT PLAN FOR
COMMERCIAL AND RECREATIONAL SALMON
FISHERIES OFF THE COASTS OF
WASHINGTON, OREGON, AND CALIFORNIA
COMMENCING IN 1978

1982 AMENDMENT OF THE

ON THE

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

FINAL

APPENDIX F

COVER SHEET

(x) Final

() Draft

Responsible Agencies:

U.S. Department of Commerce
 National Oceanic and Atmospheric Administration
 National Marine Fisheries Service
 Northwest Region
 7600 Sand Point Way N.E.
 Seattle, WA 98115

Contact: H.A. Larkins
 Regional Director
 (206)446-6150

Pacific Fishery Management Council
 526 S.W. Mill Street
 Portland, Oregon 97201

Contact: Joseph C. Greenley
 Executive Director
 (503)221-6352

Title of Proposed Action:

1982 Amendment of the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978

Abstract:

The proposed action is a modification of the fishery management plan for the ocean commercial and recreational salmon fisheries off the coasts of Washington, Oregon and California for the 1982 fishing season. The 1982 plan evaluates the current status of the coastwide salmon stocks, reviews the 1981 ocean salmon fishery, and presents the coastwide management regime for the 1982 ocean salmon fisheries and the alternatives considered. The specific management measures that comprise the coastwide management regime vary by area and fishery, but generally establish fishing seasons, provide harvest guide-lines or quotas and other management modifications, and set daily catch limits for recreational fisheries and establish minimum size limits on fish. The 1982 management regime is intended to prevent overfishing in the ocean, to apportion equitably the ocean harvest between commercial and recreational fisheries, to allow more salmon to survive the ocean fisheries and reach the various inside fisheries, to meet the U.S. obligations to treaty Indian fisheries, and to achieve spawning escapement requirements.

During its March 17-19 meeting, the Council adopted the 1982 ocean salmon plan regulations and decided to send them to the Secretary of Commerce for his review and implementation. The 1982 management measures included a more liberal commercial fishing season for chinook salmon in northern California and southern Oregon than in 1981. A subsequent evaluation of the Council's proposal indicated that the ocean catch in that area would increase by 20% over 1981, and that the interim spawning escapement goal of 86,000 chinook to the Klamath River would not be reached.

Following the March 17-19 meeting, the Council received a letter from the Assistant Administrator for Fisheries, National Marine Fisheries Service,

which urged the Council to reconsider its action and "to forward a recommendation that would represent a significant step towards achievement of the Klamath River interim spawning escapement goal." Council members were polled by phone and agreed to meet to reconsider proposed regulations off northern California and southern Oregon.

During its March 31 meeting, the Council adopted a troll season from Point Arena, California to Cape Blanco, Oregon which has a two-week closure from August 22 to September 6. A quota of 140,000 chinook until June 15 was also established for the area. For the area south of Point Arena, the troll fishery will open on April 22, rather than May 2, and off California the all-species season will begin on May 25 rather than June 1 as adopted at the earlier March meeting. The opening date for the chinook-only fishery was changed from May 2 to May 1 for the area between Cape Falcon and Point Arena. Proposed regulations in northern Oregon and Washington are unchanged from the Council's earlier March meeting.

SUMMARY

I. Proposed Action:

The Pacific Fishery Management Council (Council) has adopted an amendment of the Fishery Management Plan (FMP) for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California for the 1982 fishing season. This is the Council's fourth amendment of the FMP.

The 1982 amendment consists of the following sections: 1) a discussion of 1982 salmon fishery management problems and objectives, 2) a review of the 1981 commercial and recreational salmon fisheries, 3) an evaluation of 1981 ocean salmon management including an assessment of harvest guidelines and quotas, 4) a report on the resource status in 1982, 5) a presentation of management alternatives and strategies for the 1982 fisheries, 6) a discussion of socioeconomic trends, 7) an analysis of the alternative management strategies, and 8) an analysis of the impacts of the preferred management regime adopted by the Council for the ocean salmon fisheries.

The most recent information on the status of the Pacific salmon stocks and fisheries indicates that respectification and adjustment of management measures were necessary in order to meet the 1982 fishery management plan goals and objectives. The 1981 California chinook quotas were specifically instituted for one year only. In the absence of a 1982 amendment, the 1980 regulations would have been reinstated for the FCZ area adjacent to California while the 1981 regulations would have been in effect in the FCZ off Oregon and Washington.

II. Major Issues (Controversies)

The major areas of public concern regarding the implementation of the 1982 management program were as follows:

- (1) The role of inseason management; when, where and under what conditions it is appropriate;

- (2) The propriety of using quotas for management of the fishery;

(3) The length of fishing seasons and how they affect commercial and recreational fishing patterns and actions;

(4) The impacts of ocean harvests on depressed salmon stocks, particularly Washington and Oregon coastal coho, Columbia River chinooks, Klamath River chinooks and Upper Sacramento chinooks;

(5) The socioeconomic impacts of potentially restrictive regulations on coastal communities;

(6) The impacts of ocean salmon harvests on treaty Indian fishermen and other "inside" salmon fishing groups;

(7) The means by which the Pacific Fishery Management Council will balance the impacts of resource management between the ocean and inside fisheries so that each group has an opportunity to harvest a fair and equitable share;

(8) The impacts of recent Federal Court decisions regarding treaty Indian fishing rights on Federal and State salmon fishery management actions.

III. Management Alternatives

Before the Council adopted the management regime for the 1982 ocean fishing season at its March meetings in Portland, Oregon, it circulated for public comment a range of management options for the 1982 coastwide ocean salmon fisheries that included five management options for the commercial troll fisheries and three management options for the recreational fisheries.

Commercial Troll Options

Management option 1 recommended opening the California chinook-only season on April 15, two weeks earlier than in 1981. A two week all-species season was proposed for California from June 1-15 followed by chinook-only fishing June 16-30, and the regular all-species season opening on July 1. This option recommended about six more weeks of chinook salmon fishing (April 15-30, June 1-30) by the commercial troll fleet off California compared to the 1981 regulations.

Option 1 also recommended a commercial troll fishing closure around the mouth of the Klamath River from June 15 to July 15. The proposed closure would extend to three miles on either side of the river mouth and out to six miles in the ocean.

Option 1 recommended an additional six weeks of chinook-only fishing (compared to 1981) for the area off Oregon south of Cape Falcon (April 15-30 and June 1-30). For the area south of Cape Blanco to the California/Oregon border, coho fishing would have been extended approximately eight weeks longer than in 1981 because the closure of the all-species season was proposed for October 31 rather than on September 5. However, it is unlikely that coho fishing would have extended through October because inseason management, adjustable quotas, and a 75%-of-quota triggering mechanism for stock evaluation were mandated for coho salmon in this option.

For the area north of Cape Falcon, Oregon, to the Washington/Canada border, option 1 proposed an additional three weeks of the all-species season (compared to the 1981 regulations) by opening two weeks earlier, on July 1, and closing one week later, September 5. In addition, a Washington middle coast area closure from Carrol Island to Split Rock was proposed when 75% of the total troll coho quota north of Cape Falcon was achieved.

Option 2 was slightly more restrictive than option 1. This option proposed an April 22 opening of the chinook-only fishery off California, one week later than option 1 and nine days earlier than the 1981 regulations. In addition, the entire California troll fishery would have closed on June 16-30 under option 2. For California, this option provided three additional weeks of chinook salmon fishing compared to the 1981 regulations (April 22-30 and June 1-15) and shifted the early all-species season two weeks later.

For Oregon south of Cape Falcon, option 2 added three weeks to the early chinook-only season (April 22-30 and June 1-15) compared to the 1981 regulations. This was three weeks less than the season proposed in option 1. The June 1-15 fishery would have operated with the same gear restrictions as those proposed for the June 1-30 fishery in option 1. For all other areas, option 2 was the same as option 1, including season restrictions and inseason management proposals for coho salmon.

Option 3 presented essentially the same coastwide regulations as those adopted for the 1981 commercial troll fishing season.

Options 4 and 5 were more restrictive than the 1981 regulations. Option 4 recommended extension of the all-species season closure for the first two weeks of July for the area from Point Arena, California to Cape Falcon, Oregon. Thus the all-species season would have opened on July 15, rather than July 1, as in 1981. Option 4 also proposed a two-week delay (from July 15 to August 1) in the opening of the all-species season north of Leadbetter Point, Washington.

Option 5 proposed to eliminate the May chinook-only fisheries for the areas from Point Arena, California to the California/Oregon border and from Cape Falcon, Oregon to the Washington/Canada border. However, north of Point Arena to the Oregon/California border, the all-species season would have begun on July 1 rather than July 15, and north of Leadbetter Point the all-species season would have begun on July 15, rather than August 1, as in option 4.

Recreational Options

By proposing a May 22 opening date instead of a May 15 opening date, option 1 was slightly more restrictive than the 1981 regulations for the area from Cape Falcon, Oregon to the California/Oregon border. In all other areas option 1 was the same as the 1981 ocean recreational salmon fishing regulations.

Option 2 recommended a June 12 opening date for the all-species season north of the California/Oregon border to the Washington/Canada border. Compared with the 1981 season, this proposal represented a four-week delay in the opening of the recreational season south of Cape Falcon and about a three-week delay in the opening of the sport fishery north of Cape Falcon to the Washington/Canada border.

Option 3 proposed essentially the same seasons south of Cape Blanco, Oregon as the 1981 regulations. For the area from Cape Blanco to Cape Falcon, Oregon, the recreational season would have opened two weeks later (May 29) than the 1981 season (May 15). For the area from Cape Falcon to Leadbetter Point, Washington, the season would have been reduced a week compared to 1981 by opening one week later. North of Leadbetter Point, the 1982 recreational fishing season was similar to the 1981 season except that the first week of the season was for chinook only. In addition, option 3 proposed a reduction in the chinook salmon size limit from 24" to 22" off the Columbia River mouth (south of Leadbetter Point to Cape Falcon).

Adopted Management Measures for the 1982 Ocean Salmon Fishing Season

The Council met in Portland, Oregon on March 17-19, 1982 and tentatively chose among the management options by management area on Thursday, March 18. The Council asked its Salmon Plan Development Team (Team) to assess the impacts of the adopted management measures and report back to the Council on Friday, March 19. The Council then adopted management measures for 1982.

The Council reconvened in Portland, Oregon on March 31, 1982 in order to reconsider the management measures it had adopted for the California and southern Oregon fisheries. A summary of the management measures adopted by the Council is presented below.

AREA and FISHERY	SPECIES	DATES	SIZE LIMITS	DAILY BAG LIMITS	QUOTA
US/Canada Border to Leadbetter Point	Rec.	All species except coho	Chinook - 24"	2 fish	None
	Trotl	All species except coho (barbless hooks)	Chinook - 24"	2 fish	115,000 coho
		All species	Chinook - 24"		
		All species	July 15-till coho quota met	Chinook - 28"	204,000 coho
Leadbetter Point to Cape Falcon	Rec.	All species	Chinook - 24"	2 fish	100,000 ^a /coho
	Trotl	All species except coho (barbless hooks)	Chinook - 28"		None
		All species	July 1-till coho quota met	Chinook - 28"	89,000 ^a /coho
		All species except coho (special gear) ^{c/}	After coho quota met - Sept. 5	Chinook - 26"	None
Cape Falcon to Cape Blanco	Rec.	All species	June 12-till coho quota met		114,000 ^a /b/coho
	Trotl	All species except coho (barbless hooks)	Chinook - 26"		None
		All species except coho (special gear) ^{c/}	June 1-15	Chinook - 26"	None
		All species	July 1-till coho quota met	Chinook - 26"	488,000 ^a /b/
Cape Blanco to OR/CA Border	Rec.	All species	May 29-till coho quota met	First 2 fish	a/b/
		All species except coho	After coho quota met-Oct. 31	None	None
	Trotl	All species except coho (barbless hooks)	May 1-31	Chinook - 26"	140,000 ^a /
		All species except coho (special gear) ^{d/}	June 1-15	Chinook - 26"	None
	All species	July 1-till coho quota met ^{c/}	Chinook - 26"	a/b/	
	All species except coho (special gear) ^{d/}	After coho quota met-Aug. 22	Chinook - 26"	None	
	All species except coho (barbless hooks)	Sept. 6-Oct. 31	Chinook - 26"	None	

AREA and FISHERY SPECIES DATES SIZE LIMITS DAILY BAG LIMITS QUOTA

AREA and FISHERY	SPECIES	DATES	SIZE LIMITS	DAILY BAG LIMITS	QUOTA
OR/CA Border to Point Arena	Rec.	Feb. 13-Nov. 14	Chinook - 22" ^{e/}	2 fish	None
	All species	May 1-May 24	Chinook - 26"		g/
	Trot11 ^{f/} /All species except coho	May 25-June 15 ^{g/}	Chinook - 26"		g/
	All species	July 1-Aug. 22	Chinook - 26"		None
	All species	Sept. 6-30	Chinook - 26"		None
South of Point Arena to U.S./Mexico Border	Rec.	Feb. 13-Nov. 14	Chinook - 22" ^{e/}	2 fish	None
	All species	Feb. 13-Nov. 14	Chinook - 22" ^{e/}	2 fish	None
	All species except coho	April 22-May 24	Chinook - 26"		None
	Trot11 ^{f/} /All species except coho	May 25-June 15	Chinook - 26"		None
	All species	July 1-Sept. 30	Chinook - 26"		None
	All species	July 1-Sept. 30	Coho - 22"		None

a/ These quotas are subject to adjustment during the season based on the private hatchery contribution to the fishery.

b/ Coho caught off California and in the area from the OR/CA border to Cape Blanco will be counted toward the coho quota listed for the Cape Falcon to Cape Blanco area.

c/ Chinook-only fishery to August 22, with special gear, after reaching coho quota.

d/ Only hooks with whole, natural bait, or salmon plugs at least five (5) inches in length.

e/ There is a 22-inch minimum size limit on chinook and coho in California, except that one chinook or coho may be less than 22" but not less than 20".

f/ The California troll fishery will not be allowed to fish in the area off the Klamath River mouth (3 miles each side - 6 miles to sea) during open seasons from June 16 to July 16.

g/ Chinook quota for the area between Point Arena, California and Cape Blanco, Oregon until June 15. If quota is reached before June 15, season will be closed to all species until July 1.

According to the Team's impact report the final recommended management measures would meet most of the Council's spawning escapement goals with the exception of the Klamath River and upper Sacramento River chinook salmon goals in California and upper Columbia River spring, summer and fall chinooks. However, the Team indicated that the spawning escapement goals for upper Columbia River chinooks would not be met even if the entire ocean salmon fishery was closed from Cape Falcon, Oregon to the Canadian border. The Council discussed the accuracy of the Klamath River chinook escapement goal with the Team and decided to retain the goal for 1982. However, the Council also decided to retain its adopted ocean salmon fishing management measures even though the expected ocean catch of Klamath River chinook salmon would likely preclude the run from successfully achieving the short-term spawning escapement goal of 86,000 fish.

IV. Inseason Management and Quotas

The Council did not indicate its preference for a specific inseason management system for 1982 in the February Draft Amendment. However, the 1982 draft amendment did include a discussion of alternative inseason management systems that emphasized the use of quotas (fixed or adjustable) for various management areas and species. The quota proposals were designed to be used with or without specified season closing dates.

With the fixed quota alternative, the quota is set at the beginning of the season based on pre-season estimates (used for chinook salmon management off California in 1981). When the quota is reached, the fishery closes. There is no provision for adjusting fixed quotas during the season.

Adjustable quotas also are set at the beginning of the season but unlike fixed quotas, they can be modified or adjusted during the season if it is warranted. Such a quota was used for coho salmon management off Washington and Oregon in 1981.

Two other inseason management alternatives were proposed by the Council in the Draft Amendment. These were: mixed quotas (fixed for some species or areas, adjustable for other species or areas and no quotas for others); and no quotas, simply a setting of seasons based upon pre-season estimates of resource abundance.

The Council decided to reduce the scope and complexity of the 1982 coho salmon inseason management procedures at its March meeting in Portland, Oregon. For the 1982 fishing season, coho salmon in the OPI and Washington coastal areas will be managed with fixed quotas. However, the coho quotas from Leadbetter Point, Washington southward through the entire OPI area may need to be adjusted during the season if the abundance of coho salmon that are produced by privately owned salmon hatcheries varies from pre-season estimates.

The coho salmon quotas for the 1982 fishing season are:

<u>U.S./Canada Border to Leadbetter Point</u>	
Tro11 - 204,000	Sport - 115,000
<u>Leadbetter Point to Cape Falcon, Oregon</u>	
Tro11 - 89,000	Sport - 100,000
<u>Cape Falcon to U.S./Mexico Border</u>	
Tro11 - 488,000	Sport - 114,000

The Council also decided to adopt a fixed quota for chinook salmon caught by the commercial troll fishery from Point Arena north of Cape Blanco, Oregon prior to June 15. The fixed quota is 140,000 fish. If the quota is reached prior to June 15, the troll fishery will be closed until July 1.

V. Analysis of Impacts of Alternatives and Proposed Action Alternatives

The estimated impacts of the 1982 regulations varied depending upon which management options or combination of options were selected by the Council (see Appendix A of the 1982 Amendment for an analysis of the impacts of the management options). The least restrictive options (commercial troll 1 and 2 and recreational 1) would have had the least adverse short-term socioeconomic impact on the ocean resource harvesters and would have provided the ocean harvesters the most flexibility in planning their fishing strategies. On the other hand, the most liberal ocean fishing regulations would have had the greatest adverse biological impact on certain depressed salmon stocks such as Klamath River chinooks, upper Sacramento River chinooks, Oregon and Washington coastal coho, and upper Columbia River chinooks and thus would also adversely impact ocean harvesters in future years. The least restrictive ocean fishing regulations would also directly restrict the harvests of "inside" commercial, sport and treaty fisheries especially if actual resource conditions are worse than preseason forecasts. They also would have increased the chances of not meeting obligations to treaty Indians north of Cape Falcon, Oregon.

With more restrictive regulations than those that governed the 1981 ocean salmon fisheries, and given similar ecological, biological and economic conditions that existed during the 1981 fishing season, the impacts of the 1982 regulations may be more severe on the ocean commercial and recreational fisheries and the small coastal communities that partially depend on those fisheries. However, when more salmon escape the ocean fisheries, more salmon will be harvested by "inside" commercial, sport and treaty Indian fisheries. The net effect is a transfer of fish from ocean to "inside" harvesters rather than a complete loss of the resource to all the groups. Also to the extent that the ocean fisheries must be restricted to provide for increased spawning escapement, the long-term benefits would be positive because future salmon

runs would be enhanced. The short term impacts will, however, be adverse to all fisheries.

In adopting its preferred management regime for the 1982 ocean salmon fisheries, the Council attempted to balance the impacts of the regulations between the ocean and "inside" fisheries with overriding emphasis on the conservation needs of the resource and Federal court mandates concerning allocations to Indian tribes with treaty fishing rights.

For a thorough discussion of the estimated socioeconomic impacts of the management alternatives and the management regime adopted by the Council at its March meeting, see Chapter V of the 1982 Amendment, and Appendix E, "Supplement to the Draft Regulatory Impact Review/Regulatory Flexibility Analysis (RIR/RFA)" contained in the 1982 Salmon Plan Amendment.

Impacts of the Proposed Action

A. Recreational Fisheries

For the recreational fisheries, the daily bag limits are about the same as the 1981 bag limits. The recreational season off California is similar to 1981. In Oregon south of Cape Blanco, a late season chinook-only fishery will follow the close of the all-species season. There will be a common opening date for all recreational all-species fisheries north of Cape Blanco. There will be a two-week chinook-only fishery north of Leadbetter Point before the all-species season. The area from Cape Blanco to the Oregon/California border will open two weeks earlier than the recreational fisheries north of Cape Blanco.

The recreational coho quotas will be significantly reduced compared to the 1981 coho quotas. South of Cape Falcon, Oregon, the recreational quota will be 7% lower than the catch in 1981. North of Cape Falcon, the recreational quotas will be 26% below the 1981 catch level.

In Oregon south of Cape Falcon, there are no size limits for salmon caught by recreational anglers. For the area north of the California/Oregon border there are no specified recreational season ending dates. The seasons will close when the coho quotas are reached except for the chinook-only fishery from Cape Blanco to the Oregon border.

The opening dates provided for in the Council's adopted regulations for the recreational fisheries off Oregon and Washington will reduce the fishing season considered so important to the charterboat owners and operators and recreational anglers, Memorial Day through Labor Day. However, the Council's adopted management regime reduces some of the adverse impacts by allowing the recreational fisheries in Oregon south of Cape Blanco to open on May 29, and a chinook-only recreational fishery north of Leadbetter Point from May 29 to June 11. With the exception of California, the recreational fisheries open later because of the reduced coho quotas.

In addition, the Council's decision to refrain from specifying recreational season ending dates for all areas north of the California/Oregon border is expected to have a positive socioeconomic impact because it will reduce the confusion caused by scheduling a season closure date and then closing early when the quota is reached.

The total impact of the elimination of the minimum size limit for Oregon south of Cape Falcon will increase the recreational catch by about 25 percent. The intent of the elimination of the minimum size limit is to reduce the mortality and wastage of juvenile fish that are hooked, landed, and subsequently released. Unlike 1981, there will be no recreational quotas for chinook salmon off California.

B. Commercial Troll Fisheries

The 1982 adopted troll fishery management regime is similar to the 1981 management regime in that it provides for a May chinook-only season coastwide, and there are no area closures off Washington or changes in the minimum size limits for troll-caught salmon. The most significant changes in the 1982 management package for the troll fisheries are as follows:

- (1) There may be two extra weeks of troll fishing in June (June 1-15), depending on how soon the chinook quota is reached between Point Arena and Cape Blanco, and a shift of the early coho troll season (from May 16-31 to May 25) in California, compared to 1981.
- (2) In Oregon south of Cape Falcon, there will be two extra weeks of chinook-only fishing (with special gear) from June 1-15. This period was closed in 1981. Thus, in 1982, California and Oregon as far north as Cape Falcon could be open for the first two weeks of June if the chinook quota is not reached before June 15. However, the Team has estimated that the quota may be reached earlier, and that the fishery between Point Arena and Cape Blanco may be closed sooner.
- (3) The regular all-species troll season will open on July 1 in all areas south of Leadbetter Point. This opening is two weeks earlier than in 1981 for the area from Cape Falcon to Leadbetter Point.
- (4) The troll coho quotas will be significantly reduced compared to 1981. South of Cape Falcon, the troll quota will be 27% less than the 1981 catch in that area. North of Cape Falcon, the troll quota will be 32% below the 1981 catch level. In 1982, for the first time, this northern quota will be divided into two parts: the Cape Falcon to Leadbetter Point coho troll quota will be 25% lower than the 1981 catch in that area, and the quotas for the area north of Leadbetter Point will be 35% less than the 1981 catch.

- (5) Unlike 1981, there will be no chinook quotas in California south of Point Arena.
- (6) North of Cape Falcon, there will be no specified troll season ending dates. The seasons will close when the coho quotas are reached.

- (7) The Oregon special gear chinook-only fishery following a troll coho quota closure will be expanded slightly to include the small area from Cape Sebastian to the Oregon/California border.

- (8) A troll closure will be implemented in a six-mile square area (three miles each side and six miles out to sea) off the Klamath River mouth during the period June 16-30. This closure is actually an extension

three miles further out to sea of the river mouth closure enforced in previous years.

(9) A chinook salmon quota of 140,000 fish was adopted for the troll fishery from Point Arena, California to Cape Blanco, Oregon for the fishery prior to June 15. If the quota is reached prior to June 15, the fishery closes until the reopening on July 1.

(10) The commercial troll fishery will be closed from August 22 through September 5 for the area from Cape Blanco, Oregon to Point Arena, California.

The lack of scheduled season-ending dates north of Cape Falcon may help reduce the confusion involved in quotas closures. The two-week Klamath River mouth closure is unlikely to have any significant socioeconomic impact, since this is actually a limited area extension of an existing closure provision, and the area involved is not a highly concentrated fishing zone.

The Oregon area extension for chinook fishing after a coho closure, from Cape Sebastian to the Oregon/California border, is unlikely to be very different from 1981. The area involved is very small, and in 1981, only federal waters in this zone were closed; state waters remained open. Thus, this 1982 extension does not constitute a significant change from 1981.

The common troll all-species opening date, south of Leadbetter Point, Washington (July 1) should help minimize effort shifts.

The division of the coho quotas north of Cape Falcon into two parts, separated at Leadbetter Point, will help maintain historic catch ratios between areas and between fisheries.

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PURPOSE AND NEED

The most recent information on the status of the Pacific salmon stocks and fisheries indicates that respectification and adjustment of the 1981 management measures are necessary in order to meet the plan goals and objectives for 1982. The 1981 California chinook quotas were specifically instituted for one year only. In the absence of a 1982 plan amendment, the 1980 regulations would have been in effect to the FCZ area of California while the 1981 regulations would have been in effect to the FCZ area of Oregon and Washington. The Council believed that the 1980 and 1981 regulations (and management boundaries) would not provide effective management given 1982 stock conditions. The Council also believed that there was a need to review and revise the process of inseason management for it to work more effectively than the process that existed during the 1981 fishing season.

On November 11, 1981 the Council held a scoping meeting for the purpose of receiving public comments about the major issues that should be addressed in the 1982 salmon plan amendment. After the meeting the Council reviewed the comments and determined the major items of public concern. The issues identified during the November 1981 scoping session remained as the major issues discussed during the public review period of the draft amendment.

These are:

- (1) The role of inseason management; when, where and under what conditions it is appropriate;
- (2) The propriety of using quotas for management of the fishery;
- (3) The length of fishing seasons and how they affect commercial and recreational fishing patterns and actions;
- (4) The impacts of ocean harvests on depressed salmon stocks, particularly Washington State coastal coho, Columbia River chinooks and Klamath River chinooks;
- (5) The socioeconomic impacts of potentially restrictive regulations on local coastal communities;
- (6) The impacts of ocean salmon harvests on treaty fishermen and other "inside" salmon fishing groups;
- (7) The means by which the Pacific Fishery Management Council will balance the impacts of resource management between the ocean and inside fisheries so that each group has an opportunity to harvest a fair and equitable share;
- (8) The impacts of recent Federal Court decisions regarding treaty Indian fishing rights on Federal and State salmon fishery management actions.

MANAGEMENT ALTERNATIVES

(For a complete discussion of the management alternatives see Chapter IV of the 1982 Draft Amendment.)

A. Management Goals and Objectives

The Council instructed the Salmon Plan Development Team (Team) to evaluate the management objectives that were presented in the 1978 Plan and to determine whether they were still appropriate or in need of modification. On the basis of the evaluation, the Team recommended that the management objectives be modified for the 1982 fishing season (and beyond) and expanded to include environmental and production objectives. The plan objectives can be distinguished from the management goals by their long-term applications. The management goals usually refer to the annual spawning escapements of individual or grouped coastal salmon stocks, e.g. Klamath River chinook or OPI coho. The plan objectives (management, environmental and production) cover a broad range of fishery related problems including the socioeconomic welfare of the fishery participants, cooperative efforts at salmon stock enhancement, restoration and protection of salmon spawning habitats, resource management considerations and other long-term resource maintenance goals. For a complete discussion of the proposed management, environmental and production objectives, see Chapter IV of the 1982 Draft Amendment or Chapter IV of the Final Amendment.

The Council's 1982 salmon management goals, like the 1981 management goals, were addressed on a species-by-river system or area basis instead of a coast-wide aggregate basis. The management goals are subject to modification if the preliminary stock status projections are found to be incorrect based on additional data and analysis.

California

The 1982 management goal is to retain the 1981 spawning escapement goals for Klamath River chinook (86,000 or 75% of the long-term goal) and for Sacramento River fall-chinook salmon (74,000 upriver and 71,000 lower river or 75% of the long-term escapement goals).

Oregon

The 1982 management goal for Oregon coastal chinook stocks is to achieve the natural spawning escapement goal of 150,000 to 200,000 adult fish. For Columbia River chinook, the states of Oregon and Washington established an escapement goal of 40,000 chinook adults above McNary Dam. Until modified or rescinded, the Columbia River Management Plan sets allocation goals for Columbia River chinook. As ordered by the Federal court, the Secretary of Commerce is currently examining ocean management measures which would return more upriver "bright" fall chinook to the Columbia River.

Columbia River and Oregon coastal coho are managed as one stock unit within the framework of the Oregon Production Index (OPI) because these stocks are intermixed in the ocean environment. The 1982 management goal for OPI coho is to achieve an OPI escapement of 300,000 fish. This is comparable to the escapements of 1979 and 1980 and is 115,000 fish greater than the 1981 escapement.

Washington coastal chinook stocks are managed for natural spawning escapement goals except Willapa Bay, Quinalt River, and spring/summer chinook of the Quillayute River system. The natural chinook spawning escapement goals established by the State of Washington for coastal chinook stocks are:

Grays Harbor fall chinook	14,600
Queets River fall chinook	4,200
Queets River spring/summer chinook	1,400
Hoh River fall chinook	2,400
Hoh River spring/summer chinook	1,500
Quillayute River fall chinook	6,000
Quillayute River spring/summer chinook	1,500

A long-term management plan for Washington coho salmon is being developed by representatives from federal and state agencies and from three treaty tribes with fishing rights to coastal coho salmon. A finalized management plan had been expected prior to the time the Council met to adopt a management regime for the 1982 ocean salmon fishing season. However, the plan has not been finalized at this time.

For 1982, the coastal treaty tribes proposed an escapement goal range for each natural coastal stock within which the ocean fishery would be managed to equalize the harvest by non-treaty ocean fishermen. The treaty tribes' proposed escapement ranges for Washington coho are given in the Team's impact analysis report of March 16, 1982.

B. Management Options

The Council proposed five management options for the coastwide commercial troll fishery and three management options for the coastwide recreational fishery. The commercial troll options ranged from being less restrictive than the coastwide 1981 regulations to more restrictive coastwide than the 1981 regulations.

1. Commercial Troll Options

Option 1

Management option 1 recommended opening the California chinook-only season on April 15, two weeks earlier than in 1981. A two-week all-species season was proposed for California from June 1-15 followed by chinook-only fishing from June 16-30, and the regular all-species season opening on July 1. This option recommended about six more weeks of chinook salmon fishing (April 15-30, June 1-30) by the commercial troll fleet off California compared to the 1981 regulations.

Option 1 also recommended a commercial troll fishing closure around the mouth of the Klamath River from June 15 to July 15. The proposed closure would extend to three miles on either side of the river mouth and out to six miles in the ocean.

Option 1 proposed an additional six weeks of chinook-only fishing (compared to 1981) for the area off Oregon south of Cape Falcon (April 15-30, June 1-30). For the area south of Cape Blanco to the California/Oregon border, coho salmon fishing would have been extended approximately eight weeks longer than in 1981 because the closure of the all-species season was proposed for October 31 rather than September 5. However, it was considered unlikely that coho fishing would have extended through October because inseason management, adjustable quotas and a 75%-of-quota triggering mechanism for stock evaluation were mandated for coho salmon in this option.

For the area north of Cape Falcon, Oregon to the Washington/Canada border, option 1 proposed an additional three weeks of the all-species season (compared to the 1981 regulations) by opening two weeks earlier, on July 1, and closing one week later, September 5. In addition, a Washington middle coast area closure from Carroll Island to Split Rock was proposed when 75% of the total troll coho quota north of Cape Falcon was achieved.

Option 2

Option 2 was slightly more restrictive than option 1. This option proposed an April 22 opening of the chinook-only fishery off California, one week later than option 1 and nine days earlier than the 1981 regulations. In addition, the entire California troll fishery would have been closed June 16-30. For California, this option provided three additional weeks of chinook salmon fishing compared to the 1981 regulations (April 22-30 and June 1-15) and shifted the early all-species season two weeks later to June 1-15 rather than from May 15-30 as in 1981.

For Oregon south of Cape Falcon, option 2 added three weeks to the early chinook-only season (April 22-30 and June 1-15) compared to the 1981 regulations. This was also three weeks less than the season proposed in option 1. The June 1-15 fishery would have operated with the same gear restrictions as those proposed for the June 1-30 fishery in option 1. For all other areas, option 2 was the same as option 1, including season restrictions and inseason management proposals for coho salmon.

Option 3

Option 3 presented essentially the same commercial troll fishing seasons as those that were adopted for the 1981 commercial troll fisheries.

Option 4

This option was more restrictive for the troll fishery from Point Arena, California north to Cape Falcon, Oregon (proposed a two-week delay in the July 1st opening of the all-species season) and north of Leadbetter Point, Washington to the Washington/Canada border (all-species season opens later than in 1981, on August 1). Option 4 proposed the same troll fishing seasons as the 1981 regulations for the area between Cape Falcon, Oregon and Leadbetter Point, Washington and south of Point Arena, California.

Option 5

Option 5 provided a closure of the May chinook-only fishery north of Point Arena, California to the California/Oregon border in order to protect the depressed Klamath River chinook stock. It also included a closure of the May chinook-only fishery from Cape Falcon, Oregon to the Washington/Canada border in order to reduce the ocean catch of Columbia River chinook stocks. However, option 5 would have permitted the all-species season to open two weeks earlier than the option 4 proposal for the area north of Leadbetter Point to the Washington/Canada border (July 15 instead of August 1).

In the discussion of specific options, all reference to the early season was with respect to a chinook-only fishery. The intent was that this early fishery as well as the late season chinook-only fishery should be open to all salmon species except coho. The number of other salmon (e.g. sockeye, chum) caught by the ocean fishery is small. Pink salmon in the Washington, Oregon, California area return every other year with 1982 being an off year.

2. Recreational Options

Option 1

This option was slightly more restrictive than the 1981 regulations for the area from Cape Falcon, Oregon to the California/Oregon border because it proposed a one-week delay in the May opening of the all-salmon species season (May 22 versus May 15 in 1981). For all other areas, i.e., north of Cape Falcon and south of the California/Oregon border, option 1 proposed the same seasons as those the Council adopted for the 1981 fishing season.

Option 2

This option proposed a June 12, 1982 opening date for the all-species season north of the California/Oregon border to the Washington/Canada border. Compared with the 1981 season, this proposal represented a four-week delay in the opening of the recreational season south of Cape Falcon and about a three-week delay in the opening of the sport fishery north of Cape Falcon to the Washington/Canada border.

Option 3

Option 3 proposed essentially the same seasons south of Cape Blanco, Oregon as the 1981 regulations. For the area from Cape Blanco to Cape Falcon, Oregon, the recreational season would have opened two weeks later (May 29) than the 1981 season (May 15). For the area from Cape Falcon to Leadbetter Point, Washington, the season would have been reduced a week compared to 1981 by opening one week later. North of Leadbetter Point, the 1982 recreational fishing season would have been similar to the 1981 season except that the first week of the season would have been for chinook salmon only. In addition, option 3 proposed a reduction in the chinook salmon size limit from 24" to 22" off the Columbia River mouth (from Leadbetter Point to Cape Falcon).

All of the recreational options provided for a two-fish daily bag limit north of the California/Oregon border. Options 1 and 2 provided for either a two- or three-fish daily bag limit off California while option 3 provided for a three-fish daily bag limit off California.

C. Management Boundaries

The 1982 Draft Amendment proposed that consideration be given to most of the management boundaries that were used for managing the 1981 ocean salmon fisheries as well as others that were considered to be appropriate for the 1982 fishing season based upon the latest stock status analyses. The specific geographic management boundaries that were proposed were:

Point Arena, California	38°57'15"N
Cape Vizcaino, California	39°43'30"N
Cape Blanco, Oregon	42°50'20"N
Cape Falcon, Oregon	45°46'00"N
Leadbetter Point, Washington	46°38'10"N
Carroll Island, Washington	48°00'03"N
Split Rock, Washington	47°24'06"N

The Council's Salmon Plan Development Team believed that Point Arena or Cape Vizcaino (depending on the timing of the ocean fishing seasons) may have been good geographical demarcations for separation of Sacramento River and Klamath River fall-run chinook salmon. The Team also believed that the most recent tag recovery data indicated that Cape Blanco, Oregon is an appropriate northern boundary for the distribution of Klamath River chinooks. Cape Falcon, Oregon was designated as the southern boundary for the distribution of Columbia River chinook stocks. Leadbetter Point, Washington was not intended as an absolute stock separation line but has been used as the northern boundary for the OPI management area. It has been suggested that closing the fishery in the area between Split Rock and Carroll Island may have helped minimize adverse fishery-caused impacts on Washington coastal coho salmon.

The Council adopted the following geographic management boundaries for management of the 1982 ocean salmon fisheries in addition to the international geographic boundaries between the United States and Canada and the United States and Mexico. They are:

Leadbetter Point, Washington	46°38'10"N
Cape Falcon, Oregon	45°46'00"N
Cape Blanco, Oregon	42°50'20"N
California-Oregon Border	42°00'00"N
Point Arena, California	38°57'15"N

D. Inseason Management and Quotas

The Council did not indicate its preference for a specific inseason management system for the 1982 fishing season in the Draft Amendment. The 1982 Draft Amendment included a discussion of several alternative inseason management systems that explored the use of fixed or adjustable quotas for the various management areas and species of salmon managed in the plan. A list of criteria for inseason coho stock size adjustment was also included in Chapter IV of the February Draft Amendment.

Fixed Quota Alternative

Under the fixed quota alternative the quota is set at the beginning of the season based upon preseason estimates of salmon abundance, as was done for chinook salmon management off California in 1981. When the quota is reached, the fishery would be closed automatically by field order from the NMFS Northwest Regional Director in Seattle, Washington. This system can be implemented with or without a specified season closing date. The major disadvantage of this system is that there is no provision for adjusting the fixed quota during the season if the actual stock conditions, as reflected in catch and effort data, vary from the preseason estimates. The major advantage of this process is that it is simple and inexpensive to administer.

Adjustable Quota Alternative

Adjustable quotas are also set at the beginning of the season but, unlike fixed quotas, they can be modified or adjusted during the season if actual stock conditions, as reflected in catch and effort data, vary from the preseason estimates of stock abundances. Adjustable quotas were used for coho salmon management off Washington and Oregon in 1981. The major advantage of the adjustable quota system is that it provides fishery managers the flexibility to correct any inaccurate preseason estimates of salmon abundance during the season on a timely basis. On the other hand, the process is more difficult and costly to administer and can be confusing to fishermen who plan their fishing strategies early in the fishing season.

Other Inseason Management Alternatives

Two other inseason management alternatives were proposed by the Council for consideration before the start of the 1982 ocean salmon fishing seasons. These are: mixed quotas (fixed for some species or areas, adjustable for other species or areas and no quotas for others); and no quotas, simply a setting of seasons based upon preseason estimates of resource abundance. The latter alternative would likely result in the setting of conservative ocean fishing seasons in order to afford maximum protection of some depressed salmon stocks.

Council Adopted Inseason Management Actions and Quotas for the 1982 Ocean Salmon Fisheries

The Council decided to reduce the scope and complexity of the coho salmon inseason management procedures it initiated for the 1980 fishing season and expanded for the 1981 fishing season. Coho salmon fisheries will be managed with fixed quotas during the 1982 fishing season. However, the coho quotas from Leadbetter Point, Washington southward may need to be adjusted during the season if the abundance of coho salmon that are produced by privately owned salmon hatcheries varies from preseason estimates.

Coho salmon that are produced in privately owned hatcheries are a recent entry into the ocean salmon management equation and the abundance of these fish in the ocean is uncertain. The private hatcheries that are producing coho salmon mark with coded-wire tags a representative sample of fish that are released to the marine environment each year. These marked fish will be recovered during the ocean fishing season and the abundance of privately produced coho salmon

will be estimated. When 75 percent of the coho quotas from Leadbetter Point southward to the U.S./Mexico border have been taken, the contribution of coho produced by private hatcheries will be assessed and, if necessary, the catch quotas will be adjusted. In all other respects, inseason management for coho salmon will consist of monitoring coho catches and announcing season closures when the pre-season established quotas are reached.

The coho salmon quotas that the Council adopted for the 1982 fishing season are:

North of Leadbetter Point, Washington

Troll - 204,000
Recreational - 115,000

Cape Falcon, Oregon to Leadbetter Point

Troll - 89,000
Recreational - 100,000

South of Cape Falcon to the U.S./Mexico Border

Troll - 488,000
Recreational - 114,000

The Council also decided to adopt a fixed quota for chinook salmon caught by the commercial troll fleet from Point Arena, California to Cape Blanco, Oregon prior to June 15. The fixed chinook quota is as follows:

Point Arena, California to Cape Blanco, Oregon (Prior to June 15)

Commercial Troll - 140,000

The 1982 chinook quota for the area north of Point Arena to Cape Blanco was considered necessary in order to protect the Klamath River chinook run. No quota was established for the commercial fishery south of Point Arena or for the recreational fishery in either management area off California.

If and when the fishery reaches the chinook salmon quota, it will be closed automatically by field Order from the Northwest Regional Director of the NMFS until the reopening of the all-species season on July 1.

OTHER REGULATION CONSIDERATIONS

Most of the other regulations that were in effect for the 1981 fishing season will apply in 1982. The exceptions are:

(1) There is no minimum size limit for salmon caught in the Oregon recreational fishery south of Cape Falcon to the Oregon/California border.

(2) The minimum size limit for coho salmon caught in the Washington recreational fishery has been reduced to 16" from 20" in 1981.

- (3) The treaty Indian fishing regulations for persons of the Quinalt, Hoh, and Quileute tribes are modified by reducing the minimum size limit for chinooks to 26" and by closing the fishery on September 7, rather than October 31.

SPECIFICATION OF OY FOR THE FISHERY

The optimum yield of chinook, coho, pink, chum, and sockeye salmon was defined in the Draft Amendment as the amount of fish (in numbers or weight) caught by United States fishermen in the FCZ adjacent to the States of Washington, Oregon, and California, and in the waters (including internal waters) of those States, and Idaho, which will, to the greatest extent practicable, fulfill the following:

- (1) the annual spawning escapement goals for natural and hatchery stocks, as recommended by the various States and adopted by the Council;
- (2) the obligation to provide for treaty Indian harvest opportunity, as mandated by applicable decisions of the Federal courts;
- (3) the requirements of the Indian subsistence fishery for chinook on the Klamath River;
- (4) the allocation goals between or among ocean fisheries, as adopted by the Council;
- (5) the allocation goals between other than treaty Indian ocean and "inside" fisheries, as recommended by the various States;
- (6) other socioeconomic goals of the FMP and its amendments.

For the 1982 season only, it is estimated that OY will fall within the range of 5,000,000 to 7,000,000 fish (including coho, chinook, pink, sockeye, and chum).

AFFECTED ENVIRONMENT

Section 1.2 of the EIS in the March, 1978 FMP entitled Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978 describes the marine and freshwater environment used by the coastwide salmon resource managed by the plan, and the human environment, including a brief description of the coastal communities dependent on the fisheries and the ocean salmon fishery itself. In addition, Appendices A and B of the 1981 FMP Amendment provide a more current description of the origin, habitat and distribution of the salmon managed by the plan, and the fishery participants and communities most affected by the salmon regulations. These documents are available from the Pacific Fishery Management Council or the Northwest Regional Office of the National Marine Fisheries Service (see Cover Sheet for addresses). Finally, Chapters I and V of the 1982 Amendment provide the most recent analysis of problems facing the salmon resources and those most dependent upon them, as well as the socioeconomic trends within the fisheries.

ENVIRONMENTAL CONSEQUENCES

Appendix A of the 1982 FMP Amendment discusses the Salmon Plan Development Team's analysis of the impacts of the management regime alternatives selected by the Council in January, 1982 for public review and comment. The alternatives ranged from less restrictive than the 1981 regulations to more restrictive. Generally, the most liberal ocean fishing regulatory options would have had the least negative short-term socioeconomic impact on the ocean fishery user groups but with the likelihood of having the most severe impact on the salmon spawning escapements and harvest opportunities of inside treaty and non-treaty fishing groups. Conversely, the most restrictive ocean fishing regulatory options would have had the most negative short-term socioeconomic impact on the ocean fishery user groups with the least adverse impact on the salmon spawning escapements and on the harvest opportunities of inside treaty and non-treaty fishing groups.

Appendix C of the 1982 FMP Amendment presents a complete evaluation of the expected impacts of the Council adopted regulations as revised on March 19, 1982. In addition, Appendix E of the 1982 Amendment presents a discussion of the socioeconomic impacts of the Council's ocean salmon fishing regulations for the 1982 season. Appendix D evaluates the Council's final action on March 31, 1982.

The table below summarizes the estimated impacts of the 1982 regulations on the ocean fisheries and the coastwide salmon resources and compares them to the 1981 fishing season.

AREA

ESTIMATED IMPACTS

California

Klamath River
 Ocean harvest will be about 7% below 1981; chinook river run size will be about the same as 1981; spawning escapement will increase above last year's escapement.

Sacramento River
 Ocean harvest will increase by about 20%; chinook upper river fall chinook run will fall below the goal by about 33%; lower river runs will generally meet escapement goals.

Troll Fishery
 Ex-vessel revenues will increase \$0.7 million over 1981; harvest north of Point Arena will decrease slightly.

Recreational Fishery
 Seasons and harvests will be about the same as 1981.

Oregon (South of Cape Falcon)

OPI Coho
 Escapement goal of 300,000 fish to be reached due to a reduction in the ocean harvest quotas.

Chinook
 Escapement goal of between 150,000-200,000 to be met.

Troll Fishery
 Ex-vessel revenues decreased by \$1.6 million due to reduced coho quotas, 27% reduction in coho harvest, and the chinook closures.

Recreational Fishery
 27% reduction in coho harvest estimated; 19% increase in chinook harvest estimated; slight economic gain due to no minimum size limits and an early opening (5/29) south of Cape Blanco. \$5 million reduction in net economic benefits.

Washington and Oregon (north of Cape Falcon)

Coho
 Increased spawning escapements due to reduced coho quotas for the ocean fisheries.

Chinook (including Columbia River)
 Increased spawning escapements due to reduced coho quotas or the ocean fisheries and likely early fishing season closures; 11% reduction in ocean harvest estimated.

Troll Fishery
 Ex-vessel revenues decreased by \$1.5 million due to reduced coho quotas; 33% reduction in coho harvest estimated.

Recreational Fishery
 26% reduction in coho harvest estimated; likely early season closure as a result of coho quota in late August.

RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES,
AND CONTROLS OF THE AFFECTED AREA

Though this action applies only to the waters within the 3-200 mile zone, fishing within three miles of shore as well as processing and support activities on shore may be affected. The California Department of Fish and Game, the Oregon Department of Fish and Wildlife, and the Washington Department of Fisheries have been responsible for management of the fisheries inside three miles and for the licensing of vessels that land salmon for sale within the states. Coastal zone management (CZM) programs developed by each of these states have been approved under the Federal Coastal Zone Management Act of 1972. The NMFS made a determination of the consistency of the salmon plan and subsequent amendments with the policies that were established by the coastal zone management programs of the involved states. Each of the state coastal zone management commissions concurred. The NMFS has again issued determinations of consistency of the proposed Federal action (i.e., 1982 ocean salmon plan amendment) to the appropriate California, Oregon, and Washington coastal zone management agencies and is awaiting responses from those agencies.

LIST OF PREPARERS

Name	Title, Discipline, Experience
Robert Ayers	Fishery Biologist, NMFS B.S., Fisheries 26 years
Stacy Hall	Social Scientist, FMFC M.M.A., Marine Affairs 2 years
Kenneth Henry	Fishery Biologist, NMFS Ph.D., Fishery Biology 33 years
Harvey Hutchings	Chief, Fishery Management Div., NMFS Ph.D., Economics 26 years
Steven Lewis	Fishery Biologist, ODFW M.S., Fisheries 15 years
Rich Lincoln	Fishery Biologist, WDF B.S., Fisheries 8 years
Lee Morgan	Resource Management Specialist, NMFS M.M.A., Marine Affairs 5 years
Gary Morishima	Consultant, Quinault Indian Nation Ph.D., Quantitative Science 15 years
Pat O'Brien	Fishery Biologist, CDFG B.S., Fisheries 16 years
Tim Roth	Fishery Biologist, USFWS B.A., Fisheries 6 1/2 years

LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF

THE DRAFT STATEMENT WERE SENT

The Pacific Fishery Management Council mailed the proposed 1982 salmon plan amendment and DSEIS to over 2000 individuals who had requested copies of the document. In addition, the following Federal, state and local government agencies and other interested organizations received copies of the combined 1982 amendment/DSEIS:

Federal Agencies

U.S. Corps of Engineers
U.S. Coast Guard
Environmental Protection Agency
Department of the Interior
Fish & Wildlife Service
Bureau of Land Management
Bureau of Indian Affairs
Fisheries Service of Canada
Department of Agriculture
Forest Service
Soil Conservation Service
Department of Energy
Bonneville Power Admin.

State Agencies & Other Organizations

Fisheries Agencies, State of Oregon,
Washington, California, Idaho, and
Alaska
Conservation Organizations
Salmon Processing Industry
Northwest Indian Fisheries Commission
North Pacific Fishery Management Council
Columbia River Inter-Tribal Fish
Commission
Trollers Associations
Gillnetters Associations
Labor Organizations
Recreational Fishery Organizations
Charterboat Associations
Land Conservation and Development
Commission (Oregon)
California Coastal Zone Conservation
Committee
Washington Department of Ecology and
San Francisco Bay Conservation and
Development Commission

SCHEDULE OF PUBLIC HEARINGS

Pacific Fishery Management Council
February 26, 27 and March 1, 1982

<u>Location</u>	<u>Date</u> <u>Time/Day</u>
Park Hilton Hotel Sixth and Seneca Seattle, Washington 98101 Glacier-Yellowstone Room	February 26, Friday 7:00 P.M.
Astoria Middle School 1100 Klaskanine Astoria, Oregon 97103	February 26, Friday 7:00 P.M.
Eureka Inn 7th & J Streets Eureka, California 95501	February 26, Friday 7:00 P.M.
California Department of Fish & Game Committee Room Resources Building 1416 Ninth Street Sacramento, California 95814	February 27, Saturday 2:00 P.M.
Pony Village Lodge Virginia Avenue North Bend, Oregon 97459	February 27, Saturday 2:00 P.M.
Idaho State University Rooms 406 and 407 Student Union Building 8th Street Pocatello, Idaho 83201	March 1, Monday 7:00 P.M.

COMMENTS AND RESPONSES

Over one hundred individuals, many of them representing organizations, user groups, and agencies submitted comments during the public review period on the February, 1982 draft plan for managing the 1982 ocean salmon fisheries (see List of Commenters).

In order to present in the FSEIS the many comments that were submitted to the Council and the NMFs during the public comment period, it was necessary to combine the comments into categories for each area beginning with Washington and proceeding to Oregon and California. It was not possible to present in the text all the comments that were submitted by all the individuals and organizations. Furthermore, the naming of any individuals or organizations below is not intended in any way to indicate the relative importance of any given testimony.

Most of the comments that were submitted during the public review period, either orally at the public hearings, or as written testimony received at the Council or NMFs, concerned the 1982 ocean salmon fisheries management options that were presented in the February draft plan, the potential impacts of the 1982 management regime on the ocean fisheries, the adequacy of the data used in the plan to set management goals and management options, and the need to protect and enhance the freshwater spawning habitat of salmon.

I. U.S./Canada Border to Cape Falcon, Oregon

1. Comment:

Most commercial trollers favored management options 1 and 2. They spoke strongly in favor of the full May chinook fishery and for a July 1 opening of the all-species season. They viewed the analysts of the May closure in the amendment as unfair and faulty. It was their claim that the losses from a May closure would be greater than presented in the amendment, because of price and size changes and the assumption of a 60 percent recapture rate after the closure. The trollers stressed the heavy economic losses in 1981. Reference was made to a survey of 22 percent of the troller fleet which showed a drop of \$17.6 million for trollers in Washington in 1981.

Response:

The Council is concerned about the increasingly restrictive seasons being faced by the trollers north of Cape Falcon. It is aware of the adverse impact on the trollers of reduced catches, coupled with higher costs and the recession. The Council did everything it could to allow the trollers as much ocean harvest as possible given the status of the coastal salmon runs and the need to provide increased numbers of upriver chinook to the Columbia river and increased numbers of coho to the Washington coastal streams to meet Indian treaty obligations. The Federal District Court's ruling in August 1981 on river-by-river, run-by-run management required that the ocean harvest be constrained by its impact on the natural coho run returning to the Queets river. The trollers' coho salmon quota for the area north of Cape Falcon was reduced in 1982 to 293,000 fish (204,000 north of Leadbetter Point and 89,000 from Leadbetter Point to Cape Falcon) from 372,000 fish quota and a 434,000 fish catch in 1981 in order to meet necessary spawning escapements and to achieve treaty catch equalization.

The full May chinook (all-species-except-coho) fishery was continued in 1982 despite the desire of the Department of the Interior and the Confederated Tribes to abolish the May fishery for the troglers in the ocean north of Cape Falcon. The Council's action was based primarily on the Team analysts (pages 19-21 of Appendix A (March 16 document) and page 11-12 of Appendix C (March 19 document) which indicated that very few Columbia River upriver falls, summer and spring chinook are caught in the May ocean fishery. It also was based on the conclusion that ocean harvest pressures on chinook salmon stocks north of Cape Falcon will be reduced during the 1982 all-species season as compared to previous years because of the significantly reduced coho quotas and the shorter fishing time allowed in this area.

A July 1 all-species season was provided the troglers between Leadbetter Point and Cape Falcon as many of them requested, in order to have a common opening date for the OPI area. A July 15 opening was required, however, north of Leadbetter Point to maximize the catch of Puget Sound coho in the ocean and still protect Washington coastal coho stocks.

2. Comment:

Several troglers asked that the 26-inch minimum size limit for chinook be reinstated to reduce the waste presently occurring. They stated that a considerable number of 26- to 28-inch fish were being caught, measured and discarded, with significant mortalities resulting.

Response:

This issue was raised last year and the year before. In 1981 the Salmon Plan Development Team reviewed this restriction and the basis for it, including substantial research conducted by State, Federal and Canadian agencies over past years, and concluded that the increased poundage of fish caught (and increase in value as size increases) more than offset the increased loss of shorter fish from hooking mortality. The Team still stands by this conclusion. The measure is also necessary to protect immature portions of the populations and to increase escapement of chinook to the Columbia River.

3. Comment:

Several troglers and others stated that the Council should become more active in habitat protection and restoration since reductions in ocean harvests have not been successful in increasing the abundance of salmon.

Response:

The Council recognizes that reduction in ocean harvests is not the only step needed to increase the abundance of all runs of salmon; that other steps to protect the habitat and enhance the resource are also needed, particularly in the Columbia River. The Council is increasing its efforts to encourage, influence, and push Federal and State agencies charged with this responsibility to step up their actions to protect and enhance the salmon runs. The Council's responsibilities are statutorily limited with respect to what more it can do in this regard. It does not believe that actions to protect the habitat and enhance the resource necessarily substitute for ocean fishery regulations. Both are necessary.

The Northwest Indian Fisheries Commission recommended that the Council utilize "evaluation fisheries" in the ocean. The commission proposal called for an ocean fishery that would be suspended after some specific amount of time, e.g., three weeks. Upon suspension of the fishery, the catch and effort data would be evaluated in order to determine the accuracy of the pre-season estimates of salmon abundance. The ocean fisheries would reopen if the evaluation warranted such actions.

6. Comment:

The Council adopted more restrictive seasons and quotas for the area north of Cape Falcon. These measures are expected to increase the number of fall chinook returning to the Columbia River, including upriver brights, as well as provide for adequate spawning escapements for coho to the Washington coastal streams. It is estimated that if the entire FCZ area north of Cape Falcon were to be closed all season the return of upriver brights to the Columbia River would increase by only 4,600 fish. It is estimated that for each additional upriver bright that escapes above McNary Dam, 161 other salmon will have to be foregone by the ocean fisheries off Washington, Canada and Alaska fisheries take many more upriver brights than do the Washington, Oregon and California salmon fisheries. Other alternatives for increasing the escapement of upriver brights should be evaluated.

Response:

Some representatives of treaty fishermen from the Columbia River area and the Washington coastal area recommended that the Council adopt the most restrictive ocean fishing management options in order to achieve the Council's long-term upriver chinook salmon spawning escapement goals and the treaty fishing harvest shares.

5. Comment:

Establishing a separate allocation for inside non-treaty commercial net fishermen is outside the jurisdiction of the Council. However, the reduced coho quotas and fishing time allowed the ocean fisheries should increase the in-river run size for most Washington runs, thereby increasing the opportunity for the Washington Department of Fisheries to allocate more salmon to the inside non-treaty net fishermen.

Response:

Non-treaty inside commercial net fishermen commented that their members had been faced with severe fishing restrictions during the past several years. They requested a separate 1982 salmon allocation for inside non-treaty commercial net fishermen.

4. Comment:

Separate coho quota allocations were assigned the commercial troll and recreational coho quota was 53 percent for the recreational fishery and 47 percent for the troglers. For the area north of Leadbetter Point the recreational fishery was given 36 percent of the quota and the troglers 64 percent. The Council retained its belief that the predicted ocean catch by the treaty Indians should come off the top before the allocation to the recreational and commercial fisheries is made. This the Council believes is equitable in light of the fact that ocean catches by the treaty Indians are increasing.

Response:

Representatives of the commercial troglers as well as representatives of the charterboat fishermen urged that separate allocations be made for ocean recreational and commercial fishermen. Some urged the maintenance of the traditional distribution of ocean harvests for commercial (60%) and recreational (40%) fisheries north of Cape Falcon. Some recreational fishermen urged the Council to adopt equal harvest shares for the sport and commercial fisheries. There was some objection to taking the Indian ocean catch off the top of the allowable ocean harvest before a 60/40 allocation north of Leadbetter Point before allocating between the recreational and commercial fishermen.

8. Comment:

The Salmon Plan Development Team attempted to obtain and analyze data concerning the number of commercial fishing vessel accidents at sea the past several years (see pages 38-II, 39-II, and 27-V through 31-V of the draft amendment) in an effort to determine if there had been a decided increase in the number of accidents and fatalities. Limited data and resources did not permit an adequate analysis. Efforts in this area will be continued. Alternatives such as individual quotas that could be caught over an extended period, or five day per week fishing, were explored, but were judged impractical at this time. The troglers, for reasons expressed in the response to Comment 1, could not be given longer seasons or higher quotas.

Response:

Troglers expressed concern that they were being forced to fish under more hazardous weather conditions because of the shorter fishing seasons, and that as a result there was a greater loss of life.

7. Comment:

In view of the very short season allowed the ocean fisheries and the fixed coho quotas adopted north of Cape Falcon, the proposal by the Northwest Indian Fisheries Commission was not adopted.

Response:

II. California/Oregon Border to Cape Falcon, Oregon

1. Comment:

Most commercial trollers favored management option 2 for the Oregon troll fishery. The trollers testified at the public hearing in North Bend, Oregon that management option 2 would provide the ocean fishermen with a fair season and would meet the Council's spawning escapement goals for coho salmon in the OPI area. The President of the Coos Bay Port Commission testified that there was a high vacancy rate in the port's moorage facilities and that many fishing boats were for sale or had been displaced to other areas. He urged the Council to adopt the longest possible fishing season in order to relieve the economic stress that was affecting the commercial troll fleet.

Response:

The Council is aware that the ocean salmon fishing regulations have been getting more restrictive and that the impacts of the regulations, along with upward spiraling costs and the recession, have been severe for the commercial troll fleet. For 1982, the Council adopted a commercial troll fishing season that is very similar to the seasons that were proposed in management option 2 that was favored by the trollers. The difference between the commercial troll seasons that were proposed in option two and the commercial troll seasons the Council adopted is that the chinook-only fishery will begin on May 1 rather than on April 22 as proposed in option 2 and there will be a two-week closure south of Cape Blanco from August 22 to September 5. The Team and the Council believed that the ten-day delay in the season opening date would help protect chinook stocks, and would not adversely impact the Oregon troll fleet. The trollers' coho salmon quota for the OPI area south of Cape Falcon was reduced in 1982 to 488,000 fish (from 548,000 fish in 1981) in order to meet the Council's spawning escapement goals for coho salmon in that part of the OPI area.

2. Comment:

Several trollers challenged the Council's spawning escapement goals for Klamath River chinook salmon and stated that the goals were too high and resulted in severe restrictions on the ocean harvesters. A representative of the Professional Fishermen's Alliance stated that the Klamath River spawning escapement goal (86,000 fish) could not be reached even without an ocean fishery as long as in-river gillnetting of salmon was not controlled. The contribution of Klamath River chinook salmon to the ocean fishery was also questioned.

Response:

The Council reviewed its short-term spawning escapement goal for the Klamath River (86,000 fish) and decided that it was still appropriate for the 1982 fishing season. The most recent California Department of Fish and Game survey of the available spawning habitat along the Klamath River indicated that there is sufficient habitat to accommodate 86,000 spawning chinook salmon. The survey team also concluded that the water flow within the Klamath was adequate for 86,000 spawning chinooks. In addition, the most recent Klamath River chinook salmon migration data indicate that Klamath River chinooks are a major

The President of the Humboldt Fishermen's Marketing Association stated that the habitat and pollution factors often cited, the large by-catches and subse-

2. Comment:

Please see Response #3 for the area north of Cape Falcon.

Response:

Several individuals commented that habitat deterioration, water quality, damming, reduced stream flows, logging practices, sedimentation, and road construction were major causes for the decline in salmon runs. Although excessive effort and competition for limited stocks have exacerbated the problem, many felt the overly-restrictive seasons and quotas have created undue economic hardships. Several respondents felt real progress was being made on improving habitat and environmental conditions on rivers in California and were optimistic that runs would improve in the future.

1. Comment:

III. California Area

The Council adopted a recreational harvest quota of 114,000 coho salmon in the OPI area south of Cape Falcon. In order to allow the recreational fishery the longest season possible, the Council adopted the two-fish daily bag limit (with no minimum size restrictions).

Response:

A member of the Council's Groundfish Advisory Subpanel and a representative of recreational anglers urged the Council to adopt a three-fish daily bag limit for recreational anglers.

4. Comment:

Please see Response #3 for the area north of Cape Falcon to the U.S./Canada border.

Response:

Several individuals commented that the Council should become more involved in activities concerning stream improvements, water resource problems, and the protection and enhancement of salmon spawning habitat.

3. Comment:

contributor to the north coast of California and south coast of Oregon ocean fisheries. The U.S. Department of the Interior (DOI) has indicated that the Indian gillnet subsistence fishery of chinook salmon on the Klamath River will be limited to a 30,000 fish harvest in 1982 by DOI regulations. However, the Council agreed to review the Klamath River spawning escapement goal in depth prior to the 1983 fishing season and to determine if the present goals are realistic.

quent dumping of fish in joint ventures may be a significant factor. The City Council of Trinidad also pointed to the overt dumping associated with joint venture operations as a potential contamination problem for salmon. The Council was asked to broaden its area of responsibility to deal effectively with all of these factors in order to protect salmon runs.

Response:

The response to Comment #3 for the area north of Cape Falcon also is apropos here. In addition, the Council has requested that the NMFS condition the 1982 permits granted the foreign processors involved in whiting joint venture operations, requiring any dumping of fish done by these vessels, to be done outside 12 miles in deeper water. The NMFS has done that.

3. Comment:

Several respondents criticized the amendment for not including escapement data for all river systems which support significant spawning runs. It was stated that the Rogue and Eel Rivers have sizable runs that are not taken into account when setting escapement goals. It also was stated that the Sacramento River has a late winter chinook run that is not included in the catch-escapement calculations.

Response:

The Salmon Plan Development Team has responded to this criticism on several occasions. It is fully aware of all of the river systems that support runs contributing to the California ocean fisheries and has included all of these in its calculations and predictions. Emphasis has been directed in the Amendment to those runs in all areas that are most depressed and where the concern is the greatest for providing adequate spawning escapement. Management measures must be geared to providing adequate spawning escapement to all significant runs. Available data from all river systems is used in the Team analysts.

4. Comment:

Criticism was received on the validity of using 1968 data from the California Wildlife Plan as the basis for the escapement goals on the Klamath River system. One individual argued that more recent data on average run size would provide a more realistic escapement goal of 64,000 fish than the 115,000 currently in the 1982 Amendment.

Response:

Please refer to the response to Comment #2 above for the area from the California/Oregon border to Cape Falcon, Oregon.

5. Comment:

Support for a limited entry plan to reduce excess effort on salmon stocks was given by the Salmon Trollers' Marketing Association. The result of reducing a fleet that has grown from 4,000 to 8,000 boats would have positive impacts on runs and business conditions.

Several commented that a continuation of restrictive ocean regulations will cause severe economic dislocations, especially when local economic conditions are extremely depressed. The President of Salmon Unlimited, a spokesman for the Trinidad Chamber of Commerce, and a representative of the Humboldt County Board of Supervisors, pointed to slumps in the housing and forest products industries, high interest rates, mooring defaults, and vessel repossession as indicators of the seriousness of the economic situation along the North Coast. A member of the Salmon Trollers Marketing Association felt strongly that the effect of ocean regulations designed to increase runs was actually to create more economic burdens for the industry. He contended that regulations

7. Comment:

Larger boats have the advantage of being able to operate in worse weather than small boats. Therefore, regardless of quotas or seasons, larger vessels probably will be able to fish more days and likely will catch more fish. In 1981, vessels less than 25 feet in length comprised 42 percent of the California troll fleet and landed 12 percent of the state's salmon. In 1978 and 1979, without a chinook quota, these small vessels comprised 49 percent and 47 percent of the fleet and landed 19 percent and 15 percent of the salmon statewide. These data do not indicate that the smaller vessels suffered a disproportionately severe impact under chinook quotas. For 1982, the recommended chinook quota will apply only to the early season (before June 15).

According to the Salmon Plan Development Team's analysis, options 1 and 2 would not move toward achieving the interim spawning escapement goal for the Klamath River fall chinook. The Council has recommended a fishing season that it believes will allow the most fishing time possible while protecting Klamath River chinook. The chinook quotas established in 1981 and the early season quota recommended for 1982 are based on the best information available. Because the abundance of chinook runs cannot be predicted accurately and because the purpose of these quotas was to prevent increases in ocean harvests until escapement goals are met, it was reasonable to base quotas on historic catch statistics.

Response:

Most California trollers favored options 1 and 2 and opposed quotas. Comments centered around the scientific validity of quotas that are based on historical catch statistics. The imposition of quotas in 1981 was criticized for the lack of empirical data on biomass, recruitment, and mortality that are necessary to establish defensible quotas. Fishermen with small boats felt they would be impacted more by quotas than the larger boats due to weather.

6. Comment:

The Council up to the present has deferred to the States for moratorium or other means of limiting the number of vessels participating in commercial trolling. The Council, however, has tentatively scheduled a workshop to take place in the fall of 1982 to discuss various methods of controlling fishery effort including individual fisherman quotas.

Response:

were adopted without adequate economic analysts and presented data that showed the multiplier effects of a change in landings on the Fort Bragg economy. He also stated that based on an input-output model for the California economy recently developed at San Diego State University, some \$2.8 million in direct expenditures, 250 jobs, and a substantial rise in personal disposable income had been gained by fishing in state waters during the June closure of the FCZ by the Federal regulations.

Response:

The Council recognizes that the fishing industry, particularly the salmon industry, is important to the economy of the northern coast of California. It is for this reason that the Council is seeking to rebuild and sustain salmon runs in California that will provide for a viable fishing industry in the years ahead. Because the local economies are depressed at this time, the Council has determined that rebuilding the Klamath River fall chinook run should be gradual. It recognizes that an interim spawning escapement goal of 86,000 fish cannot be met in 1982 without severe hardship on the salmon fishing industry and coastal communities. The Council's recommended management regime for 1982 was proposed as a balance between the short-term economic needs of the industry and the long-term need for a productive salmon resource.

8. Comment:

Representatives of Indian tribes that fish on the Klamath River and the U.S. Department of the Interior (DOI - letter attached) recommended that the California ocean harvest of chinook salmon be substantially reduced from the 1981 harvest in order to increase the in-river run of chinook salmon into the Klamath River system. The DOI recommended a harvest quota (commercial and recreational) of 300,000 chinook salmon for the fisheries south of Point Arena, California and a quota of 200,000 chinooks for the ocean fisheries north of Point Arena to the California/Oregon border. In addition, the DOI recommended a May and June commercial troll fishery closure for the California area north of Point Arena. The California Indian Legal Services also recommended a northern California ocean fishery quota of 200,000 chinook salmon plus a fishing closure zone around the mouth of the Klamath River that would extend fifteen miles on either side of the river and thirty miles off the coast.

Response:

Considering the economic condition of the California salmon industry and the communities of the northern California coast, the Council found these recommendations would cause severe hardships. The suggested May-June closure was not accepted because 60 percent of the total California salmon catch is landed in those two months on average. Since the spawning goal for the lower Sacramento River system was met in 1981, and the upper Sacramento still suffers from habitat degradation which will not permit optimal spawning levels at this time, the continued imposition of a chinook quota south of Point Arena was found to be unnecessary. The Council also eliminated the whole season chinook quota north of Point Arena and proposed instead an early season (May 1-June 15) quota of 140,000 chinook. Most 4-year-old Klamath River fall chinook are caught in the ocean in May and June. This early season quota is expected to hold ocean harvests at historic levels until the escapement goals

are met. As a contribution toward the 1983 fishery and escapement, the Council has adopted a closure of trolling off northern California and southern Oregon from August 22 to September 6 to protect 3-year-old Klamath River chinook. The combination of these measures proposed by the Council is expected to provide about the same number of fish to the river in 1982 as in 1981, but will begin to build toward increasing the number of chinook available for escapement in the 1983 run.

The Council has proposed a six-mile square closed area in the ocean at the mouth of the Klamath River. Existing information on the behavior of chinook salmon around the entrance of the river does not indicate that an area closure of 15 miles on either side of the mouth and out to 30 miles from shore would substantially increase escapement beyond the proposed closure.

9. Comment:

The Sierra Club, Redwood Chapter, recommended that the Council allocate a number of Klamath River chinook salmon to in-river fishermen as well as ocean fishermen.

Response:

The Council only has planning jurisdiction over the ocean salmon fisheries and cannot allocate in-river harvest among different users. However, the Council has acknowledged the existence of the in-river catches when establishing spawning escapement goals. For 1982, the expected harvest in the Klamath River is 35,000 chinook of which 5,000 will be taken by sportfishermen and 30,000 by Indian fishermen for subsistence.

LIST OF COMMENTERS

David Allen - Del Norte County Fishermen's Association
Phil Anderson - Washington State Charterboat Association
Michael Baldwin - Troller
Don Bock - Coos Bay Area Chamber of Commerce
Scott Boley - Oregon Fishermen's Association
Wilson Boyer - Sport Fishermen
Kathryn Brigham - Umatilla Fish and Wildlife Committee
Don Bradley - Salmon Unlimited
Randy Brown - American Fisheries Society
Ray Buderer
Dennis Bunn - Troller
Larry Carlson - Troller
Dan Christopherson - Shoshone/Bannock Tribes
Les Clark - Northwest Gillnetters Association
Kevin Collins - Humboldt Fishermen's Marketing Association
Confederated Tribes and Bands of the Yakima Indian Nation
Paul Coyne - Port of Suislaw
Bob Deibel - American Fisheries Society
Marguerite Dodgin - Golden State Trollers
Mel Dodgin - Troller
Kim Doutrich - Englund Marine Supply
Phillip L. Dunn - Biologist
Kesley Edmo - Shoshone/Bannock Tribes
Jim Edmondson - Commercial Fisherman
Rick Ekelund - Oregon Fishermen's Association
Jon Englund - Englund Marine Supply
Charles Fay
Bruce Ferguson - Federation of Fly Fishers
Carl Finley - Troller
Bob Frazell - Professional Fishermen's Alliance
Doug Fricke - Washington Troller's Association
James Gast - Humboldt Bay Harbor Recreation and Conservation District
Levi George - Columbia River Inter-Tribal Fish Commission
Zeke Grader - Pacific Coast Federation of Fishermen's Association
Gary Graham - Troller
Norm Green - Troller
Larry Hale - Troller
Don Hall - Northwest Steelhead and Salmon Council
Jim Harp - Quinault Treaty Area Tribes
Richard Haugen - Washington Troller's Association
Ronald L. Haworth - Troller
James Heckman - Northwest Indian Fisheries Commission
Eric Hedlund - Humboldt Board of Supervisors
Ed Henke - Klamath/Trinity River Coalition
DeValle R. Horton - Port San Luis Commercial Fishing Boat Owners
Jeff Hottowe - Makah Indian Tribe
Jack Hudson - Troller
Bill Hurst - Durham and Bates
Jack Jett - Washington State Sportsman's Club
Tom Joiner - Humboldt Fishermen's Marketing Association

Harry Justice - Troller
Tim Kelley - Northwest Steelhead and Salmon Council
Patsy Kelly
Ferron Kildow - Troller
George Lachner - Troller
Bruce Laird - Port of Coos Bay
Walt Lara - Yurok Indian Tribe
Mel Leback
Jack Long - Troller
Michael Maahs - Commercial Fisherman
William Maahs - Fort Bragg Salmon Trollers
Toimi Maki - Grays Harbor Gillnetters
Anthony Mack - Troller
Jerry Mallet - Idaho Department of Fish and Game
Lanny Matsuda - Golden State Trollers
Chip McConnaha - Columbia River Inter-Tribal Fish Commission
Michael McCurley - Quinault Fish and Game Commission
Michael McHenry - Half Moon Bay Marketing Association
Jack McNeal - Charterboat Skipper
Forrest L. Meuret - Oregon Wildlife Federation
Louis Miller - Troller
Charles E. Moore - Port San Luis Commercial Fishing Boat Owners
Bill Morgan - Humboldt Fishermen's Marketing Association
Jack Moye - Troller
Elizabeth Murguia
Frank Parsons - Troller
Henry J. Pavelek - Groundfish Panel Member
Tom Peters - Humboldt Fishermen's Marketing Association
Ken Peterson - Pacific Troller's Association
Michael S. Pfeffer - California Indian Legal Services
Bryan Phinney - Northwest Steelhead and Salmon Council
Cecil Proudfit - Salmon Troller's Marketing Association
Dick Regan - Northwest Steelhead and Salmon Council
Elsie Ricklefs - Hoopa Valley Business Council
Robert Ross - Troller
Helen M. Schruder - United Food and Commercial Workers Union
Wayne Scott - Salmon Troller's Marketing Association
Al Seely - Troller
George Setzer - Salmon Troller's Marketing Association
Captain Shark - Commercial Fisherman
George Sheldon - Troller
Emanuel Silveira - Humboldt Fishermen's Marketing Association
Tom Solin - Charterboat Owner and Operator
Jim Sugg - Troller
Des Swithenbank - Troller
Paul Thomas - Salmon Advisory Panel
Stephanie Thornton - Humboldt Fishermen's Marketing Association
Susie Van Kirk - Sierra Club, Redwood Chapter
Kevin Vasserino - Washington State Charterboat Association
Maurice Viand - Humboldt Fishermen's Marketing Association
Helen Wagar - Troller
S. Timothy Wapato - Columbia River Inter-Tribal Fish Commission
Larry Ward - Troller/Biologist
Christopher Welsh

Jack Westrick - Westport Charterboat Association
Steve Westrick - Westport Charterboat Association
Jeff Wieland
E. Paul Winslow - Humboldt Wildlife
Paul Wood - Troller
Jeff Yoon - Humboldt Fishermen's Marketing Association
Dave Zebo - Trinidad Chamber of Commerce

AGENCY COMMENTS

Division of Economic and Community Affairs - State of Idaho
Lane Council of Governments - State of Oregon
Idaho Department of Fish and Game
Oregon Department of Fish and Wildlife
State of California - Native American Heritage Commission
The Resources Agency of California
United States Environmental Protection Agency, Region IX
United States Department of Agriculture, Forest Service, Payette National
Forest
United States Department of the Interior
California Legislative - Joint Committee on Fisheries and Aquaculture
State of Oregon, Executive Department, Intergovernmental Relations Division

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Payette National Forest
McCall, ID 83638

2610

March 3, 1982



Mr. Larry M. Nakatsu
Executive Director
Pacific Fishery Management Council
526 S. W. Mill Street
Portland, OR 97201

Dear Mr. Nakatsu:

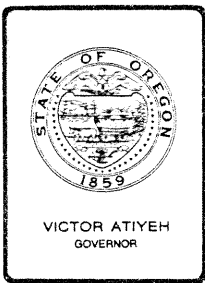
We have reviewed your "Proposed Plan for Managing the 1982 Salmon Fisheries off the Coasts of California, Oregon, and Washington." We were interested in your "Habitat and Environmental Objectives" on page 8-I.

While we agree that maintenance of high quality habitat for anadromous fish is desirable, we are concerned by the conotation of the language which states that, "natural habitat for anadromous salmonids should be preserved." Analysis of the existing situation on the Payette National Forest indicates that some major areas of fish habitat are not now in a "natural" condition. Land management agencies need the flexibility to be able to manage for habitat capabilities near existing, if they are significantly degraded from natural.

Opportunities to maintain or enhance anadromous fish habitat on the Forest range from direct investments in fish habitat to constraints on commodity production. Constraints involve protection of riparian areas and limitations on nonpoint source pollution such as sediment. We hope to examine a full range of alternatives in our on-going Forest planning process.

Sincerely,


KENNETH D. WEYERS
Forest Supervisor



Executive Department

155 COTTAGE STREET N.E., SALEM, OREGON 97310

March 9, 1982

Mr Lorry M. Nakatsu
Executive Director
Pacific Fishery Mgmt Council
526 S.W. Mill Street
Portland, OR. 97201

Dear Mr. Nakatsu:

PNRS- OR820216-024-4

Amendment to Management Plan for Commercial & Recreational
Salmon Fisheries off Coast of Washington, California, Oregon

This is to notify you that the State Clearinghouse
has requested an extension of review time as allowed
by OMB Circular A-95.

We will attempt to expedite matters in order to
cause you the least possible inconvenience.

Sincerely

INTERGOVERNMENTAL RELATIONS DIVISION

Kay Wilcox
A-95 Coordinator

KW:cb



John V. Evans, Governor
Daniel T. Emborg, Administrator

State Capitol Building
Boise, Idaho 83720

DIVISION OF ECONOMIC AND COMMUNITY AFFAIRS

March 11, 1982

Mr. Lorry M. Nakatsu
Executive Director
Pacific Fishery Management Council
526 S.W. Mill Street
Portland, Oregon 97201

Dear Mr. Natatsu:

The Idaho State Clearinghouse has completed its review on the DRAFT PROPOSED PLAN FOR MANAGING THE 1982 SALMON FISHERIES OFF THE COASTS OF CALIFORNIA, OREGON AND WASHINGTON, SAI #00226593. The following agencies were contacted for their review and comment:

Department of Fish and Game
Department of Parks and Recreation
Clearwater Economic Development Agency
Panhandle Area Council
Department of Water Resources

Comments have not been received from the reviewing agencies.

If we can be of further service, do not hesitate to contact myself or Lois Wade at 334-3416.

Sincerely,

A handwritten signature in cursive script that reads "Gloria Mabbutt".

Gloria Mabbutt, Coordinator
Idaho State Clearinghouse

GM:lw



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

MAR 11 1982

Mr. Herman J. McDevitt
Chairman, Pacific Fishery
Management Council
526 Southwest Mill Street
Portland, Oregon 97201

Dear Mr. McDevitt:

We have reviewed the Pacific Fishery Management Council's February 1982 "Draft Proposed Plan for Managing the 1982 Salmon Fisheries Off the Coasts of California, Oregon and Washington." Our comments relate to the draft plan as a management tool for stewarding these renewable natural resources and for allocating the harvestable surplus of the stocks to meet user demands. We also are enclosing our comments on the Draft Supplemental Environmental Impact Statement.

The draft plan incorporates a range of management techniques such as time and area closures, quotas, and in-season adjustments, which can be used to further the objectives of the plan. However, we conclude that the data presented in the draft is inadequate when used as the basis for selecting the preferred management options. Of particular concern is the absence of forecasts of abundance of the various salmon stocks and an evaluation of the impact of each option on in-river escapements. Forecasts of expected impacts of Alaskan and Canadian interceptions of U.S. salmon stocks also are needed before we can be assured which options, if any, will meet the objectives of the plan.

In the absence of quantifiable data from the draft plan, we will draw some general conclusions about the effectiveness of the plan amendments based on our examination of past fishing seasons and the Council's predictions of the status of various salmon stocks. We reserve the right to adjust our conclusions as the Council continues to update and revise the salmon plan data base. Stringent regulations will be necessary in 1982 because of the failure of many stocks to reach spawning escapement goals in 1981, such as fall chinook in the upper Sacramento River; fall chinook in the Klamath River; coho on the coasts of Oregon and Washington; and upriver spring, summer, and fall chinook in the Columbia River. We believe that none of the proposed options, by themselves, would meet the spawning escapement needs in 1982 for the west coast stocks. The large number of trollers in the Pacific fleet tend to override the objectives of time and area closures. The success of the 1982 plan will be dependent upon the magnitude and type of quotas established.

Comment on management options for the Southeast Alaskan troll fishery, which impact the depleted upper Columbia River stocks, will be forwarded separately to the North Pacific Fishery Management Council.

We offer the following specific recommendations concerning management options for the 1982 salmon fishing season.

Chinook salmon fishery south of Point Arena, California.

We believe that meeting escapement needs of natural spawning fall chinook in the upper Sacramento River should be the primary basis for ocean management south of Point Arena, and a quota is a key to providing protection to this stock since there is no effective control over fishing effort. Although the harvest quota of 380,000 chinook was not met in 1981, neither was the upper Sacramento River short-term spawning goal of 74,000 adults. Escapement into the upper Sacramento River was 19 percent above that of the 1980 season, but 24 percent below the short-term goal. The preliminary data indicate that the 1982 stock will be comparable to the 1981 stock. Consequently, we recommend a harvest quota of 300,000 chinook for the fishery south of Point Arena. This is the same quota we recommended for the 1981 fishery.

Chinook salmon fishery from Point Arena to the California/Oregon border.

We believe that meeting escapement needs of the Klamath River fall chinook should be the primary basis for ocean management between Point Arena and the California/Oregon border. As noted for the fishery south of Point Arena, a quota is also a key for protecting this stock since there is no effective control over fishing effort. Last year's harvest quota of 315,000 chinook was not attained and the total return to the river was only 76,100 adult salmon. The spawning escapement in the Klamath River after inside harvest was only 36,700. No progress is evident in reaching either the short-term or the long-term spawning escapement goals of 86,000 and 115,000 adult salmon, respectively. Preliminary data indicates that the 1982 stock will be comparable to the 1981 stock size. Consequently, we recommend a harvest quota of 200,000 chinook in this area which is the same quota we recommended last year. Recent tagging studies indicate that more than 60 percent of the maturing 4-year-old Klamath River fall chinook harvested off California are caught in May. We believe a May and June troll fishery closure is necessary to protect this stock.

We will manage the in-river Indian fishery, through Departmental regulation, to harvest a maximum of 30,000 adult fall chinook for the subsistence fishery on the Klamath River. This maximum harvest figure should not be considered as an indication of the magnitude of the Indian entitlement, but as an appropriate number for this season given the depressed condition of the Klamath River stocks and the fact that an in-river Indian commercial fishery will not be allowed this year. We anticipate an in-river harvest of 5,000 fall chinook or less by sportsmen on the Klamath River. We will cooperate fully in the management of the Klamath River fisheries in the manner indicated; however, the ocean fishery must be managed to provide for the inside needs (at least 121,000 fall chinook).

Chinook salmon fishery from the California/Oregon border to Cape Blanco, Oregon.

We believe that meeting escapement needs of the Klamath River fall chinook should be the primary basis for ocean management in this area since 40 percent of the ocean harvest of Klamath River fall chinook occurs north of the California/Oregon border. In 1981, the Oregon chinook landings south of Cape

Blanco totalled 86,000 fish which substantially exceeded recent historical landings. To provide protection to the Klamath River stock and to reduce the potential transfer of California-caught chinook salmon to ports outside the California quota areas, we recommend a landings quota of 50,000 chinook in 1982 for Oregon south of Cape Blanco. This figure is the same quota we recommended for the 1981 season.

Management for Columbia River and coastal Washington wild chinook stocks.

Spawning escapement for upriver Columbia River spring, summer, and fall chinook fell to record or near record lows in 1981. These stocks were subjected to increased troll effort in May 1981. This is also a period of high juvenile mortality (shaker) loss in the ocean fishery. We believe the May chinook-only fishery north of Cape Falcon, Oregon, should be closed in 1982 to protect these stocks.

Coho management south of Leadbetter Point, Washington.

The preliminary Oregon Production Index (OPI) projection for 1982 is 807,500 coho compared to 1,153,500 coho during 1981. Also it is estimated that private hatcheries will contribute 193,300 coho to the ocean fisheries. This projection indicates coho abundance is at a record low. In 1981, the coho harvest exceeded guidelines by 201,500 fish and wild coho escapement in the OPI area was only slightly above the 1977 escapement "failure." Coho were harvested at an "apparent rate" of 86 percent of the OPI abundance projections. We believe that wild coho stocks cannot continue to sustain harvests at that rate.

To protect the critically depressed wild coho stocks in the OPI area, we recommend that the quota for the harvest of coho in OPI waters be limited to a maximum of 790,000 fish to be distributed as follows:

So. Cape Falcon, Oregon	Cape Falcon to Leadbetter Point, Wash.
Troll - 500,000	Troll - 88,000
Sport - 102,000	Sport - 100,000

In addition, the all-species troll season should be delayed until July 15 to maximize coho poundage.

Coho management north of Leadbetter Point, Washington.

We have begun a preliminary review of data on the status of stocks north of Leadbetter Point. Until our examination of the data is complete we will reserve the option of recommending revised management measures.

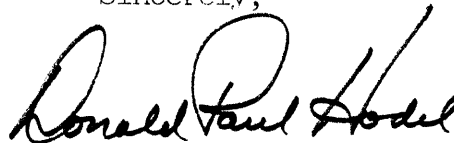
Preliminary abundance estimates for wild coho returning to Washington north coastal streams indicate that the 1982 spawning escapement goals for these stocks may not be achievable even with a total closure of the ocean fisheries north of Cape Falcon, Oregon, to the Canadian border. We understand that southern Canadian stocks that contribute to the fisheries off the coast of

Washington also are severely depressed. Therefore, the 1982 regulations governing the Washington coho fishery will require stringent measures to protect the stocks.

We endorse the efforts of the Washington coastal tribes, the United States and the State of Washington to develop a process for the management of north Washington coastal salmon runs. The exchange brings into focus an approach to the resolution of complex fishery management problems that provides the protection necessary to conserve and strengthen the salmon runs while assuring the maximum benefits of their production for both the treaty Indian fisheries and the non-treaty fisheries. This approach is long overdue and we support this process both in the Washington situation and in other areas where complex fishery management problems remain unresolved.

We appreciate the opportunity to present the Department of the Interior's views prior to the Pacific Fishery Management Council's adoption of the 1982 Ocean Salmon Fishing Regulations. We support your efforts to provide responsible management of this valuable renewable resource.

Sincerely,

A handwritten signature in black ink that reads "Ronald Paul Hodel". The signature is written in a cursive style with a large, prominent initial "R".

UNDER SECRETARY

Enclosure

DEPARTMENT OF INTERIOR COMMENTS ON THE DRAFT SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT ON THE 1982 AMENDMENT OF
THE FISHERY MANAGEMENT PLAN FOR COMMERCIAL AND RECREATIONAL
SALMON FISHERIES OFF THE COASTS OF WASHINGTON, OREGON, AND
CALIFORNIA, COMMENCING IN 1978.

In reviewing the DSEIS, we note that the subject document does not evaluate the environmental consequences of the proposed options nor does it address the rationale behind any of the options. We do not believe that this is an adequate DSEIS because it does not indicate that all the alternatives have been discussed or that the environmental impacts have been assessed. Furthermore, the DSEIS provides no indication of the methodologies used to develop options or to evaluate them. We appreciate the procedural problems that result in the distribution of the DSEIS in its present state and we understand that additional information is being developed for insertion in a later draft.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

215 Fremont Street
San Francisco, Ca. 94105

Mr. Lorry M. Nakatsu
Executive Director
Pacific Fishery Management Council
526 S.W. Mill Street
Portland, OR 97201

MAR 11 1982

Dear Mr. Nakatsu:

The Environmental Protection Agency (EPA) has received and reviewed the Draft Supplemental Environmental Impact Statement (DS) titled PROPOSED PLAN FOR MANAGING THE 1982 SALMON FISHERIES OFF THE COASTS OF CALIFORNIA, OREGON, AND WASHINGTON.

The EPA's comments on the DS have been classified as Category LO-1. Definitions of the categories are provided by the enclosure. The classification and the date of the EPA's comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and the adequacy of the environmental statement.

The EPA appreciates the opportunity to comment on this DS and requests three copies of the Final Supplemental EIS when it becomes available.

If you have any questions regarding our review, please contact Loretta Kahn Barsamian, Chief, EIS Review Unit, at (415) 974-8137 or FTS 454-8137.

Sincerely yours,

A handwritten signature in cursive script that reads "John Wise".

John Wise, Acting Director
Office of Policy and Resources Management

Attachment (1)

cc: Joyce M.T. Wood, NOAA, Washington, D.C.
Judy Schwartz, EPA, Region 10

EIS CATEGORY CODES

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objection to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft impact statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.