PROPOSED PLAN FOR MANAGING THE 1981 SALMON FISHERIES OFF THE COAST OF CALIFORNIA, OREGON AND WASHINGTON

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

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Cover

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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 COAST 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The 1980 ocean salmon regulations are superceded to provide seasons and bag limits for commercial and recreational fisheries in 1981 and to provide for in-season modifications to these as set forth below:

COMMERCIAL TROLL SEASONS (Except Treaty Indian)

CALIFORNIA (entire state)

All salmon except coho — May 1-15
All salmon — May 16-31
a/ All salmon — July 1-September 30
Chinook minimum size limit: 26 inches
Coho minimum size limit: 22 inches

OREGON/CALIFORNIA BORDER TO CAPE FALCON

All salmon except coho — May 1-31
b/ All salmon — July 1-September 8
Note: If there is an in-season closure on coho, then an all species except coho season will be allowed from Cape Sebastian to Cape Falcon, with only whole bait or 5" larger plugs, starting at the time of the closure to September 8.
All salmon except coho — September 9-October 31
Chinook minimum size limit: 26 inches
Coho minimum size limit: 16 inches

CAPE FALCON TO US/CANADA BORDER

All salmon except coho — May 1-31
b/ All salmon — July 15-September 1
Chinook minimum size limit: 28 inches
Coho minimum size limit: 16 inches

CAPE FALCON TO LEADBETTER POINT

Coho only — September 20-October 3
(maximum 10 boats with observers; coho gear only; out to 12 miles)
Coho minimum size limit: 16 inches

The 1980 regulation requiring troll vessels of 26 or more feet to have California hold inspection documentation on board between May 15 and May 24

a/ Subject to modification by in-season management provisions for California.
b/ Subject to modification by in-season management provisions for the WPP and OPI.

when operating south of the Oregon/California border is deleted for 1981.

Other than as specified above, and for 1981 harvest guidelines, regulations for the non-treaty ocean commercial troll fishery are the same as 1980.

RECREATIONAL SEASONS AND BAG LIMITS

CALIFORNIA (entire state)

a/ All salmon 2-fish bag limit February 14-November 15
Chinook/Coho minimum size limit: 22 inches, except that one chinook or coho salmon per day may be less than 22 inches but not less than 20 inches.

OREGON/CALIFORNIA BORDER TO CAPE FALCON

b/ All salmon 2-fish bag limit May 15-September 20
Chinook minimum size limit: 22 inches
Coho minimum size limit: 16 inches (entire state of Oregon)

OREGON/CALIFORNIA BORDER TO CAPE BLANCO

All salmon except coho 2-fish bag limit September 21-October 31
Chinook minimum size limit: 22 inches

CAPE FALCON TO US/CANADA BORDER

b/ All salmon 2-fish bag limit May 23-September 7
EXCEPT 2+1-fish bag limit from Queets River mouth north to US/Canada border (Areas 3 and 4)
Chinook minimum size limit: 24 inches
Coho minimum size limit: 20 inches (only for state of Washington)

Except for 1981 harvest guidelines, other regulations for the ocean recreational fishery are the same as 1980.

Figures 1 and 2 compare the 1981 seasons, bag limits and size restrictions with those in effect in 1980. Figure 3 shows the coastal landmarks that depict the Council's ocean fishery management area off California, Oregon and Washington.

a/ Subject to modification by in-season management provisions for California.
b/ Subject to modification by in-season management provisions for the WPP and OPI.

IN-SEASON MANAGEMENT (WPP and OPI)

Recognizing that early season estimates of coho stock strength north of Cape Falcon, Oregon, are of limited reliability and that projections of total ocean harvest and effort for that area and the Oregon Production Index (OPI) area 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 operating costs), the Council endorses a system for in-season 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.

Such a system should provide the 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 a longer fishing season. Likewise, the system should allow some means to attain equitable distribution of catch between the ocean recreational and commercial fisheries.

Washington Production Projection Area (WPP)

Based on pre-season forecasts of coho stock abundance for 1981, the Council has set Washington coastal coho ocean escapement guidelines at 156,000 fish and Puget Sound ocean escapement guidelines at 925,000 fish. The Council considers these levels necesary to provide adequate escapement to inside areas for spawning and to meet the obligation to treaty Indians. The pre-season prediction of allowable ocean harvests which will occur north of Cape Falcon to accomplish these objectives is 620,000 coho salmon. It is acknowledged that in meeting the Washington coastal streams escapement objective, the required 925,000 coho escapement into Puget Sound will likely be exceeded.

It is recognized, however, that deviations from pre-season forecasts of stock strength and resultant allowable ocean harvests may require modification of regulations during the season to meet spawning escapement goals and treaty-Indian allocations. Such modification will occur, if at all, in either or both of the following manners:

a. Automatic Season Closure Prior to August 26

Catches by the commercial and recreational salmon fisheries in Sub-Area A (the Fishery Management Area north of Cape Falcon) will be closely monitored throughout the 1981 fishing season. Commencing two weeks after the opening of any coho salmon season (commercial or recreational) in that Sub-Area, and periodically thereafter, the Regional Director will review catch data obtained from the WDF for each operating fishery. He will project the catch rates and determine the date when the ocean harvest of coho salmon north of Cape Falcon will reach 372,000 for the troll fishery and 248,000 for the recreational fishery. If at any time prior to August 26 the projection indicates that either of these harvest guidelines will be reached before the end of the regularly scheduled season, the RD will notice in the Federal Register and publicize in the public news media the date on which a harvest guideline will be reached. The notice will include the projections and determinations and

will announce the date that either the troll or recreational fishery or both will be closed for all species north of Cape Falcon. Data used in making the projections will be made available for public review at the Regional Office of NMFS in Seattle. The projections by the RD will be subject to such public comment as time allows prior to the closure[s] and for a period of at least 15 days thereafter.

b. Closure or Extension of Season on or About August 26

Because pre-season forecasts of stock abundance may require modification during the season on the basis of more recent data, a system is needed to adjust the troll and/or recreational seasons north of Cape Falcon to reflect any change in abundance estimates.

On or about August 6 the RD will review ocean harvest data and will make preliminary projections of ocean harvests of coho by the troll and recreational fisheries to the end of the regularly scheduled season. The RD will then make a preliminary determination of what, if any, modifications to the regulations are necessary to ensure that the harvest guidelines north of Cape Falcon (troll = 372,000 coho; recreational = 248,000 coho) are met but not exceeded and the 60%:40% coho harvest ratio between the troll and recreational fisheries is maintained.[c/] These preliminary projections and determinations, together with their supporting rationale, shall be published in the Federal Register and the public news media as soon as practicable after they are made. Data used in making the projections shall be available for review at the Regional Office of NMFS in Seattle. The preliminary projections and determinations shall be subject to public comment for at least 10 days following filing with the Federal Register. A public hearing will be held prior to the close of the public comment period.

On or about August 23rd, the RD, after consultation with the WDF, the ODF&W and the Pacific Fishery Management Council, shall consider all information and comments supplied by the public, all catch data used in making the preliminary projection (as updated by more recent harvest data), 1981 effort data,[d/] any re-estimate of WPP coho abundance[e/] and shall make final projections of coho abundance, total ocean fishing effort and total ocean harvest (troll and recreational) in the WPP to the end of the scheduled season. If it appears that reestimates of coho abundance north of Cape Falcon are either higher or

c/ Inasmuch as this preliminary projection and determination is based on harvest data only and occurs before in-season reestimates of stock abundance can be made, it is duplicative of procedures performed for any fishery previously closed under the "automatic season closure provision" and, therefore, those procedures need not be followed for those fisheries.

d/ As historic trends indicate that ocean fishing effort is disproportionately high at the start of an open fishing period as compared to average effort over the course of a season, August 23 is considered the earliest time that reliable projections of effort to a season's end can be made.

e/ Given a July 15 opening of the all-species troll season north of Cape Falcon, Oregon, August 23 is the first date on which updated coho abundance estimates can be made.

lower than pre-season figures, the pre-season figures will be modified. If abundance is modified, pre-season estimates of escapement which is necessary for spawning and to meet the treaty Indian allocation requirement will be changed and ocean harvest guidelines will be revised to meet the new escapement goals.

If it appears on August 23 that escapement of coho from the ocean to Washington coastal streams and rivers or into Puget Sound will fall short or exceed figures for ocean escapement to inside areas as modified above, the Regional Director shall change the regulations north of Cape Falcon as necessary to provide for adequate escapement from the ocean fisheries to inside areas and, to the extent possible, to maintain a 60:40 harvest ratio between the troll and recreational fisheries. Regardless of adjustments to accomplish the historical catch ratio, if either fishery is unable to take its share of the allowable ocean harvest, the Regional Director may also modify the regulations to allow the other fishery the opportunity to take the surplus. The final projections and determinations by the Regional Director with supporting rationale and any amendment to the regulations governing the ocean fisheries north of Cape Falcon shall be published in the Federal Register as soon as practicable after August 23 and shall be effective upon filing.

Columbia River and Oregon Coastal Coho (OPI)

Because there is no treaty Indian allocation requirement which applies to Oregon coastal coho, there should be no need over the course of a season to depart from the pre-season goal of 300,000 coho to escape the ocean fishing areas in the OPI. The pre-season prediction of ocean harvest off California and Oregon south of Cape Falcon to accomplish the escapement of 300,000 coho from the ocean in the OPI is 772,000 coho.[f/] However, should stock abundance, ocean fishing effort or total harvests during the season deviate significantly from pre-season estimates, the fishing regulations south of Cape Falcon to the Oregon/California border will be modified to meet the intended escapement.

f/ Ocean harvest guidelines are based on allowable ocean harvests in that portion of the OPI south of Cape Falcon. Allowable ocean harvest of coho in that portion of the OPI from Cape Falcon north to Leadbetter Point was taken into account in setting the WPP harvest guidelines.

Modification of the regulations in the OPI area south of Cape Falcon will occur in either of the following manners:

a. Automatic Season Closure Prior to August 12

Catches by the commercial and recreational salmon fisheries in the OPI (south of Cape Falcon) will be closely monitored throughout the season. Commencing two weeks after the opening of any coho salmon season (commercial or recreational) between Cape Falcon and the Oregon/California border and periodically thereafter, the Regional Director will review the catch data for each operating fishery. He will project catch rates for each fishery and establish a date when the ocean harvest of coho salmon in the OPI south of Cape Falcon will reach 548,000[g/] for the troll fishery and 224,000 for the recreational fishery. If at any time prior to August 12 his projection indicates that either of these harvest guidelines will be reached before the end of the regularly scheduled season, the Regional Director will notice in the Federal Register and publicize in the public news media the date on which he projects either harvest guideline will be reached. The notice will include the RD's projections and determinations and will announce the date that either the troll or recreational fishery or both will be closed for all species from Cape Falcon to the Oregon-California border. Data used in making the projections will be made available for public review at the Regional Office of NMFS in Seattle. The projections by the Regional Director will be subject to such public comment as time allows prior to the closure(s) and for a period of fifteen (15) days thereafter.

b. Closure or Extension of Season on or about August 12

Because pre-season forecasts of stock abundance in the OPI may be up-dated and changed during the season, a system is needed for possible adjustment of the troll and/or recreational fishing seasons south of Cape Falcon. As there is no treaty-Indian allocation requirement for coho stocks south of Cape Falcon, escapement goals need not be revised during the season to meet an obligation to treaty-Indians.

On or about July 23 the Regional Director will review ocean harvests for both the recreational and troll fisheries and will make a preliminary projection of total ocean harvests of coho south of Cape Falcon (by both the troll and recreational fisheries) to the end of the regularly scheduled season.[h/] He will also make a preliminary determination of what, if any, modifications to

g/ If this guideline is projected to be reached on August 11, it should be reduced by 19,000 fish to account for coho that will be taken incidental to the chinook only fishery south of Cape Falcon to Cape Sebastian after the closure of the all-species season. If it is projected that the coho harvest guideline will be reached before August 11, the guideline should be even further reduced. See, Salmon Team analysis dated March 27, 1981, at p. 10, fn b/. (Appendix E to 1981 FMP amendment).

h/ Inasmuch as this preliminary projection is based on harvest data only and occurs before in-season re-estimates of stock abundance can be made, it is duplicative of procedures performed for any fishery previously closed under the "automatic closure provision" and, therefore, and those procedures need not be followed for those fisheries.

the regulations are necessary to ensure that the harvest guidelines south of Cape Falcon (troll = 548,000 coho; recreational = 224,000 coho) are met but not exceeded and to ensure that the 71%:29% coho harvest ratio between the troll and recreational fisheries is maintained in that area. These preliminary projections and determinations and the supporting rationale shall be published in the Federal Register and public news media as soon as practicable after they are made. Data used in making the projections shall be available for public review at the Regional Office of NMFS in Seattle. The projections and determinations shall be subject to public comment for at least 10 days following filing with the Federal Register. A public hearing will be held prior to the close of the public comment period.

On or about August 9 the Regional Director, after consultation with the ODF&W, the WDF and the Pacific Fishery Management Council, shall consider all information and comments supplied by the public, all catch data used in making the preliminary projection (as updated by more recent harvest data), 1981 effort data[1/], and any up-dated estimate of OPI coho abundance. He shall make final projections as soon as practicable after August 9 of coho abundance, total ocean fishing effort and ocean harvests (troll and recreational) in the OPI to the end of the scheduled season.

If it appears that reestimates of coho adundance in the OPI are either higher or lower than the pre-season figures, the pre-season figures will be modified and ocean harvest guidelines will be revised accordingly. Based on revised estimates of coho abundance, updated projections of total ocean harvest and projections of ocean fishing effort, if it appears on August 9 that escapement of coho to the OPI will fall short or exceed 300,000 fish, the Regional Director will modify the ocean harvest guidelines south of Cape Falcon to meet that escapement. The Regional Director also shall change the regulations south of Cape Falcon to the Oregon/California boundary to meet the 300,000 goal and, to the extent possible, to meet a 71:29 harvest ratio between the troll and recreational fishery in that area. Regardless of adjustments to accomplish the historic catch ratio, if either fishery is unable to take its share of the allowable ocean harvest south of Cape Falcon, the Regional Director may modify the regulations to allow the other fishery the opportunity to take the surplus. The final projections and determinations by the Regional Director, with supporting rationale, and any amendment to the regulations governing the ocean fisheries south of Cape Falcon to the Oregon/California border, shall be published in the Federal Register as soon as practicable after August 9 and shall be effective upon filing.

IN-SEASON MANAGEMENT (CALIFORNIA)

In consideration of the social and economic impacts of the abbreviated 1980 troll season on California coastal communities, the Council adopted a more liberal ocean troll season for northern California and a more liberal recreational season for the entire State in 1981. To provide adequate protection for Klamath River and Sacramento River chinook stocks, the Council also adopted harvest guidelines for California for the troll and recreational

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1/ As historic trends indicate that ocean fishing effort is disproportionately high at the start of an open fishing period as compared to average effort over the course of a season, August 9, is considered the earliest time that reliable projections of effort to season's end can be made.

fisheries north and south of Point Arena. If either fishery reaches its guideline prior to the end of the regularly scheduled season, that fishery will be closed automatically.

On or about July 15 and periodically thereafter the Southwest Regional Director will review salmon catch data for the area south of the Oregon/California border obtained from the California Department of Fish and Game. He will project the date when the ocean harvest of chinook salmon south of the Oregon/California border to Point Arena will reach 300,000 fish for the troll fishery and 15,000 fish for the recreational fishery. He will project the date when the ocean harvest of chinook salmon from Point Arena to the US/Mexico border will reach 265,000 fish for the troll fishery and 115,000 fish for the recreational fishery. If any of these projections reveals that any harvest guideline will be reached either north or south of Point Arena, he will recommend that the Regional Director shall notice in the Federal Register and publicize in the public news media the date on which the harvest guideline will be reached. The notice shall include the Southwest Regional Director's projections, determinations, and reasons therefore and will announce the date that the troll or recreational fishery or both will reach its harvest guideline and will be closed for all species of salmon. Data used in making the projections will be made available for public review at the NMFS Regional Office in Seattle, and the NMFS Regional Office at Terminal Island, California.

If at the time of any projection referred to above, the Southwest Regional Director determines that either the troll or recreational fishery in either area (north or south of Point Arena) will not reach its entire harvest guideline of chinook salmon prior to the close of the regularly scheduled season for that fishery, he shall project the number of fish which that fishery will harvest during its regularly scheduled season and reallocate any surplus to the harvest guideline of the other fishery in the same area. Reallocation shall occur only within each area, either north or south of Point Arena. No reallocation shall occur between areas.

TREATY INDIAN FISHING

In-season modifications which make more restrictive any ocean fishing regulations 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-October 31
Chinook minimum size limit: 28 inches
Coho minimum size limit: 16 inches

Except as noted above, regulations for the 1981 treaty-Indian ocean fishery

are the same as for non-Indians fishing in the same Council Sub-Area.

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 1981, which regulations shall remain in effect unless and until superceded or otherwise modified, except that, no regulations affecting the ocean fisheries in the FCZ off California in 1981 will remain in effect longer than the 1981 fishing season for that area, after which time the 1980 ocean salmon fishing regulations will again become effective for the FCZ off California unless superceded 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 1981 season only, it is estimated that OY will fall somewhere in the range of 7,000,000 to 9,000,000 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 program 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. Vessel 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. Licenses were issued to vessels that were licensed as a charter vessel 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.

"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 was 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 in Oregon. Permits can be transferred by the vessel owner to a replacement vessel. Individuals whose vessels do not have an Oregon salmon permit may land salmon for sale in that state if they are duly licensed to fish commercially in another state and purchase a $75 single delivery permit. This moratorium was enacted for a two-year period and will expire after 1981 if it is not reauthorized by the Oregon State Legislature.

"The salmon license moratorium enacted by the California State Legislature in 1979 differs from those in the other two 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. The special salmon licenses are valid from date of issue through 1981 at which time this moratorium will end if it is not extended by the legislature. 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.

"During 1981, each state legislature will consider amendments to extend and strengthen these existing limits on participation in the salmon fisheries."

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 Pacific Fishery 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."

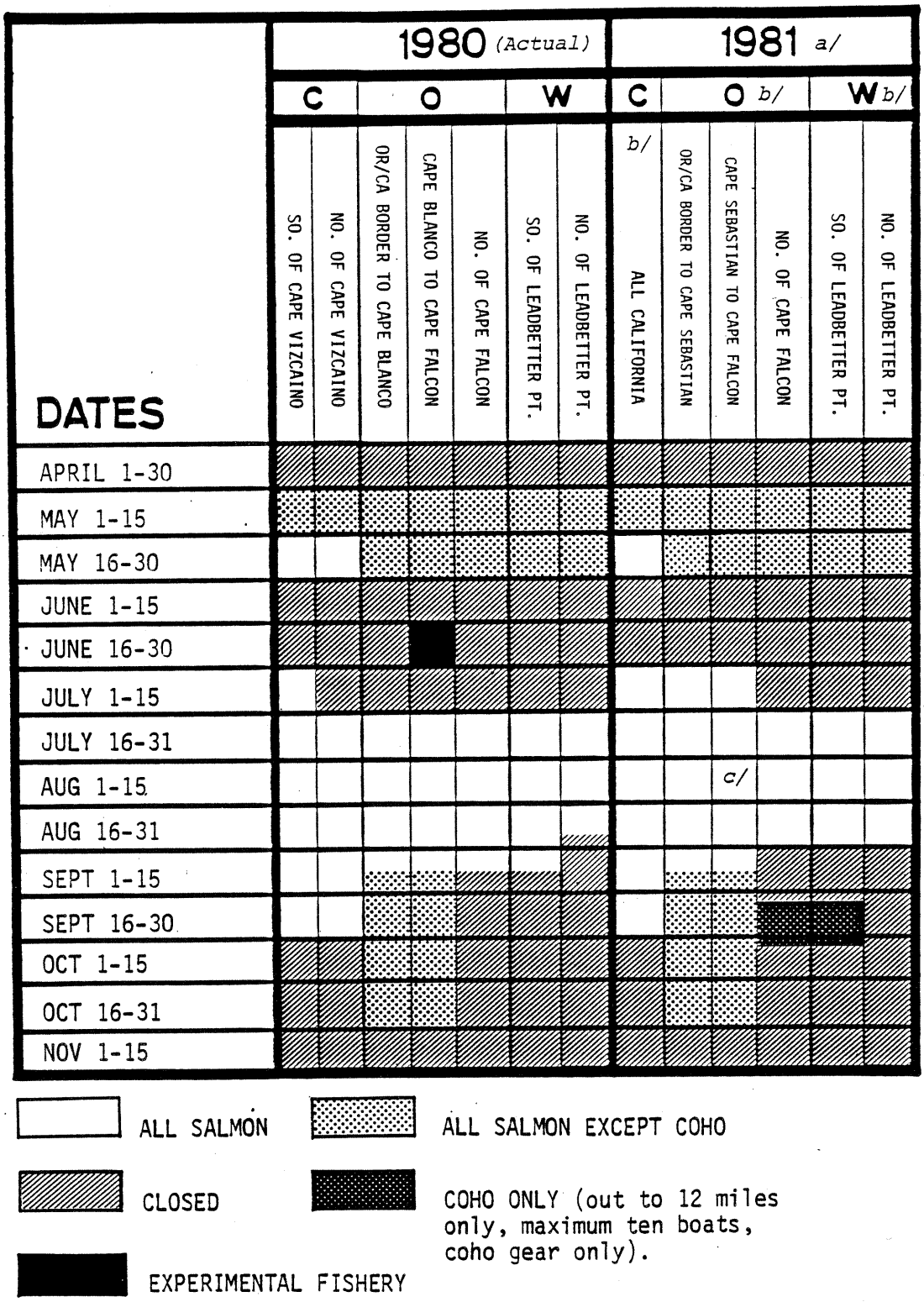
6. Sections 13.5 and 13.6 of the FMP (as amended) are replaced with the following:

"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 1981. 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 adequancy 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 1981."

7. Appendices are added as follows:

TROLL



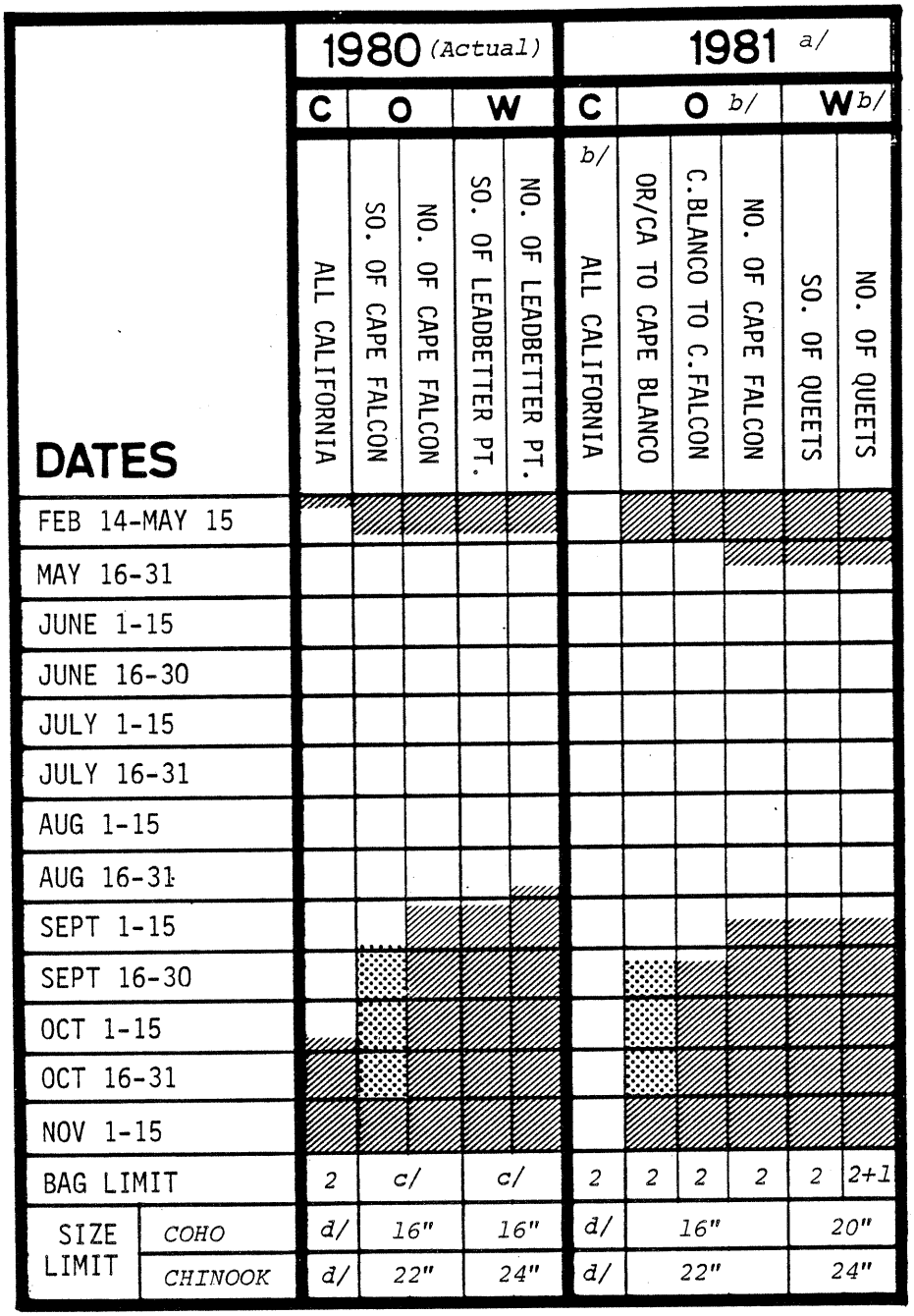
a/ Adopted by Council, March 26, 1981.

b/ 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

c/ ALL SALMON EXCEPT COHO, whole bait or 5-inch plugs, after coho catch reaches harvest guideline.

Figure 1. Comparison of 1980 and 1981 commercial troll salmon regulations.

RECREATION



a/ Adopted by Council, March 26, 1981.

b/ 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

c/ 1980 season began with 3-fish bag limit; this was reduced to 2 fish.

d/ 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.

Figure 2. Comparison of 1980 and 1981 recreational salmon fishery regulations.

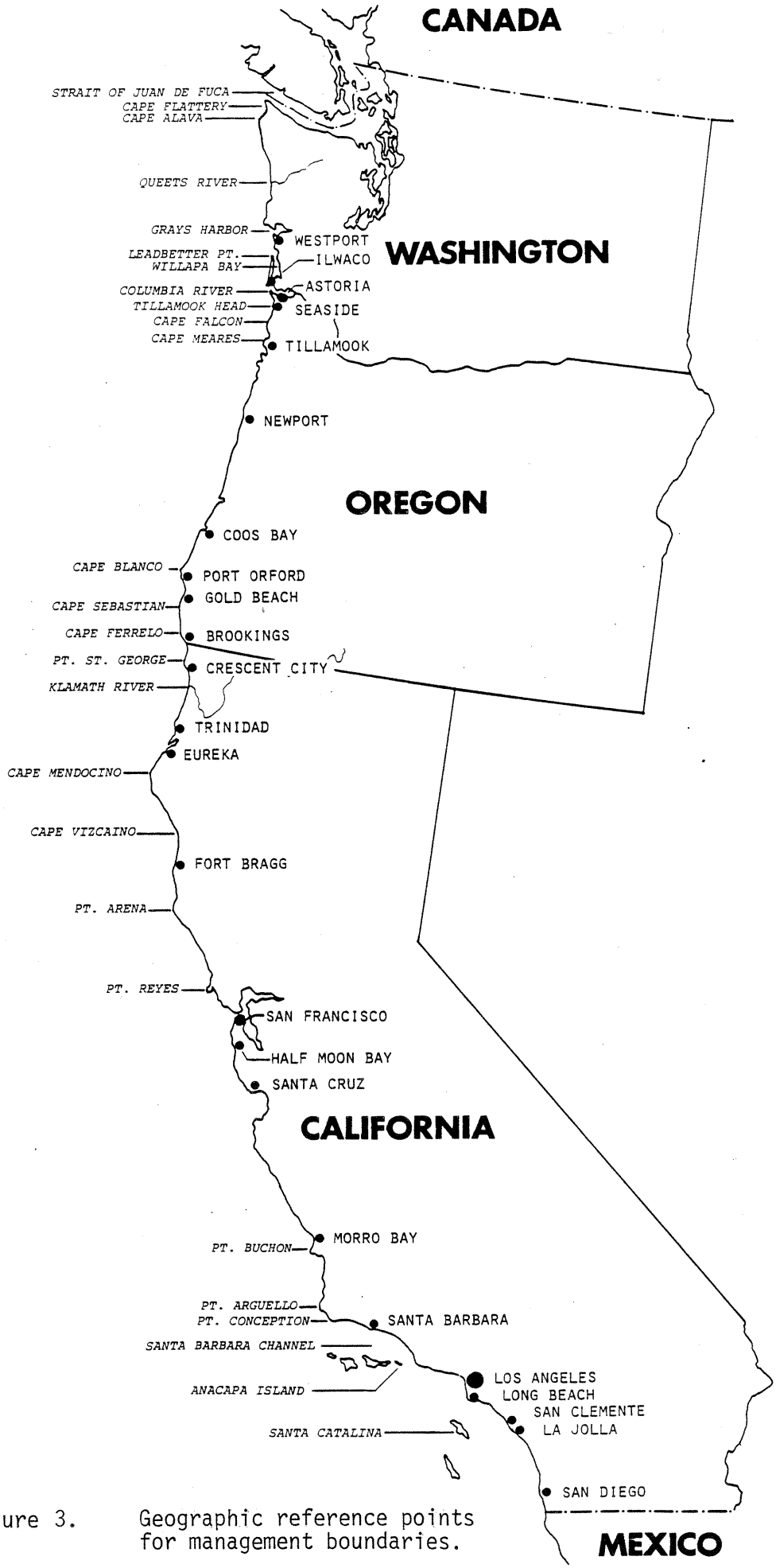


Figure 3. Geographic reference points for management boundaries.

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INTRODUCTION

The management plan amendment for 1981 continues the basic plan approved by the Council in March 1978 entitled, "Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon and California, Commencing in 1978" as amended. This report includes a review of the harvest and management of the 1980 fisheries, 1981 projected status of the resources, a presentation of the goals for 1981, 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 1980 fishery at this time. The spawning stock assessment for 1980, 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 1981, changes may be proposed prior to or during the 1981 season.

The development of a framework plan for the management of the fishery has been undertaken by the Council. A first rough draft was presented to the Council on November 8, 1979. This plan will encompass a thorough review of past fishing seasons under FCMA regulations, additional data and computer model capability, as well as results from new studies. Economic studies are continuing. A task force has made a survey of the status and problems of salmon freshwater habitat. Additional studies have been made of artificial and ocean ranching production. Of further import are judicial actions relative to treaty Indian fishing rights and Congressional actions regarding fisheries enhancement programs.

The full impact of these factors cannot be assessed at this time. For this reason, the Council has chosen to delay implementation of the framework plan until after the 1981 season. The framework plan is intended to be a long-range management program. It will serve as a foundation for annual regulations, as well as changes required by unforeseen fluctuations in environment, stocks and fisheries.

I. DESCRIPTION OF 1981 SALMON FISHERY MANAGEMENT PROBLEMS

The problems facing the Pacific salmon fisheries in 1981 are similar in many ways to problems that have been present in the fisheries for the past two or three years.

This amendment addresses two fundamental and inter-related problems: conservation of the salmon resource and allocation of the resource among fishery participants. Habitat degradation and other problems have greatly reduced salmon stocks over the past 50 years so that they 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.

Within these two broad problem areas, the Council has developed the following management goals:

- Provision for adequate spawning escapement
- Allocation to treaty Indian fisheries
- Allocation among ocean and "inside" sport and commercial fisheries
- Consideration of the interests of non-fishing participants (e.g., processors)
- Consideration of the interests of non-fishery related groups (e.g., consumers, taxpayers)

The first two goals are of prime importance. The remaining responsibilites are considered simultaneously and balances are made among them.

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.

(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 up-river 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 1980, California chinook escapements remained well below long term escapement goals, with the Klamath River being particularly poor. The Sacramento River escapements must be increased substantially over a period of time to realize full production potential. In 1980, while upper Sacramento River chinook returns fell short of natural escapement goals, one hatchery on the lower Sacramento River received returns higher than necessary for maintenance of that hatchery run. The only commercial fishery for Sacramento River chinook is the ocean troll 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 1980. This decline has occurred in spite of increased restrictions on the ocean fisheries in recent years off northern Oregon and Washington. The chinook catch off Washington dropped from 209,000 fish in 1979 to only 173,000 fish in 1980--well below the annual average Washington ocean catch of 490,000 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 1980, 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 increased "inside" fisheries occurred. This management measure resulted in an escapement to Puget Sound greater than needed to meet the projected Indian treaty allocation or escapement goals. It also resulted in increased catch in 1980 for both the Indian and non-Indian net fisheries. However, Washington coastal coho stocks still had very disappointing escapements. The problem of the mixture of weak and strong coho stocks in the Washington ocean fishery will continue in 1981.

(B) Legal

Indian treaty fishing rights affording the opportunity to take up to 50% of the harvestable salmon resource apply to all stocks of salmon under U.S. control or jurisdiction (including jurisdiction exercised by the States) that, absent prior interception by Washington fishermen, would pass through or be available at any of the treaty tribes' usual and accustomed fishing grounds wherever located. 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 "inside."

Columbia River treaty fishing rights are defined for allocation purposes in the Columbia River Management Plan.[1] The question of treaty rights to ocean fisheries for salmon of Columbia River origin is currently being adjudicated in U.S. District Court.

California state courts have upheld Indian rights to fish on the Klamath River for subsistence and ceremonial purposes. The issue of commercial Indian fisheries on the Klamath is currently being adjudicated.

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 March 1981, a U.S. District Court enjoined the State of Washington from imposing a 28-inch minimum size troll chinook catch limit upon members of the Makah Tribe fishing in coastal waters on the basis that the size limit was not necessary for conservation, was discriminatory, and deprived the tribe of the power to determine what is the wisest use of its share of the salmon resource.

In addition to the legal responsibilities of the Indian treaties, the Council is legally required under the FCMA to manage the salmon resource according to optimum yield. A discussion of the biological, social, economic and institutional problems associated with this legal mandate are contained in this section and Appendix B of this plan.

During the 1980 salmon season, the Fort Bragg Salmon Trollers Marketing Association brought suit against the State of California in State Court. The suit succeeded in voiding 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

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

Secretarially approved Salmon FMP. As a result, California territorial waters were opened for salmon fishing from July 4-12 while the FCZ off California was closed. It is estimated that approximately 4,600 chinook were taken in State ocean waters during the July 4-12 period, of which 1,900 were estimated to be of Klamath River origin.

The case is presently being appealed. In the meantime, the State statute authorizing conformance remains inoperative. At present, the Director of the California Department of Fish and Game does, however, have the authority to take such regulatory action in California ocean waters as is necessary to conserve the salmon resource.

(C) Economic and Social

The unique economic and community characteristics associated with the Pacific salmon fisheries create another set of management problems. The market price, 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 price fluctuations and competition among products of different types, species and origins.

For example, troll-caught salmon are preferred by some processors over net-caught salmon. However some small early-season, troll-caught coho command lower prices, while certain net-caught fish (e.g., up-river early spring chinook) bring premium prices due to their high quality.

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. 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 regultory 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.

For instance, many Pacific salmon fishermen experienced low salmon prices, restricted seasons, and poor salmon fishing, as well as poor albacore fishing and a general recession in 1980. Low-interest Small Business Administration loans to some fishermen may alleviate these economic impacts temporarily, but in 1981 the salmon fisheries will again be under severe economic pressures. Coastal communities may suffer similar economic problems as a result of regulatory decisions taken with regard to the commercial and recreational fisheries.

Many salmon fishermen also feel strong social 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.

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.

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 are 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 responsibililty 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 for the majority of their salmon data. Each state 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., National Marine Fisheries Service, 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 both 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 treaty and non-treaty "inside" fisheries).
- The timing of fishing opportunities for other species.
- The timing of data availability for in-season 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 the North Pacific Fishery Management Council's salmon plan which occurs prior to the development of the Pacific Council's salmon plan (or amendments).

The management regime presented in the 1978 salmon FMP and this 1981 amendment attempts 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.

II. REVIEW OF THE 1980 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 1980 season and includes comparisons with certain years since 1971. In addition, catch estimates for the 1980 inside fisheries and some comments on escapement to certain areas are included.

OCEAN FISHERIES

CALIFORNIA

Troll Fishery

This summary of the 1980 California troll fishery is preliminary. Final figures will change, but they are expected to vary by no more than plus or minus 10 percent. Catch statistics are reported by port-area of landing, not actual catch area.

1980 Regulations. The 1980 commercial troll season off California was as follows:

South of Cape Vizcaino	all salmon except coho	May 1 through May 15
	all salmon	May 16 through May 31
	all salmon	July 1 through Sept. 30
North of Cape Vizcaino*	all salmon except coho	May 1 through May 15
	all salmon	May 16 through May 31
	all salmon	July 16 through Sept. 30

Effort. Specific estimates of effort are not available for California; however, number of deliveries provide a rough measure of effort (Table II-1). There were over 50,000 total deliveries to California ports in 1980. This represents a slight increase over 1979 deliveries of 48,000, and is 10% greater than the 1971-75 average of 45,000. The high level of effort occurred in spite of significant reductions in the 1980 season as compared to the 1979 season and the 5-year average.

Effort by area, for 1980, when compared to 1979 was similar in the Eureka, Fort Bragg, and San Francisco areas. However in the Crescent City area, deliveries declined from 8,000 in 1979 to 6,200 in 1980, while in the Monterey area deliveries increased 53% over 1979 deliveries (Table II-2).

* On the evening of July 4, state waters (inside 3 miles) north of Cape Vizcaino were opened by a state court order. The Director of the Department of Fish and Game, under powers given to him by the State Legislature, closed the season for conservation reasons on July 12. During this added week of fishing (July 5-12), trollers landed about 4,600 chinook, of which 1,900 were estimated to be Klamath River fish.

Table II-1. Commercial troll catch (in thousands) and effort off California, 1971-80.

Year	Effort[a/]	Numbers			Pounds Dressed		
		Chinook	Coho	Pink	Chinook	Coho	Pink
1971	38,552	434	442	1	4,926	3,184	7
1972	37,832	492	158	0	5,372	1,050	0
1973	55,623	817	348	19	7,587	1,994	88
1974	51,076	492	656	c/	5,048	3,700	1
1975	42,996	579	204	3	5,782	1,124	16
1971-75 Average	45,217	563	362	5	5,742	2,211	
1976	59,977	540	622	0	4,944	2,844	0
1977[b/]	61,547	563	35	1	5,728	204	6
1978[b/]	NA	519	238	NA	5,260	1,277	NA
1979[b/]	47,819	659	164	c/	6,860	1,050	0
1980[b/]	50,397	575	50	c/	5,607	300	

a/ Number of Deliveries.

b/ Preliminary.

c/ Under 500.

Chinook - Chinook landings in 1980 of 575,000 fish were less than the 1979 record landings of 659,000 chinook, but were more than the 1971-75 average of 563,000 chinook (Table II-1).

All of the decline in chinook landings in 1980, when compared to 1979, was in the north coast area (Crescent City, Eureka, and Fort Bragg). This was expected due to the record harvest in 1979 and the shortening of the 1980 season in that area. North coast landings were 299,000 chinook in 1980 and 438,000 chinook in 1979. However, 1980 north coast landings still equalled the 1971-75 average of 299,000 chinook (Table II-2).

The 1980 south coast (Monterey and San Francisco) landings of 276,000 chinook were 25% higher than 1979 landings of 221,000 chinook and 5% higher than the 5-year (1971-75) average of 264,000 chinook. The largest increase was in the Monterey area where 1980 landings of 74,000 chinook were 46% above 1979 landings of 51,000 chinook (Table II-2).

Table II-2. Summary of California commercial troll effort (deliveries) and catch (numbers of fish) by area of landing, 1976-80 and 1971-75 average.

	Area of Landing							
	North Coast				South Coast			
Year	Crescent City	Eureka	Fort Bragg	Subtotal	San Francisco	Monterey	Subtotal	Total
EFFORT								
Deliveries								
1971-75 Ave.	3,836	8,254	10,563	22,653	14,407	8,157	22,564	45,217
1979[a/]	8,042	7,044	12,601	27,687	12,817	7,315	20,132	47,819
1980[a/]	6,199	7,440	12,351	25,990	13,222	11,185	24,407	50,397
CATCH								
Chinook								
1971-75 Ave.	35,675	142,140	120,814	298,629	188,189	75,857	264,046	562,675
1976	20,971	165,419	115,683	302,073	138,231	99,626	237,857	539,930
1977[a/]	44,074	157,659	118,004	319,737	169,762	73,337	243,099	562,836
1978[a/]	62,386	130,719	98,667	291,772	125,462	101,321	226,783	518,555
1979[a/]	70,844	193,024	174,343	438,211	169,859	50,742	220,601	658,812
1980[a/]	34,555	134,497	129,943	298,995	201,818	74,253	276,076	575,066
Coho								
1971-75 Ave.	84,020	133,912	100,394	318,326	35,526	7,770	43,296	361,622
1976	133,054	204,835	159,259	497,148	83,246	41,384	124,630	621,778
1977[a/]	14,875	16,854	2,025	33,754	1,029	197	1,226	34,980
1978[a/]	99,868	95,195	31,880	226,943	10,135	1,344	11,479	238,422
1979[a/]	72,477	55,019	25,911	153,407	8,931	1,772	10,703	164,110
1980[a/]	15,054	17,934	12,915	45,903	3,394	343	3,737	49,640

a/ Preliminary.

The mid-season closures in 1980 caused a shifting of the bulk of the chinook landings to later in the season. The 1971-75 average shows that 61% of the statewide chinook catch of 563,000 fish was taken before July 1 (Table II-3). In 1980, only 42% of the chinook was landed before July 1.

Coho. The 1980 troll coho landings of 50,000 fish were the second lowest in 20 years. (In 1977, 35,000 coho were landed.) They amounted to only 30% of

Table II-3. California commercial troll chinook and coho landings, in numbers of salmon by month, for 1978-80, with average of 1971-75. [a/]

		April	May	June	July	August	September	Season
CHINOOK								
1971-75	Monthly	38,791	148,224	154,012	135,142	60,868	25,638	
Average	Cumulative	38,791	187,015	341,027	476,169	537,037	562,675	562,675
1978	Monthly	20,891	212,507	166,233	90,160	21,650	7,114	
	Cumulative	20,891	233,398	399,361	489,791	511,441	518,555	518,555
1979[b/]	Monthly	Closed	205,596	91,196	201,301	115,202	45,517	
	Cumulative	Closed	205,596	296,792	498,093	613,295	658,812	658,812
1980	Monthly	Closed	231,738	8,347	248,026	50,154	36,801	
	Cumulative	Closed	231,738	240,085	488,111	538,265	575,066	575,066
COHO								
1971-75	Monthly	-	88,718	135,970	110,520	24,367	2,046	
Average	Cumulative	-	88,718	224,688	335,208	359,575	361,621	361,621
1978	Monthly	Closed	36,167	159,361	38,170	3,781	943	
	Cumulative	Closed	36,167	195,528	233,698	237,479	238,422	238,422
1979[c/]	Monthly	Closed	12,828	50,800	84,500	15,522	460	
	Cumulative	Closed	12,828	63,628	148,128	163,650	164,110	164,110
1980[d/]	Monthly	Closed	1,326	60	31,466	11,212	5,576	
	Cumulative	Closed	1,326	1,386	32,852	44,064	49,640	49,640

a/ 1978-80 data are preliminary.
b/ Last two weeks of June were closed in 1979.
c/ Last week of May and last two weeks of June were closed.
d/ See text for 1980 closures.

1979 poor landings of 164,000 coho and 14% of the 1971-75 average of 362,000 coho (Table II-1). Several factors influenced the 1980 California coho landings. Among the most important were:

1) A price dispute over coho between the fishermen and buyers. This was especially true during the early (May) season (Table II-3).
2) The reduction in the fishing season in 1980.
3) The low abundance of coho in the OPI. Since the mid-1960s, California coho landings have been dominated by fish from the OPI area. Approximately 80% to 90% of the California coho catch originates from the Oregon coast and Columbia River area.

   Production of coho from California streams and rivers has always been minor when compared to coho from other areas and chinook. Most of the small northern California streams have intermittent runs of coho that vary from a few hundred to 1,000 coho. The largest coho runs occur in the Klamath where there is an average run of about 20,000 coho. Total California hatchery releases of yearling coho amount to only 300,000 fish, compared to approximately 60,000,000 coho yearling releases in the OPI area.

Value. Preliminary estimates of ex-vessel values of troll landings in 1980 show a significant decline over 1979, $13.15 million compared to $19.66 million (Table II-4). The decrease in 1980 value is due to: (1) decreased poundage landed, and (2) lower ex-vessel prices in 1980, particularly for coho.

Table II-4. Estimates of ex-vessel value[a/] of California troll landings and average price per pound in 1979 and 1980.

	Chinook		Coho		
Year	Value	$ per lb.	Value	$ per lb.	Total Value
1979	$17,356,000	$2.53	$2,303,000	$2.19	$19,659,000
1980	12,741,000	2.27	408,000	1.36	13,149,000

a/ Dressed weight value.

Recreational Fishery

Recreational catch and effort data were obtained from sampling surveys at all major California ports. In addition, charter boat statistics were obtained from logs. Much of the data presented are preliminary (Table II-5).

Table II-5. California recreational ocean salmon catch (thousands) and effort for the years 1971-80 and 1971-75 average.

Year	Effort (Angler Trips)	Catch			Fish/ Angler Trips
		Chinook	Coho	Total	
1971	275,020	188	67	255	0.93
1972	234,544	200	45	245	1.04
1973	245,800	198	32	230	0.93
1974	255,796	157	77	234	0.92
1975	173,385	104	21	125	0.72
1971-75 Average	241,534	170	48	218	0.90
1976	189,738	81	58	139	0.73
1977[a/]	NA	127	27	154	NA
1978[a/]	NA	84	44	128	NA
1979[a/]	174,951	123	16	139	0.79
1980[a/]	145,276	86	21	107	0.75

a/ Preliminary.

1980 Regulations. Sport regulations in 1980 were identical to those in 1979. The 1980 season ran from the Saturday closest to February 15 to the Sunday closest to October 15 (the season was extended one day to include Columbus Day.) The bag limit was two fish, of which one fish could be less than 22 inches but not less than 20 inches.

Effort. Recreational effort was 145,000 angler trips in 1980. This represented a decrease of 17% from 1979 effort of 175,000 angler trips and a 40% decrease from the 1971-75 average of 242,000 angler trips (Table II-6). As usual, the San Francisco Bay area accounted for the majority (62%) of the effort.

Chinook - The estimated 1980 chinook landings of 86,000 fish show a 30% decrease from 1979 landings of 123,000 chinook and a 49% decrease from the 1971-75 average of 170,000 chinook (Table II-6). San Francisco sport anglers accounted for 87% of the statewide recreational chinook landings in 1980. Sport landings by month are shown in Table II-7.

Coho - The estimated 1980 California coho recreational catch was 21,000 fish (Table II-6). This represents a 32% increase over 1979 landings of only 16,000 coho but was still only 43% of the 1971-75 average of 48,000 coho. As is usually the case, the Eureka area had the highest landings (12,000 fish); north coast (Crescent City, Eureka, and Fort Bragg) anglers caught 99.5% of the statewide coho landings.

Table II-6. Summary of California recreational ocean salmon effort and catch (numbers of fish) by area, for the years 1976-80 and 1971-75 average.

Year	Area of Landing: North Coast: Crescent City	Eureka	Fort Bragg	Subtotal	South Coast: San Francisco	Monterey	Subtotal	Total
EFFORT (Angler Trips)								
1971-75 Average	18,928	37,714	19,497	76,139	136,560	28,835	165,395	241,534
1979[a/]	12,643	19,396	10,655	42,694	122,333	9,924	132,257	174,951
1980[a/]	19,188	23,094	6,400	48,682	89,759	6,835	96,594	145,276
CATCH								
Chinook								
1971-75 Average	2,153	9,887	3,728	15,768	140,922	12,894	153,816	169,584
1976	2,991	7,111	2,324	12,426	63,760	4,807	68,567	80,993
1977[a/]	7,394	13,260	5,945	26,599	96,816	4,000	100,816	127,415
1978[a/]	2,224	2,540	2,759	7,523	66,275	10,072	76,347	83,870
1979[a/]	4,559	3,652	5,806	14,017	102,902	5,932	108,834	122,851
1980[a/]	2,751	4,046	1,154	7,951	75,352	3,106	78,458	86,409
Coho								
1971-75 Average	6,880	22,180	9,020	38,080	8,750	1,460	10,210	48,290
1976	16,880	19,845	7,253	43,978	13,287	641	13,928	57,906
1977[a/]	5,327	5,905	696	11,928	14,860	0	14,860	26,788
1978[a/]	19,774	19,557	2,097	41,428	2,819	35	2,854	44,282
1979[a/]	5,023	8,553	1,058	14,634	1,163	10	1,173	15,807
1980[a/]	7,354	12,286	1,162	20,802	101	1	102	20,904

a/ Preliminary.

Table II-7. California ocean recreational chinook and coho landings in numbers of salmon by month for 1978-80, with average of 1971-75[a/]

		February	March	April	May	June	July	August	September	October	November	Season
CHINOOK												
1971-75	Monthly	17,233	26,389	16,659	10,586	17,290	30,806	25,390	12,981	8,791	3,454	
Average	Cumulative	17,233	43,622	60,281	70,867	88,157	118,963	144,353	157,334	166,130	169,584	169,584
1978	Monthly	14,735	11,866	3,366	3,016	9,026	15,073	9,195	6,081	7,735	3,777	
	Cumulative	14,735	26,601	29,967	32,983	42,009	57,082	66,277	72,358	80,093	83,870	83,870
1979	Monthly	7,876	15,516	11,596	5,178	16,238	29,944	16,227	13,331	6,945	-	
	Cumulative	7,876	23,392	34,988	40,165	56,404	86,348	102,625	115,956	122,901	-	122,851
1980	Monthly	4,703	12,033	6,094	5,573	18,231	19,413	8,752	7,270	4,340	-	
	Cumulative	4,703	16,736	22,830	28,403	46,634	66,047	74,799	82,069	86,409	-	86,409
COHO												
1971-75	Monthly	1	109	1,315	3,971	8,555	24,938	8,532	821	41	6	
Average	Cumulative	1	110	1,425	5,396	13,951	38,889	47,421	48,242	48,283	48,289	48,289
1978	Monthly	0	0	0	0	19,846	21,015	3,392	29	-	-	
	Cumulative	0	0	0	0	19,846	40,861	44,253	44,282	-	-	44,282
1979	Monthly	10	39	20	169	3,613	8,956	2,710	290	-	-	
	Cumulative	10	49	69	238	3,851	12,807	15,517	15,807	-	-	15,807
1980	Monthly	0	0	17	23	3,837	14,948	1,928	147	4	-	
	Cumulative	0	0	17	40	3,877	18,825	20,753	20,900	20,904	-	20,904

a/ 1978-80 data are preliminary.

OREGON

Troll Fishery

Catch and effort data for the 1980 Oregon troll salmon fishery are preliminary. These statistics are obtained directly from commercial fish receiving tickets and landings were converted from weight to numbers of fish utilizing average weight information. Catch statistics reported by area represent port of landing, not actual catch area. Reported catches include some fish caught off California and Washington but landed in Oregon.

1980 Regulations - Commercial troll regulations were different off the Oregon coast north and south of Cape Falcon. The commercial troll season north of Cape Falcon was open for all salmon except for coho from May 1-31 and was open for all salmon species from July 15 - September 8. Minimum size limits were 28 inches for chinook and 16 inches for coho. South of Cape Falcon, the season for all salmon except coho extended from May 1-31, June 16-30 (experimental fishery to Cape Blanco with plugs and whole bait) and September 9 to October 31. The season for all salmon species extended from July 15 - September 8. Minimum size limits for chinook and coho were 26 inches and 16 inches, respectively.

Effort - The best historical measure of troll fishing effort presently available is the total number of boats landing troll-caught salmon in Oregon ports. This number gradually increased from 2,770 vessels in 1976 to 3,157 in 1978 (Table II-8), decreased to 3,114 in 1979, but increased to 3,928 in 1980, the first year of the state salmon vessel moratorium program. Under this program, a total of 4,271 vessels qualified for and were issued troll salmon permits in 1980. Thus, about 343 vessels which did not land salmon in 1980 will not be qualified to participate in the fishery in 1981. Of the 3,928 vessels landing salmon in Oregon during 1980, 3,159 (80%) were owned by residents of Oregon, compared with 376 (10%) and 335 (9%) that were owned by Washington and California residents, respectively. The remaining 58 vessels were from other or unknown states.

Table II-8. Number of commercial fishing vessels which landed troll-caught salmon in Oregon from 1974 to 1980.

Year	Number of Vessels
1976	2,770
1977	3,108
1978	3,157
1979	3,114
1980	3,928[a/]

a/ Preliminary.

Specific estimates of effort (boat days) for the Oregon troll fishery were first developed in 1979. Cumulative effort for the 1980 commercial troll fishery totaled 39,600 boat days (Table II-9). The 1980 commercial effort is 18% below the 48,300 boat days of effort recorded in 1979; however, the difference largely reflects the lack of an early July season in 1980.

Table II-9. Commercial troll salmon effort and catch (thousands) off Oregon, 1971-80.

Year	Effort (boat days)	Chinook		Coho		Pink	
		No.	Lbs. (round)	No.	Lbs. (round)	No.	Lbs. (round)
1971	-	102.9	1,150.8	1,490.1	10,079.9	2.0	10.4
1972	-	127.3	1,499.3	824.6	5,584.8	<0.1	0.1
1973	-	363.3	3,980.5	795.5	5,907.6	3.2	16.3
1974	-	224.1	2,634.0	1,137.2	8,315.5	<0.1	0.1
1975	-	224.7	2,970.8	657.4	4,700.7	0.2	1.0
1971-75 Average	-	208.5	2,447.1	981.0	6,917.7	1.8[b/]	9.2[b/]
1976	-	184.3	2,209.8	1,827.0	10,420.3	0	0
1977	-	340.0	3,984.7	446.1	3,036.9	88.0	455.5
1978	-	191.5	2,177.7	611.6	3,195.8	<0.1	0.3
1979	48.3	245.5	2,967.0	714.6	5,274.3	20.5	122.3
1980[a/]	39.6	209.4	2,497.1	383.2	2,518.3	0.3	1.6

a/ Preliminary.

b/ Odd-year average.

The Newport and Coos Bay areas accounted for 59% of the total troll effort in 1980 (Table II-10). The pattern of effort distribution in 1980 was similar to that observed in 1979 and commensurate reductions in effort were apparent for all areas when comparing 1980 with 1979.

Table II-10. Summary of Oregon commercial troll effort and catch (numbers of fish) by area of landing, 1971-75 average and 1976-80.

Year	Area of Landing					Total
	Columbia River	Tillamook	Newport	Coos Bay	Brookings	
EFFORT						
(Boat Days)						
1971-75 Ave.	NA	NA	NA	NA	NA	NA
1979	2,920	6,155	12,593	17,390	9,269	48,327
1980[a/]	2,627	5,658	10,334	13,056	7,964	39,639
CATCH						
Chinook						
1971-75 Ave.	12,431	5,636	37,378	98,498	54,513	208,456
1976	28,102	9,076	29,943	75,025	42,199	184,345
1977	21,884	26,145	61,619	142,519	87,847	340,014
1978	15,196	8,138	54,122	66,825	47,251	191,532
1979	9,506	4,289	37,253	86,950	107,475	245,473
1980[a/]	9,769	6,101	43,602	86,092	63,810	209,374
Coho						
1971-75 Ave.	62,306	136,332	280,668	376,956	124,694	980,956
1976	176,673	307,455	445,634	778,589	118,667	1,827,018
1977	73,226	98,397	102,743	148,603	23,153	446,122
1978	56,158	93,399	186,528	217,399	58,154	611,638
1979	62,147	76,468	207,233	279,925	88,861	714,634
1980[a/]	36,816	75,690	136,144	105,466	29,098	383,214

a/ Preliminary.

Monthly effort in 1980 was significantly higher than that in 1979 for the months of May, June and September, but was similar or lower for the remaining months of the season (Table II-11). An analysis of effort by month shows that 67% of the total effort occurred during 6 weeks of the season from mid-July through August.

Chinook Catch - The commercial troll chinook catch in 1980 was below that of 1979 but comparable to the 1971-75 average (Table II-9). A total of 209,400 chinook weighing 2.5 million pounds (round weight) were landed in 1980, compared to 245,500 fish in 1979 and an average of 208,500 for 1971-75. A total of 29,700 chinook was landed during the special chinook-only season from June 16-30.

Table II-11. Oregon commercial troll effort and chinook and coho landings (numbers of fish) by month, 1971-75 average and 1978-80.

		April	May	June	July	August	September	October	November[a/]	Season
EFFORT (Boat Days)										
1971-75 Average		NA	NA	NA	NA	NA	NA	NA	NA	NA
1979	Monthly	-	1,246	334	24,438	18,215	1,273	2,176	645	
	Cumulative	-	1,246	1,580	26,018	44,233	45,506	47,682	48,327	48,327
1980	Monthly[b/]	-	2,099	3,681	12,069	14,291	4,685	2,324	490	
Prelim.	Cumulative	-	2,099	5,780	17,849	32,140	36,825	39,149	39,639	39,639
CHINOOK										
1971-75	Monthly	532	8,325	27,528	56,647	69,725	31,442	13,701	1,313[c/]	
Average	Cumulative	532	8,857	36,385	93,032	162,757	194,199	207,900	209,213	209,213
1978	Monthly	-	3,216	40,597	63,087	46,870	25,023	9,288	3,451	
	Cumulative	-	3,216	43,813	106,900	153,770	178,793	188,081	191,532	191,532
1979	Monthly	-	10,870	375	80,383	109,729	16,289	25,726	2,101	
	Cumulative	-	10,870	11,245	91,628	201,357	217,646	243,372	245,473	245,473
1980	Monthly[b/]	-	25,765	29,671	39,203	72,533	25,998	15,150	1,054	
Prelim.	Cumulative	-	25,765	55,436	94,639	167,172	193,170	208,320	209,374	209,374
COHO										
1971-75	Monthly	-	-	227,843	414,383	305,753	29,691	3,286	2[c/]	
Average	Cumulative	-	-	227,843	642,226	947,979	977,670	980,956	980,958	980,958
1978	Monthly	-	-	279,618	227,231	92,810	10,378	1,599	2	
	Cumulative	-	-	279,618	506,849	599,659	610,037	611,636	611,638	611,638
1979	Monthly	-	-	436[d/]	544,900	162,541	6,757	-	-	
	Cumulative	-	-	436	545,336	707,877	714,634	-	-	714,634
1980	Monthly	-	-	-	188,849	177,215	17,150	-	-	
Prelim.	Cumulative	-	-	-	188,849	366,064	383,214	-	-	383,214

a/ Late season at mouth of Elk and Chetco Rivers only which was initiated in 1974.

b/ In 1980, May includes May 1 -June 1 landings, June includes June 16-July 6 landings, and July includes July 15-July 31 landings.

c/ Average from 1974 and 1975 only.

d/ Caught off California and landed in Oregon.

Of the total Oregon chinook catch, 41% was landed in the Coos Bay area and 92% from Newport south (Table II-10). The number landed in 1980 from the Coos Bay area and north was near or slightly above 1979 figures. The Brookings area catch was well below that of 1979 but comparable to the 1971-75 average. The number landed in the Columbia River area was below levels observed prior to 1979.

Peak troll catches of chinook salmon in 1980 occurred in August when 35% of the total catch was made (Table II-11). The seasonal pattern of harvest was similar to the 5-year average except for above average catches in May and below average catches in July due to the later July opening.

Coho Catch - The commercial troll fishery for coho salmon opened on July 15 in 1980 to protect the depressed coho resource. This date is later than the traditional opening of June 15 and the July 1 opening in 1979. As a result of the depressed resource and curtailed season, the commercial troll catch of coho in 1980 fell well below the 1979 catch and the 1971-75 average (Table II-11). Commercial troll coho catches in 1980 totaled 383,200 fish weighing 2.5 million pounds, compared to 714,600 fish landed in 1979 and 981,000 for the 1971-75 average.

The distribution of coho landings by area in 1980 was similar to 1979 and the 5-year average despite the later opening (Table II-10). Of the total Oregon coho catch, 63% was landed in the Newport and Coos Bay areas.

Peak troll catches of coho salmon in 1980 occurred during the first two weeks of the all-species season from July 15-31 when 189,000 coho or 49% of the total season's catch occurred (Table II-11).

Value - Preliminary estimates were made of the ex-vessel values of troll landings in 1980 (Table II-12). Value of the 1980 landings was $8.19 million compared to $17.0 million in 1979. The 1980 figures represent a 52% decline in landed value over 1979 without making adjustments for inflation. The significant decrease in 1980 value is largely due to: (1) decreased number of coho landed, and (2) lower prices per pound paid to fishermen compared to 1979, particularly for coho.

Assessment of Selective Chinook Fishery - An experimental chinook-only season was established from June 16 to June 30 between Cape Falcon and Cape Blanco, with gear limited to plugs and whole bait. This special season was implemented to allow the troll fishery access to Oregon coastal chinook stocks when the coho season was closed and to test the selectivity of the troll fleet for chinook.

Table II-12. Estimates of ex-vessel value[a/] of Oregon troll landings and average price per pound, 1971-80.

Year	Chinook Value	Chinook $/lb.	Coho Value	Coho $/lb.	Total Value
1971	$ 587,000	0.59	$ 3,155,000	0.36	$ 3,742,000
1972	982,000	0.75	2,476,000	0.51	3,458,000
1973	3,520,000	1.02	4,004,000	0.78	7,524,000
1974	2,412,000	1.05	5,525,000	0.76	7,937,000
1975	2,680,000	1.04	3,128,000	0.77	5,808,000
1976	3,410,000	1.77	11,458,000	1.26	14,868,000
1977	7,938,000	2.17	3,546,000	1.34	11,484,000
1978	3,584,000	1.89	3,756,000	1.35	7,340,000
1979	6,646,000	2.58	10,351,000	2.26	16,997,000
1980[b/]	5,259,000	2.42	2,926,000	1.34	8,185,000

a/ Dressed weight value.
b/ Preliminary.

Effort was estimated by trip type and area. A total of 3,681 boat days of effort was expended during the special season, with approximately 39% of the effort from day boats and 61% from trip boats (Table II-13). Dayboats were considered as those vessels which reported one day fished as compared to trip boats which reported more than one day fished on fish receiving tickets. The majority of effort (59%) occurred in area 5 - Heceta Head to halfway between the Coquille River and Cape Blanco (Table II-14).

Table II-13. Effort and Chinook Catch by Trip Type during 1980 Troll Special Season.

Trip-type[a/]	Effort Boat days	Effort %	Chinook Catch Number	Chinook Catch %
Day boats	1,453	39%	8,466	29%
Trip boats	2,228	61%	21,205	71%
Total	3,681	-	29,671	-

a/ Catch and effort from tickets with unknown trip type were assigned to day boats and trip boats based on the contribution of known day and trip boats.

A total of 921 vessels landed salmon during the special season. Of this total, 659 (72%) were Oregon boats, 137 (15%) were from Washington, and 115 (12%) from California and 10 (1%) were others or unknown.

A comparison with the 1980 length distribution of boats landing salmon for the entire season indicates that boats participating in the 1980 special season were generally larger. The majority (69%) of vessels landing salmon during the special season was 30 to 50 feet in length. Of the total boats landing in Oregon during the 1980 special season, 74% was 30 feet or more in length, compared with 43% during the entire 1980 season. A chi-squared analysis showed that these length distributions were significantly different.

The number of chinook landed in Oregon during the special season was 29,671 (311,334 pounds dressed) (Table II-13). Trip boats landed 71% of the total catch and day boats 29%. Oregon troll vessels accounted for 66% of the total catch compared to 19% and 15%, respectively, for Washington and California vessels. The catch by out-of-state boats may be underestimated, since boats from California and Washington may have landed fish in their home states during the special 2-week season. Area 5 showed the highest catch, representing 58% of the total number, followed by Area 4 (30%) and Area 6 (11%) (Table II-14).

Table II-14. Estimated Effort and Chinook Catch by Area During 1980 Special Chinook Season.

	Effort		Chinook Catch	
Area	Estimated Days	% of assigned effort	Numbers	% of catch assigned to areas
3 - Cape Falcon to Cascade Head	113	3.6	244	1.0
4 - Cascade Head to Heceta Head	955	30.5	7,183	30.1
5 - Heceta Head to halfway between Coquille R. and Cape Blanco	1,836	58.7	13,875	58.1
6 - Halfway between Coquille and Cape Blanco to Cape Blanco	225	7.2	2,569	10.8
Unassigned	552	-	5,800	-
Total	3,681	-	29,671	-

During the 2-week experimental season, observer and logbook programs were implemented to assess the incidental catch of coho salmon. Both programs resulted in small sample sizes and were not adequately representative of the fishery in terms of trip-type, area, or vessel origin. Since most vessels utilized only bait, there was not an opportunity to evaluate the relative efficiency and selectivity of bait and plugs.

Of the 921 boats that landed salmon during the season, 35 (4%) participated in the voluntary logbook program, representing 6% of the total days fished and 6% of the total chinook catch. Most boats participating in the logbook program were Oregon trip boats. ODFW observed fishing operations on 14 vessels. Since logbooks provided larger samples, the logbook information was used to calculate coho:chinook ratios by area and trip type, and these ratios were used to estimate total coho catch (Table II-15). Logbook and observer information corresponded closely to each other.

Table II-15. Numbers of chinook, ratios of coho to chinook, and estimate of coho caught by area and trip type during special 1980 chinook season (June 16-30).

Area	Trip type	Number Chinook	Ratio (Coho/Chinook)	95% Confidence Interval or Ratio	Est. Coho Caught & Released
Cape Falcon to Heceta Head[a/]					
(Areas 3-4)	Day	803	0.50	±0.68	401
	Trip	6,624	0.19	±0.16	1,259
Heceta Head to Cape Blanco[b/]					
(Areas 5-6)	Day	5,975	0.47	±0.24	2,808
	Trip	10,469	0.46	±0.15	4,816
Unassigned areas	Day	1,688	0.47	-	793
	Trip	4,112	0.36	-	1,480
Total	Day	8,466	0.47	-	4,002
	Trip	21,205	0.36	-	7,555
Grand Total		29,671	0.39	-	11,557

a/ Chinook catch from areas 3 and 4 were combined, and coho:chinook ratios from area 4 were applied to catch from the combined areas, since no logbooks were collected from area 3.

b/ Chinook catch from areas 5 and 6 were combined, and ratios from area 5 and 6 were applied to the catch from combined areas.

Trip boats in the more northerly areas 3 and 4 (Cape Falcon to Heceta Head) showed significantly lower ratios of coho per legal chinook (0.19) than trip boats in areas 5 and 6 (Heceta Head to Cape Blanco) to the south (0.46). There was no difference in the ratio for day boats by area (0.47 to 0.50). The higher incidence of coho per chinook from north to south may be due to a more southerly distribution of coho along the coast during early summer.

Trip boats fishing for chinook in offshore reef areas such as Heceta Banks reported a very low incidence of coho. Perhaps oceanographic conditions and resultant coho stock distribution patterns in 1980 allowed offshore fishermen to better target for chinook than those fishing in nearshore waters. However, this may not be the case in all years.

The ratios of coho per legal chinook from logbooks were applied to chinook landings by day boats and trip boats to estimate the incidental catch of coho (Table II-15). The preliminary estimate of coho released during the special chinook season is 11,557 (1,660 from Cape Falcon to Heceta Head, 7,624 from Heceta Head to Blanco; 2,273 from unassigned areas). Trip boats accounted for 7,555 of the coho compared to 4,002 for day boats. Assuming a mortality rate of 30% for fish hooked and released, it is estimated that 3,500 coho were lost during the 2-week season. However, this estimate of loss could vary significantly, since confidence intervals associated with coho:chinook ratios are high, and sampling for these ratios may be inadequate and therefore not representative of the fleet's overall performance.

Based on the 1980 experience, the concept of a selective troll fishery for chinook salmon appears promising. However, the scope of the evaluation in 1980 was inadequate to fully assess the impact of such a fishery on coho stocks. More detailed studies are necessary before the selective fishery concept can be widely implemented.

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. Eight major ports were sampled in 1980, representing about 92% of the total catch and effort of the ocean salmon recreational fishery. These statistics have been expanded to account for non-sampled ports and are preliminary.

1980 Regulations - Regulations for the 1980 Oregon ocean salmon recreational fishery provided for an all-species season from May 10 to September 14. A season for all salmon except coho was scheduled from September 15 through October 31 south of Cape Falcon. The recreational fishery was closed to coho fishing south of Cape Falcon and to all salmon fishing north of Cape Falcon from 3 to 200 miles effective September 2; however, state waters remained open for all salmon through September 14. The season began with a 3-fish bag limit which was reduced to 2-fish on July 16 when it appeared the recreational fishery would exceed 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 1980 was slightly above levels recorded in 1979 and the 1971-75 average. Cumulative effort for the 1980 recreational fishery totaled 357,100 angler trips (Table II-16) and was 4% above the 341,800 trips recorded in 1979 and 3% above the 1971-75 average of 345,800 trips, but still below effort levels recorded from 1976-78.

Table II-16. Recreational ocean salmon effort and catch (thousands) off Oregon, 1971-80.

Year	Effort (Angler trips)	Catch				Fish/ Angler
		Chinook	Coho	Pinks	Total	
1971	303.7	29.6	311.7		341.3	1.12
1972	331.7	44.1	248.4		292.5	0.88
1973	350.4	61.0	232.1	2.0	295.1	0.84
1974	335.8	36.7	314.5		351.2	1.05
1975	407.5	75.7	252.2	1.2	329.1	0.81
1971-75 Average	345.8	49.4	272.2	1.6[b/]	323.2	0.93
1976	538.4	79.3	501.3		580.6	1.08
1977	404.5	61.4	195.3	4.0	260.7	0.64
1978	403.7	22.8	259.8		282.6	0.70
1979	341.8	20.9	180.8	0.6	202.3	0.59
1980[a/]	357.1	18.5	332.4		350.9	0.98

a/ Preliminary.
b/ Average 1973 and 1975 only.

The Newport and Coos Bay areas accounted for 55% of the total recreational effort (Table II-17). Effort increased in all areas in 1980 as compared to 1979, with the exception of Brookings.

An analysis of effort by month showed that 65% of the total effort in 1980 ocurred during June and July (Table II-18). Effort levels in these two months were above 1979 levels due to excellent catch rates for coho experienced during this period. However, by August effort declined below that observed in 1979.

Chinook Catch - Recreational catches of chinook salmon in 1980 were comparable to 1979 but were well below the 1971-75 average. The cumulative recreational catch totaled 18,500, only 9% below the 1979 catch of 20,900 fish but 62% below the 1971-75 average catch of 49,400 (Table II-16).

Best catches of chinook salmon occurred in the Columbia River, Coos Bay and Brookings areas, with 88% of the total catch attributed to these areas (Table II-17). The 1980 catches of chinook salmon exceeded 1979 levels in the Coos Bay, Newport and Tillamook areas but were lower in the Columbia River and Brookings areas. Catches were well below the 1974-75 average in all areas, with the greatest disparity in the Colmbia River area.

Table II-17. Summary of Oregon recreational ocean salmon effort and catch data by area, 1974-75 average and 1976-80.

Year	Area					
	Columbia River	Tillamook	Newport	Coos Bay	Brookings	Total
EFFORT (Angler Trips)						
1974-75 Ave.	75,892	40,396	91,339	104,289	59,208	371,674
1978	63,409	31,740	115,556	104,441	88,594	403,740
1979	43,368	36,323	88,341	97,717	76,021	341,770
1980[a/]	46,654	52,696	98,085	99,438	60,207	357,080
CATCH						
Chinook						
1974-75 Ave.	32,607	1,978	4,317	6,761	10,561	56,244
1976	44,578	2,323	4570	14,613	13,232	79,316
1977	22,630	1,541	2,626	22,727	11,840	61,364
1978	7,939	833	2,068	4,751	7,253	22,844
1979	7,542	981	1,431	4,537	6,411	20,902
1980[a/]	5,541	1,467	1,771	5,442	4,273	18,494
Coho						
1974-75 Ave.	70,724	27,232	65,145	90,077	30,177	283,355
1976	116,677	50,022	118,071	164,764	51,772	501,306
1977	55,297	15,594	34,043	76,305	14,038	195,277
1978	60,155	8,510	61,210	82,784	47,110	259,769
1979	38,034	9,418	36,275	78,956	18,151	180,834
1980[a/]	56,030	29,932	72,129	141,292	33,059	332,442

a/ Preliminary.

The peak monthly catch of chinook salmon in 1980 occurred in July when 38% of the total catch was recorded (Table II-18). Monthly catches in 1980 were above 1979 levels in July and September but below 1979 in August. The 1980 catches were below the 1974-75 average for all months.

Coho Catch - Recreational landings of coho salmon in 1980 were well above 1979 levels and also well above the 1971-75 average. The 1980 catch totaled 332,400, 84% above the 1979 catch of 180,800 and 22% above the 1971-75 average catch of 272,200 (Table II-16). The larger coho catches were attributed to: (1) reduction in early season troll fishery, (2) greater coho availability, (3) increased early season effort and (4) the more liberal bag limit.

Table II-18. Oregon ocean salmon recreational effort and catch(numbers of fish) by month, 1974-75 average and 1978-80.

		April[a/]	May	June	July	August	September	October	November	Season
EFFORT (Angler Trips)										
1974-75[b/]	Monthly	1,757	9,788	39,348	124,660	129,779	61,275	5,067	-	
Average	Cumulative	1,757	11,545	50,893	175,553	305,332	366,607	371,674	-	371,674
1978	Monthly	-	12,278	78,669	144,534	115,855	37,582	13,284	1,528	
	Cumulative	-	12,278	90,947	235,481	351,336	388,918	402,212	403,740	403,740
1979	Monthly	-	15,290	53,371	112,650	143,167	11,332	4,791	1,169	
Prelim.	Cumulative	-	15,290	68,861	181,311	324,478	335,810	340,601	341,770	341,770
1980	Monthly	-	11,739	85,087	146,357	93,303	20,594	-	-	
Prelim.	Cumulative	-	11,739	96,826	243,183	336,486	357,080	-	-	357,080
CHINOOK										
1974-75[b/]	Monthly	165	899	4,789	19,678	19,732	9,193	1,768	-	
Average	Cumulative	165	1,064	5,853	25,531	45,263	54,456	56,224	-	56,224
1978	Monthly	130	869	4,708	4,963	9,573	1,611	911	79	
	Cumulative	130	999	5,707	10,670	20,243	21,854	22,765	22,844	22,844
1979	Monthly	-	823	4,740	5,115	9,365	202	582	75	
	Cumulative	-	823	5,563	10,678	20,043	20,245	20,827	20,902	20,902
1980	Monthly	-	301	4,652	7,060	5,337	1,144	-	-	
Prelim.	Cumulative	-	301	4,953	12,013	17,350	18,494	-	-	18,494
COHO										
1974-75[b/]	Monthly	779	5,772	36,510	102,519	103,028	33,866	881	-	
Average	Cumulative	779	6,551	43,061	145,580	248,608	282,474	283,355	-	283,355
1978	Monthly	181	5,130	101,523	71,423	67,810	13,208	494	-	
	Cumulative	181	5,311	106,834	178,257	246,067	259,275	259,769	-	259,769
1979	Monthly	-	5,402	35,834	73,799	64,156	1,643	-	-	
	Cumulative	-	5,402	41,236	115,035	179,191	180,834	-	-	180,834
1980	Monthly	-	6,498	117,644	158,124	45,776	4,400	-	-	
Prelim.	Cumulative	-	6,498	124,142	282,266	328,042	332,442	-	-	332,442

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.

The Newport and Coos Bay areas accounted for 64% of the Oregon recreational coho catch (Table II-17). With the exception of the Columbia River area, the 1980 coho landings by area were greater than area landings in 1979 or the 1974-75 average.

Peak catches occurred in June and July with 82% of the total season's landings occurring during these two months (Table II-18). Both June and July landings were well above 1979 levels and the 1974-75 average. Catches dropped sharply in August and September below levels experienced in 1979 and during the 1974-75 period.

Analysis of Oregon Production Index (OPI)

The 1980 ocean salmon regulations were set in part to provide added protection to depressed stocks of coho in the OPI area. The preseason objective was to provide a coho escapement of 260,000 to this area.

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 off the Columbia River, Oregon and California; (2) Oregon coastal hatchery returns; and (3) the in-river gillnet catch, Bonneville Dam 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 return to streams and spawn naturally 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 enumeration of the coho harvest was made for the OPI area from Leadbetter Point, Washington south through California. An estimated 999,400 coho were harvested by the ocean fisheries in the area (Table II-19). This total includes catches of 213,200 for Washington south of Leadbetter Point (i.e., Ilwaco), 715,600 for Oregon and 70,500 for California.

The troll fishery harvested 491,600 coho compared with 507,800 coho for the recreational fishery. Excluding California, the division of catch between the troll and recreational fishery was 48% and 52%, respectively, compared to the allocation guideline established in the 1980 plan of 71% troll: 29% recreational.

1980 OPI Abundance - The total number of adult coho comprising the OPI in 1980 totaled 1,317,000 (Table II-20). This total includes an ocean catch of 999,400, a Columbia River run size of 277,700 and an estimated 39,900 coho returning to Oregon coastal areas from hatchery production. The 1980 OPI abundance is the second lowest since 1962 and only slightly above the near failure in 1977.

Table II-19. Estimated harvest of coho salmon in the Oregon Production Index area in 1980.

Area	Fishery		Total
	Recreational	Troll	
Ilwaco, Washington	154,478	58,752[a/]	213,230
Oregon coast	332,442	383,200	715,642
California coast	20,904	49,640	70,544
Total	507,824	491,592	999,416

a/ Includes 3,467 fish caught off Oregon.

Table II-20. Oregon Production Index of Adult Coho in Thousands of Fish, 1972-80.

Adult Production Year	Adult Production Index Areas[a/]				
	Ocean		Columbia	Oregon Coast[b/]	Total
	Troll	Sport			
1972	1,214.9	533.6	266.8	23.7	2,039.0
1973	1,257.4	422.1	282.9	34.9	1,997.3
1974	1,995.3	636.8	446.9	45.3	3,124.3
1975	1,027.8	441.6	280.7	8.9	1,759.0
1976	2,796.3	930.8	323.5	54.5	4,105.1
1977[c/]	622.6	405.1	86.4	7.2	1,121.3
1978[c/]	974.2	502.9	296.0	9.5	1,782.6
1979[c/]	996.7	318.9	260.4	38.3	1,614.3
1980[c/]	491.6	507.8	277.7	39.9	1,317.0[d/]

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 stocks

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

c/ Data are preliminary; 1978 and 1979 statistics have been updated.

d/ Includes estimated catch of 53,600 fish of private hatchery origin which were not part of predicted stock size. Total, excluding private hatchery fish, is 1,263.4.

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. Preliminary estimates were made from coded wire tag recoveries of the contribution of private hatchery fish to the Oregon ocean catch for 1980. Final analysis will depend upon marked/unmarked ratios by tagged group and tag loss determined by actual returns to private hatchery production facilities. It was estimated that private hatcheries contributed 38,400 fish to the total 1980 Oregon ocean catch, a contribution rate of 5.36%. This was verified by analysis of scale samples which showed a contribution rate of 4.4% ±0.6 for unmarked 0-age releases primarily planted by private hatcheries. If this contribution rate were applied to the entire OPI ocean catch of 999,400, private hatchery contributions would have added 53,600 fish to the OPI. Subtracting the estimated private hatchery contributions from the OPI stock size reduces that total to 1,263,400.

Assessment - The number of three-year-old adult coho in the OPI can be predicted by the number of two-year-old jack coho returning to selected facilities in the previous year. 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.

The OPI abundance predictor was modified for application in 1980 to improve its accuracy and precision. The major modification included an adjustment to account for jacks and adults returning from off-station hatchery releases of smolts in coastal streams. The adjustment for off-station releases is based on the assumption that survival of smolts liberated off-station is identical to hatchery releases and that both jacks and adults return to the release site. In addition, data from 1979 were added to the jack vs. adult relationship, bringing to 8 the number of data points in the relationship (1972-79). Table II-21 and Figure II-1 show the data and regression calculation which make up the 1980 abundance predictor.

The above modifications in the OPI abundance predictor improved the degree of correlation in the relationship and more fully accounted for the actual stock size making up the OPI. The 1980 predictor has an R^2 value of 0.956 with a standard error about the mean of the predicted population size of ±216,900. The potential accuracy of the predictor is best indicated by comparing the expected and observed values of the OPI for individual years from 1972-79 (Table II-21). Observed stock sizes deviated a maximum of 349,100 (±15%) from expected values for a population which varied between 1.1 and 4.1 million fish. In most cases, the deviations ranged between 2 and 10%.

Jack returns to index areas during the fall of 1979 were the lowest recorded since 1965. A total of 48,100 jacks returned to Columbia River and coastal index areas in 1979 (Table II-21). Based on the relationship of jacks to adults (Figure II-1) the pre-season estimate of adult production for the OPI in 1980 was 1,024,600, a near record low level. This figure was adjusted to 1,217,300 (including private hatchery contribution) on August 21 based on catch, effort and stock contribution information in conjunction with the in-season management review procedure (PFMC Report, August 21, 1980). The

observed OPI value in 1980 of 1,317,000 is 292,400 above the pre-season prediction but only 99,700 above the adjusted in-season value. Excluding private hatchery fish the 1980 OPI abundance was 1,263,400, which is 238,800 fish or 23% above the pre-season estimate of 1,024,600.

Table II-21. Relationship of Columbia River and Oregon Coastal Coho Jack Index to the Oregon Production Index for Coho Adults in Thousands of Fish, 1972-80.

Year of Adult	Jacks[a/] of Previous Year			Adult Production Index[b/]	
Production	Columbia	Coastal[c/]	Total	Expected	Observed[d/]
1972	88.5	13.7	102.2	2,388.1	2,039.0
1973	74.7	7.0	81.7	1,871.4	1,997.3
1974	105.1	20.8	125.9	2,985.4	3,124.3
1975	66.7	4.2	70.9	1,599.2	1,759.0
1976	131.9	34.9	166.8	4,016.2	4,105.1
1977[d/]	43.4	7.7	51.1	1,100.2	1,121.3
1978[d/]	87.5	3.7	91.2	2,110.9	1,825.8
1979[d/]	56.5	10.5	67.0	1,500.9	1,600.6
1980[d/]	42.8	5.3	48.1	1,024.6	1,317.0[e/]

a/ Components of jacks are ODFW hatcheries below Bonneville, Cowlitz Hatchery, Bonneville and Williamette dam counts, Oregon coastal hatcheries and Tenmile Lake counts prior to 1975.

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 Williamette 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.

d/ Data are preliminary and observed OPI values for 1978-79 have not been updated.

e/ Includes estimated catch of 53,600 fish of private hatchery origin which were not part of predicted stock size. Total, excluding private origin fish, is 1,263.4.

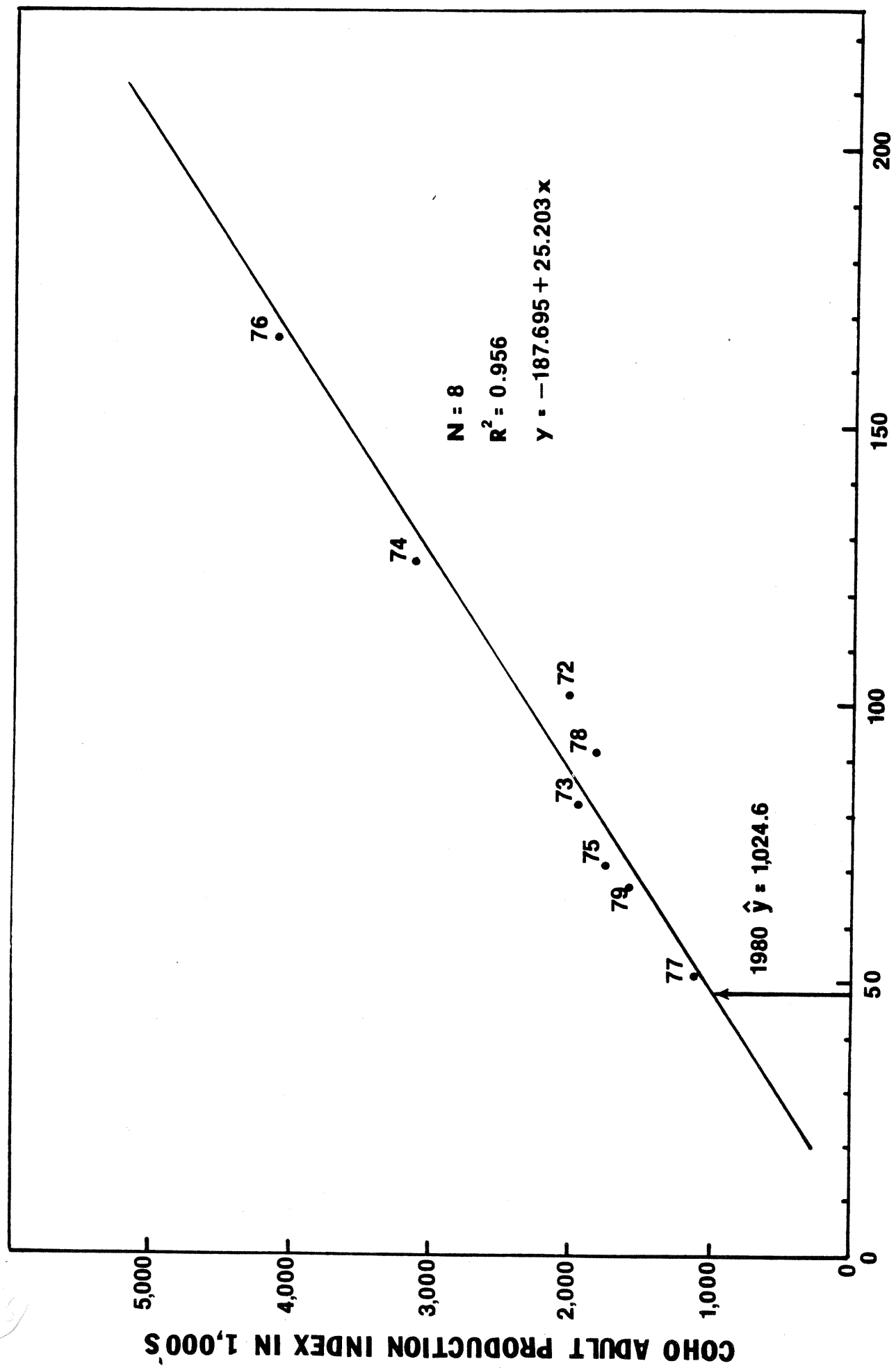


Figure II-1. Relationship between Columbia River and coastal jack index and the coho adult production index, 1972-79 and 1980 prediction.

It is possible to assess the "apparent" exploitation rate of coho in the OPI by comparing the 1980 harvest with the total OPI stock size. The coho harvest in the OPI area was 945,800 in relation to the total stock size of 1,263,400 (adjusted to exclude fish of private hatchery origin). The 1980 ocean harvest represents an exploitation rate of 75% which provided an escapement of 317,600 to the OPI area, slightly exceeding the 1980 pre-season objective of 260,000.

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 75% experienced in 1980 translates to a real rate of approximately 68%.

WASHINGTON

Troll Fishery

Catch statistics are presented for the 1980 commercial troll salmon fishery from data reported at the point of landing on Washington Department of Fisheries fish receiving tickets. All landings compiled through the end of October serve as the 1980 base. The 1979 and 1980 figures presented throughout this summary are preliminary. Total troll fishery catches and effort are listed in Table II-22, including all troll-caught salmon landed in Washington, regardless of catch area. Monthly catch and effort data for Washington coastal catch areas are presented in Table II-23. Totals may vary slightly in the various tables due to rounding.

Table II-22. Washington commercial troll landings, 1971-80[a/]

Year	Effort (days fished)	Chinook No.	Chinook Lbs. Round	Coho No.	Coho Lbs. Round	Pink No.	Pink 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	3,298,000	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

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.

Table II-23. Washington commercial troll effort, and numbers chinook and coho caught, by month - 1971-75 mean and 1978-1980[a/].

		April	May	June	July	August	September	October	Total
EFFORT (Days fished)									
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[b/]	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[b/]	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
CHINOOK									
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[b/]	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[b/]	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
COHO									
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[b/]	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[b/]	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

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

b/ Preliminary.

Season - The 1980 commercial troll season was initiated with regulations primarily intended to protect coho salmon stocks and also provide added protection for chinook stocks. After a May non-coho season, Washington coastal areas were closed to non-Indian trolling until July 15, when the all-species season was opened. At this point, the fishery was monitored relative to a predetermined coho catch level. On August 21-22 it was determined that the fishery would close north and south of Leadbetter Point on August 26 and September 9, respectively. A summary of the troll season since 1971 is shown in Table II-24.

Effort - The number of troll days fished off Washington declined to 26,900 in 1980, compared to more than 41,400 days in 1978 and 1979, and over 50,000 days for the 1973-75 average. Effort was low in all areas of the Washington coast (Table II-25).

During the May chinook fishery, troll effort was at levels comparable to previous years (Figure II-2 and Table II-23). Following the 6-week closure, troll effort was supported for 2 weeks by relatively high coho catch levels. In contrast, reduced coho landings and continued low prices were experienced during the month of August compared to August 1979.

Table II-24. Washington commercial troll salmon regulations[a/] for 1971-1980.

	Season		Days		Size	
Year	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	45	77	28"[c/]	16"
		7/1-10/9 south	45	101	28"	16"
1978[d/]	5/1-6/14	7/1-9/15 north	45	77	28"	16"
		7/1-10/31 south	45	123	28"	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	31	42	28"	16"
		7/15-9/8 south	31	56	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.

Chinook - Landings of chinook salmon from Washington coastal areas are estimated to be 128,200, continuing the decreasing trend observed since 1977 (Table II-25). With lagging coho success after mid-July, the fishery targeted on chinook to a greater extent than usual by those vessels still fishing heavily, although weekly catch levels were average through August (Figure II-2).

Table II-25. Summary of Washington troll effort and catch (number of fish) by coastal catch area, 1976-80, average effort for 1973-75, and average catch for 1971-75.

Year	Cape Flattery	Quillayute	Grays Harbor	Columbia River	Total Wash. Coastal Area
EFFORT (days fished)					
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
CATCH					
Chinook					
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
Coho					
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

a/ Preliminary (as of November 26, 1980).

Coho - As with the chinook fishery, the number of coho salmon caught by trollers were at record low levels in 1980 (Table II-25). This can be attributed in part to the constricted coho season, but added factors were low price and low abundance.

Catches were low in all coastal areas, although the decline was most severe off southern Washington (Table II-25). There was a northerly shift in catch and effort between the first and second weeks of the coho season, which began July 15. Troll coho catch levels dropped immediately following the first 2 weeks and remained low throughout the season (Figure II-2). This contributed to factors causing closures near the end of August.

Indian Troll Fishery - In previous years, a limited Indian troll fishery has operated off northern Washington waters during winter months in the Juan de Fuca Strait and off Cape Flattery. Catch levels of coho salmon in this fishery have been insignificant in most years. In 1980, however, the treaty Indian portion of the commercial troll catch increased significantly. Historic records are available for the Indian troll fishery since 1972 (Table II-26).

Table II-26. Indian and non-Indian troll chinook and coho salmon catches from Washington coastal areas, 1972-1980.

	Chinook		Coho	
Year	Indian	Non-Indian	Indian	Non-Indian
1972	11,300	180,600	9,500	542,800
1973	11,800	301,900	11,400	683,100
1974	11,900	336,100	18,200	1,001,600
1975	12,400	251,300	7,000	753,900
1976	18,500	335,200	7,700	1,347,300
1977	13,700	217,900	7,200	656,600
1978	15,900	129,600	8,100	546,700
1979[a/]	9,300	123,100	10,400	629,800
1980[a/]	14,400	113,800	32,500	341,500

a/ Preliminary.

Value - Unavailable.

Recreational Fishery

Recreational catch and effort statistics (compiled from creel census data) for 1979 and 1980 are preliminary. Data through 1978 are final compilations from post-season punch card reports published annually by the Washington Department of Fisheries. Annual reports and monthly catch totals for the Washington ocean sport salmon fishery are presented in Tables II-27 and II-28, respectively.

Table II-27. Washington ocean recreational salmon fishery statistics, 1971-80.

Year	Effort (Angler trips)	Catch				Fish/ Angler
		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

a/ 1973-75 effort average.
b/ 1971-75 odd-year pink average.
c/ Preliminary.

Season - Regulations for the Washington ocean sport salmon fishery since 1971 are tabulated in Table II-29. The 1980 season opened on Saturday, May 10, in waters north of Cape Falcon. As with the ocean troll fishery, a harvest guideline was established to protect against excessive harvest rates. With significant coho catch levels developing earlier than in previous years, the recreational bag limit was reduced from three to two fish on July 16. Emergency closures were enacted by the Washington Department of Fisheries and the Secretary of Commerce to terminate ocean recreational fishing in waters north of Leadbetter Point on August 26 and in Washington waters south of Leadbetter Point on September 2.

Table II-28. Washington ocean sport salmon angler trips, and numbers of chinook and coho caught, by month--1971-75 mean and 1978-1980.

		April	May	June	July	August	September	October	Total
EFFORT									
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
CHINOOK									
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
COHO									
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

a/ Preliminary.

Table II-29. Washington ocean sport salmon regulations[a/], 1971-1980.

Year	Season	Days	Bag	Size	
				Chinook	Coho
1971-73 (Ave.)	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[c/]	5/10-8/25 north	108	3/2	24"	16"
	5/10-9/1 south	115	3/2	24"	16"

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.

Effort - Total days fished for the 1980 season amounted to 280,100, below the 1979 recent record low of 310,700. In all ports, this reduction is a continuation of a downward trend since record highs in the 1976-78 period. Effort has been especially reduced in the last 2 years (Table II-30).

Both the 1979 and 1980 seasons began in May with extraneous factors almost immediately affecting angler participation. In 1979, gasoline shortages, combined with the first year of a 2-fish bag limit, affected participation. In 1980, although the 3-fish bag limit was reinstated, the eruption of Mt. St. Helens as well as adverse economic factors probably contributed to continued low effort levels.

Table II-30. Summarized Washington recreational ocean sport angler effort and catch by area, 1971-75 average and 1976-80.

Year	Area				
	Neah Bay	La Push	Westport	Ilwaco	Total
EFFORT (Angler trips)					
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
Chinook					
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
Coho					
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

a/ Preliminary.

Figure II-2 illustrates weekly effort and catch relative to previous years. Reduced effort through the early 1980 season as well as the lack of the traditional post-July 4 effort buildup are shown. An important consideration in the annual regulation has been this early-to-late season ratio of angler trips. Recent trends have shown a shift in effort toward the pre-July 4 weekend (Table II-31).

Table II-31. Comparable Washington ocean recreational effort for May-June versus July-August, 1971-75 mean and 1976-80.

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	73,500	233,300	3.2
1980[c/]	70,600	205,600	2.9

a/ Statistical weeks 19-26.
b/ Statistical weeks 27-35.
c/ Preliminary.

Chinook - Estimated 1980 recreational chinook landings of 53,600 were only 25% of the 1971-75 average (210,400), well below the 1979 record low of 76,900 (Table II-27). The May fishery began with only limited success in capturing chinook which were concentrated in deep water and which the troll fishery had been targeting upon, especially off Grays Harbor. With eventual success in coho fishing, significant chinook catches never materialized except for limited periods in localized areas (Table II-28 and Figure II-2).

Coho - Total landings were 361,500 coho for the 1980 recreational season. This is above 1979 levels (290,300) but well below previous years. The figures in Table II-30 show that this was the general situation in all four ports, though the 1980 landings at Neah Bay were slightly behind 1979.

Although effort was initially directed toward chinook, by late June coho catch per angler had reached record levels. This high catch rate continued through the middle of July. On July 16, the bag limit was reduced to 2 fish in order to assure a more equitable apportionment between the recreational and troll fisheries. As with the troll fishery, recreational catches during the month of August were below previous years.

Size and Age Data

Chinook - Chinook salmon age composition data for 1980 are presented in Tables II-32 and II-33. This was the fourth 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).

In the troll fishery, the change to 28 inches significantly reduced the landings of immature 2- and 3-year-old fall chinook and 3-year-old spring chinook. Since 1977, chinook catch levels have not approached those of previous years. Age composition data during 1980 were essentially the same as

in 1979 with a slight increase in percentage of 4-year-olds. Average weights were 13.5 pounds in 1979 and 14.2 pounds in 1980, an increase over the 12.2 pound average during the 1971-75 mean (Table II-32).

Table II-32. Age composition of chinook salmon caught in Washington commercial troll fishery, 1971-75 mean and 1976-80.[a/]

	Age	1971-75 mean	1976	1977	1978	1979[b/]	1980[b/]
Catch	2	4,367	2,336	1,286	132	744	473
	3	182,755	266,763	168,711	59,271	90,124	83,877
	4	71,141	63,902	45,939	67,851	29,132	31,661
	5	6,216	9,103	5,305	4,752	3,843	2,126
	6	207	388	163	-	124	-
Total		264,686	342,492	221,404	132,006	123,967	118,137
Percent	2	1.7	0.7	0.6	0.1	0.6	0.4
	3	68.9	77.8	76.2	44.9	72.7	71.0
	4	26.9	18.7	20.7	51.4	23.5	26.8
	5	2.4	2.7	2.4	3.6	3.1	1.8
	6	0.1	0.1	0.1	-	0.1	-
Total		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
Minimum size regulation[c/]		26"	26"	28"[d/]	28"	28"	28"

a/ For the four Washington coastal catch areas only (except area 4-B).

b/ Preliminary.

c/ Total length.

d/ Only partial compliance in 1977.

The change in minimum size from 20 to 24 inches in the recreational fishery in 1976 significantly reduced the catch of 2-year olds (Table II-33). The decline in the total catch reflects primarily the decreased catch of 3-year-old fish.

Coho - Monthly troll-caught coho average weights for all coastal areas combined are listed in Table II-34. Specific comparisons are difficult due to recent changes in the all-species season.

Table II-33. Age composition of chinook salmon caught in Washington ocean recreational fishery, 1971-75 mean and 1976-80.

	Age	1971-75 mean	1976	1977	1978	1979[a/]	1980[a/]
Catch	2	70,618	11,030	5,810	3,471	6,755	5,831
	3	103,510	127,125	128,790	63,532	57,457	35,008
	4	32,491	27,515	36,198	27,861	11,305	11,636
	5	3,688	3,845	3,895	1,542	1,319	1,094
	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
	3	49.2	74.8	73.8	65.9	74.8	65.4
	4	15.4	16.2	20.7	28.9	14.7	21.7
	5	1.7	2.3	2.2	1.6	1.7	2.0
	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"

a/ Preliminary 1979 and 1980.
b/ Total length.

Table II-34. Monthly Washington commercial troll coho salmon average round weights, 1971-1980.

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

a/ Preliminary.
b/ Treaty Indian fishery.

SUMMARY OF OCEAN FISHERIES

The harvest of the 1980 salmon fishery off the coasts of California, Oregon and Washington amounted to 917,000 chinook and 820,000 coho by commercial trollers and 158,000 chinook and 715,000 coho by the recreational fleet. The chinook commercial harvest was below the average of 1971-75, but the coho catch was only 37% of average. The recreational chinook catch was only 37% and the coho take was 81% of average.

By states, the California commercial chinook harvest was 87% of 1979 and 102% of the 1971-75 average, but the coho take was only 30% of 1979 and 14% of the average. The recreational take of chinook was 70% of 1979 and 31% of average.

Oregon commercial troll harvest of chinook in 1980 was 85% of 1979 and equal to the 1971-75 average, the coho catch was 54% of 1979 and 39% of average. The recreational catch of chinook was 86% of 1979 and 37% of average, and the coho catch was 183% of 1979 and 122% of average.

In Washington, the commercial troll take of chinook in 1980 was 90% of 1979 and 48% of the 1971-75 average, and the coho catch was 58% of 1979 and 44% of average. The recreational catch of chinook was 70% of 1979 and 26% of average, and the coho catch was 125% of 1979 and 64% of average.

Details are illustrated in Figures II-3 and II-4, and summary data are given in Table II-35. The salmon fishing seasons for 1980 are summarized in Table II-36.

INSIDE FISHERIES

COLUMBIA RIVER
(Oregon and Washington)

A number of restrictions has been placed upon the in-river recreational and commercial fisheries, including both treaty Indian and non-treaty, to protect spawning escapement and provide for allocation as set forth in the "Management Plan" adopted by the Federal Court in 1977. (This Management Plan is discussed in the Council's 1978 Fishery Assessment Report.) In-river runs in 1980 were sufficient in size to allow a fishery on only one of the three upriver runs addressed by the "Management Plan," the upriver fall chinook run (Table II-37).

For management purposes, the various Columbia River salmon runs are separated by seasons which reflect run timing through the standard treaty and non-treaty fishing zones, both above and below Bonneville Dam. Table II-37 shows the current status of each of the five seasonal fisheries.

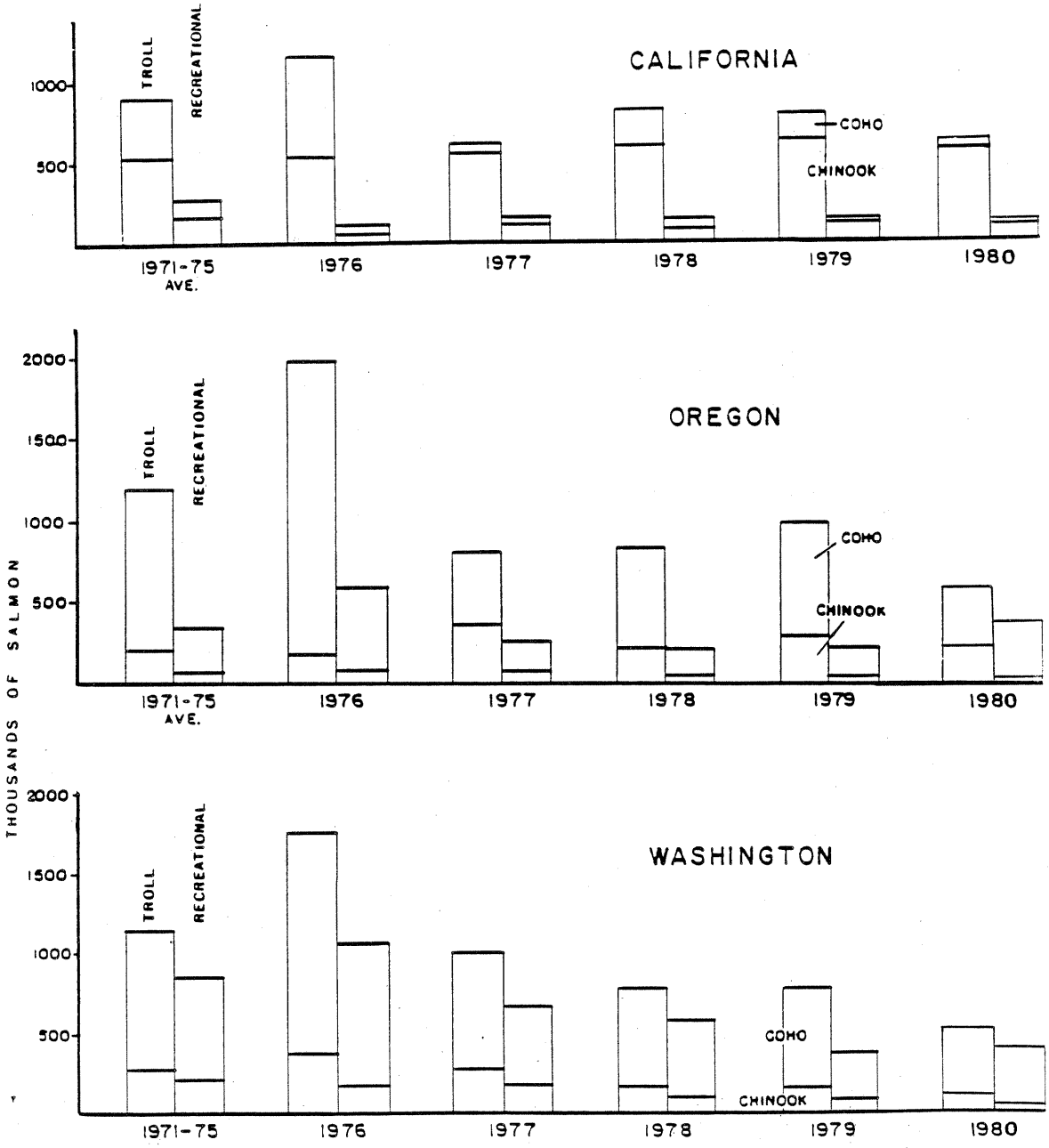


Figure II-3. Summary of ocean salmon landings of California, Oregon and Washington 1976-80, with 1971-75 average.

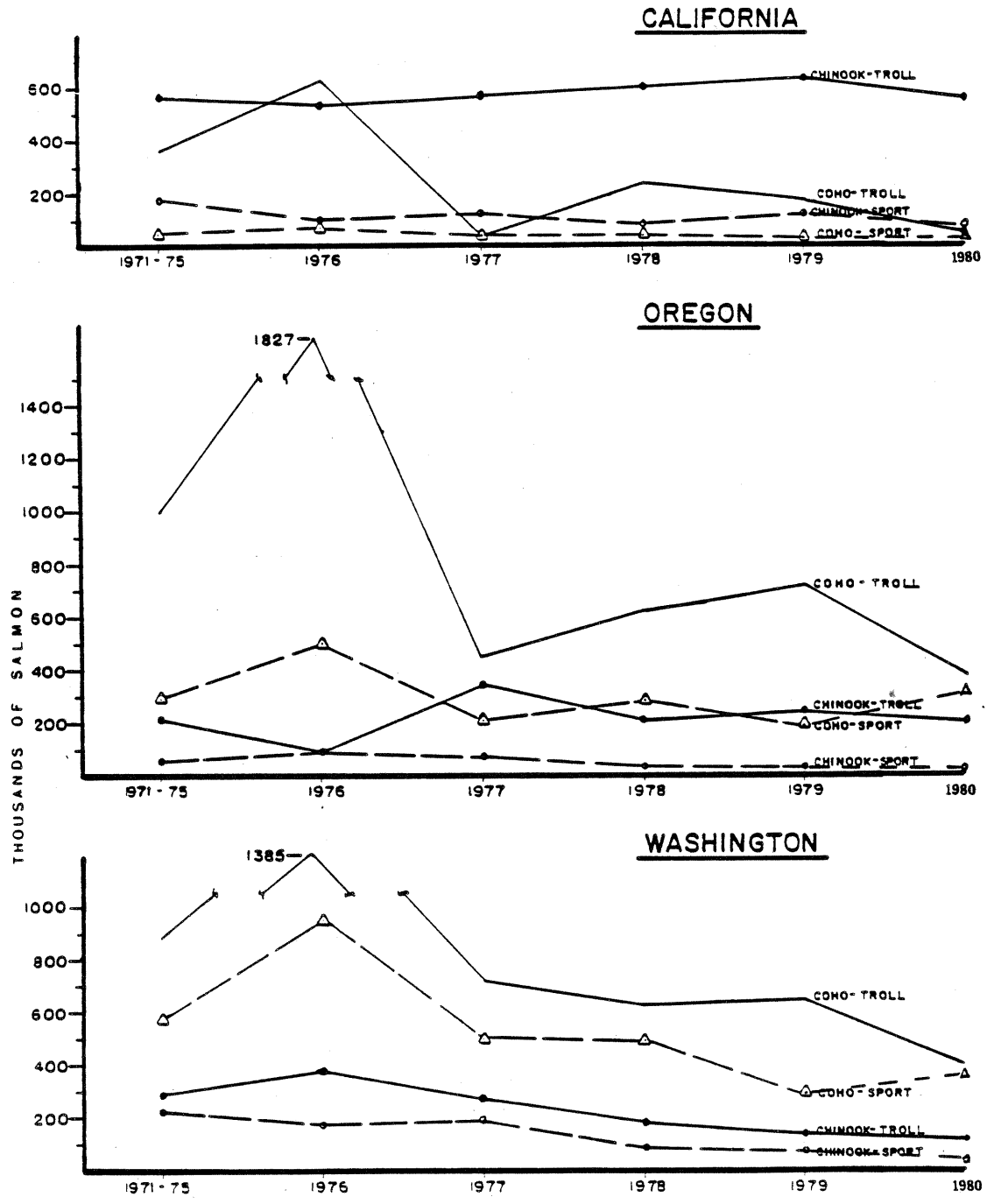


Figure II-4. Summary of ocean salmon landings of California, Oregon and Washington, 1976-80 and 1971-75 average, showing trends by species and type of fishery.

Table II-35. Summary of ocean salmon fisheries of California, Oregon and Washington. Base years for management plans of 1977 and 1978 were 1971 to 1975 (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
	CALIFORNIA						OREGON					
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	18	332	227	715
	WASHINGTON						TOTAL - ALL STATES					
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	97	470	263	1,080	877	1,460	204	774	1,081	2,234
1979[a/]	147	666	77	290	224	956	1,051	1,545	221	487	1,272	2,032
1980[a/]	133	386	54	362	187	748	917	820	158	715	1,075	1,535

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.

Table II-36. Summary of salmon fishing season, 1980 (dates inclusive).

Area	FCZ		State Waters	
	Sport	Commercial	Sport	Commercial
Area A-North of Cape Falcon				
All salmon except coho		5/1-5/31		5/1-5/31
All salmon				
North Leadbetter Point	5/10-8/25	7/15-8/25	5/10-8/25	7/15-8/25
South Leadbetter Point	5/10-9/1	7/15-9/8	5/10-9/1	7/15-9/8
Size limit - Chinook	24"	28"	24"	28"
Coho	16"	16"	16"	16"
Bag limit	3[a/]	-	3[a/]	-
Area B - South of Cape Falcon				
All salmon except coho	9/2-10/31	5/1-5/31	9/15-10/31	5/1-5/31
		6/16-6/30[b/]		6/16-6/30[b/]
		9/9-10/31		9/9-10/31
All Salmon	5/10-9/1	7/15-9/8	5/10-9/14	7/15-9/8
Size limit - chinook	22"	26"	22"	26"
coho	16"	16"	16"	16"
Bag limit	3[a/]	-	3[a/]	-
Area C - California				
All salmon except coho		5/1-5/15		5/1-5/15
All salmon	2/16-10/13	5/16-5/31	2/16-10/13	5/16-5/31
South Cape Vizcaino		7/1-9/30		7/1-9/30
North Cape Vizcaino		7/16-9/30		7/5-7/12[c/]
				7/16-9/30
Size limit - chinook	22"[d/]	26"	22"[d/]	26"
coho	22"[d/]	22"	22"[d/]	22"
Bag limit	2	-	2	-

a/ Reduced to 2 on 7/16.
b/ Experimental fishery (Cape Falcon to Cape Blanco) with plugs and whole bait.
c/ Opened by state court order.
d/ Allowance for one fish to be less than 22 inches but not less than 20 inches.

Table II-37. Estimate of runs into Columbia River of salmon[a/] and steelhead destined to migrate above Bonneville Dam (in thousands of fish), 1971-80.

Year	Spring Chinook	Summer Chinook	Sockeye	Fall Chinook	Coho[b/]	Steelhead
1971	168.0	89.5	150.5	296.3	75.9	224.6
1972	280.4	77.5	123.3	234.8	65.9	225.6
1973	232.9	49.9	61.3	317.6	54.6	187.8
1974	108.5	34.0	43.9	239.3	61.0	144.8
1975	104.1	44.4	58.2	373.7	58.3	84.1
1971-75 Average	178.5	59.6	87.4	291.5	63.1	173.5
1976	78.3	42.1	43.7	359.4	51.9	122.4
1977	143.7	41.2	99.8	275.6	19.4	196.1
1978	129.0	43.4	18.4	240.7	52.6	105.0
1979[c/]	51.4	34.4	52.6	220.0	45.3	114.2
1980[c/]	61.0	31.2	59.4	180.8[d/]	21.7	129.8

a/ Includes adult and jack salmon.

b/ Bonneville Dam count only.

c/ Preliminary.

d/ Includes Bonneville Dam count and estimated catches of upriver fish in September fisheries below Bonneville based on mark recoveries for 1980 only.

Winter Season (January-March). The "winter season" is primarily a lower river fishery designed to harvest the early arriving segments of spring chinook salmon destined for several lower river tributaries, with Willamette River fish predominating. Although these stocks are not covered under the Columbia River Management Plan, care must be taken to assure that the season does not impact the upriver spring chinook run present during the latter part of March. The 1980 winter season commercial catch of 400 fish was a record low (Table II-38). The winter season averaged more than 12 days per year through the early 1970's. The 1980 season of only 1 day (February 27-28) was the shortest ever. The lower river sport harvest through March was an estimated 800 fish, also well below average.

Table II-38. Columbia River winter season chinook landings (in thousands), 1971-80.

Year	Commercial		Sport
	Numbers	Pounds	Numbers
1971	13.4	278.0	6.5
1972	15.8	331.0	0.2
1973	17.2	337.5	7.4
1974	13.3	277.0	2.2
1975	9.1	184.8	2.3
1971-75 Average	13.8	281.7	3.7
1976	4.7	96.1	3.2
1977	6.8	132.5	3.1
1978	13.5	264.7	5.0
1979[a/]	5.5	111.7	1.7
1980[a/]	0.4	7.6	0.8

a/ Preliminary.

Spring Season (April-May). The 1980 upriver spring chinook run to the Columbia River was the second poorest on record, and did not provide any fish to be harvested by Indian or non-Indian fishermen. There were no regular commercial or sport fishing seasons above or below Bonneville Dam (Table II-39). Also, the treaty Indian tribes withdrew some requests for ceremonial and subsistence fish allowed under the management plan.

Summer Season (June-July). The 1980 upriver summer chinook run was one of the lowest in the history of counting at Bonneville Dam (Table II-37). As in the past years, no recreational fisheries or treaty and nontreaty commercial net fisheries were allowed on this run.

The 1980 sockeye run of 59,400 was higher than the disastrous low run recorded in 1978, but was still far below the required escapement level. Consequently, no fisheries were allowed on sockeye (Table II-37).

Table II-39. Columbia River upriver spring chinook landings (in thousands), 1971-80.

Year	Non-Treaty Commercial Numbers	Non-Treaty Commercial Pounds	Non-Treaty Sport Numbers	Treaty Commercial Numbers	Treaty Commercial Pounds
1971	22.6	363.3	19.9	12.7	162.5
1972	69.9	1,076.5	24.4	42.8	637.9
1973	60.5	928.5	30.3	34.2	533.9
1974	8.4	135.1	14.0	17.5	270.8
1975	0	0	0	0	0
1971-75 Average	32.3	500.7	17.7	21.4	321.0
1976	0	0	0	0.4	7.2
1977	9.3	123.8	14.8	17.2	234.6
1978	0	0	0.1	2.6	55.4
1979[a/]	0	0	0	0.5	10.9
1980[a/]	0	0	0	0	0

a/ Preliminary.

Fall Chinook Seasons Above and Below Bonneville. The upriver adult fall chinook run totaled about 160,400 fish (181,200 including jacks) in 1980 (Table II-37). This was below the preseason forecast of 165,000 fish and one of the poorest ever recorded. The preseason run size estimate for the upriver bright segment of this run was a record low 78,400 fish. The actual run will be about 76,700 fish.

A new data base for management of the fall chinook stocks was utilized in 1980 which reflected revised stock timing information available from recent micro-tagging experiments of upriver bright stock. These data showed a broader-timed upriver bright run than previously estimated. The objectives of management in 1980 were to achieve an escapement of 40,000 upriver bright fall chinook adults at McNary Dam while maximizing the harvest of hatchery tule stocks, given the new stock timing data. The fall seasons were also designed to make up the 1980 estimated cumulative 13,400[1/] fall chinook deficit owed the treaty Indian fishermen from 1977-1979 period based upon earlier stock distribution data. No lower river mainstem August season was allowed for the first time in history due to preseason estimates of low upriver fall chinook abundance, the new stock timing data, and the need to comply with the allocation of harvest as stated in the Columbia River Management Plan.

The fall commercial gillnet season for treaty Indians (Zone 6) and non-treaty fishermen (Zone 1-5) was the shortest and latest in history. There was no August fishing allowed below Bonneville Dam and only a one-day chinook season

1/ Based on estimates made at the time fall in-river seasons were set. Subsequent revised analysis increased this figure to 15,600.

in September (September 2-3, Zone 1 only). The late fall coho season opened the latest (September 28) and was the shortest season ever (12 days). In addition, area restrictions were instituted with only Zone 1 open on September 28-29 followed by an opening below the Longview Bridge through October 2. Two weekly fishing periods expanding upstream to Rooster Rock then followed for 4 days per week. During the lower river late fall coho season, gillnet mesh size restrictions were imposed to further reduce the incidental harvest of upriver fall chinook stocks.

The treaty Indian season in the area between Bonneville to McNary Dam was only 5 days (September 2-4 and 8-11), the shortest in history. To increase harvest of hatchery-origin chinook, a 2-day terminal fishery around Spring Creek National Fish Hatchery (September 15-17) was allowed. As with the lower river fishery, a mesh restriction was imposed, albeit in this instance to reduce incidental harvests of upriver-origin steelhead. In addition to the mainstem fisheries, terminal fisheries were allowed in several restricted areas in Washington and Oregon (August 25-October 31; specific dates for specific areas).

The Columbia River catch of upriver fall chinook is summarized in Table II-40. The fishery is managed based upon the run strength of two upriver stocks, as well as the need to harvest lower river hatchery origin fish. Lower river non-treaty and upriver treaty Indian catches by stock of origin are shown in Table II-41. In summary, an estimated 105,800 adult fall chinook were harvested in the commercial fishery below Bonneville Dam of which 27,400 fish were upriver origin fall chinook. An estimated 29,400 adult fall chinook were harvested by treaty fishermen.

Table II-40. Columbia River catch of upriver fall chinook (in thousands, including jacks), 1971-80.

	Non-Treaty			Treaty		
Year	Numbers	Pounds	Percent[a/]	Numbers	Pounds	Percent[a/]
1971	93.8	2,044.7	62.4	56.5	953.6	38.6
1972	96.3	2,177.5	69.2	42.9	634.5	30.8
1973	105.4	2,350.9	60.8	67.9	1,148.3	39.2
1974	52.2	1,225.6	48.7	54.9	980.1	51.3
1975	95.9	2,257.8	40.5	140.6	2,665.6	59.5
1971-75 Average	88.7	2,011.3	55.0	72.6	1,276.4	45.0
1976	33.4	746.3	19.8	135.0	2,555.0	80.2
1977	69.2	1,509.6	55.6	55.2	941.8	44.4
1978	39.7	939.4	39.2	61.6	1,173.7	60.8
1979[b/]	28.4	636.3	31.2	62.4	1,183.5	68.8
1980[b/]	28.0	600.0	47.8	30.6	650.2	52.2

a/ Percentage based on numbers.
b/ Preliminary.

Table II-41. Columbia River in-river harvest of individual fall chinook stocks (adults) in 1980[a/].

Fishery	Upriver Bright	Bonneville Pool Hatchery	Upriver Total	Lower River Natural & Hatchery	Total
Lower River (Non-Treaty)					
Tributary Terminal Gillnet Fisheries	1,350	3,600	4,950	34,450	39,400
Mainstem 9/2-3 Gillnet Fishery (Zone 1)	1,150	18,550	19,700	31,600	51,300
Mainstem Late Fall Gillnet Season	1,700	450	2,150	11,750	13,900
Mainstem Sport	500	100	600	600	1,200
Total Lower River Catch	4,700	22,700	27,400	78,400	105,800
Upper River					
Treaty Indian Above Bonneville	NA	NA	29,400	-0-	29,400
Total River Catch	--	--	56,800	78,400	135,200

a/ Preliminary (as of December 17, 1980).

Management objectives for the 1980 upriver fall chinook run were not met. Escapement at McNary Dam (28,600 adults) fell short of the 40,000 goal. Based upon revised stock distribution data developed in 1980, the 15,600 chinook treaty deficit increased to about 20,300 adults (subject to future interpretation by involved parties).

Fall Coho Seasons

The total coho catch in 1980 was slightly above catches in 1978 and 1979 but was still below the 1971-75 average of 199,400 fish. A total of 143,300 coho was harvested during the fall gillnet seasons (Table II-42), of which 109,000 were harvested during the regular late fall season. An additional 15,700 coho were caught in the Washington terminal fisheries and 11,500 fish were caught in the Youngs Bay fishery. About 6,000 coho were harvested in the

September 2-3, Zone 1 fishery. The late fall season closed on October 16 when it became apparent that late stock coho returns to Washington hatcheries were not materializing as anticipated.

Table II-42. Columbia River commercial landings of lower river chinook and coho (in thousands), 1971-80.

Year	Chinook		Coho[a/]	
	Numbers	Pounds	Numbers	Pounds
1971	122.1	2,027.3	264.3	2,191.5
1972	43.4	715.4	131.3	1,177.5
1973	165.3	3,201.4	183.7	1,823.2
1974	44.7	748.5	261.0	2,391.0
1975	77.4	1,478.1	156.6	1,530.8
1971-75 Average	90.6	1,634.1	199.4	1,822.8
1976	114.9	2,174.2	168.4	1,298.4
1977	97.9	1,721.7	39.0	308.9
1978	70.3	1,213.9	132.7	1,074.1
1979[b/]	74.2	1,283.7	127.6	1,065.7
1980[b/]	78.4[c/]	NA	143.3	1,114.3

a/ Includes small number of August season landings, except in 1980 which includes terminal fishery catches.
b/ Preliminary.
c/ The chinook catch for 1980 is an estimate of lower river stocks caught in all fisheries below Bonneville Dam, September-October.

Washington South Coastal Area

Commercial net fisheries historically occur in Willapa Bay and Grays Harbor as well as in several of the north Washington coastal rivers. A treaty Indian net fishery occurs in Grays Harbor with non-Indian commercial net and recreational fisheries based upon U.S. District Court sharing principles. The north Washington coastal commercial net fisheries are exclusively treaty Indian fisheries. No treaty Indian fishing rights have been established in Willapa Bay, although stocks originating from this region are subject to equal opportunity criteria when present in tribal usual and accustomed areas.

Management of salmon harvest in Willapa Bay is exclusively the jurisdiction of Washington Department of Fisheries (WDF). Depending upon the specific fishery, the participating fishermen, and the location of the fishery, the management of Grays Harbor and the north Washington coastal rivers is shared by WDF and tribal governments. Proposals on fishing schedules, harvest rates

and escapement goals are presented to the Fisheries Advisory Board and agreed to by all parties wherever possible prior to the commencement of the fishery.

Catch statistics presented herein are necessarily preliminary. In some cases, the fisheries were ongoing at the time of compilation of the statistics and may change significantly by season end. Historical catch figures reflect WDF catch records for these fisheries. Where possible, these statistics have been reconciled with tribal records.

Willapa Bay - The summer season gill-net fishery for sturgeon and non-local chinook started July 6 and continued through August 20. An estimated 11,850 chinook were taken during this period.

Fishing for local salmon stocks started August 24 and ended November 30. Preliminary catches for the season were 12,900 chinook, 25,700 coho and 29,800 chum. Catches for 1971-80 are shown in Table II-43. The chinook and coho catches are both above the 1971-75 averages, due primarily to good returns of hatchery fish. Chum catches were slightly below the 1971-75 average.

Table II-43. Willapa Bay chinook and coho catches in numbers of fish by gillnet gear, 1971-80.

Year	Early Season[a/] Chinook	Regular Fall Season Chinook	Coho	Chum
1971	2,059	7,830	14,462	17,104
1972	2,376	8,562	10,755	56,415
1973	27,857	12,586	16,716	35,351
1974	4,997	8,727	15,821	35,466
1975[b/]	6,791	8,620	7,393	23,527
1971-75 Average	8,816	9,265	13,029	33,573
1976[b/]	15,678	13,340	9,021	33,096
1977[b/]	21,934	9,420	3,066	8,092
1978	3,781	7,599	7,002	28,356
1979[c/]	5,482	12,696	31,939	1,185
1980[c/]	11,850	12,900	25,674	29,801

a/ Prior to August 26.
b/ Includes Indian catches although no treaty rights have been adjudicated in this area.
c/ Preliminary (subject to change).

Grays Harbor - The early gill-net fishery for sturgeon and non-local chinook began July 6 and continued without weekly closure through August 15. The estimated catch during this period was 1,550 chinook salmon.

Table II-44. Grays Harbor treaty Indian and non-Indian chinook and coho commercial catches in number of fish by gill net gear, 1971-80.

		Fall Season								
	Early Season	Chinook			Coho			Chum		
Year	Chinook[a/]	Non-Indian	Indian	Total	Non-Indian	Indian	Total	Non-Indian	Indian	Total
1971	449	8,880	-	8,880	58,698	-	58,698	12,467	-	12,467
1972	440	10,113	-	10,113	46,552	-	46,552	46,827	-	46,827
1973	6,054	10,476	-	10,476	40,162	-	40,162	34,269	-	34,269
1974	1,735	7,941	70	8,011	49,515	106	49,621	28,841	-	28,841
1975	401	7,013	1,294	8,307	20,985	3,507	24,492	9,986	2,802	12,788
1971-75 Average	1,816	8,885	-	9,157	43,182	-	43,905	26,478	-	27,038
1976	5,280	2,874	3,086	5,960	13,846	14,718	28,564	12,775	10,220	22,995
1977	13,536	1,840	4,006	5,846	1,455	2,581	4,036	645	1,035	1,680
1978	901	703	2,674	3,377	892	4,282	5,174	7,567	7,853	15,420
1979[b/]	881	0	95	95	0	3,285	3,285	0	47	47
1980[b/]	1,550	3,508	5,650	9,158	10,343	23,804	34,147	6,329	14,658	20,987

a/ Prior to August 16.

b/ Preliminary (subject to change); 1980 data current through November 26.

Preseason estimates suggested that no harvestable local chinook would be available in 1980, so no directed fisheries on local chinook stocks were allowed. An estimated 9,158 chinook were taken incidental to coho and chum fisheries. Harvestable coho were predicted and tribal net fisheries began September 21. A non-Indian in-season evaluation fishery operated a total of 7 days between September 25 and October 3. The non-Indian allocation of coho was achieved during the evaluation fishery and no further fishing was planned. However, it became apparent that the continuing tribal fishery by the Quinault Tribe would not be able to fully harvest their expected remaining share, and with the agreement of the Fisheries Advisory Board, the non-Indian fishery was reopened for an additional day to provide for full harvest.

An in-season run size update showed a harvestable run for Grays Harbor chum. A one-day non-Indian fishery caught 6,200 fish and it was expected that the tribal fishery would match this. However, before this fishery ended, it had taken over 13,900 fish, well beyond the agreed upon allocation. Additional late stock coho were taken from November until February entirely by the Quinault tribal fishery. Catches in Grays Harbor for 1971-1980 are presented in Table II-44.

Chehalis River (Grays Harbor Tributary) - An Indian gill-net fishery is conducted by the Chehalis Tribe on their reservation near Oakville on the Chehalis River. Spring/summer chinook catches of this tribal fishery were below the 1971-75 average. Catches of fall chinook, coho, and chum were near or above the 1971-75 average.

Table II-45. Chehalis Indian Reservation catch, 1971-80.

Year	Spring Chinook	Fall Chinook	Coho	Chum
1971	609	487	3,607	451
1972	855	1,652	1,604	611
1973	799	2,236	3,288	765
1974	275	511	4,715	501
1975	149	578	1,131	407
1971-75 Average	537	1,093	2,869	547
1976	388	386	3,988	717
1977	864	1,317	1,609	688
1978	616	1,069	1,831	1,724
1979[a/]	764	1,413	5,443	208
1980[a/]	301	1,229	2,810	751

a/ Preliminary.

Quinault River

Spring/Summer Stocks - Sockeye and spring/summer chinook are the only stocks managed primarily for natural production in the Quinault system.

The tribal sockeye evaluation fishery operated three days per week through April 30, resulting in an in-season run size estimate of 43,000 and a harvestable surplus of approximately 15,000. The tribe expanded their fishery to five days per week. The final season catch was 16,800. The preliminary escapement estimate was 26,200.

The tribe conducted a normal fishery on spring/summer chinook, achieving a season catch of 1,100 fish. Total run size and escapement are unknown at this time.

Fall Stocks - Primary management emphasis for Quinault fall coho, chinook, and chum is on hatchery production. A normal fall fishery was conducted yielding a season catch of 12,200 fall coho, 4,400 fall chinook and 11,900 chum, above the 1971-75 average for all species except sockeye.

Historical catches and the 1980 estimated catch for the Quinault River are shown in Table II-46.

Table II-46. Indian gill net catch of salmon in the Quinault River, 1971-80[a/].

Year	Spring Chinook	Fall Chinook	Coho	Chum	Sockeye
1971	NA	2,112	11,805	944	9,713
1972	NA	2,938	13,021	2,311	16,185
1973	428	1,596	9,295	1,221	12,369
1974	208	2,458	14,813	3,815	25,629
1975	63	1,578	4,742	1,825	73,857
1971-75 Average		2,136	10,735	2,023	27,551
1976	311	3,236	5,611	7,352	14,828
1977	208	5,856	1,879	3,595	30,446
1978	540	6,843	6,855	13,677	20,845
1979	851	6,484	17,770	3,242	4,665
1980[b/]	1,109	4,413	12,239	11,908	16,757

a/ 1971-72 data from catch records of Washington Department of Fisheries. 1973-80 data from Quinault Indian Tribe.
b/ Preliminary.

Queets River

Spring/Summer Stock - This stock is managed for natural production. By state-tribal agreement, a 3-day-per-week evaluation fishery commenced June 3 and continued for four weeks. The in-season estimator showed a run size of 1,043 chinook, substantially less than the escapement objective of 1,400 fish. The fishery was terminated after the evaluation fishery ended. The total catch was 117 chinook.

Fall Stocks - Queets fall salmon are also managed for natural production. Based on a preseason run size of 8,200 chinook, the tribe initiated a net fishery on September 8 using gear targeting for chinook. The scheduled fishery to evaluate run size commenced on September 28, and continued for two weeks at five days per week. The in-season estimators yielded a natural coho run size of 7,364 fish, below the escapement goal, but indicated harvestable numbers of fall chinook remaining. The harvestable chinook were taken in a fishery selective for chinook. Catch of natural plus hatchery coho totaled 3,200 fish. A total of 2,600 fall chinook was landed in 1980. Approximately 500 chum were caught. Historical catches for each Queets River stock are shown in Table II-47.

Table II-47. Indian gill net catch of salmon in Queets River, 1971-80.

Year	Spring/Summer Chinook	Fall Chinook	Coho	Chum
1971	1,111	1,128	6,043	22
1972	1,241	668	5,068	55
1973	459	3,629	9,002	85
1974	481	3,063	12,015	173
1975	380	2,052	2,883	343
1971-75 Average	734	2,108	7,003	136
1976	148	1,274	2,799	79
1977	364	1,864	875	253
1978	229	895	2,310	108
1979	475	860	2,700	107
1980[a/]	117	2,621	3,154	473

a/ Preliminary.

Hoh River

Spring/Summer Stock - This stock is managed for natural production. By state-tribal agreement, a 3-day-per-week, 3-week evaluation fishery was initiated on May 26. The in-season run size estimate of 1,727 chinook showed no

harvestable fish remaining, and the fishery was terminated on June 18 for the remainder of the season. Season catch was 165 fish. The post-season run size was placed at 1,107, with a natural escapement of 840 fish.

Fall Stocks - These stocks are also managed for natural production. The tribe fished four days in early September, with steelhead predominating in the catch. The scheduled evaluation fishery commenced on September 28, fishing for two weeks at five days per week. In-season estimates derived from the evaluation fishery showed coho and chinook below escapement objectives and the fishery was terminated on October 10. The tribe conducted a brood stock fishery in late October, with state approval, collecting 110 chinook. Substantial numbers of additional salmon were also sold during the brood stock fishery, including 268 coho and 214 chinook. Season catch was 500 fall chinook, 1,300 coho, and 80 chum. Preliminary estimates of natural coho and chinook escapements are 2,400 and 1,400, respectively, below escapement goals.

Historical catches and estimated 1980 catches for the Hoh River are shown in Table II-48.

Table II-48. Indian gill net catch of salmon in the Hoh River.

Year	Spring/Summer Chinook	Fall Chinook	Coho
1971	1,470	1,128	5,187
1972	1,380	668	2,886
1973	715	2,187	6,701
1974	623	820	5,716
1975	513	677	2,450
1971-75 Average	940	1,096	4,588
1976	509	483	1,816
1977	875	1,619	972
1978	1,051	843	2,937
1979	766	450	3,085
1980[a/]	165	478[b/]	1,325

a/ Preliminary.

b/ Includes 110 fish taken as brood stock.

Quillayute River

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

Spring/Summer Stocks - The tribe initiated a normal five-day-per-week fishery through June, at which time the season was closed for three weeks because of a weak run of summer chinook. A two-day-per week fishery to monitor coho abundance was initiated on July 21, continuing through August 6. On August 10, the tribe commenced a normal five-day-per-week fishery. The state proposed that the tribe rescind its weekend closures during peak summer coho migration (hatchery origin stock). However, the tribe elected to maintain their five-day-per-week schedule, thereby forfeiting an estimated catch of 2,100 hatchery coho. The season catch of spring/summer chinook was 1,000, while the summer coho catch was 13,600. Hatchery escapement requirements were met.

Fall Stocks - The tribal fishery continued at 5-days-per-week through September with hatchery summer coho dominating the catch. The previously scheduled evaluation fishery commenced on September 28, continuing 2 weeks at 5-days-per-week. In-season run size estimates showed coho and chinook populations below escapement requirements and the fishery was terminated on October 10. The tribe re-opened their fishery on November 2, in violation of the off-reservation conservation closure by the state and advisory board ruling of October 10, 1980. The state subsequently sought and obtained a minute order from the U.S. District Court closing the tribal on-reservation fishery. Season catch was 5,500 fall coho and 1,400 fall chinook. Preliminary data indicate that both fall coho and chinook escapement objectives were not achieved.

Historical catches and estimated 1980 catches for the Quillayute River are shown in Table II-49.

Table II-49. Indian gill net catch of salmon in the Quillayute River, 1971-80.

	Chinook		Coho	
Year	Spring/Summer	Fall	Summer	Fall
1971	373	2,941	750	5,551
1972	763	3,523	817	6,954
1973	292	5,035	1,089	42,803
1974	117	3,849	1,612	28,013
1975	2,256	2,290	696	7,444
1971-75 Average	760	3,528	993	18,153
1976	2,513	2,246	1,313	7,449
1977	2,595	5,297	1,414	2,723
1978	3,201	1,357	325	4,516
1979	2,473	2,610	11,160	6,648
1980[a/]	1,000	1,415	13,618	5,478

a/ Preliminary.

A summary of catches of Washington coastal stocks by river system is shown in Table II-50.

Table II-50. Summary of estimated 1980 Washington coastal net catch as compared to 1979 catch and 1971-75 average catch.

Region	Race	Catch		
		1980[a/]	1979[a/]	1971-75 Average
Willapa Bay	Non-local chinook	11,850	5,482	8,816
	Local fall chinook	12,900	12,696	9,265
	Coho	25,674	31,939	13,029
	Chum	29,801	1,185	33,573
Grays Harbor	Non-local chinook	1,550	881	1,816
	Local fall chinook	9,158	95	9,157
	Coho	34,147	3,285	43,905
	Chum	20,987	47	27,038
Quinault River	Spring/summer chinook	1,109	851	-
	Fall chinook	4,413	6,484	2,136
	Coho	12,239	17,770	10,735
	Chum	11,908	3,242	2,023
	Sockeye	16,757	4,665	27,551
Queets River	Spring/summer chinook	117	475	734
	Fall chinook	2,621	860	2,108
	Coho	3,154	2,700	7,003
	Chum	473	107	136
Hoh River	Spring/summer chinook	165	766	940
	Fall chinook	478	450	1,096
	Coho	1,325	3,085	4,588
Quillayute River	Spring/summer chinook	1,000	2,473	760
	Summer coho	13,618	11,160	993
	Fall chinook	1,415	2,610	3,528
	Fall coho	5,478	6,648	18,153
Chehalis River	Spring/summer chinook	301	764	537
	Fall chinook	1,229	1,413	1,093
	Coho	2,810	5,443	2,869
	Chum	751	208	547

a/ Preliminary.

Puget Sound

Commercial Fishery

Preliminary estimates of total Puget Sound commercial net fishery catches to that date (which includes catches of salmon of Canadian and Puget Sound origin) indicate catches will be equal to or larger than the 1971-75 average for chinook, coho, and chum salmon, and well below average for sockeye salmon. There are no pink salmon runs to Puget Sound in even years. 1980 chinook and coho catches were the largest for the period 1971-1980. Chum catches were second only to the record set in 1978. Sockeye catches were approximately 25% of the 1971-1975 average, due in part to a large-scale diversion of the run through Johnstone Strait, yielding them unavailable to U.S. fishermen.

Historical catches and estimated 1980 catches for Puget Sound are shown in Table II-51.

Recreational Fishery

In-season Puget Sound marine sport fishery catch projections are not available for 1980. Agency budget constraints have caused this program to be curtailed and an in-season catch estimate cannot be made.

SUMMARY OF INSIDE FISHERIES

Data on the inside commercial salmon harvest presented in this report are summarized in Table II-52.

Table II-51. Puget Sound commercial net fishery salmon catches, 1971-80.

Year		SPECIES				
		Chinook	Coho	Pink	Chum	Sockeye
1971	Non-Indian	130,715	435,151	2,355,564	123,847	3,040,414
	Indian	29,234	118,510	122,875	27,535	22,361
	Total	159,949	553,661	2,478,439	151,382	3,062,775
1972	Non-Indian	83,867	453,749	119	736,292	1,128,129
	Indian	33,823	97,144	16	51,867	16,549
	Total	117,690	550,893	135	788,159	1,144,678
1973	Non-Indian	94,126	684,295	2,247,243	462,367	2,616,170
	Indian	42,262	117,498	116,056	72,665	58,819
	Total	136,388	801,793	2,363,299	535,032	2,674,989
1974	Non-Indian	80,156	494,375	152	229,809	2,452,144
	Indian	64,482	378,950	15	166,303	33,166
	Total	144,638	873,325	167	396,112	2,485,310
1975	Non-Indian	130,424	550,265	1,225,957	103,084	1,558,313
	Indian	99,964	411,261	104,214	72,458	58,257
	Total	230,388	961,526	1,330,171	175,542	1,616,570
1971-75 Average	Non-Indian	103,858	523,567	1,942,921[a/]	331,080	2,159,034
	Indian	53,953	224,673	114,382[a/]	78,166	37,830
	Total	157,811	748,240	2,057,303[a/]	409,246	2,196,864
1976	Non-Indian	91,146	376,394	103	478,736	1,222,995
	Indian	122,953	290,289	16	279,163	95,508
	Total	214,099	666,683	119	757,899	1,318,503
1977	Non-Indian	136,208	555,618	1,858,761	279,786	1,473,453
	Indian	108,472	447,162	175,218	176,264	365,672
	Total	244,680	1,002,780	2,033,979	456,050	1,839,125
1978	Non-Indian	121,121	383,349	208	751,662	1,137,584
	Indian	127,981	434,960	61	483,726	235,274
	Total	249,102	818,309	269	1,235,388	1,372,858
1979[b/]	Non-Indian	74,393	270,114	3,201,606	21,021	1,263,906
	Indian	109,048	472,492	730,918	100,292	421,113
	Total	183,441	742,606	3,932,524	121,313	1,685,019
1980[b/]	Non-Indian	95,070	486,217	66	532,141	286,327
	Indian	157,438	772,588	413	437,290	274,086
	Total	252,508	1,258,805	479	969,431	560,413

a/ Odd-year average.

b/ Preliminary data.

Table II-52. Summary of commercial net catch of salmon from Indian and non-Indian inside fisheries of Washington and the Columbia River, 1971-80 (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	2,057b/
1976	52	61	64	15	214	667	758	1,319	a/
1977	72	17	14	30	245	1,003	456	1,839	2,034
1978c/	32	31	59	21	249	818	1,235	1,373	a/
1979c/	36	82	5	5	183	743	121	1,685	3,933
1980c/	48	98	64	17	253	1,259	969	560	a/

Year	Columbia River				Total				
	Chinook	Coho d/			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	268	-	-	372	1,275	465	2,511	a/
1975	323	162	-	-	588	1,175	215	1,691	1,330
1971-75 Average	324	208	-	-	524	1,058	472	2,225	2,057b/
1976	288	172	-	-	554	900	822	1,334	a/
1977	256	40	-	-	573	1,060	470	1,869	2,034
1978c/	188	136	-	-	469	985	1,294	1,394	a/
1979c/	171	132	-	-	390	957	126	1,690	3,933
1980c/	137	143	-	-	438	1,500	1,033	577	a/

a/ Less than 1,000.
b/ Odd-year average.
c/ Preliminary data.
d/ Includes treaty catch through 1977.

III. EVALUATION OF 1980 MANAGEMENT

INTRODUCTION

Before regulations are proposed for the 1981 ocean salmon fisheries, it is desirable to analyze the performance of the regulatory controls in effect during the 1980 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.

ESCAPEMENT

Escapements for major stocks are presented for the 1980 run in relation to established goals. Where feasible, escapement information is reviewed for both natural and hatchery returns. Data presented are preliminary. Stream surveys for natural spawning stocks are currently underway and will not be completed until January; however, preliminary results are presented where available.

California Chinook

The 1980 California chinook runs in the Klamath and Sacramento River systems were expected to be poor because of the 1976-77 drought. The Council accordingly decided that it would not be practical to attempt to meet the long-term spawning escapement goals for these two systems, since to do so would result in severe disruption of the California ocean fisheries. Instead, the Council adopted regulations intended to achieve 75% of the long-term escapement goals.

Klamath River System

Preliminary in-river run size estimates for 1980 are 45,500 fall run chinook (Table III-1). This amounted to only 38% of the 1980 management (run size) goal of 118,000 fish. In 1979, the in-river run size was 56,100 fall run chinook. Comparable data for the Klamath River systems for 1979 and 1978 are shown in Tables III-2 and III-3.

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

Table III-1. Preliminary Klamath River system fall chinook salmon in-river run size, catch and escapement, 1980 season.[a/]

Spawning/Fishery Unit	Number		
	Adults	Grilse	Total
Iron Gate Hatchery	2,412	451	2,863
Shasta River	3,762	4,334	8,096
Bogus Creek	2,334	1,224	3,558
Scott River	1,200	1,100	2,300
Misc. Tribs. to Middle/Upper Klamath	1,000	500	1,500
Mainstem Klamath	2,468	867	3,335
Salmon River	800	200	1,000
Subtotal	13,976	8,676	22,652
Trinity River System (above Willow Ck. and not including Hatchery	10,671	13,541	24,212
Trinity River Hatchery	4,871	1,496	6,367
Subtotal	15,542	15,037	30,579
Hoopa Reservation Tribs.	400	250	650
Spawning Escapement Estimates	29,918	23,963	53,881
River Sport Fishing Catch			
Klamath Below 101	533	805	1,338
Klamath Glen	555	1,843	2,398
Trinity River above Willow Creek	1,500	1,671	3,171
Subtotal	2,588	4,319	6,907
Indian Net Fishery	13,000	0	13,000[b/]
Subtotal	15,588	4,319	19,907
In-River Run Size Estimate	45,506	28,282	73,788

a/ Prepared 2/12/81.
b/ USFWS estimate. Majority of catch was from 1/2 mile above 101 bridge to river mouth. Per Gary Rankel, USFWS, Arcata, 12/9/80.

The 1980 Indian catch for the Klamath River system was estimated to be 13,000 fall chinook. The initiation of an intensive sampling program and net-harvest monitoring station on the lower Klamath River by the U.S. Fish and Wildlife Service resulted in a more comprehensive data base on which to estimate the 1980 Indian gillnet harvest of fall chinook. Catch estimates were developed for two river sections: (1) mouth of Klamath to Resighinni at river-mile 4.5 (10,000 fish) and (2) upstream from Resighinni (3,000 fish) for a total estimated Indian net harvest of 13,000.

Table III-2. Preliminary Klamath River system fall chinook salmon run size and escapement estimates, 1979 season.[a/]

Spawning/Fishery Unit	Number Adults	Jacks	Total	Methods/Comments
		Counting Stations		
Iron Gate Hatchery	2,301	257	2,558	Actual count. CDFG data.
Shasta River	7,111	1,040	8,151	" "
Subtotal	9,412	1,297	10,709	
		Stream Surveys--Carcass Mark Recapture		
Bogus Creek	5,444	494	5,938	CDFG data (2,854 actually counted).
Misc. Trib to Upper Klamath	238	57	295	CDFG data (75 actually couunted).
Main Stem Klamath River	4,190	466	4,656	" (484 actually counted).
Scott River	3,396	428	3,824	" (1,147 actually counted).
Subtotal	13,268	1,445	14,713	
		Mark-Recapture--Live Fish		
Trinity River System (above Willow Creek and not including hatchery)	7,732	4,150	11,882	CDFG data.
Trinity River Hatchery	1,449	850	2,299	CDFG data.
Subtotal	9,181	5,000	14,181	
		Spawning Area Reconnaissances		
Salmon River	1,000	150	1,150	CDFG estimate based on numbers of live fish and redds observed in prime spawning areas relative to streams on which carcass tagging was conducted.
Misc. tributaries to Middle and Upper Klamath River[c/]	330	40	370	" " " " " "
Hoopa Reservation tribs.[d/]	400	100	500	USFWS estimate[e/].
Subtotal	1,730	290	2,020	
		Unexamined Areas		
Misc. live creeks not included in the above	500	50	550	CDFG estimate.
Subtotal	500	50	550	
Spawning Escapement Est.	34,091	8,082	42,173	
		Fisheries		
Sport fishery below 101	484	216	700	USFWS estimate[e/].
Sport fishery above 101 (excluding Trinity River basin above Willow Creek)	500	1,200	1,700	CDFG estimate (assumes approximately the same number of adults caught in this area as below 101 and adult:jack ratio was 1:2.4)
Trinity River basin above Willow Creek	1,016	998	2,014	
Hoopa Indian net fishery	20,000	0	20,000	USFWS estimate[e/ f/]. Majority of catch was from below 101 Bridge.
Subtotal	22,000	2,414	24,414	
Run Size Estimate	56,091	10,496	66,587	

a/ Prepared 2/12/81.
b/ Cottonwood, Grider, Horse, and Beaver Creeks.
c/ Indian, Elk, Clear, Dillon, Humbug and Thompson Creeks.
d/ Blue, Mill, Tish-Tang, Pine, Supply and Turwar Creeks.
e/ As per Gary Rankel, USFWS, Arcata, 11/27/79.
f/ USFWS Progress Report 11/21/79.

Table III-3. Klamath River fall chinook salmon run size and escapement estimates, 1978 season.[a/]

Spawning/Fishery Unit	Number Adults	Jacks	Total	Method/Comments
Counting Stations				
Iron Gate Hatchery (IGH)	6,925	915	7,840	Actual count. CDFG data.
Shasta River	12,024	6,707	18,731	
Subtotal	18,949	7,622	26,571	
Stream Survey-Carcass Counts				
Bogus Creek	4,928	651	5,579	CDFG est. (3,765 actually counted): IGH A:G ratio.
Scott River	3,423	1,909	5,332	CDFG est. (2,999 actually counted): Shasta A:G ratio.
Subtotal	8,351	2,560	10,911	
Mark Recapture-Live Fish				
Trinity River System (above Willow Ck. not including hatchery)	29,327	6,437	35,764	CDFG data.
Trinity River Hatchery	6,034	1,325	7,359	CDFG data.
Subtotal	35,361	7,762	43,123	
Spawning Area Reconnaissances				
Main Stem Klamath River	1,700	300	2,000	CDFG est. Lightly used; carcasses uncommon.
Salmon River	2,600	1,400	4,000	CDFG est. "Good" run reported. Redds numerous in areas examined.
Subtotal	4,300	1,700	6,000	
Unexamined Areas				
Misc. tributaries to the Klamath River & Hoopa Reservation not included in the above.	2,765	735	3,500	Based on 1979 estimates for these areas; relative size of runs in the other areas of the system in 1978 and 1979; and A:G ratio for the other areas in 1978.
Subtotal	2,765	735	3,500	
Spawning Escapement Estimates	69,726	20,379	90,105	
Fisheries				
Sport fishery below 101	854	122	976	USFWS estimate.
Sport fishery above 101	840	1,960	2,800	CDFG tag returns and a creel census.
Hoopa net fishery below 101	10,000	0	10,000	USFWS est. (6,689 counted)[b/]
Hoopa net fishery above 101	15,000	0	15,000	USFWS est.[b/]
Subtotal	26,694	2,082	28,776	
Run Size Estimate	96,420	22,461	118,881	

a/ Prepared 2/12/81.
b/ Richard Navarre, USFWS, Sacramento, personal communication 2/21/80.

Field sampling was concentrated in the lower section because effort was greater in this area and gear efficiency was much greater in this section due to fish availability and river conditions. Less intensive sampling was conducted in the upper section, whereas the fishery in the lower section was sampled nightly throughout the fishing season. Daily net counts were made in this section and most nets were sampled for catch twice per day during peak landing periods. This intensive sampling program resulted in 5,400 fishermen contacts, and samplers observed 75% of the estimated catch of 10,000 fish in the lower section. The estimated catch of 3,000 fish in the upper section is less reliable; however, effort distribution and catch per unit of effort (CPUE) data indicated that the catch in this section was about 20-30% of the Indian harvest in the lower section.

Preliminary 1980 spawning escapement estimates of fall run adult chinook in the Klamath River system were 30,000 chinook (Table III-1). This is only 35% of the 1980 management goal of 86,000 fall run chinook spawners and 88% of the 1979 poor escapement of 34,000 chinook. A variety of factors contributed toward not achieving the 1980 management objective of 86,000 adult fall run chinook. The most important are: (1) the negative impact of the drought on 1976 production (4-year chinook in the 1980 fishery), (2) the high ocean harvest rates in 1979 by trollers off the California north coast area (Fort Bragg to Crescent City), and (3) the higher-than-anticipated troll effort along the California north coast in 1980.

The 1980 north coast troll effort was only slightly less than 1979 record levels and well above the 1971-75 average. However, chinook landings of 299,000 were equal to the 1971-75 average. This catch and effort took place in spite of the depressed status of Klamath River chinook stocks and a reduction of two months fishing time compared to the 1971-75 period (Table III-4).

Table III-4. North coast California (Crescent City, Eureka and Fort Bragg) ocean chinook landings (troll and sport), in numbers of fish and units of effort, 1977-80 and 1971-75 average.

Year	Troll Effort	Fishery		
		Troll	Sport	Total
1971-75 Average	22,653	298,629	15,768	314,397
1977[a/]	33,295	319,737	26,599	346,336
1978[a/]	NA	291,772	7,523	299,295
1979[a/]	27,687	445,552	14,017	459,569
1980[a/]	25,990	298,995	8,313	307,308

a/ Preliminary.

Sacramento-San Joaquin River System

Before the 1980 season, escapement goals for the Sacramento-San Joaquin River system chinook included jacks (grilse). The escapement goals were revised to exclude jacks by multiplying escapement goals by the percentages of each run made up of adult salmon (Table III-5) based on data from 1957 to 1979. In addition, hatchery escapement goals were separated from river escapement goals (Table III-6).

Table III-5. Preliminary Sacramento-San Joaquin River system natural fall-run chinook salmon spawning population estimates for the 1980 season, including comparisons with recent years and escapement goals (in thousands).

River System	Estimated 1980 Run		1979		1970-79 Average		Long-Term Escapement Goal (Adults)	1980 Escapement Goal
	Adults	Jacks	Adults	Jacks	Adults	Jacks		
Sacramento								
Upper Sacramento[a/]	47	12	82	39	61	16	99	74
Feather River	30	1	25	3	39	8	27	20
Yuba River	11	2	11	2	9	2	20	15
American River	32	2	34	1	33	3	24	18
Subtotal	120	17	152	45	142	29	170	127
San Joaquin	6	0.6	5	0.5	11	1	7	5
Totals	126	17.6	157	45.5	153	30	177	132

[a/] Includes Tehama-Colusa Spawning Channel.

Within the Sacramento River system, the long term fall-run natural escapement goal is 170,000 adult chinook. This is the same as the previous long-term goal of 245,000 chinook that included jacks as well as hatchery fish. The 1980 goal for Sacramento River fall-run chinook was 127,000 adults (75% of the long-term goal) which, including jacks and hatchery fish, was 185,000 fish. Preliminary 1980 escapements are 120,000 adult chinook, 94% of the 1980 goal and 54% of the long-term goal. The comparable 1979 escapement was 152,000 adult fish.

Practically all of the 1980 short fall can be attributed to poor returns to the upper Sacramento River system. The upper Sacramento River system had 47,000 adult fall-run chinook spawners in 1980, compared to 82,000 in 1979 and 61,000 for the 1970-79 average.

The Feather and American Rivers spawning escapements met 1980 goals. The Feather River exceeded 1979, whereas the American River escapement was less than in 1979 (Table III-5). The Yuba River adult fall-run chinook escapement was the only Sacramento system tributary, other than the upper Sacramento, that did not meet 1980 escapement goals. For the Yuba, the 1980 escapement was 11,000 adult chinook, compared to 11,000 in 1979 and the 1980 goal of 15,000.

Fall run chinook escapement in the San Joaquin system was 6,000 adults in 1980, compared to 5,000 in 1979 and the 1980 goal of 5,000 (Table III-5).

Table III-6. Preliminary Sacramento-San Joaquin Hatchery fall-run chinook salmon spawning population estimates for the 1980 season, including comparisons with recent years and escapement goals (in thousands).

Hatchery	Estimates 1980 Run Adults	Jacks	1979 Adults	Jacks	1970-79 Average Adults	Jacks	Escapement Goal (Adults)
Sacramento System							
Coleman	8.7	0.7	5.0	4.0	3.0	NA	9.0
Feather River	3.2	0.5	3.4	0.6	4.0	1.0	5.0
Nimbus	13.5	2.0	7.0	3.2	7.0	1.0	6.0
San Joaquin System							
Mokelumne River	0.4	0.2	0.3	0.2	0.4	NA	0.5[b/]
Merced River	0.2	a/	0.2	0.2	0.3	NA	5.0
Total	26.0	3.4	15.9	8.2	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.

Hatchery escapement goals were met only at Nimbus Hatchery in the Sacramento River system in 1980. However as is the normal procedure, egg allotments at Coleman and Feather River Hatcheries will be met from the large surplus taken at Nimbus Hatchery on the American River. Returns to Nimbus Hatchery were 13,500 adult chinook in 1980 compared to 7,000 in 1979. The escapement goal for Nimbus is 6,000 adults (Table III-6).

While fall-run natural spawning chinook escapement in the Sacramento River system in 1980 was below the 1980 goal, goals for some individual tributaries were met in 1980. The greatest discrepancy was in the upper Sacramento where adverse environmental factors (i.e., the 1976-77 drought) have had a critical impact on the stocks. All Sacramento River hatcheries will be operating at capacity due to transfer of egg surpluses between hatcheries.

Oregon Coastal Chinook

Available information indicates that current escapements of chinook salmon to Oregon coastal streams are adequate to meet 1980 management goals. These stocks remain in a generally favorable status, showing a 3%/year increase in spawning escapements (Table III-7). Preliminary spawning surveys indicate that an escapement level of 82 adults/mile was achieved in 1980 which is similar to that observed in 1979. The spawning levels observed in 1980 were adequate to meet the management goal of 150,000 to 200,000 spawning adults.

Table III-7. Average number of spawning fish/mile observed in standard Oregon index streams, 1949-80

Year	Coastal Rivers						Chum Salmon	Col. River Coho
	Chinook salmon			Coho salmon				
	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[a/]	15.1	82.3	97.4	5.5	13.3	18.8	371	9

a/ Preliminary.

Table III-8. Preliminary 1980 adult escapement to Oregon Department of Fish and Wildlife salmon hatcheries on the Columbia River and Oregon coastal streams compared with recent escapements from 1971-79 and the 1980 management goal.

Hatchery Location and Species	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980[a/]	Management[b/] Goal
Columbia River											
Above Bonneville											
Spr.-Summer Chinook	--	--	--	--	--	--	144	227	147	139	700
Fall Chinook	--	--	--	--	3,030	3,879	4,926	4,057	1,069	1,769	6,000
Coho	1,902	1,103	2,563	5,998	814	3,565	159	2,941	2,392	1,711	1,000
Below Bonneville[c/]											
Spring Chinook	8,981	5,808	9,177	16,446	5,900	6,608	12,684	14,081	7,684	7,150	16,200
Fall Chinook	22,773	21,217	32,312	20,609	18,840	37,481	25,868	40,225	24,661	22,064	22,000
Coho	52,072	22,080	15,434	51,997	20,611	39,258	10,202	57,580	38,775	38,845	14,200
Oregon Coastal											
Spring Chinook	--	--	--	--	--	2,868	2,367	4,428	6,934	7,873	5,700
Fall Chinook	2,190	4,101	4,206	1,642	2,108	460	4,208	1,568	1,979	1,310	2,500
Coho	29,122	12,874	18,400	35,081	4,946	38,244	6,524	5,565	22,966	21,834[d/]	17,200[e/]

a/ Preliminary returns.
b/ Hatchery escapement goals include number of adult fish needed to meet 1980 agency production and does not include private hatchery needs.
c/ Includes Willamette River hatcheries.
d/ An additional 43,100 coho returned to private hatcheries (includes jacks).
e/ Includes 3,000 excess adults for distribution in priority streams and 6,000 to provide eggs for coho fingerling releases to augment natural production.

Some Oregon coastal hatcheries did not receive adequate escapement of fall chinook salmon in 1980 (Table III-8). However, the low 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 was a near record low of 53,100 in 1980 (Table III-9). The escapement of adults into the Snake River at Lower Granite Dam was a record low of 5,400 fish compared to the goal of at least 30,000 fish. The major cause for the failure to meet escapement goals was in-river environmental problems. These stocks contribute at a comparatively low rate to the ocean fisheries off Washington and Oregon and no in-river commercial harvest has been allowed in recent years. Snake River fish are normally the dominant segment of the upriver run. The difference between the total escapement and the Snake River escapement is due to spawning in tributaries below the Snake River, mortality at dams, and an upper Columbia River segment which originates above the confluence of the Snake River.

Table III-9. Estimates of in-river run size and escapement of upper Columbia River adult spring chinook, 1971-80.

Year	Run Size	Escapement	Snake River Escapement
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	<97,900	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[a/]	53,100	53,100	5,400
Goal	-	100,000-120,000	30,000 (minimum)

a/ Preliminary.

Upriver Summer Chinook

The major components of upriver summer chinook originate from the Snake River and upper Columbia River. These runs continue to remain in a depressed state. The 1980 run of 31,200 fish was even less than the poor runs returning in the previous 5 years (Table III-10). The 1980 escapement was well below the established goal of 80,000 to 90,000 adults. The principal reason for the low runs of summer chinook is the depressed condition of the Snake River run. Failure to meet escapement goals was due to in-river environmental problems since these stocks contribute at a comparatively low rate to the ocean fisheries and no in-river commercial harvest has been allowed in recent years. It should be noted that in Table III-10, the Snake and upper Columbia components will not add up to the total escapement figure because of spawning in tributaries below the Snake River, mortality at dams, and mainstem spawning.

Table III-10. Estimates of in-river run size and escapement of upper Columbia River summer chinook, 1971-80.

Year	Run Size	Escapement	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[a/]	34,400	34,200	3,600	22,700
1980[a/]	31,200	31,100	3,500	18,700
Goal	-	80,000-90,000[b/]	-	-

a/ Preliminary.
b/ Goal was set in 1963 for adults only.

Upriver Fall Chinook

The upriver run of adult fall chinook was only 160,400, making this the fifth consecutive year the run has declined (Table III-11). The 1980 in-river run consisted of 76,700 upriver "brights" and 83,700 from the Bonneville pool stock. The 1980 in-river run size was 68% of the total 1971-75 average. Likewise, the escapement of 28,600 adults at McNary was 72% of the 40,000 goal. It is questionable if the McNary escapement goal could have been achieved even without any in-river fishing because of abnormally large unexplained inter-dam loss. The Snake River fall chinook are currently under review to determine their status relative to the Endangered Species Act.

Table III-11. Estimates of in-river run size and escapement of upper Columbia River adult fall chinook, 1971-80.

Year	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/]	160,400[c/]	98,100	28,600
Goal	-	-	40,000

a/ Bonneville Dam count minus Indian harvest.
b/ Preliminary.
c/ Derived from new methodology for stock separation.

Lower River Spring Chinook

One of the major components of lower river spring chinook is the Willamette River run. The Willamette run was below average in 1980, and the escapement of 27,000 adults was below the desired level of 30,000 to 35,000 at Willamette

Falls (Table III-12). The other major run in the lower river is the Cowlitz, which is primarily of hatchery origin. Escapement to the Cowlitz River was about 30,000 in 1980. These stocks constitute a minor part of the Oregon-Washington ocean catch.

Table III-12. Estimates of in-river run size and escapement of lower Columbia River spring chinook, including jacks, 1971-80.

Year	Willamette River		Cowlitz
	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
Goal	-	30,000-35,000	-

a/ Preliminary.

Lower River Fall Chinook

The returns of lower river fall chinook in 1980 were below average. The 1980 commercial landings of lower river fall chinook totaled 78,400 fish compared to 72,800 in 1979 and the 1971-75 average of 90,600 (Table II-42). Dam counts were also below average.

Hatchery Chinook

Returns of adult chinook to Columbia River stations since 1971 are shown in Table III-13. In general, egg take needs were met for all stocks of spring and fall chinook in 1980, except upriver spring chinook. Snake River hatcheries fell well below their goals.

Table III-13. Adult chinook and coho returns to Columbia River hatcheries (thousands), 1971-80. Includes hatcheries operated by all agencies.

	Chinook				Coho	
	Spring		Fall			
Year	Below Bonneville	Above Bonneville	Below Bonneville	Above Bonneville	Below Bonneville	Above Bonneville
1971	16.9	8.2	55.7	17.1	187.6	20.4
1972	9.3	20.5	41.2	9.6	91.3	6.2
1973	15.1	19.8	50.1	20.4	68.2	4.6
1974	33.2	6.4	34.2	14.2	152.8	10.0
1975	25.9	12.0	34.8	36.8	85.4	16.7
1976	29.9	14.8	51.6	25.8	117.3	14.4
1977	30.2	20.1	41.6	22.2	37.1	2.0
1978	25.2	14.1	59.4	20.1	131.4	7.8
1979[a/]	19.2	9.3	46.8	21.2	101.4	7.7
1980[a/]	28.4	11.2	36.3	30.2	120.4	3.4

a/ Preliminary.

Columbia River and Oregon Coastal Coho

Measured escapements of coho salmon for the Oregon Production Index (OPI) totaled 317,600 in 1980. The 1980 OPI escapement of coho was above the preseason objective of 260,000. This escapement is comparable to the escapement of 294,400 achieved in 1979, and the 1978 level of 305,000. The 1980 OPI escapement figure included a run size of 277,700 to the Columbia River and an escapement of 39,900 resulting from Oregon coastal hatchery production.

The 1980 run of 277,700 to the Columbia River is comparable to the 1979 run size of 260,100 but is still below the 1971-75 average of 360,100 (Table III-14). Hatchery escapement of 120,400 Columbia River coho in 1980 was greater than 1979 (Table III-13). Early stock coho salmon that make up the major segment of Oregon's coho production returned in fair numbers during 1980. Surpluses of early returning coho at Oregon Columbia River hatcheries (Table III-8) are largely the result of the mixed stock fishery problem with upper Columbia River fall chinook stocks. This problem precludes a significant lower river gill net harvest of early returning coho stocks. Required egg takes have been achieved for this stock and surpluses were available. Approximately 1,700 surplus adults were distributed in streams and 3 million eggs were taken to provide for coho pre-smolt releases of 3 million to augment natural production. The late-returning stock of coho, which makes up the major segment of Washington's Columbia River hatchery production, returned in adequate numbers to meet production needs.

Oregon's coastal hatchery escapement in 1980 of 21,800 (Table III-8) was less than in 1979 but was comparable to the 1971-75 average of 20,000. An additional 14,100 hatchery fish are estimated to have returned to coastal

areas in 1980 from off-station hatchery releases of smolts. Some surplus coho were available at coastal hatcheries. Approximately 2,600 adults were distributed in streams and 9.5 million eggs surplus to hatchery needs were taken at coastal hatcheries to provide for coho pre-smolt releases of 7 million to augment natural production.

The 1980 regulations had varying impacts on natural spawning stocks of Columbia River and Oregon coastal coho. A decline was observed from 1965 to 1978 in the abundance of natural spawning stocks of coho in Oregon spawning index areas (Table III-7). The number of coho counted in Oregon coastal streams has declined at a rate of 9.3%/year to levels of 8 and 9 adults/mile in 1977 and 1978, respectively. Assessment of the 1979 spawning escapement indicates a level of 21 adults/mile was achieved which is equivalent to the 1976 parent year and represents significant improvement over 1977 and 1978. Spawning surveys have not been completed but preliminary assessment of the 1980 spawning escapement indicates a level of escapement (13 adults/mile) which is improved 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 29 adults/mile (200,000 adult escapement) by 1987. (This equates to the earlier stated goal of 47-50 fish/mile which included jacks.)

Declines have been noted in the abundance of natural spawning stocks of coho in the Columbia River (Table III-7). However, the decline is not unexpected since coho management in the Columbia River is based on hatchery production which would tend to overharvest the natural stocks.

Table III-14. Estimated in-river run size, catch and escapement of Columbia River adult coho, 1971-80 (in thousands).

	Catch	Escapement			
Year	Gill Net Below Bonneville	Hatcheries Below Bonneville	Bonneville Count	Willamette Count	Minimum Run Size
1971	264.3	187.6	53.8	17.4	523.1
1972	131.3	91.3	34.2	10.0	266.8
1973	183.7	68.2	25.8	5.2	282.9
1974	261.0	152.8	31.6	1.5	446.9
1975	156.6	85.4	32.8	5.9	280.7
1971-75 Average	199.4	117.1	35.6	8.0	360.1
1976	168.4	117.3	35.5	2.3	323.5
1977	39.0	37.1	9.3	1.0	86.4
1978	132.7	131.4	30.2	1.7	296.0
1979[a/]	127.6	101.4	29.6	1.8	260.4
1980[a/]	143.3	120.4	12.7	1.3	277.7

a/ Preliminary.

Washington Chinook

Willapa Bay

Willapa Bay chinook are managed to provide a full harvest of hatchery-produced fish and not for natural escapement. Hatchery returns have been sufficient to meet existing program needs and some, but not all, expanded enhancement project needs.

Grays Harbor

Grays Harbor chinook are managed to achieve natural spawning escapement goals. This escapement goal is 14,600 adult spawners. The estimated 1980 natural escapement of 11,650 exceeds each of the last ten years, but is still below the goal.

North Washington Coast

All stocks except Quinault fall salmon (chinook, coho, and chum) and Quillayute spring/summer chinook and summer coho are managed to achieve natural production spawning escapement goals. Estimated escapements of naturally-spawning chinook for 1980 and recent year escapements are presented in Table III-15. Estimated spawning escapements for all stocks are derived from in-season evaluation fisheries, and have not been confirmed by spawner counts. With the exception of Queets River stocks, all escapement objectives are agreed to by both State and Tribal technical staffs.

Generally, spring chinook showed reduced escapements over 1979. Fall chinook escapement in the Queets was reduced from 1979 levels, whereas escapements of Hoh and Quillayute fall chinook stocks were comparable to those experience in 1979. All escapements were above brood year escapement levels.

Puget Sound

Natural spawning escapements in Puget Sound are presently being assessed and estimates of total numbers of spawners are not yet available. Approximately three-quarters of the eggs needed to satisfy artificial production and enhancement needs will be collected. Low water conditions prevailed through early October and restricted chinook from reaching hatchery racks, reducing potential egg take. Puget Sound chinook stocks constitute a minor part of Washington coastal chinook catch.

Washington Coho

Willapa Bay

Willapa Bay is managed to fully harvest hatchery coho production. Hatchery escapements in 1980 met all program needs.

Grays Harbor

Preliminary indications are that Grays Harbor coho escapements were below the natural spawning escapement goal of 33,000 adult spawners, while hatchery program needs are expected to be met.

North Washington Coast

The north Washington coastal region is managed to achieve natural spawning escapement goals for all stocks except Quillayute River early coho and Quinault River coho which are managed for full harvest of hatchery production. Estimated natural spawning escapements and goals are presented in Table III-16. Estimated 1980 escapements are substantially below levels achieved in 1979 but above brood year (1977) escapement in all rivers.

Table III-15. Chinook salmon natural spawning escapements for north Washington coastal stocks, 1973-80.

Stock	1973	1974	1975	1976	1977	1978	1979	1980[a/]	1980 Goal
Queets									
Spr./summer	488	519	600	256	1,079	1,092	955	805	1,400[b/]
Fall	3,615	1,621	2,498	1,262	3,422	2,063	6,147	3,800	4,200[b/]
Hoh									
Spr./summer	817	791	546	621	1,212	1,626	1,442	842	1,700[c/]
Fall	1,966	563	400	469	1,191	797	1,750	1,389	2,400[c/]
Quillayute									
Fall	2,591	3,804	2,023	2,027	3,224	4,824	4,968	4,478	6,100[c/]

a/ Preliminary.
b/ Washington Department of Fisheries goal.
c/ Jointly agreed to by state and tribe.

Table III-16. Coho salmon natural spawning escapements for north Washington coastal stocks, 1973-80.

Stock	1973	1974	1975	1976	1977	1978	1979	1980[a/]	1980 Goal
Queets	7,338[b]	2,088	2,164	1,557	2,378	3,873	7,500	6,071	9,850[c/]
Hoh	4,400	3,486	1,982	2,068	2,147	2,068	5,265	2,350	4,800[d/]
Quillayute Fall	13,701	4,603	3,876	3,944	3,056	10,117	20,358	9,250	17,700[d/]

a/ Preliminary.
b/ Tribal estimate.
c/ Washington Department of Fisheries goal.
d/ Jointly agreed to by state and tribe.

Puget Sound

Puget Sound coho runs are managed on a regional basis to achieve either natural spawning escapement goals or hatchery program needs. Escapement estimates for the 1965-80 period are presented in Table III-17. The Puget Sound natural escapement goal is for 152,000 adult spawners. This figure is an aggregate of individual escapement goals for numerous rivers managed for natural production within Puget Sound.

In 1979, the escapement goal for all management units was achieved. The most significant escapement overage occurred in the South Sound management unit where a run-size evalution fishery was not allowed to update the projected run size due to the anticipated extreme small size of the run. In-season management analysis in 1979 indicated the possibility of a larger than anticipated Puget Sound hatchery segment. The natural segment was also larger than projected by the preseason analysis.

The 1980 natural escapement estimate is 209,000. Goals were achieved for all individual units managed for natural production except Skagit. Hatchery egg-take requirements for current and new enhancement production were met. An unusually large Hood Canal hatchery run accounted for a significant part of the Puget Sound hatchery escapement.

Table III-17. Puget Sound coho escapement estimates for natural and hatchery origin fish, 1965-80 (in thousands).

		Hatchery		
Year	Natural	Rack counts	Off-station returns	Total
1965	138	76.1	36	250.1
1966	187	98.6	45	330.6
1967	116	68.1	41	225.1
1968	147	141.2	7	295.2
1969	70.5	165.8	1	237.3
1970	208	265	8	481
1971	127.5	174.6	4	306.1
1972	61.5	110.9	31	203.4
1973	100	112.7	20	232.7
1974	154	215.1	18	387.1
1975	90	164.5	12	266.5
1976	103	146.7	8	257.7
1977	193	163.7	17	373.7
1978	126	122.6	11	259.6
1979	271	119.2	46	436.2
1980[a/]	209	192.3	23	424.3
1980 Goal	152	-	-	-

a/ Preliminary.

Washington Hatchery Returns

Adult salmon escapement estimates to Washington Department of Fisheries salmon culture facilities from 1971-1980 are provided in Table III-18. Hatchery returns exceeded or met minimum egg-take requirements except for Puget Sound chinook.

Table III-18. Preliminary 1980 adult escapement to Washington Department of Fisheries salmon hatcheries on the Columbia River, Washington coast and Puget Sound compared with 1971-79 returns.

	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

a/ Includes spring, summer and fall chinook.

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 ("Boldt Decision") reaffirmed a standard for management. A specific objective of 1980 PFMC management for the north Washington coast was to achieve allocation as required on a regional stock-by-stock basis versus (1) river-by-river, stock-by-stock basis, or (2) regional species aggregate basis. This question is yet to be resolved through litigation by any involved parties. Puget Sound allocation was defined by the Puget Sound Management Plan approved by the Court.

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. This question is also still to be litigated through the federal judicial system.

The Council has also addressed the question of allocation between ocean and inside non-treaty 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, this general objective was more exactly quantified for the two ocean fisheries as well as for the Puget Sound commercial net fisheries.

The two general allocation objectives will be discussed as treaty and non-treaty allocation questions. While data are presently unavailable to comprehensively evaluate allocations achieved in 1980, analysis of trends is useful and will be presented. As more information becomes available, the Salmon Plan Development Team (PDT) will prepare additional reports on this subject.

The following treaty Indian allocation analysis of 1980 salmon catches is based upon Washington coastal catches and does not account for Washington resident catches made in Fishery Conservation Zone (FCZ) waters off Washington, Oregon, California or Alaska and landed outside Washington. With one exception, it also does not include catches made outside Washington FCZ waters but landed in Washington by either Washington or non-Washington residents. Columbia River fall chinook allocation analysis includes Oregon catches. Unless address is accepted as residency criteria, this information is unavailable for Washington's historical catch base and preliminary in-season catch statistics. Such catch separation may be available for the Southeast Alaskan fishery but is not available for California or Oregon catches as they represent port of landing, not area of catch (volunteer catch by area system was begun in Oregon during 1979). The catch separation between state territorial waters and FCZ waters is unavailable for catches off Oregon and California. Available information for the Southeast Alaska troll fishery is thought to be very inaccurate. If the statistics were available, the catches would need to be prorated depending upon the stocks present in each fishery.

Treaty Indian Allocation

All salmon stocks originating within Washington north of the Willapa Bay watershed and all salmon originating above Bonneville Dam on the Columbia River are subject to allocation for treaty Indian requirements. In California, Klamath River chinook salmon are impacted by an in-river Indian subsistence fishery. Whether this right includes a commercial fishery is presently in litigation.

Columbia River - The status of upriver Columbia River salmon stocks in 1980 was such that an allocation between Indian and non-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 non-treaty fisheries. The 60/40 in-river harvest allocation was not achieved in 1980. Table III-20 outlines the harvest pattern on upper Columbia River fall chinook salmon run since 1977. Any Indian deficit must be totally corrected in 1981 as a zero deficit is required by the fifth year of the Columbia River Agreement which began in 1977.

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. 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-1, while the ocean distribution is shown in Figure III-2. 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 Pacific Fishery Management Council (PFMC) and Washington/Oregon/California management to solve this problem is reduced by the ocean distribution of the upriver bright fall chinook stock versus "Tule" stock.

The 1980 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 were totally closed. Estimates of upper Columbia River fall chinook ocean catch are presented in Table III-19. All available information indicates this conclusion is still valid. 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.

Table III-19. Preliminary estimates of 1979 and 1980 ocean fishery catches[a/] of upper Columbia River fall chinook off the Washington and Oregon coast.

1979	Washington ocean troll and recreational catch	199,800
	x.70 to get Columbia River fall stock	139,900
	x.485 to get upriver stock	67,800
	Oregon ocean troll and recreational catch	261,200
	x.05 to get Columbia River fall stock	13,100
	x.485 to get upriver stock	6,300
	Total Washington/Oregon 1979 ocean catch of upriver falls	74,100
1980	Washington ocean troll and recreational catch	181,800
	x.70 to get Columbia River fall stock	127,300
	x.485 to get upriver stock	61,700
	Oregon ocean troll and recreational catch	227,800
	x.05 to get Columbia River fall stock	11,400
	x.485 to get upriver stock	5,500
	Total Washington/Oregon 1980 ocean catch of upriver falls	67,200

a/ Catches not adjusted to adult equivalents.

1/ An amendment to the "Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the coast of Washington, Oregon, and California commencing in 1978, " May, 1980.

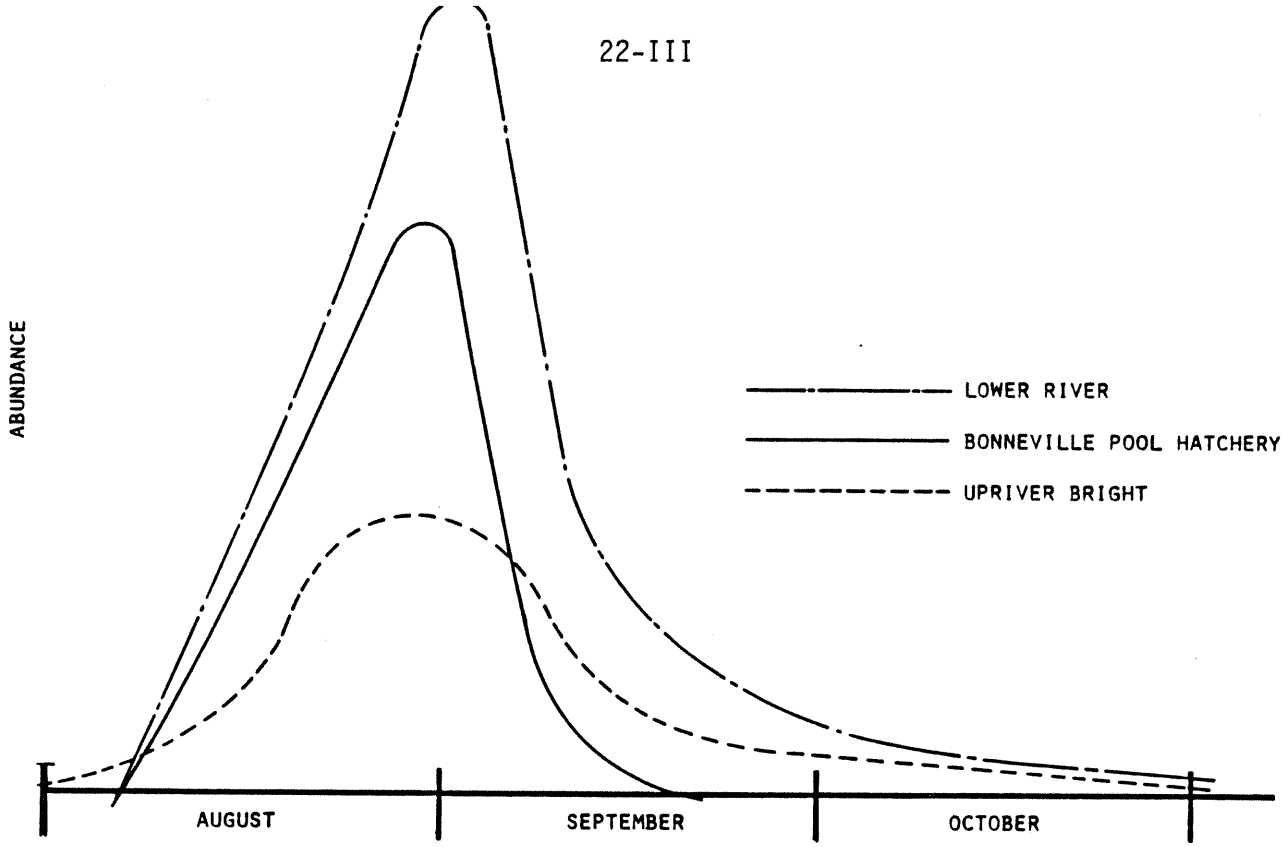


Figure III-1. Abundance of adult fall chinook salmon in the Columbia River estuary, by stock.

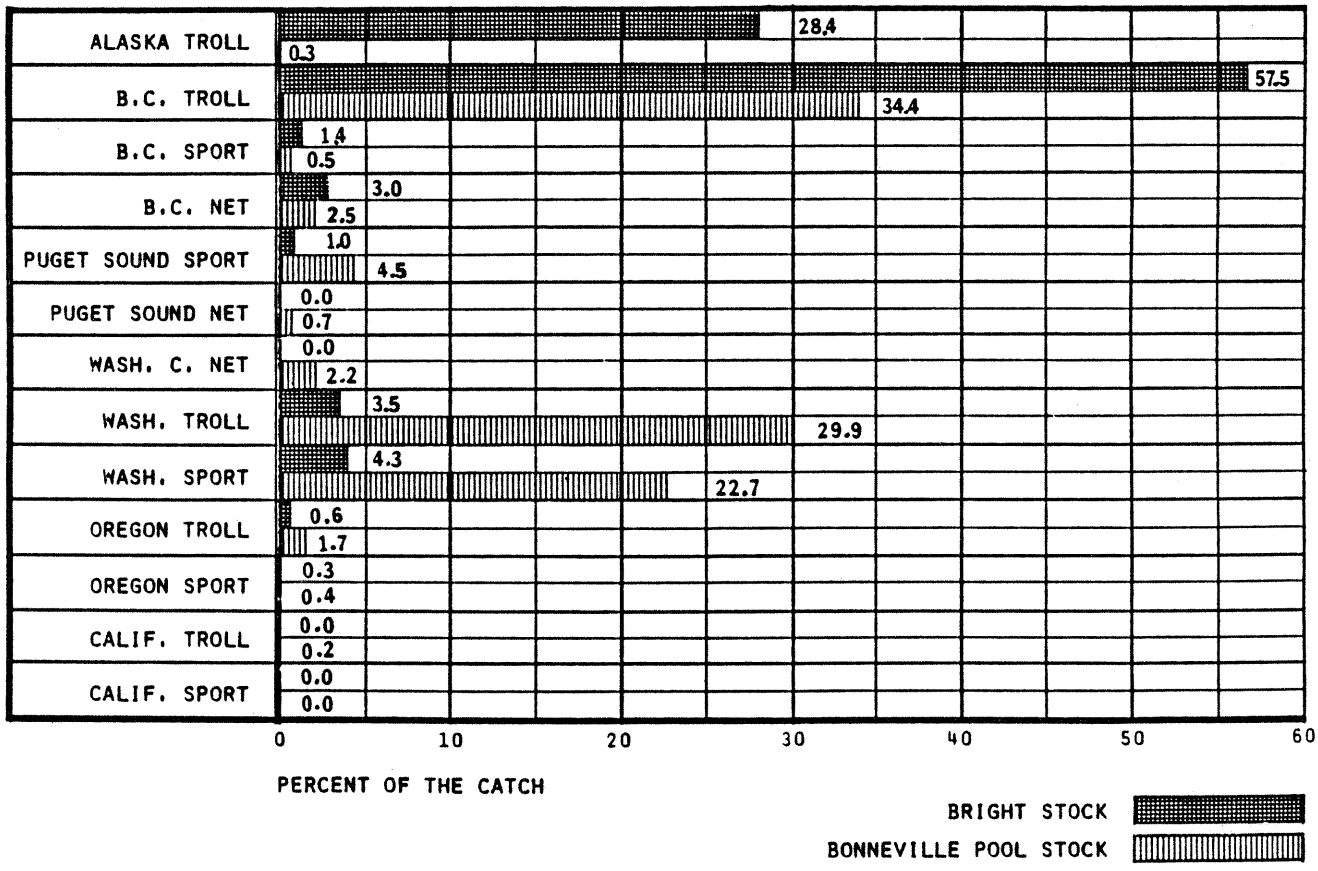


Figure III-2. Ocean catch distribution of Columbia River fall chinook based upon 1976 ocean regulation.

One means of addressing this question is to review the trend in ocean harvest and in-river run sizes for the 1971-75 base period (prior to PFMC management and the Columbia River Agreement) relative to the 1977-80 period (active PFMC management and Columbia River Agreement). This information is presented in Table III-21.

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.

Table III-20. Columbia River Treaty-Indian and non-Indian catch of upriver fall chinook (in-river harvest), 1977-80.

Fishery	Years			
	1977	1978	1979[a/]	1980[a/]
Non-Indian				
Catch	67,100	38,900	28,100	27,400
Annual Share	59%	41%	32%	48%
Cumulative Catch	67,100	106,000	134,100	161,500
Cumulative Share	59%	51%	45%	46%
Treaty-Indian				
Catch	46,400	55,900	60,000	29,400
Annual share	41%	59%	68%	52%
Cumulative catch	46,400	102,300	162,300	191,700
Cumulative share	41%	49%	55%	54%
Total				
Annual catch	113,500	94,800	88,100	56,800
Cumulative catch	113,500	208,300	296,400	353,200
Deficit	21,700[b/]	22,700	15,600	20,300[c/]

a/ Preliminary.
b/ Original deficit essentially due to "protest" fishery by non-Treaty gillnet fishermen in lower river.
c/ Subject to future interpretation by involved parties.

Table III-21. Annual percentage reduction in ocean catch of chinook north of Cape Falcon and Columbia River returns of upriver origin fall chinook stocks from 1971-75 base period.

	Washington/Oregon Chinook Catch North of Cape Falcon[a/]	% of Ave.	In-River Run of Upriver Origin[c/] Columbia River Bright	% of Ave.	Columbia River Tules	% of Ave.	Columbia River Total	% of Ave.
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[b/]	218,800	44.2	90,000	77.1	89,900	85.5	179,900	81.0
1980[b/]	191,700	38.7	76,700	65.7	83,700	79.6	160,400	72.3

a/ Excludes Oregon recreational catch which is unavailable for entire base period.
b/ Preliminary.
c/ Based on new stock distribution model developed in 1980.

North Washington Coast - The discussion on how to allocate the north coastal salmon resource was presented in the 1980 Amendment (page 86-87) and is still relevant today. This treaty allocation question is expected to be resolved through litigation in 1981.

With the exception of Grays Harbor coho, most 1980 ocean fishery escapements of coho and chinook were below 1979 levels. Actual 1980 terminal area returns of Washington coastal coho were also below pre-season abundance forecasts made by state and tribal technical staffs.[1/] Depressed parent year spawning escapements and adverse environmental conditions appear responsible since 1980 Washington ocean troll and recreational fishery effort and catch were at record lows, partially corresponding to an in-season reduction of the allowable coho harvest off the Washington coast.

A preliminary WDF analysis of 1980 coastal salmon allocations is presented in Table III-22, which summarizes estimated adult harvests of treaty Indian and non-Indian fishermen. According to this analysis, treaty fishermen generally took over 50% of the actual total harvest, regardless of which allocation scheme is examined.

1/ Washington Dept. of Fisheries (WDF) met with technical representatives of the Quinault, Hoh, and Quileute tribes on April 28, 1980 to develop final pre-season 1980 coho abundance forecasts for Washington coastal streams. These forecasts were subsequently provided to the Council in a May 21, 1980 letter from WDF which revised the 1980 ocean coho harvest guidelines north of Cape Falcon.

Table III-22. Preliminary 1980 Washington coastal salmon allocation for Indian and non-Indian fishermen by river or region of origin - Balance of actual harvest[a/]

Area	Species	Actual Non-Indian Harvest[b/] Number of Fish	Pounds[d/]	Percent of total[e/]	Tribe	Actual Treaty Indian Harvest[c/] Number of fish	Pounds[d/]	Percent of total[e/]	Harvestable surplus[f/] in terminal run (no. of fish)
Run by run									
Quillayute	chinook	425	8,058	15	Quileute	2,437	46,206	85	1,000 (spring/summers) 0 (falls)
	coho	17,614 (7,354-falls only)	162,753	44		22,244 (5,912-falls only)	205,535	56	20,618 (0-falls only)
Hoh	chinook	145	2,939	18	Hoh	651	13,196	82	0
	coho	1,608	14,183	53		1,420	12,524	47	0
Queets	chinook	407	8,938	13	Quinault	2,764	60,697	87	2,384 (falls) 0 (spring/summers)
	coho	5,929	57,037	64		3,370	32,419	36	0
	chum	0	0	0		473	5,449	100	473
Quinault	chinook	542	9,832	9	Quinault	5,557	100,804	91	5,522
	coho	9,093	92,203	42		12,570	127,460	58	12,239
	chum	0	0	0		11,908	147,183	100	11,908
	sockeye	0	0	0		16,757	74,234	100	15,500
Grays Harbor[g/]	chinook	6,073	114,201	48	Quinault	6,517	120,674	52	8,500 (falls) 0 (spring/summer)
	coho	30,449	275,557	54	Quinault	25,792	257,238	46	23,229
	chum	6,704	95,311	31	Quinault	15,034	176,630	69	19,783
Totals by species	chinook	7,592	143,968	30		17,926	341,577	70	
	coho	64,693	601,733	50		65,396	635,176	50	
	chum	6,704	95,311	20		27,415	329,262	80	
	sockeye	0	0	0		16,757	74,234	100	
Totals by tribal grouping (multiple species)									
Quillayute			170,811	40	Quileute		251,741	60	
Hoh			17,122	40	Hoh		25,720	60	
Queets/Quinault/Grays Harbor			653,079	37	Quinault		1,102,788	63	
Total - all species, all areas			841,012	38			1,380,249	62	

a/ WDF Harvest Management staff analysis (3/6/81) - subject to review.
b/ Includes Washington marine prior interceptions (adjusted to adult equivalents) and non-Indian commercial net (Grays Harbor). Non-Indian river sport catch assumed equal to Indian ceremonial and subsistence - not included in an actual harvest.
c/ Includes coastal Indian commercial net fisheries. Also, marine interceptions (adjusted to adult equivalents) by Makah, Quileute, and Quinault fishermen.
d/ Pounds estimated by applying average terminal area weight per fish to actual numbers of fish harvested.
e/ Percent of total numbers harvested except for multiple species aggregate which represent percent of total pounds landed.
f/ Represents actual harvestable numbers of fish in terminal area. When this column is less than total actual Indian harvest for a specific area-species, indicates over-fishing occurred in all intercepting fisheries. Allocation balance would change if harvestable oportunity were analyzed rather than actual catch.
g/ Chehalis Indian tribal catches were divided equally and applied to both non-Indian and treaty Indian harvests.

Table III-22a. Estimated chinook catch allocation for 1980 coastal stocks[a/]

	Spring/Summer Chinook		Fall Chinook	
	Treaty	Non-Treaty	Treaty	Non-Treaty
Quillayute	1,000	8,333	1,415	3,245
Hoh	165	1,375	461	1,057
Queets	108	900	2,621	6,011
Quinault	1,103	9,192	4,413	10,122
Grays Harbor	0	0	5,650	16,302

a/ Based upon 1971 brood CWT recoveries of Soleduck Hatchery releases, as provided by WDF. Numbers not adjusted for adult equivalence.

Source: Quinault Treaty Area tribal analysis - 3/17/81.

Table III-22b. Catch allocation 1980 coastal coho stocks expressed in adult equivalents.[a/]

	Quillayute					
	Fall	Summer	Hoh	Queets	Quinault	Grays Harbor
Non-treaty catch						
Ocean	12,095	13,199	2,784	7,662	13,717	37,842
Terminal	300	400	50	50	50	12,717
Total	12,395	13,599	2,834	7,712	13,767	50,559
Treaty Catch						
Ocean	731	918	168	278	497	1,618
Terminal	5,700	13,278	1,391	3,044	11,909	23,811
Total	6,431	14,196	1,559	3,322	12,406	25,429
Total Catch	18,826	27,795	4,393	11,034	26,173	75,988
% Non-treaty	66%	49%	65%	70%	53%	67%
% Treaty	34%	51%	35%	30%	47%	33%
Total harvestable surplus available from each 1980 run	10,900	34,848	2,487	7,050	33,806	46,105
% taken by non-treaty ocean fishery	111%	47%	112%	109%	41%	110%

a/ Based upon WDF model adjusted for observed terminal run sizes.

Source: Quinault Treaty Area tribal analysis - 3/17/81.

On the river-by-river, run-by-run sharing formula advocated by the tribes, non-Indians exceeded 50% of the actual harvest of only Hoh, Queets, and Grays Harbor coho. Treaty fishermen accounted for 52% to 100% of actual harvest for the remainder of coastal salmon stocks.

On a single-species aggregate basis (1980 PFMC position) treaty fishermen's harvest (numbers) accounted for over 50% of actual totals as follows: chinook - 70%; coho - 50%; chum - 80%; and sockeye - 100%.

On a cross-species aggregate basis (1980 State of Washington position) the actual catch balance for coastal salmon was as follows:

		Treaty-Indian	Non-Indian
1. Cross-area:		62%	38%
2. By tribal group:	Quillayute	60%	40%
	Hoh	60%	40%
	Quinault/Chehalis	63%	37%

These percentages correspond to total weight rather than number estimates of all species landed. Tribal fishermen harvested approximately 500,000 lbs. more Washington coastal salmon in 1980 than non-Indians.

A different analysis of 1980 Washington coastal chinook and coho allocations was provided to the Council on March 17, 1981 by Quinault Treaty Area tribes. This analysis is summarized in Tables III-22a and III-22b. The primary difference between the WDF and tribal analysis appears to be related to interpretations of 1980 prior marine interceptions. The Team feels that the tribal analysis does not accurately reflect prior marine interceptions for the following reasons:

(1) Washington ocean harvest rates were not appropriately reduced to reflect 1980 ocean seasons and size limit regulations or actual troll effort levels;

(2) It appears that chinook coded-wire tag experiments were used which do not accurately represent marine distribution of coastal chinook stocks;

(3) Alaska troll interceptions were counted as part of the non-Indian harvest.

State and tribal representatives are currently attempting to resolve these differences.

It should be emphasized that the 1980 allocation balance of coastal salmon would change considerably if harvestable opportunity were analyzed instead of actual catch. For instance, 1980 natural fall coho terminal runs to the Quillayute, Queets, or Hoh rivers had no harvestable surplus. Actual ocean and terminal (non-Indian and treaty Indian) harvest on these stocks, then, occurred at the expense of spawning escapement goals. Over-fishing these runs only perpetuates their depressed status and assures continued resource allocation problems.

Puget Sound - A preliminary analysis for Puget Sound stocks indicates that treaty Indian fishermen did not achieve their 1980 allocation for summer-fall chinook, achieved their allocation for chum, and exceeded their allocation for coho. A detailed breakdown by management unit is presented in Table III-23.

Table III-23. Allocations of Puget Sound-origin salmon in 1980 as mandated by federal court.[a/]

		Ocean troll, ocean sport and Puget Sound sport interceptions		Puget Sound non-Indian commercial fishery allocations		Puget Sound treaty Indian commercial fishery allocations	
Species	Management Unit	Non-Indian	Indian	Goal	Actual	Goal[b/]	Actual[b/]
Summer/	Strait of Juan de Fuca		-		NO ALLOCATIONS PRESCRIBED		
Fall	Nooksack-Samish	37,000	-	33,215	33,594	70,214	69,835
Chinook	Skagit	10,300	-	1,085	1,458	11,386	11,013
	Stillaguamish-Snohomish	21,500	-	1,398	1,794	22,897	22,501
	South Sound	51,900	-	-6,331	3,850	45,569	35,387
	Hood Canal	4,000	--	1,948	318	5,948	7,578
Total		124,700	-	31,315	41,014	156,014	146,314
Coho	Strait of Juan de Fuca	9,200	500	6,011	1,667	14,710	19,054
	Nooksack-Samish	28,300	1,400	39,442	27,294	66,343	78,491
	Skagit	23,400	1,300	10,751	8,693	32,850	34,908
	Stillaguamish-Snohomish	75,200	4,000	56,123	52,174	127,323	131,272
	South Sound	151,000	6,400	171,115	151,981	315,715	334,849
	Hood Canal	76,700	3,000	24,392	10,638	98,093	111,847
Total		363,800[d/]	16,600[d/]	307,834	252,447	655,034	710,421
Chum	Strait of Juan de Fuca	-	-	918	980	917	855
	Nooksack-Samish	-	-	4,792	3,495	4,792	6,089
	Skagit	-	-	36,955	35,414	36,959	38,497
	Stillaguamish-Snohomish	-	-	16,518	11,595	16,518	21,441
	South Sound	-	-	123,662	133,699	123,661	113,624[c/]
	Hood Canal	--	-	94,716	98,502	94,716	90,930
Total		-	-	277,561	283,685	277,560	271,436

a/ Incorporates numbers of fish harvested by the commercial net fishery in Puget Sound in 1980 (soft data estimates as of 11/25/80), including incidental catches made during IPSFC-managed fishery for sockeye salmon. Excludes opportunity fish not caught.

b/ Includes ceremonial and subsistence.

c/ Late chum run (allocated 100 percent to treaty Indians) still to be harvested.

d/ Based on in-season estimates.

management goal was for a terminal return of 1.1 million Puget Sound origin coho. This goal achieved necessary spawning escapements, met required treaty Indian allocations for the six Puget Sound management units, and provided for a non-Indian net fishery. Pre-season stock assessment indicated that this goal would concurrently meet similar conservation and allocation requirements for Washington coastal coho stocks, i.e., Puget Sound goals were believed to be the limiting factor on the level of allowable 1980 ocean coho harvest.

During the 1980 season, an abnormal northward shift in ocean distribution of various coho stocks, including Puget Sound, was perceived by WDF. They subsequently concluded that the ocean fishery needed to be closed in late August to achieve Puget Sound allocation goals. Current analysis now indicates that the 1980 Puget Sound coho terminal run returned at record high levels, significantly greater than predicted at the time of ocean closure. Reduced ocean harvest rates obviously contributed to this increase, although it also appears that total 1980 Puget Sound coho abundance was possibly at least 15%-20% above pre-season forecasts. The resultant increased net catch of this stock relative to previous years is presented in Table III-24).

Further comparisons of recent harvest trends in the Washington ocean and Puget Sound net fisheries are available in Figure III-3. This increased abundance plus the August ocean closure resulted in the following 1980 coho catch relative to 1979. Non-Indian Washington ocean coastal troll down 288,000 (46%), Washington ocean recreational up 71,000 (25%), Puget Sound non-Indian net up 216,000 (80%), and Puget Sound Indian net up 300,000 (64%).

Despite this significant reduction in 1980 Washington ocean catch and effort, coho returns to Washington coastal areas were significantly less than pre-season forecasts (Table III-25) and below natural escapement goals in the Queets, Hoh, and Quillayute rivers. If Puget Sound stock abundance had been detected in-season, a larger ocean catch would have been allowed resulting in a Puget Sound coho allocation balance closer to the pre-season forecast. Conversely, if coastal conservation problems had been recognized, additional ocean fishery curtailment would have been implemented, allocating a larger portion of the total Washington catch to inside fisheries, particularly in Puget Sound. Additional catch transfers to Canadian fisheries would have also occurred.

Such impacts, however, are a reality of managing mixed stock ocean fisheries for the weakest viable stocks or stock aggregates. Washington ocean catches represented less than 20% of the 1980 ocean catch plus terminal runs of healthy Puget Sound coho stocks, while a similar figure for weaker Washington coastal coho was almost 30%. The larger relative impact of ocean fisheries on this weak resource unit compounds the problem.

This problem has been further compounded by past overfishing of north coastal stocks (including 1980) by both ocean and inside user groups. Consistent management to achieve both spawning and allocation requirements by both the Council and terminal area fishery managers is absolutely essential to improving Washington coastal coho resource status and thereby minimizing weak stock management problems in the future. Obviously, well-planned salmon enhancement also will be essential to solve coastal allocation and management problems.

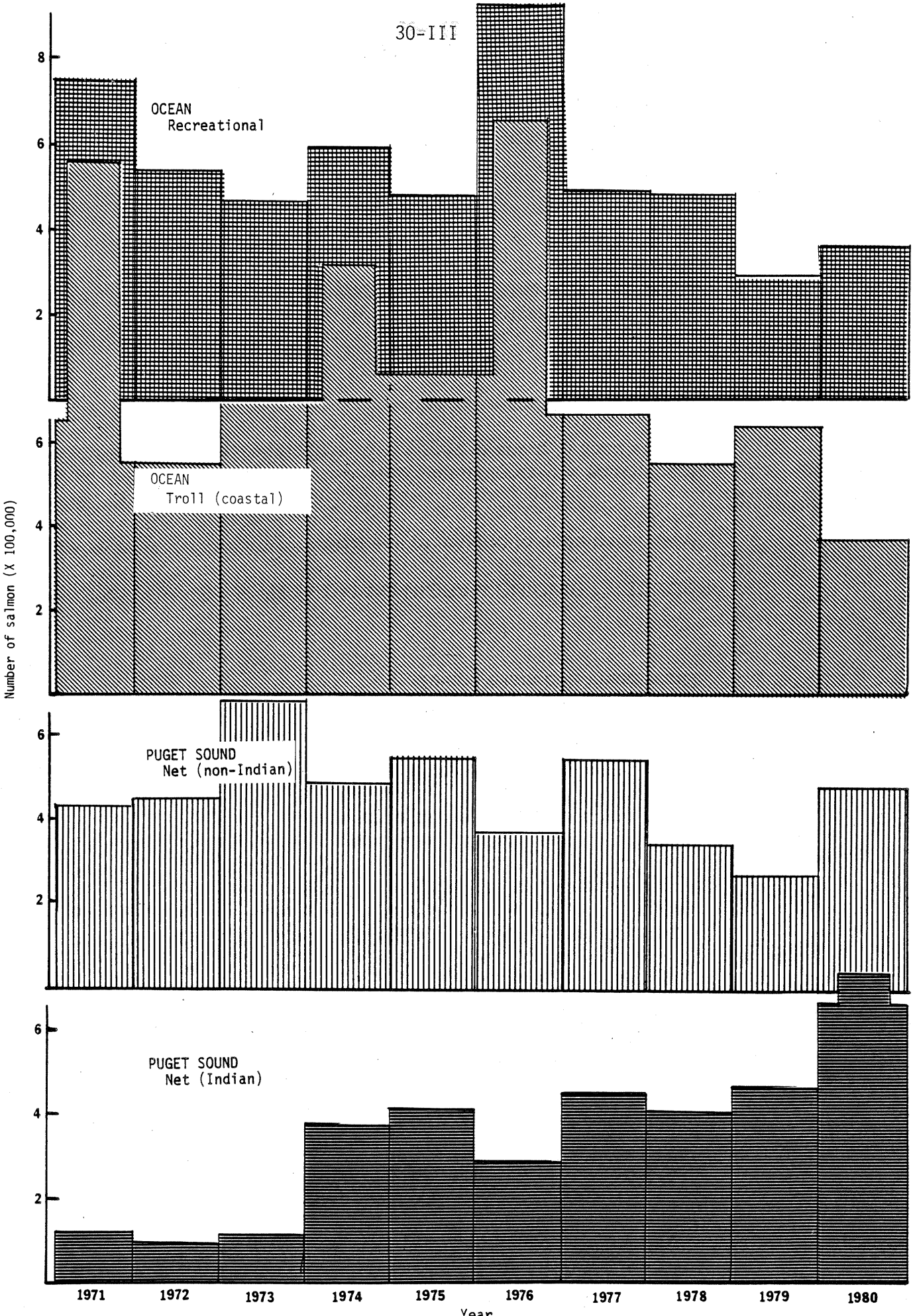


Figure III-3. Washington catch of coho in the ocean and Puget Sound gillnet fisheries 1971 through 1980.

Table III-24. Annual Indian and non-Indian Puget Sound commercial net catch of United States and non-United States origin coho.

Year	United States Stocks			Non-United States Stocks		
	Indian	Non-Indian	Total	Indian	Non-Indian	Total
1971	116,112	281,299	397,411	2,398	153,852	156,250
1972	93,336	289,386	382,722	3,808	164,363	168,171
1973	115,732	402,161	517,893	1,766	282,134	283,900
1971-71 Ave.	108,393	324,282	432,675	2,657	200,116	202,773
1974	367,148	351,604	718,752	11,802	142,771	154,573
1975	405,133	255,154	660,287	6,128	295,111	301,239
1976	269,275	98,092	367,367	21,014	278,302	299,316
1977	426,940	338,929	765,869	108,233	216,689	324,922
1978	400,724	161,136	561,860	34,236	222,213	256,449
1979	437,074	85,895	522,969	35,418	184,219	219,637
1980[a/]	708,887	254,490	963,377	63,701	231,727	295,428
1974-80 Ave.	430,740	220,757	651,497	40,076	224,433	264,509

a/ Preliminary (3-4-81).

Table III-25. Pre-season forecasts vs. actual 1980 harvest and escapement for Puget Sound and Washington coastal coho stocks (preliminary subject to review 3/13/81).

	Pre-season Forecast (May 1980)	Estimated Actual (March 1981)	Percent Deviation from Pre-season Forecast
Puget Sound			
Puget Sound net catch	801,100	963,400	+20
Escapement	209,200	424,300	+103
Total terminal run[c/]	1,010,300	1,387,700	+37
Washington ocean catch[a/b/]	380,600	266,400	-30
Washington Coast (N. of Willapa)			
Coastal net catch	123,900	72,800	-41
Escapement	96,600	75,400	-22
Total terminal run[c/]	220,500	148,200	-33
Washington ocean catch[a/d/]	108,200	55,200	-49

a/ Includes both treaty and non-treaty.
b/ Actual catch.
c/ Terminal U.S. net plus escapement.
d/ Adult equivalents.

Other Allocation Considerations

Numerical management goals were established for allocation of the ocean harvest of coho salmon between the troll and recreational fisheries in 1980.

For the Oregon Production Index (OPI) area, harvest guidelines were established which provided for a 71% and 29% allocation of the coho salmon harvest between the troll and recreational fisheries, respectively, south of Leadbetter Point. This allocation guideline excluded California. The 1980 allocation of the coho catch excluding California (928,872) between the troll and recreational fisheries was 48% and 52%, respectively, compared to the guideline of 71% and 29% established for the 1980 plan (Table III-26). The unanticipated shift in the proportion of the coho catch taken by the recreational fishery was due to: (1) reduction in the early season troll fishery, (2) greater coho availability during the early part of the recreational season, (3) greater-than-anticipated early season effort by the recreational fishery, and (4) the more liberal 3-fish bag limit.

Table III-26. Estimated harvest of coho salmon in the Oregon Production Index area in 1980, exluding California.

Area	Fishery		Total
	Recreational	Troll	
Ilwaco, Washington	154,478	58,752[a/]	213,230
Oregon Coast	332,442	383,200	715,642
TOTAL	486,920	441,952	928,872
	(52%)	(48%)	

a/ Includes 3,467 fish caught off Oregon.

For the Washington Production Projection area (WPP), 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 1980 ocean catch was 828,000 (Table III-27). The actual 1980 allocation of the coho catch between the troll and recreational fisheries was 50% for each fishery. Similar events described for the OPI area contributed to the allocation imbalance favoring the recreational fishery in the WPP area in 1980.

Allocation goals between ocean and "inside" non-Indian fisheries were not established for stocks not subject to Indian treaty allocation requirements. 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 1981 salmon plan amendment: upper Columbia River fall chinook - Table III-20; Grays Harbor coho - Table II-44; and Puget Sound coho - Figure III-3 and Table III-24.

Table III-27. Estimated 1980 harvest of coho salmon in the Washington Production Projection (WPP) area.

Area	Fishery		Total
	Recreational	Troll	
Columbia River (OR)	56,030	36,816	92,846
Washington	361,500	374,000	735,500
Total	417,530	410,816	828,346
(50.4%)	(49.6%)		

IV. OCEAN MANAGEMENT OF SALMON IN 1981

STATUS OF CHINOOK AND COHO RESOURCE FOR 1981

The purpose of this assessment is to provide the most current information available relative to the salmon stocks which will contribute to the 1981 salmon fisheries. This report is necessarily incomplete and highly preliminary due to the preliminary nature of much of the data available for analysis. The Council anticipates updated status reports as more comprehensive data and analysis becomes available. Time constraints, caused by administrative and legal procedures mandated by the FCMA, require the preparation of preliminary status reports prior to completion of the 1980 spawning and analysis of relevant 1981 resource information. This use of very preliminary data often causes a credibility problem with user groups when significant changes in technical analysis develop as more complete data become available. However, this problem can only be corrected by a delay in the current plan development scheduling.

This report contains the best information available to the Salmon Team as of early February 1981.

California Chinook

Coastal Streams

The 1976-77 California drought was over by the fall of 1977 along the north coast, but lasted through the winter of 1977 on the Sacramento River system. The 1976 and 1977 spring outflows of the Klamath, Smith and Eel Rivers were significantly reduced (Table IV-1). However, by November of 1977, flows increased dramatically in these areas.

The last of the drought-impacted north coast fall run chinook spawned during the fall of 1980. Because of relatively good escapement and better-than-average environmental conditions in 1978, the 1981 Klamath run size and escapement are predicted to be of the same magnitude or slightly higher than occurred in 1978. The 1978 run size was 96,000 chinook, the spawning escapement, 70,000.

Sacramento-San Joaquin River System

San Joaquin River System - San Joaquin River chinook face unfavorable environmental conditions almost every year. Predictions for 1981 are for depressed runs comparable to recent years (3,000-10,000 chinook).

Sacramento River Winter Run Chinook - Four-year-old winter-run chinook will be depressed in 1981 due to the drought; however, 3-year-olds had more favorable environmental conditions. The 1981 escapement will not reach the 40,000 chinook goal, but should show considerable improvement over the extremely depressed 1980 and 1979 escapement of 1,200 and 2,300 fish respectively. The 1978 escapement was 25,000 chinook.

Sacramento River Spring Run - Spring run chinook should show improvement in 1981 over the depressed 1980 and 1979 runs of only 9,700 and 2,900 chinook respectively. In 1981 only 4-year-old returns will be impacted by the drought years. Even though the 1981 escapement should show improvement, it is anticipated that the goal of 29,000 chinook will not be achieved.

Table IV-1. Mean monthly flows in cfs, for the Klamath, Smith and Eel Rivers. Source: USGS - Eureka.

Klamath at Glen	March	April	May	June	July	August	September	October	November	December
1974	56,530	60,400	25,680	15,260	5,541	3,265	2,893	3,297	5,098	10,650
1975	54,590	30,770	38,850	21,420	6,352	3,414	3,553	8,113	14,520	19,650
1976	21,850	15,220	11,980	5,446	3,012	3,348	3,030	3,334	5,012	3,042
1977	6,954	5,448	5,638	3,630	1,782	1,441	2,858	4,635	25,630	48,960
Smith River Crescent City										
1974	11,100	6,944	1,702	877	418	273	222	216	555	4,629
1975	13,080	4,353	3,506	1,046	491	323	257	1,754	4,904	5,721
1976	4,422	3,507	1,534	692	423	533	284	244	388	264
1977	3,539	1,406	1,801	691	353	270	892	1,492	10,910	15,020
Eel River Scotia										
1974	36,300	19,640	2,830	1,004	464	193	126	140	607	4,690
1975	45,330	9,689	5,810	1,543	438	205	152	1,225	3,557	5,767
1976	9,287	6,234	1,576	582	199	218	126	114	252	169
1977	2,607	848	626	255	70	322	187	384	4,661	19,910

Sacramento River Fall Run - As was the case with the winter and spring runs, the 1981 fall runs should show a slight improvement over 1980, due to the fact that only 4-year-old chinook (1977 brood year) were negatively impacted by the drought. However, the escapement goals in the upper Sacramento River system will still not be attained due to environmental problems on the upper Sacramento River and the depressed status of these upriver stocks.

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.

These stocks remain in a generally favorable status, showing recent upward trends in spawning escapement. Preliminary spawning survey counts for 1980 indicate a continuing upward trend in these stocks. Spawning escapements for the 1976-78 brood years were average to good and the abundance of Oregon coastal chinook stocks is predicted to be near or above average in 1981.

Columbia River Chinook Stocks

Columbia River chinook are the predominant chinook stocks found north of Cape Falcon off Oregon and Washington. Spring and summer chinook stocks are minor contributors to the Oregon-Washington coastal ocean catches. The 1977 and 1978 brood years of 4- and 3-year-old fall chinook salmon, respectively, are the major contributors to the 1981 salmon fisheries. Poor returns of 3-year-old chinook in 1980 indicate another year of below average abundance of 4-year-olds in 1981.

Status of specific stocks of Columbia River chinook is outlined below.

Upriver Spring-Summer Chinook

Upriver stocks of spring and summer chinook remain in a depressed state. Runs of both stocks are predicted to be at or near record low levels in 1981. The record low run of upriver spring chinook of 49,000 fish occurred in 1979; the summer chinook run reached a record low of 31,000 fish in 1980.

Lower River Spring Chinook

The major lower river runs of spring chinook originate in the Willamette and Cowlitz rivers. The Willamette run is expected to be somewhat above average, about 50,000 to 55,000, compared to the 1971-75 average run size of 46,100. The other major component is produced by the Cowlitz Hatchery and a run similar in size to 1980 is anticipated for 1981.

Fall Chinook

Both the upper and lower river Tule (hatchery) stocks largely support the Washington coastal fishery (see Figure III-2). The upriver bright fall chinook contribute most significantly to the northern British Columbia and Southeastern Alaskan troll fisheries. The 1977 fall chinook brood year made a poor showing as 3-year-olds in the 1980 offshore fishery and a poor showing as

well in the upper and lower Columbia River fall runs. It is likely that contribution to the 1981 offshore fishery and in-river runs as 4-year-olds will also be poor. Overall returns for 1981 are expected to be low, similar to 1980. At the present time, the strength of the 3-year-old age class in 1981 is unknown. The poor survival of the 1977 brood year follows similar poor survival of the 1975 and 1976 brood years and is the first time that three consecutive weak brood years have been recorded. There are no indications that this trend has been reversed.

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 definite conservation problem is expected in 1981 for these stocks of coho.

The Oregon Production Index (OPI) is used as a measure of the annual abundance of adult three-year-old coho salmon resulting from production in Columbia River and Oregon coastal hatcheries and selected streams. The number of three-year-old adult coho in the OPI is predicted by the number of two-year-old jack coho returning to selected facilities in the previous year. The assumption is 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 making up the OPI as previously described on pages 19-25 of Section II of the plan.

The OPI abundance predictor has been modified for application in 1981 to improve its accuracy and precision. The major modifications includes: (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 WDF hatcheries in the Columbia River jack totals, (3) omission of 1972 and 1978 data points from regression analysis due to bias in Cowlitz jack counts in 1971 and 1977, and (4) the addition of 1980 data to the jack vs. adult relationship bringing to 7 the number of data points in the relationship. Table IV-2 and Figure IV-1 show the data and regression calculation which make 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 will vary slightly from that utilized in the 1980 relationship (Table II-21 and Figure II-1).

The modifications in the OPI abundance predictor have improved the degree of correlation in the relationship and more fully account for the actual stock size making up the OPI. The 1981 predictor has an R^2 value of 0.988 with a standard error about the mean of the predicted population size of ±112,700. The potential accuracy of the predictor is best indicated by comparing the expected and observed values of the OPI for individual years from 1973-80 (Table IV-2). Observed stock sizes deviated a maximum of 208,400 (±6%) from expected values for a population which varied between 1.1 and 4.1 million fish. The deviations ranged between 2 and 6%. The observed 1980 OPI value was only 5% above the expected value with the new relationship.

Table IV-2. Relationship of Columbia River and Oregon coastal coho jack index to the Oregon Production Index for coho adults in thousands of fish, 1971-80 and 1981 prediction.

Year of Adult Production	Jacks[a] of Previous Year			Adult Production Index[b]	
	Columbia	Coastal[c]	Total	Expected	Observed[c]
1972[d]	99.4	14.3	113.7	----	2,041.9
1973	83.0	6.5	89.5	1,953.6	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	4,109.7
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	1,200.9	1,263.4[f]
1981[e]	40.3	10.9	51.2	1,069.3	

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.

Jack returns to index areas during the fall of 1979 were the lowest recorded since 1965. A total of 51,200 jacks returned to Columbia River and coastal index areas in 1980 (Table IV-2). Based on the relationship of jacks to adults (Figure IV-1) the total adult production for the OPI in 1981 is expected to be 1,069,000, which is a near record low level.

New production sources, such as private hatcheries, are not included 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 is necessary to make a separate estimate of the private origin fish contributing to the ocean catch in the OPI area. Returns from releases of 14.8 million coho at coastal

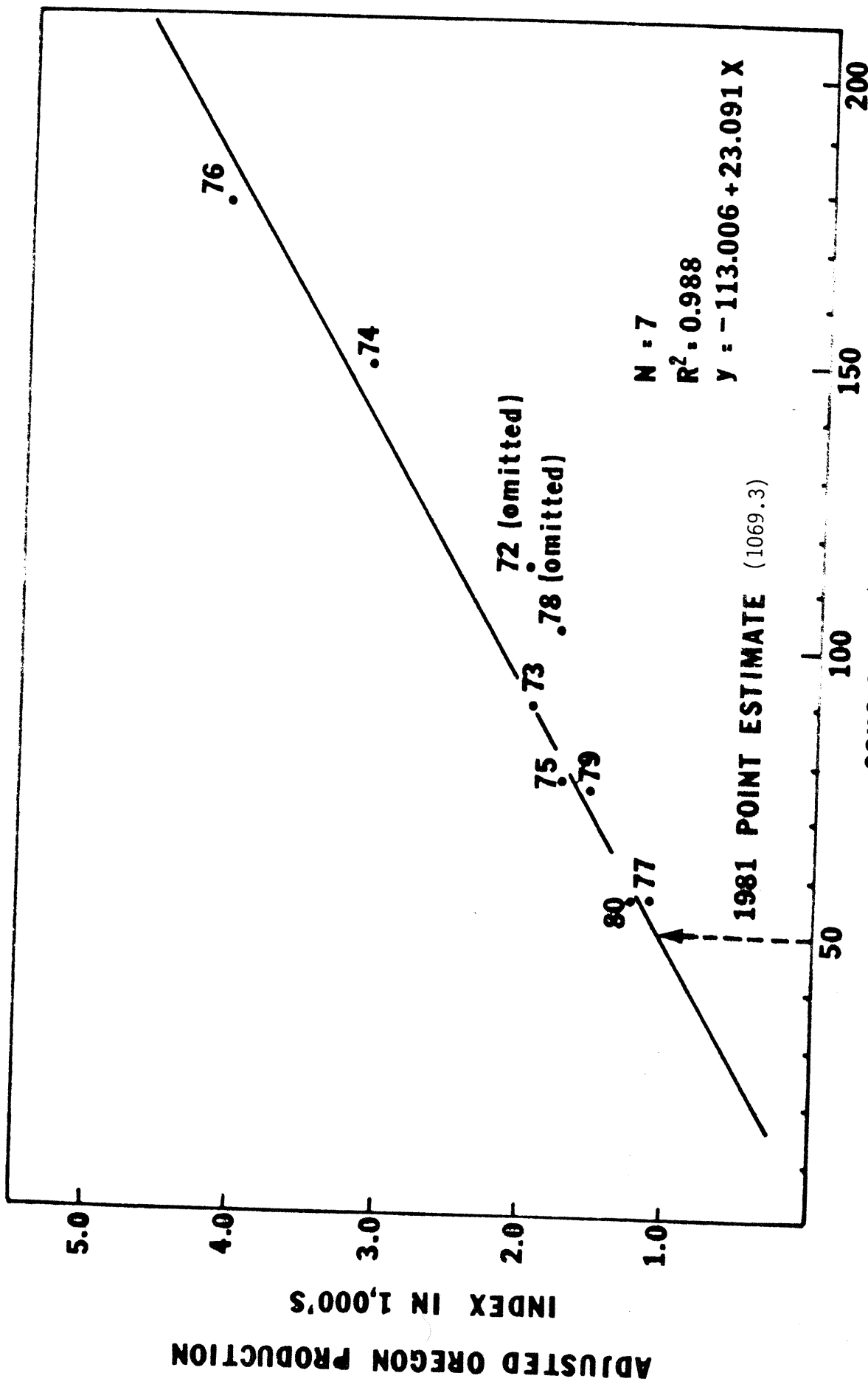


Figure IV-1. Relationship between Columbia River and coastal jack index and the coho adult production index, 1972-80 and 1981 prediction. (Data points for 1972 and 1978 were omitted from the regression.)

facilities can be expected in 1981. 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 survival rate (1.4%) and catch to escapement ratio (2:1) experienced by private hatchery fish released in 1979 is applied to 1980 releases it is estimated that private hatcheries will add an additional 140,000 fish to the catch in the OPI area. This would bring the total number of fish contributing to the OPI area to 1,209,000. Fish of private hatchery origin would then comprise about 12% of the total available stock size. 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 in-season analysis of micro-tags and/or scales in order to partition private production from the remaining sources of production contributing to the ocean catch of coho in the OPI area.

The 1981 forecast is for coho abundance even lower than the failure of 1977. There is special concern for natural stocks returning to coastal streams in 1981 because of the near record low spawning excapement of 9 adult fish/mile in the 1978 cycle year. Poor freshwater production of natural coho resulted from inadequate escapements in 1978 and the 1978 brood coho was apparently also subject to poor ocean survival conditions in 1980.

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 escapements. ODFW is currently reviewing the coho problem to identify factors causing the declining production and to develop management procedures which will improve future coho production.

Washington Coastal Chinook Stocks

Willapa Bay

Hatchery releases of 1977 brood fall chinook, which will make up the bulk of the 1981 return to Willapa Bay, were 4.32 million, up substantially from the 3.42 million 1976 brood releases, and the 1972-76 average of 2.82 million. The 1978 brood releases, which will contribute as 3-year-olds, were 3.23 million. On the basis of these increased releases, the 1981 run should be greater than the 1980 run. However, hatchery escapement needs will remain high in 1981, similar to 1980 as a result of the expansion of hatchery facilities in Willapa Bay and Grays Harbor.

Grays Harbor

The 1977 and 1978 wild chinook escapement levels in Grays Harbor, which will contribute the bulk of the 1981 runs to Grays Harbor, were both well below the required escapement level, although 1978 escapement showed some improvement. Juvenile populations of both 1977 and 1978 chinook showed good abundance. Based on this, an improved natural run of chinook is expected in 1981, but it will likely continue to provide no harvest for a directed chinook fishery. A large plant of 1977 brood chinook was made from the Humptulips Hatchery but the returns in 1981 from this plant will be needed to develop hatchery brood programs. The 1978 brood release was small due to lack of brood stock.

North Coast

Spring/summer and fall chinook are expected to return at average strength. Some improvement from four-year contributions is expected because of increased chinook escapements during 1977. However, poor escapements in 1976 are expected to moderate the increased 1977 brood strength. Hatchery returns in 1981 should be comparable to 1980 returns.

Washington Coho Stocks

Washington Production Projection (WPP)

In 1980, an abundance estimate was formulated for the area north of Cape Falcon by calibrating the Washington-National Bureau of Standards Salmon Catch/Regulation Model average stock abundance profile to predicted individual stock abundances for 1980. This procedure is being used again in 1981 after a review of individual stock prediction methodologies. The overlap of the OPI and the WPP between Cape Falcon and Leadbetter Point must also be reconciled. Final abundance forecast for the WPP will not be available until stock size prediction methodologies are reviewed and developed cooperatively with treaty Indian tribal technical staffs sometime in late April or May. A preliminary forecast will be available in early March.

Available information on the status of stocks which contribute to the WPP is provided below and in Table IV-3.

Willapa Bay - The Willapa Bay is managed for hatchery coho production and the bulk of the run in 1981 will be returns from 1978 brood releases. The 1978 brood yearling coho releases were 2.39 million, up from the 1977 brood release of 2.02 million, and above the recent 5-year average of 1.92 million. A preliminary run size estimate is 25,000 adult coho returning to Willapa Bay, based on average hatchery return rates. This figure is not adjusted to reflect recent ocean regulations.

Grays Harbor - Grays Harbor is managed primarily for natural production. The 1978 escapement of wild fish to Grays Harbor was poor and a low run of natural coho is expected. The 1978 brood hatchery yearling coho releases were an all time high for Grays Harbor. These are expected to augment natural production in 1981. The total unadjusted forecast is for a return of 62,100. The natural component is based upon average cycle year return per spawner. The hatchery prediction is based on average juvenile to adult survival rates.

North Coast - Spawning escapements of most natural stocks achieved substantial improvement in 1978 but extreme floods in 1979 may have reduced freshwater survival. Natural coho runs are expected to be above 1980 levels, but at or below spawning escapement goals, given 1980 fishery conditions. The 1981 hatchery coho production from releases into the Quinault and Queets Rivers are expected to be slightly below 1980 levels. Production of coho released in the Quillayute River will show a marked reduction from 1980 levels.

Table IV-3. Preliminary (March 14, 1981) preseason abundance forecasts for coho salmon stocks expected off the Washington coast in 1981.[1/]

Production area	Coho salmon stock	Type of prediction	Estimated number of adults (x1,000) Preliminary 1980[2/]	Estimated number of adults (x1,000) 1981	Prediction methodology	Prediction base years	Source
California and Oregon Coasts and Columbia River	Same	Ocean catches south of Leadbetter Point plus ocean escapement to index	1263.4	1069.3	Relationship of jack returns to adult production following year	1972-1979	Oregon Department of Fish and Wildlife (ODFW)
Oregon Coast	Private aquaculture facilities	Total adult production	58.0	140.0	Juvenile to adult survival rate from coded-wire tag experiments	1979	ODFW
Washington Coast	Willapa	Ocean fishery escapement	21.0	25.0	Average adult return	1974-1979	Washington Department of Fisheries (WDF)
	Grays Harbor	Ocean fishery escapement	(N)	42.1	Average return per spawner (1.5 returns/ spawner)	1970-1978	WDF
			51.7 (H)	20.0	Average juvenile to adult survival rate (1.0% on-station; 0.5% off-station)	1970-1978	WDF
	Quinault	Ocean fishery escapement	(N)	9.9	Relationship of jack to adult returns	1975-1980	WDF
			20.4 (H)	10.1	Juvenile to adult survival rate trend, 1977-79 (0.96% in highest year, 1979)	1977-1979	Quinault Tribe (1980)
	Queets	Ocean fishery escapement	(N)	10.4	Relationship of jack to adult returns	1975-1980	WDF
			13.3 (H)	4.2	Average juvenile to adult survival rate (0.59%)	1977-1979	Quinault Tribe

[1/] Inside return predictions do not include potential increases resulting from ocean regulatory controls. Exceptions are coastal predictions north of Grays Harbor. These forecasts are actual expectations given 1980 fishery conditions.

[2/] Represents actual 1980 estimated returns except for Puget Sound, Canada, Willapa and Grays Harbor, which represent final, 1980 preseason forecasts.

(N) - Natural
(H) - Hatchery

Table IV-3. (Continued)

Production area	Coho salmon stock	Type of prediction	Estimated number of adults (x1,000) Preliminary 1980[2/]	1981	Prediction methodology	Prediction base years	Source
Washington Coast	Hoh	Ocean fishery escapement	(N) 3.8	4.7	Relationship of jack to adult returns	1974-1980	WDF
			(H)	0.6	Average juvenile to adult survival rate (0.53%)	1977-1979	Hoh Tribe
	Quillayute fall run	Ocean fishery escapement	(N) 17.1	18.0	Relationship of jack to adult returns	1975-1980	WDF
			(H)	1.5	Relationship of jack to adult returns	1975-1980	WDF
	Quillayute summer run	Ocean fishery escapement	(N) 23.7	2.9	Relationship of adult to peak cycle year redd counts	1974-1980	WDF
			(H)	4.7	Relationship of jack to adult returns	1975-1980	WDF
Puget Sound	Strait	U.S. Puget Sound net catch plus spawning escapement	31.2[3/]	31.8	[4,5/]		WDF
	Nooksack-Samish	U.S. Puget Sound net catch plus spawning escapement	89.8[3/]	114.4	[4,5/]		WDF
	Skagit	U.S Puget Sound net catch plus spawning escapement	60.8[3/]	44.4	[4,5/]		WDF

[2/] Represents actual 1980 estimated returns except Puget Sound, Canada, Willapa, and Grays Harbor, which represent final 1980 preseason forecasts.

[3/] Total natural plus hatchery prediction.

[4/] Natural prediction: Relationship of summer stream flows and adult returns two years later (Zillges, 1977); 1965-1978 base years.

[5/] Hatchery prediction: Average juvenile to adult survival rates (Zillges, 1977); 1973-1977 base years.

Table IV-3. (Continued)

Production area	Coho salmon stock	Type of prediction	Estimated number of adults (x1,000) Preliminary 1980[2/]	1981	Prediction methodology	Prediction base years	Source
Puget Sound	Stillaguamish-Snohomish	U.S. Puget Sound net catch plus spawning escapement	175.5[3/]	134.7	[4,5/]		WDF
	South Sound	U.S. Puget Sound net catch plus spawning escapement	416.4[3/]	384.8	[4,5/]		WDF
	Hood Canal	U.S. Puget Sound net catch plus spawning escapement	68.0[3/]	55.9	[4,5/]		WDF
Southern B.C.	W. Coast Vancouver Island	Spawning escapement	59.7	92.9	Cycle year spawning escapement, stream flows, and weather and environmental conditions	Varied	Canadian Depart. of Fisheries and Oceans, "1981 Salmon Expectations."
	N. Georgia Strait	Spawning escapement	99.4	168.0	Cycle year spawning escapement, stream flows, and weather and environmental conditions	Varied	Candadian Depart. of Fisheries and Oceans, "1981 Salmon Expectations."
	S.E. Coast Vancouver Island	Spawning escapement	56.1	34.4	Cycle year spawning escapement, stream flows, and weather and environmental conditions	Varied	Canadian Depart. of Fisheries and Oceans, "1981 Salmon Expectations."
	Fraser River and vicinity	Spawning escapement	97.1	100.0	Cycle year spawning escapement, stream flows, and weather and environmental conditions	Varied	Canadian Depart. of Fisheries and Oceans, "1981 Salmon Expectations."
	Capilano early	Spawning escapement	45.0	40.0			

[2/] Represents actual 1980 estimated returns except Puget Sound, Canada, Willapa and Grays Harbor, which represent final 1980 preseason forecasts.

[3/] Total natural plus hatchery prediction.

[4/] Natural prediction: Relationship of summer stream flows and adult returns two years later (Zillges, 1977); 1965-1978 base years.

[5/] Hatchery prediction: Average juvenile to adult survival rates (Zillges, 1977); 1973-1977 base years.

Natural terminal run size prediction methodology for coastal coho stocks for the Quinault, Queets, Hoh, and Quillayute rivers is based upon the relationship between jack and adult returns (1975-1980). Hatchery predictions represent recent juvenile to adult survival rates. The preliminary 1981 forecasts compared with 1980 preliminary actual in-river run size by system are as follows:

	1981	Preliminary 1980
Quillayute summer	7,600	23,700
Quillayute falls	19,500	17,100
Hoh	5,300	3,750
Queets	14,200	13,300
Quinault	19,900	20,400

These preliminary figures represent expected terminal returns given 1980 regulatory and fishery conditions. Further review by state and tribal technical staffs will be necessary to finalize these forecasts in May. Changes are not anticipated to be significant.

Puget Sound - Below normal summer stream flows in 1979 as well as reduced 1978 brood year escapement levels indicate that the 1981 natural coho production should be below average. The 1979 summer flows were the third lowest observed since 1963. The preliminary 1980 estimate for the natural run size at point of entry into Puget Sound (Strait of Juan de Fuca) -- without adjustment for current ocean regulations -- is 218,000 fish (80% confidence interval is 128,000-298,000). In addition, juvenile outmigrants observed in 1980 were lower than 1979 levels but generally above 1978 levels (Table IV-4).

Hatchery releases of 1978 brood coho were slightly higher than the 1977 brood plants. Therefore, the stock size of hatchery origin coho can be expected to be slightly higher in 1981 than in 1980. The 1981 forecast of 555,400 is based upon average terminal return rates of 1971-1974 brood CWT experiments for individual management areas.

1981 MANAGEMENT GOALS

Before regulation options can be developed for the 1981 ocean fishery, the relevant 1981 management goals must be defined. The options and goals are related to the preliminary assessment of the 1981 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 - Meeting the long term escapement goal of 115,000 adult fall-run chinook in the Klamath system would be difficult to achieve in 1981. The adoption in 1981 of measures to meet the long-term goal would contribute to severe economic disruption of the ocean fisheries, and coupled with last years (1980) low prices (when compared to 1979) paid to trollers, would undoubtedly result in economic disaster to many fishermen.

Table IV-4. Puget Sound coho outmigrant totals by brood year, 1973-78.

Stream/System	Brood Year	Fish Trapped & Released	Est. Number of Fish Escaping Trap	Estimate of Number of Down-stream Migrants
Little Pilchuck/ Snohomish	1973	18,200	3,000	21,200
	1974	31,200	3,000	34,200
	1975	25,100	10,000	35,100
	1976	12,100	200	12,300
	1977	12,500	11,500	24,000
	1978	21,486	0	21,486
Harris/Snohomish	1977	22,467	1,000	23,467
	1978	11,172	550	11,722
Griffin/Snohomish	1977	58,395	2,000	60,395
	1978	42,808	2,100	44,908
Mill Creek/ South Sound	1974	23,900	8,000	31,900
	1975	19,800	1,500	21,300
	1976	12,200	3,000	15,200
	1977	22,100	0	22,100
	1978	8,472	0	8,472[a/]
Big Beef/Hood Canal	1973	12,600	7,000	19,600
	1974	30,600	8,000	38,600
	1975	29,800	6,000	35,800
	1976	16,200	800	17,000
	1977	43,000	0	43,000
	1978	20,614	0	20,614
Little Tahuya/ Hood Canal	1976	5,035	1,200	6,235
	1977	9,713	100	9,813
	1978	3,048	350	3,398
Lost/East Kitsap	1977	3,597	50	3,647
	1978	1,765	65	1,830
Wildcat/East Kitsap	1977	5,933	75	6,008
	1978	2,009	110	2,119

a/ Very low escapement of 1975 brood adults probably accounted for such a low number of outmigrants.

In the Klamath River system the 1981 goal is to manage for an escapement of 86,000 adult fish (75% of the long term goal of 115,000). With the projection for much better survival of Klamath stocks in 1977 and 1978 (post-drought brood years) and the fact that in both of these years escapement was about 70,000 adults, compared to only 34,000 and 30,000 in 1979 and 1980, respectively (Table IV-5), a goal of 86,000 adult fall-run chinook appears reasonable for 1981.

Table IV-5. California adult fall run chinook salmon long term and 1981 escapement goals, compared to escapements in earlier years.

River System	Goal		Escapement			
	Long Term	1981	1980	1979	1978	1970-79 Average
Total Sacramento River System	170	146	120	152	NA	142
Upper Sacramento	99	75	47	82	NA	61
Lower Sacramento	71	71	73	70	NA	81
Klamath River System	115	86	30	34	70	NA

The 1981 spawning escapement goal for the Klamath River system cannot be assured without knowledge of the magnitude of the 1981 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 1981 in-river run size must exceed 86,000 adults to accommodate this subsistance fishery and a non-Indian sport fishery if the spawning escapement goal is to be achieved.

Based on the California Wildlife Plan, in 1963, the Klamath system, when compared to the remaining California north coastal streams and rivers, accounted for 67% of the in-river run size, followed by the Eel with 20% (Table IV-6). Current in-river run sizes are reduced from the 1963 level due to a variety of factors. However, based on available chinook habitat, even after diversion of 85% of Trinity River water at Lewiston Dam, the Klamath system still accounts for 63% of the north coast chinook habitat. Thus, the Klamath River system will continue to be a main controlling factor for setting ocean regulations.

Table IV-6. Comparison of fall chinook run sizes and surface acres of chinook salmon habitat for northern California coastal rivers in 1963[a/].

River System	Run Size[b/]		Chinook Habitat (low summer flow)	
	Number	% of Total	Surface Acres	% of Total
Klamath	193,493	67	10,109	63
Eel	58,279[c/]	20	3,796	23
Smith	18,450	6	1,349	8
Mattole	5,286	2	386	2
Mad	5,179	2	317	2
Redwood Creek	5,107	2	263	2
Smaller tributaries	2,919	1	-	-
Total	288,713		16,220	

a/ Based on California Fish and Wildlife Plan, 1965.
b/ Includes jacks and adults.
c/ Includes 20,000 spring-run chinook.

Sacramento River System Fall-Run Chinook

In the Sacramento River system, fall-run chinook stocks will still be depressed in 1981, but not as much as in 1980 when both year classes (1976-77) were depressed due to the drought. In 1981 only the 4-year-old chinook (1977 year class) will be depressed due to the drought. In addition, upriver Sacramento River stocks are still facing environmental problems not associated with the drought. 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 1981 for upper Sacramento fall-run chinook would require the imposition of additional severe restrictions on the troll fishery, with consequential severe economic impact on the ocean troll fisheries. In addition, the lower Sacramento would probably exceed escapement goals in all areas. Therefore, the 1981 goal is to manage for a spawning escapement of 75% of the long-term upper Sacramento goal of 99,000 chinook. This would set the upriver goal for 1981 at 75,000 adult fall-run spawners and result in achievement of 100% of the lower Sacramento River fall-run chinook long-term escapement goal of 71,000 chinook. Satisfying the long term upriver chinook escapement goal of 99,000 should be reached by 1988.

Oregon Coastal Chinook

The 1981 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 1976-78 have ranged from 57 to 88 fish per mile and it is anticipated that counts for 1981 should fall within this range, indicative of adequate escapement.

Columbia River Chinook

The 1981 objectives of chinook management are to provide spawning escapement, maintain sufficient escapement into the river to provide for allocations as defined in the Columbia River Agreement and to move progressively toward the in-river run size goal of 300,000 chinook. A comprehensive discussion of the problems associated with achieving the 300,000 fall chinook goal was presented in the 1980 Plan Amendment and is still relevant today since the Columbia River stocks are still severely depressed. No additional analysis is necessary in order to state that the 300,000 goal cannot be achieved in 1981 even with a total closure of the Oregon/Washington coastal ocean fisheries.

This management problem should be placed in perspective. The Pacific Council, since its establishment, has taken a series of progressive steps to reduce ocean harvests of chinook salmon north of Cape Falcon. They include the following:

(a) Management line for Columbia River chinook was moved southward from Tillamook Head to Cape Falcon in 1978.

(b) Minimum size limit was increased in 1977 north of Cape Falcon for troll-caught chinook from 26 inches to 28 inches to provide increased protection for immature 3-year old chinook (recreational size limit increased in 1976 -- prior to existence of Council -- from 20 inches to 24 inches).

(c) Recreational bag limit for chinook and coho was reduced to 2 fish mid-way through the 1980 season and throughout the 1979 season.

(d) Chinook-only troll season north of Cape Falcon was reduced from 45 days in 1976-78 to 31 days in 1979 (31% reduction) and was not allowed to increase in 1980.

(e) All-species season north of Leadbetter Point was again reduced in 1980 to only 42 days compared to 52 days during 1979 and 139 days during the 1971-75 base period.

(f) Recreational season north of Leadbetter Point was reduced to only 108 days in 1980 compared to 115 days in 1979 and 200 days during the 1971-75 base period.

(g) Regulations proposed by the Council have reduced the Washington coastal troll catch of chinook. In 1980 the catch was only 47% of the base period (1971-75) average.

(h) Regulations proposed by the Council have reduced the Washington coastal recreational catch of chinook. In 1980 the catch was only 25% of the base period (1971-75) average.

As shown above, significant reductions in the Oregon/Washington chinook harvests north of Cape Falcon have occurred relative to the 1971-75 resource base period. However, it is apparent that corresponding increases in Columbia River in-river run sizes have not occurred and these runs are still depressed.

Management of the Columbia River chinook resource is greatly complicated by the ocean distribution of the Columbia River chinook stocks. The spring and summer chinook (stocks which are severely depressed) are relatively evenly distributed off the coast of Washington throughout the current summer fishery but these runs constitute a minor portion of the total harvest off Washington. On the other hand, the fall chinook stocks have an ocean distribution pattern such that the upper and lower river Tule (hatchery) stocks contribute significantly to Washington coastal fisheries, whereas the depressed upriver bright chinook stock contributes significantly to the northern British Columbia and Southeastern Alaska troll fisheries and not to the Washington fisheries.

Providing additional protection to the Tule stocks without providing corresponding protection to the upriver bright stock will not resolve the in-river allocation problem due to the overlapping in-river migration timing of these two major upriver stocks.

Unless sufficient upriver bright stocks are returned to the river, the incidental harvest of the upriver bright stock will preclude achievement of the spawning escapement goal for upriver brights and/or will preclude harvest of most Tule stocks such that in-river allocation can not be achieved. Therefore, the 1981 management objective for the ocean fisheries must reflect the difference in stock distribution. Tule stocks can be harvested at current levels off Washington but there must be reductions in the catch of upriver brights by Northern British Columbia and Southeastern Alaskan troll fisheries to benefit these stocks. Further reduction in the ocean catch of Tules off Washington will not materially benefit upriver bright escapement (see Figure III-3).

Washington Coastal Chinook

For Washington coastal chinook stocks, which include those stocks originating north of the Columbia River, the management objective, at a minimum, should be the achievement of natural spawning escapement goals for those stocks which significantly contribute to the Indian and coastal fisheries under the Council's jurisdiction. 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. Escapement goals for these stocks are outlined in Table IV-7.

(15)

Table IV-7. Natural chinook spawning escapements goals for Washington coast, 1981.

	Spring/Summer	Fall
Grays Harbor	NA	14,600
Queets River	1,400	4,200
Hoh River	1,700	2,400
Quillayute River	NA	6,100

Before treaty Indian allocations can be developed for this region, criteria must be quantitatively defined. A 50/50 share is required for Grays Harbor but technical problems are evident with this allocation formula being applied on a river-by-river, species-by-species basis for the north Washington coastal region. (Note: A discussion on this problem is presented in the 1980 FMP Amendment, pp. 86-88.)

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 1981, it is unlikely that escapements greater than those achieved in 1980 could be realized without severely disrupting the ocean fishery. Therefore, the desired objective is to achieve a measured escapement in 1981 of at least 300,000 adult coho to the OPI area. This escapement level would be comparable to that achieved in 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 above escapement objective should provide for a significant improvement over the 1978 brood year level and prevent any decline in spawning ground counts below the improved level experienced in 1980. This escapement objective is consistent with the long term goal of rebuilding natural runs of Oregon coastal coho to a level of 29 adults per mile (200,000 adult fish escapement) by 1987.

Washington Coho

The escapement 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, in addition to that necessary to achieve spawning escapement, to follow Court-mandated harvest opportunity for treaty-Indian fisheries in a manner consistent with requirements placed upon the State of Washington.

The spawning escapement goals were presented to the Council in Washington Department of Fisheries' February 1979 report and have been presented again in this report (Table IV-8). For the Washington coast, spawning escapement totaling 71,000 fish should be provided. For Puget Sound, a natural run of a minimum of 152,000 fish for escapement should be provided. Additional escapement for allocation purposes to provide for the continuance of traditional inside non-Indian net fisheries should also be provided.

Puget Sound/Canadian Pink Salmon

At the annual meeting of the International Pacific Salmon Fisheries Commission on December 12, 1980, in Bellingham, Washington, the Commission reported that the 1981 pink salmon run should be strong, returning 9 million pinks, or about 30% more than the average for the last 11 cycles. The Commission is estimating a catch of about 1.6 million pinks for the U.S. in Convention Waters.

No 1981 abundance forecasts are currently available for Puget Sound origin pinks. These stocks are managed for natural escapement objectives and achievement of treaty-Indian and non-Indian allocation requirements. The all-species season north of Cape Falcon should be planned to maximize harvest opportunity of pink salmon.

SUMMARY OF 1981 RESOURCE STATUS AND MANAGEMENT GOALS

The status of the chinook and coho resources for 1981 and the management goals presented in this report are summarized in Table IV-8.

1981 REGULATION OPTIONS TO ACHIEVE GOALS

This 1981 management plan, which is an 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 1981 season. These options should be considered as representative of a limited range of management possibilities available if objectives are to be achieved. The options are presented in troll and recreational pairs for purposes of impact analysis only. Such pairing does not preclude choice of a different combination of any recreational and troll option within the range here presented, nor does it 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 qualification is also not meant to preclude consideration of management alternatives outside the range of options here presented, alternatives which may arise from the public comment period or be necessitated in order to achieve management goals. The alternative considered must, however, be reasonably calculated to attain the goals as specified in this fishery management plan supplement. Regulation Option I through VI provide a range of options generally less restrictive than 1980 regulations to more restrictive regulations. The options listed in the report are not presented in any order of intensity.

Table IV-8. Summary of 1981 resource status and management goals. [a/]

	System	Stock Prediction 1981	1981 Goal	Long-Term Goal
1.	Klamath Fall Chinook	Same or slightly higher than 1978. Considerably better than 1980.	Escapement 86,000	Escapement 115,000 Goal to be reached over 2 complete cycles (8 yrs) given average environmental conditions.
2.	Sacramento R. Fall Chinook	Slight improvement over 1980, upriver stocks depressed.	Escapement 145,000 adults - 74,000 upriver chinook (75% of long-term goal) and 71,000 downriver chinook (100% of long-term goal)	Escapement 170,000 adults. Goal to be reached over 2 complete cycles (8 yrs) given average environmental conditions.
3.	Oregon Coastal Chinook	Near or above average	Escapement 150-200,000	Escapement 150-200,000.
4.	Columbia R. Upper River Fall Chinook	Similar to or less than 1980, stocks depressed.	Exceed 1980 in-river run size (160,000 adults), escapement of 40,000 adults above McNary Dam.	300,000 in-river run size, escapement of 40,000 above McNary Dam.
	Upper River Spring Chinook	Near record low (depressed), minor part of Washington coastal ocean catch.	Escapement 100-120,000 (not attainable)	Escapement 100-120,000.
	Upper River Summer Chinook	Near record low (depressed), minor part of Washington coastal ocean catch.	Escapement 80,000 (not attainable)	Escapement 80-90,000
	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 1980, wild production depressed. Ocean distribution primarily north of Washington.	Natural escapement 28,000 plus meet treaty and non-treaty allocation.	Natural escapement 28,000 plus meet treaty and non-treaty allocation.
6.	Washington North Coastal Spring/Summer Chinook	Natural runs depressed. Ocean distribution primarily north of Washington.	4,100 natural escapement plus meet treaty and non-treaty allocation.	4,100 natural escapement plus meet treaty and non-treaty allocation.
7.	Puget Sound Chinook	Minor part of Washington coastal ocean catch.		
8.	Columbia R. & Oregon Coastal Coho (OPI)	Near record low, similar to 1980	300,000 OPI ocean escapement, plus 125,000 adult natural coastal spawning escapement (15-20 adults per mile)	575,000 OPI ocean escapement, plus 200,000 adult natural coastal spawning escapement (29 adults per mile) To be reached by 1987.
9.	Washington Coastal Coho	Hatchery-similar to or less than 1980, natural-depressed.	71,000 natural escapement plus meet treaty allocation.	71,000 natural escapement plus meet treaty and non-treaty allocation.
10.	Puget Sound Coho	Above average for hatchery but less than 1980 for natural.	152,000 natural escapement plus meet treaty and non-treaty allocation.	152,000 natural escapement plus meet treaty and non-treaty allocation.
11.	Fraser River Pink	Above average.	4,000,000 escapement.	--

[a/] In general, these goals were developed by the state fishery management agencies.

NOTE: The Plan Development Team initially proposed three sets of options. The Council, at its January 1981 meeting, requested that the Team's original set of three options be expanded to six options. Two of the three additional options incorporate suggestions from the Advisory Subpanel. A sixth option was accepted by the Council for inclusion in this draft amendment. It is the most restrictive of the options proposed in the event subsequent stock size evaluation warrants more restrictive regulation.

Management Boundaries

Because of the expected regional differences in the status of the salmon resource, additional management boundaries are presented for 1981 to provide maximum flexibility in setting regulations. These are as follows (Figure IV-2):

Cape Alava, Washington	48°10'0"N
Leadbetter Point, Washington	46°38'10"N
Cape Falcon, Oregon	45°46'00"N
Cape Blanco, Oregon	42°50'20"N
Cape Sebastian	42°19'30"N
Cape Ferrelo, Oregon	42°06'00"N
Cape Vizcaino, California	39°43'30"N

Cape Blanco to Cape Vizcaino - There is a lack of definitive, historic Klamath River chinook distribution data. Recent coded-wire tag information from 1976 and 1977 brood year Trinity River fall run chinook salmon recovered in the ocean fisheries provide new data on the distribution of these stocks. Evaluation is from yearling releases made in October and November at a size of 8 to 11.5/lb. The 1976 brood fish were recovered as 3- and 4-year-olds in 1979 and 1980, respectively, while the 1977 brood contributed as 3-year-olds in 1980.

It should be emphasized that these stock distribution data are preliminary and represent only partial returns from two 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.

The 1976 brood year showed relative differences in distribution as 3- and 4-year-olds. Estimated recoveries of 2,877 marked fish were made in 1979 as 3-year-olds, with 91% attributed to ports from southern Oregon to northern California (Coos Bay to Fort Bragg) (Table IV-9). Since recoveries are by port of landing, it is likely that a high proportion of the tags attributed to ports north of the Brookings area (Cape Blanco) were taken by trip boats fishing south of Cape Blanco. Of the total recoveries as 3-year-olds, 58% were made off California and 42% were attributed to Oregon ports. The peak month of contribution as 3-year-olds in 1979 was in July for California and August for Oregon recoveries.

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

Table IV-9. Estimated[a/] 1979 Oregon and California ocean recoveries of 3-year old 1976 brood year Trinity River fall run chinook salmon (tag code 06-61-01), by area and month.

Area[b/]	Month						Season
	May	June	July	August	September	October	
Columbia River	0	2	0	13	0	NS	15
Tillamook	NS	0	0	23	0	NS	23
Newport	5	0	13	59	27	0	104
Coos Bay	0	0	163	346	4	37	550
Brookings	NS	0	171	258	8	83	520
Oregon Total	5	2	347	699	39	120	1,212
Crescent City	17	25	166	140	0	-	348
Eureka	77	24	190	150	22	-	463
Fort Bragg	11	4	617	88	29	-	749
San Francisco	30	18	13	0	40	-	101
Monterey	0	0	0	0	4	-	4
California Total	135	71	986	378	95	-	1,665
GRAND TOTAL	140	73	1,333	1,077	134	120	2,877

a/ CWT recoveries expanded for sampling rates at ports sampled.
b/ Recoveries represent port of landing and not catch area.
NS - Not sampled.

The estimated catch of 4-year-old fish in 1980 from the 1976 brood year showed markedly different distribution patterns from 3-year-olds off California (Tables IV-10 and IV-11). These 4-year olds would be primarily mature fish. An estimated 2,519 marked fish were caught in 1980 as 4-year-olds; however, their distribution was more southerly, with 76% recovered off California and 24% off Oregon. The peak month of contribution was in May off California and August off Oregon.

Table IV-10. Estimated[a/] 1980 Oregon and California ocean recoveries of 4-year old 1976 brood year Trinity River fall run chinook salmon (tag code 06-61-01), by area and month.

Area[b/]	Month						Season
	May	June	July	August	September	October	
Columbia River	0	4	0	0	0	NS	4
Tillamook	NS	0	0	0	0	NS	0
Newport	0	24	0	13	0	NS	37
Coos Bay	5	47	82	168	21	NS	323
Brookings	NS	30	35	122	66	NS	253
Oregon Total	5	105	117	303	87	-	617
Crescent City	188	1	17	16	11	-	233
Eureka	1,205	12	75	20	18	-	1,330
Fort Bragg	46	0	199	11	13	-	269
San Francisco	0	3	58	0	0	-	61
Monterey	0	9	0	0	0	-	9
California Total	1,439	25	349	47	42	-	1,902
GRAND TOTAL	1,444	130	466	350	129	-	2,519

a/ CWT recoveries expanded for sampling rates at ports sampled.
b/ Recoveries represent port of landing and not catch area.
NS - Not sampled.

The combined contribution of 3- and 4-year-old fish from the 1976 brood year in 1979 and 1980 showed a higher overall contribution to California fisheries. Of the estimated 5,396 tags recovered, 3,567 (66%) were attributed to California ports and 1,829 (34%) to Oregon ports (Table IV-11). These differences largely reflect the higher contribution of 4-year-old chinook to California fisheries.

Table IV-11. Estimated[a/] 1979 and 1980 Oregon and California ocean recoveries of 3- and 4-year old 1976 brood year Trinity River fall run chinook salmon (tag code 06-61-01).

Age/Area	Month						Season
	May	June	July	August	September	October	
1979 (3-yr. old)							
Oregon	5	2	347	699	39	120	1,212
California	135	71	986	378	95	-	1,665
Total	140	73	1,333	1,077	134	120	2,877
1980 (4-yr. old)							
Oregon	5	105	117	303	87	-	617
California	1,439	25	349	47	42	-	1,902
Total	1,444	130	466	350	129	-	2,519
Combined ages							
Oregon	10	107	464	1,002	126	120	1,829
California	1,574	96	1,335	425	137	-	3,567
Total	1,584	203	1,799	1,427	263	120	5,396

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

The recoveries of 1977 brood year fall chinook entering the 1980 fishery as 3-year-olds showed a contribution of 53% to Oregon fisheries and 47% to California fisheries (Table IV-12). Distribution was again largely confined to the southern Oregon and northern California areas. These recoveries of 1977 brood fish contributing as 3-year-olds (806 tags) comprised only 28% of recoveries of the 1976 brood year at a comparable age even though the release groups were similar in numbers (175,000 to 190,000). The lower recovery of the 1977 brood fish may be due to lower survival, a lower harvest rate or may simply reflect the shortened season in 1980. Based on the limited mark returns from the 1976 and 1977 brood-years, the contribution of these fall chinook as 3-year olds is approximately 50% to California ocean fisheries and 50% to Oregon ocean fisheries.

Table IV-12. Estimated[a/] 1980 Oregon and California ocean recoveries of 3-year old 1977 brood year Trinity River fall run chinook salmon (tag code 06-61-05) by area and month.

Area[b/]	Month						
	May	June	July	August	September	October	Season
Columbia River	0	0	7	0	0	NS	7
Tillamook	NS	0	0	0	0	NS	0
Newport	0	0	0	15	0	NS	15
Coos Bay	0	0	61	159	32	NS	252
Brookings	NS	8	8	82	52	2	152
Oregon Total	0	8	76	256	84	2	426
Crescent City	2	10	9	14	26	-	61
Eureka	32	2	31	26	33	-	124
Fort Bragg	0	0	116	23	15	-	154
San Francisco	4	0	33	0	0	-	37
Monterey	0	0	4	0	0	-	4
California Total	38	12	193	63	74	-	380
GRAND TOTAL	38	20	269	319	158	2	806

a/ CWT recoveries expanded for sampling rates at ports sampled.
b/ Recoveries represent port of landing and not catch area.
NS - Not sampled.

Based on the new stock distribution information, it appears that the management unit from Cape Blanco to Cape Vizcaino utilized in 1980 to protect Klamath River stocks is appropriate and should be retained for 1981.

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). This boundary line is not intended as an absolute stock separation line but is useful for separating the majority of coho stocks contributing to the OPI and the Washington Production Projection (WPP) area.

Cape Alava - This boundary line is suggested as a Puget Sound stock separation point, north of which this stock predominates in September. Application of this stock separation point is dependent upon needs of other stocks also present in September and an allocation consideration between ocean fishery and Puget Sound non-Indian commercial net fishery.

Specific Options

The combined options for management of the 1981 ocean salmon fishery are made up of the following proposals for the recreational and troll fisheries (see charts at end of report):

Combined Option	Recreation	Troll
I	1	1
II	2	2
III	3	3
IV	4	4
V	5	5
VI	6	6

Pink salmon will be available in 1981. This has been considered in all options.

Option I

For California south of Cape Vizcaino, this option is more liberal than that adopted in 1980 for both the troll and sport fisheries. For California north of Cape Vizcaino, this option is more liberal for the sport fishery and the same as adopted in 1980 for the troll fishery. For the troll fishery, this option adds two weeks (June 1-15) to the all-species season south of Cape Vizcaino and almost three weeks to the statewide sport season. This option would allow additional harvest of Sacramento River chinook stocks, which should be up slightly from last year's levels.

For California, north of Cape Vizcaino, and Oregon south of Cape Blanco, the troll season would be the same as that adopted last year. For Oregon north of Cape Blanco and Washington, the all-species troll season would begin one week earlier and terminate 1 week earlier than was adopted last year. Due to the depressed status of stocks in these areas, a more liberal season cannot be justified. The sport fishing season north of the California-Oregon border is not changed in this option; however, the bag limit is changed for the area north of California-Oregon border to Cape Falcon so that the recreational season opens with a 2-fish bag limit and increases to 3 fish when the all-species commercial troll season opens. The recreational chinook-only season proposed for the area off Oregon (south of Cape Falcon) during September and October is optional.

North of Cape Falcon, at the opening of the all-species troll season, a bag limit of three fish (any species) would be allowed. In this area, since pink salmon will be available again in 1981, a 3-fish bag limit (only 2 of which may be coho and chinook) could be used prior to the all-species troll season.

Option II

For the area north of Cape Falcon, this option is nearly the same as that adopted in 1980 by the Council except that the recreational bag limit starts at 3 fish, only 2 of which can be coho or chinook, and changes to 3 fish (any species) when the all-species commercial season opens on July 15. This bag limit regulation is proposed as a means of reducing the early season catch of coho, thereby increasing the probability of achieving troll/recreational allocation guidelines adopted in 1980.

For the recreational fishery off Oregon, this option is similar to that adopted in 1980, except for the bag limit. The proposed bag limit would be 2 fish until the opening of the all-species commercial troll season when it would increase to 3 fish. The purpose of this change in bag limit is discussed in the preceding paragraph. In addition, the late fall chinook-only fishery should be considered an optional proposal.

For the troll fishery south of Cape Falcon to the California border, this option is the same as that adopted by the Council in 1980, including the special experimental gear fishery. The special fishery, proposed again for the last two weeks of June between Cape Falcon and Cape Blanco, is designed to harvest surplus Oregon coastal chinook, but it should not be allowed unless sufficient monitoring can be assured. Monitoring was inadequate in 1980. It is an experimental fishery and should be permitted again only on that basis.

The combined Oregon coastal troll and recreational regulations presented in this option should provide harvest and escapement levels similar to 1980. In addition, the bag limit change should make it possible to adhere more closely to the allocation guidelines adopted in 1980 for the troll/recreational fisheries.

For California, this option presents regulations which are nearly the same as those adopted by the Council in 1980 for both the recreational and troll fisheries. Due to projections for somewhat improved stock abundance in 1981, this option should produce increased escapements compared to 1980. However, it should be noted that escapement to the Klamath River in 1980 was less than one-third of the long-term goal.

Option III

For the Oregon-Washington recreational fishery, the season would be reduced to that period from Memorial Day (May 30) through Labor Day (September 7). The bag limit would be 3 fish with provision for in-season reduction to 2 chinook or coho. An alternative proposal suggested to the Council is to begin the season with a 3-salmon (any species) bag limit and on June 15 implement an automatic change to a bag limit of 3 salmon, not more than 2 of which can be coho or chinook. The reduced season is proposed in an attempt to assure a specific length of season, given the more liberal early bag limit, and avoid the possibility of an unanticipated early closure, given the anticipated resource status. As in Options I and II, the late fall chinook-only recreational fishery off Oregon (south of Cape Falcon) should be considered an optional proposal. There is no change from Option II in the California recreational regulations.

For the troll fishery, Option III is more restrictive from Cape Blanco to Cape Vizcaino and for the area north of Cape Falcon. The May season in these areas would be shortened by two weeks and restricted to the period May 16-31. The balance of the troll season does not change from Option II.

This option is generally more restrictive and is designed to provide added protection to Klamath River, Columbia River, and Washington coastal chinook. The May closures off southern Oregon and northern California should provide significant protection to mature 4-year old Klamath River chinook. The combined impact of this option should achieve management objectives for most stocks.

Option IV - Note: The troll boundary is changed from Cape Blanco to Cape Ferrelo for this option and the sport boundary from Cape Falcon to Cape Blanco.

This option is more liberal than the 1980 season for both troll and recreational fisheries in all areas. For the troll fishery south of Vizcaino, this option lengthens the early all-species season by one week and the "all salmon except coho" season by one week. North of Vizcaino to the California border, the early all-species troll fishery is one week longer and the late all-species troll season opens two weeks earlier (July 1). The area from the California border to the Canadian border has an "all-species season" opening two weeks earlier than in 1980. Oregon's experimental chinook troll fishery would be eliminated in this option.

For Washington and Oregon, in-season coho management is mandated with the provision that full troll allocations are met. In Oregon, if in-season coho closures are implemented, fishing for other salmon species would continue with gear restrictions for the remaining open period.

The sport fishery in California would be almost five weeks longer than in 1980 with a 2-fish bag limit. For the area north of the California border to the Canadian border, the sport season would be open one week earlier and extend two weeks later than in 1980. The special chinook-only season off Oregon would open two weeks later than in 1980 and would be limited to the area from Cape Blanco south to the California-Oregon border, instead of from Cape Falcon to the California-Oregon border as in 1980. This chinook-only season should be considered an optional proposal.

The bag limit for the area from the Oregon-California border north to the Canadian border would be 3 salmon, only 2 of which could be chinook or coho (2+1). In addition, for this area an allocation and quota system is suggested based on historic coho catch ratios of 60/40% recreational in the WPP and 71/29% recreational in the OPI.

It is the Team's view that opening the all-species troll season two weeks earlier off Washington is totally impractical given the projected 1981 Washington stock status. In addition, for both Oregon and Washington, the early opening of the all-species troll season creates the following problems:

(1) It would result in loss of poundage and value to the troll fishery by landing coho at a smaller size.

(2) The added chinook fishing time would negatively impact already depressed Klamath River and Columbia River chinook stocks.

(3) The early opening may result in the coho harvest guideline being met in less than 43 days, which would reduce the effectiveness of in-season management procedures developed in this amendment.

(4) If the coho harvest guideline is achieved early in the season, one of two situations is likely to occur:

(a) An early total closure for both Oregon and Washington which would result in loss of chinook landings; or

(b) An early total closure off Washington and, off Oregon, an early coho closure with a gear-restricted chinook-only fishery. A special chinook-only fishery of this type would cause an unquantifiable loss of coho through incidental coho mortalities.

In the Team's view, Option IV's proposed recreational season in Oregon and Washington extends longer than can be reasonably assured, given the status of the stocks and the need to achieve historic harvest ratios. Option IV would generally place additional pressure on 2-year-old chinook during the late California recreational season. The 3-salmon, only 2 of which can be chinook or coho, is a viable regulation off Oregon and Washington with any of the six options listed.

Option V - Note: The troll boundary is changed from Cape Blanco to Cape Ferrelo for this option and the sport boundary from Cape Falcon to Cape Blanco.

This option is more liberal than the 1980 season for both troll and recreational fisheries. For the troll fishery off California south of Vizcaino, the early all-species season would be extended by two weeks. North of Vizcaino to the Oregon border, the all-species troll season would be extended a total of four weeks compared to 1980. For Oregon from the California border to Cape Falcon, the all-species troll season would open two weeks earlier, beginning July 1, and close two weeks earlier. From Cape Falcon north to the Canadian border, the all-species troll season would be extended three weeks in late June and early July. Oregon's experimental chinook season is retained but the season is shifted two weeks earlier and the area extended to the south from Cape Blanco to Cape Ferrelo. The late "all salmon except coho" troll season from the California border to Oregon's Cape Falcon would be opened two weeks earlier. As in Option IV, for Washington and Oregon, in-season coho management is mandated with the provision that full troll allocations are met. If in-season coho closures occur, fishing for other salmon species would continue with gear restrictions for the remaining open period.

The recreational fishery off California would extend from February 14 to November 1 with a 2-salmon bag limit. This is approximately two weeks longer in comparison to 1980. The recreational season off Oregon opens one week later than in Option IV to coincide with the Washington opening date. The late fall chinook-only season off Oregon (south of Cape Blanco) should be considered an optional proposal. The recreational season off Washington would be open from May 9 to September 20 with a 3-salmon bag limit. If necessary, this bag limit would be adjusted to 3-salmon, only 2 of which can be coho or chinook. In-season recreational bag limit reductions and August in-season management decisions both apply to the recreational fishery. This proposal would have both different season closures and different bag limits for Oregon and Washington.

The Salmon Planning Team feels the shift of Oregon's experimental troll chinook fishery 2 weeks earlier is a viable option. The earlier opening of the troll fishery would probably have all the adverse effects described by the Team (points 1 through 4) in Option IV.

Generally, earlier season opening dates increase the risk of the recreational fishery being unable to extend through Labor Day. As with Option IV, it is the Team's view that Option V's proposed recreational season in Oregon and Washington is longer than can be reasonably assured and generally places additional pressures on 2-year-old chinook during the late California recreational season.

In general, the Team feels that certain elements of Options IV and V are viable. There is concern, however, that if Options IV and V are taken in total, they are not restrictive enough to meet 1981 resource needs (e.g. treaty allocation and escapement goals). For example:

(1) Extending the management boundary from Cape Blanco south to Cape Ferrelo would reduce needed protection on depressed Klamath River stocks. The Team will continue to look at tag data, as it becomes available, to better define stock management boundaries in that area.

(2) Anticipated early coho closures due to earlier openings could preclude use of normal in-season management procedures and might severely restrict coho fishing north of Cape Falcon.

(3) Possible chinook-only fisheries during mid-season off Oregon because of anticipated early coho closures would cause unknown coho losses, and would require special gear restrictions which have not been adequately evaluated.

Option VI

This option attempts to provide more restrictive regulatory measures which may need to be considered by the Council should subsequent stock status later indicate the need for more protective regulations.

This option is more restrictive than the 1980 season for both troll and recreational fisheries in all areas except the California recreational fishery. For the troll season off California, the May season would be eliminated (2 weeks of early chinook-only and 2 weeks of all-species). From the California border north to Cape Blanco, the 4-week May chinook season would be eliminated. The May chinook season off Oregon from Cape Blanco to Cape Falcon would be retained but eliminated north of Cape Falcon to the Canadian border. In addition, the all-species troll season north of Cape Falcon would close 3 weeks earlier (August 19). The Oregon 2-week experimental troll chinook fishery in June would be eliminated. The all-species recreational fishery season would be reduced by approximately 4 weeks off Oregon and Washington (open May 30 through September 7). The Oregon chinook-only recreational season, south of Cape Falcon, would begin 1 week earlier (September 8) than in 1980. This special chinook-only season should be considered an optional proposal. The coastwide bag limit off Oregon and Washington would be 3 salmon, only 2 of which can be chinook or coho.

Because Option VI calls for an initial 3-fish bag limit, only two of which may be coho or chinook, north of California to the Washington-Canada border, in-season management bag limit reductions do not apply. Due to the abbreviated troll season north of Cape Falcon, August in-season management would be difficult to apply to the troll fishery but could be applied to the recreational fishery.

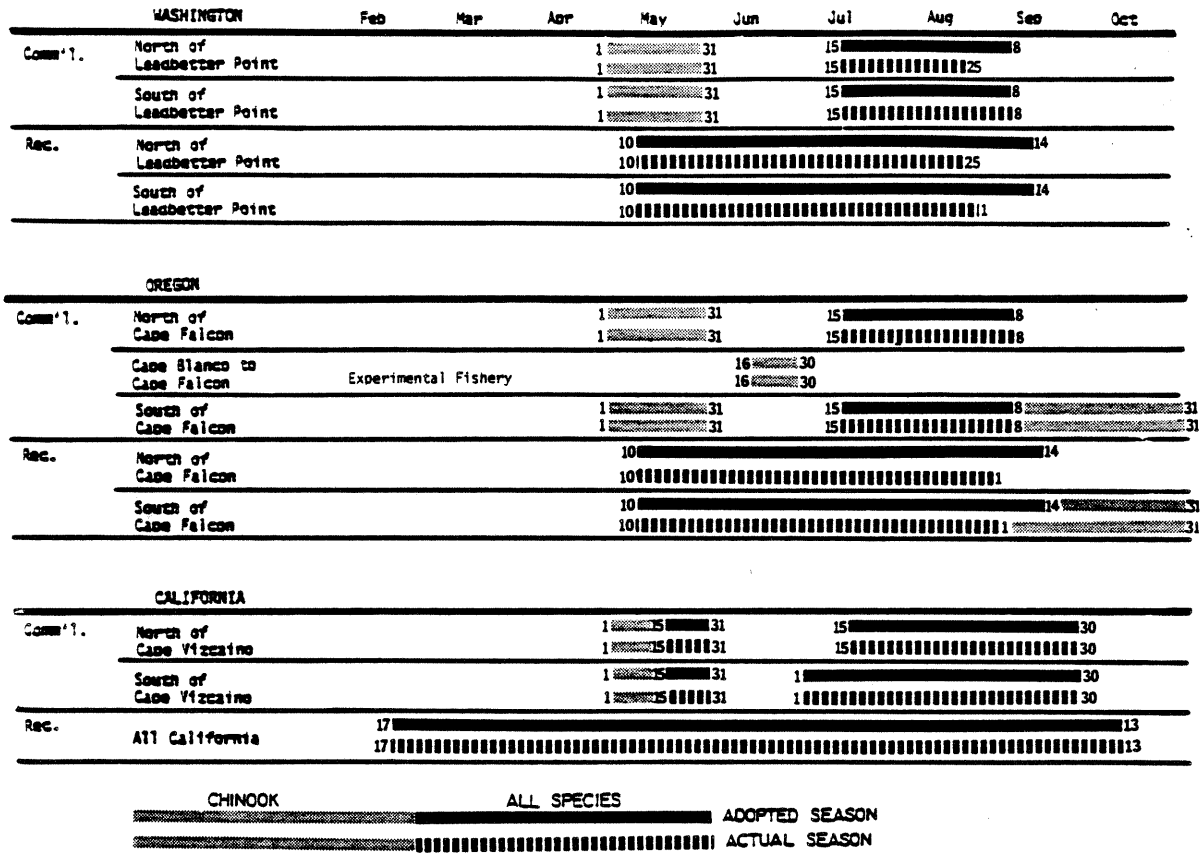
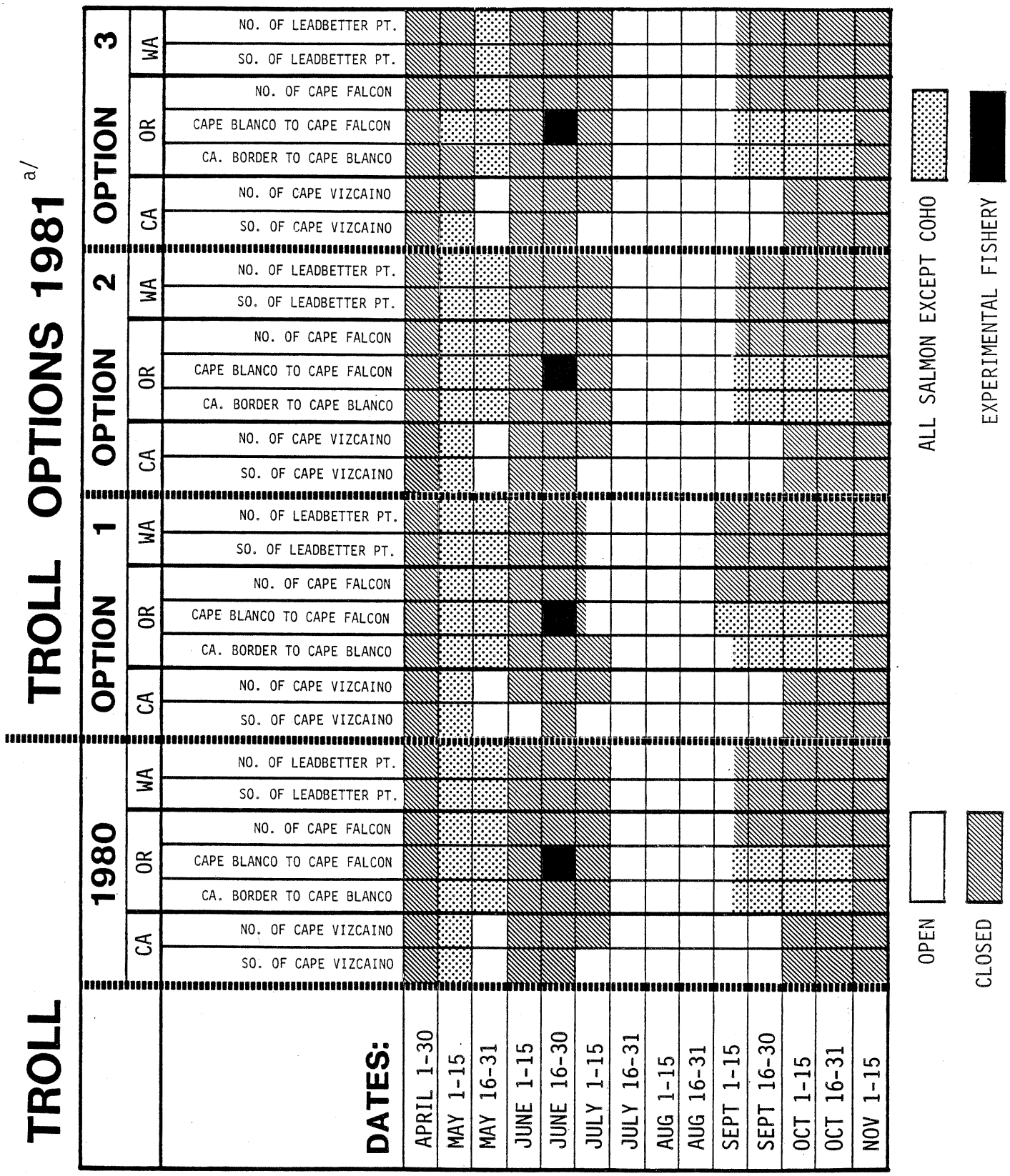
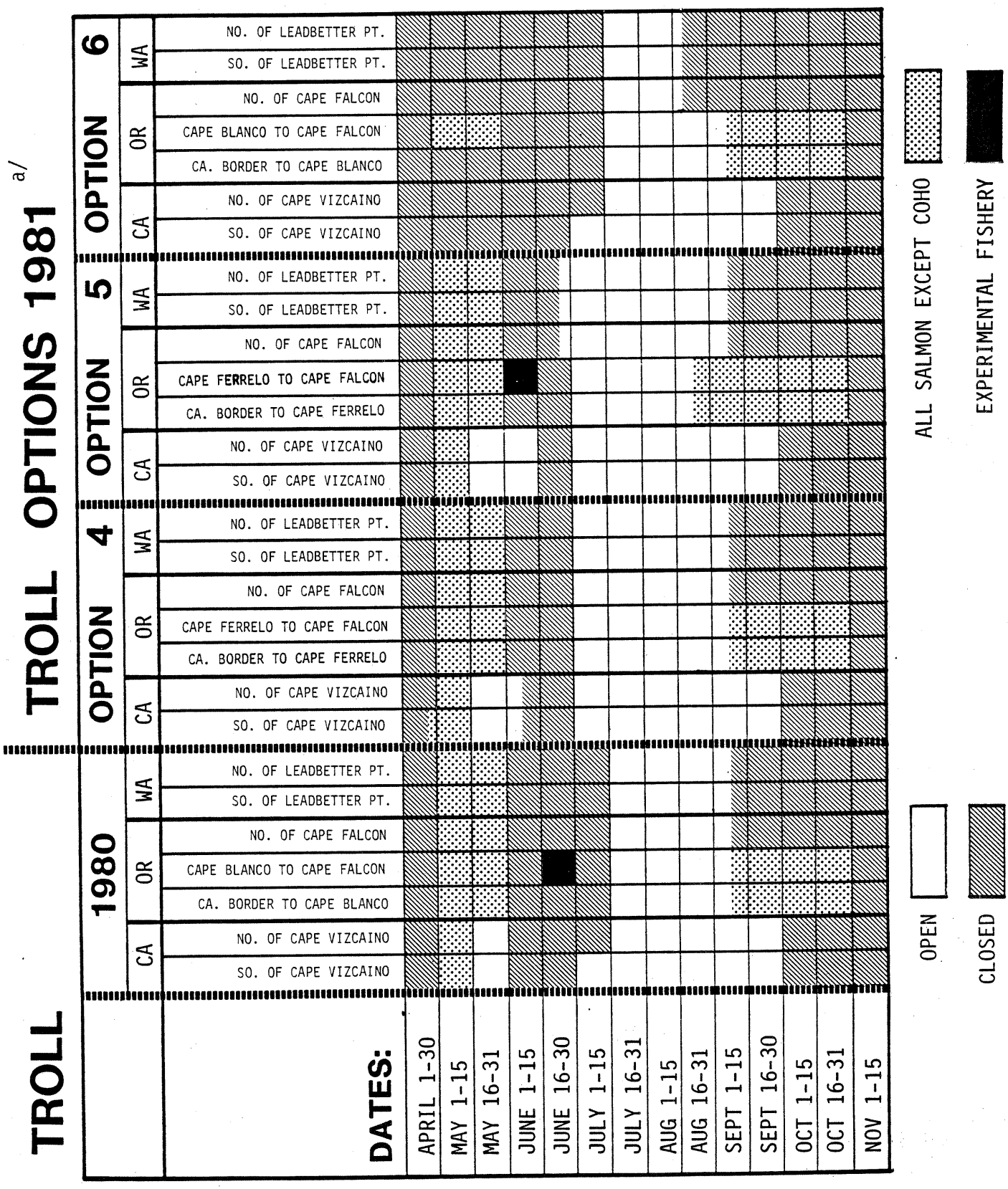


Figure IV-3. Comparison of 1980 Seasons Adopted in March 1980 and Actual Seasons Resulting from In-Season Management.



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. (See page 13-IV.)

Figure IV-4.



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. (See page 13-IV.)

Figure IV-5.

RECREATION

RECREATION OPTIONS 1981

DATES:	1980					1					2					3		
	CA	OR		WA		CA	OR		WA		CA	OR		WA		CA	OR		WA
	ALL CALIFORNIA	SO. OF CAPE FALCON	NO. OF CAPE FALCON	SO. OF LEADBETTER PT.	NO. OF LEADBETTER PT.	ALL CALIFORNIA	SO. OF CAPE FALCON	NO. OF CAPE FALCON	ALL WASHINGTON		ALL CALIFORNIA	SO. OF CAPE FALCON	NO. OF CAPE FALCON	ALL WASHINGTON		ALL CALIFORNIA	SO. OF CAPE FALCON	NO. OF CAPE FALCON	ALL WASHINGTON
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			a/		2	b/				2	b/				2	b/		

CLOSED

OPEN

ALL SALMON EXCEPT COHO (OPTIONAL FOR 1981)

c/ 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. (See page 13-IV.)

a/ 1980 SEASON BEGAN WITH 3-FISH BAG LIMIT; THIS WAS REDUCED TO 2 FISH.

b/ BAG LIMITS

OPTION	AREA	SPECIES	BAG LIMIT	DATES (inclusive)
1	OREGON, SOUTH OF CAPE FALCON	ALL SALMON	2 FISH	May 9 - July 5
		ALL SALMON	3 FISH	July 6 - Sept. 13
		ALL SALMON EXCEPT COHO	3 FISH	Sept. 14 - Oct. 31*
	OREGON/WASHINGTON, NORTH OF CAPE FALCON	ALL SALMON (only 2 of which may be coho or chinook)	3 FISH	May 9 - July 5
		ALL SALMON	3 FISH	July 6 - Sept. 13
2	OREGON, SOUTH OF CAPE FALCON	ALL SALMON	2 FISH	May 9 - July 14
		ALL SALMON	3 FISH	July 15 - Sept. 13
		ALL SALMON EXCEPT COHO	3 FISH	Sept. 14 - Oct. 31*
	OREGON/WASHINGTON, NORTH OF CAPE FALCON	ALL SALMON (only 2 of which may be coho or chinook)	3 FISH	May 9 - July 14
		ALL SALMON	3 FISH	July 15 - Sept. 13
3	OREGON, SOUTH OF CAPE FALCON	ALL SALMON (Possible change to 3 fish bag limit, only 2 of which may be coho or chinook)**	3 FISH	May 30 - Sept. 7
		ALL SALMON, EXCEPT COHO	3 FISH	Sept. 8 - Oct. 31*
	OREGON/WASHINGTON, NORTH OF CAPE FALCON	ALL SALMON (Possible change to 3 fish bag limit, only 2 of which may be coho or chinook)**	3 FISH	May 30 - Sept. 7

* Optional proposal.

** Two alternative methods of making this change are proposed: (1) Use of the in-season management procedure; or (2) automatic change in bag limit on June 15.

Figure IV-6.

RECREATION

RECREATION OPTIONS 1981 c/

DATES:	1980 CA	1980 OR SO. OF CAPE FALCON	1980 OR NO. OF CAPE FALCON	1980 WA SO. OF LEADBETTER PT.	1980 WA NO. OF LEADBETTER PT.	4 CA ALL CALIFORNIA	4 OR SO. OF CAPE BLANCO	4 OR NO. OF CAPE BLANCO	4 WA ALL WASHINGTON	5 CA ALL CALIFORNIA	5 OR SO. OF CAPE BLANCO	5 OR NO. OF CAPE BLANCO	5 WA ALL WASHINGTON	6 CA ALL CALIFORNIA	6 OR SO. OF CAPE FALCON	6 OR NO. OF CAPE FALCON	6 WA ALL WASHINGTON
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	3/2 a/				2	b/			2	b/			2	b/		

OPEN

CLOSED

ALL SALMON EXCEPT COHO

c/ 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. (See page 13-IV.)

a/ 1980 SEASON BEGAN WITH 3-FISH BAG LIMIT; THIS WAS REDUCED TO 2 FISH.

b/ BAG LIMITS

OPTION	AREA	SPECIES	BAG LIMIT	DATES (inclusive)
4	OREGON, SOUTH OF CAPE BLANCO	ALL SALMON (only 2 of which may be chinook or coho)	3 FISH	May 2 - Sept. 27
		ALL SALMON EXCEPT COHO	3 FISH	Sept. 28 - Oct. 31
	OREGON/WASHINGTON, NORTH OF CAPE BLANCO	ALL SALMON (only 2 of which may be coho or chinook)	3 FISH	May 2 - Sept. 27
5	OREGON, SOUTH OF CAPE BLANCO	ALL SALMON (only 2 of which may be coho or chinook)	3 FISH	May 9 - Sept. 27
		ALL SALMON EXCEPT COHO	3 FISH	Sept. 28 - Oct. 31
	OREGON, NORTH OF CAPE BLANCO	ALL SALMON (only 2 of which may be coho or chinook)	3 FISH	May 9 - Sept. 27
	WASHINGTON	ALL SALMON (Adjustment to 2+1 pink at any time it appears the total recreational coho catch will exceed 40% of total allowable ocean harvest by seasons end.)	3 FISH	May 9 - Sept. 20
6	OREGON, SOUTH OF CAPE FALCON	ALL SALMON (only 2 of which may be coho or chinook)	3 FISH	May 30 - Sept. 7
		ALL SALMON, EXCEPT COHO	3 FISH	Sept. 8 - Oct. 31 (Optional)
	OREGON/WASHINGTON, NORTH OF CAPE FALCON	ALL SALMON (only 2 of which may be coho or chinook)	3 FISH	May 30 - Sept. 7

NOTE: Apply in-season management harvest guidelines to all options.

Figure IV-7.

COMBINED OPTION I

California

			(Dates are inclusive.)
Commercial Troll			
South of Cape Vizcaino	all salmon except coho		May 1 - May 15
	all salmon		May 16 - June 15
	all salmon		July 1 - Sept. 30
North of Cape Vizcaino	all salmon except coho		May 1 - May 15
	all salmon		May 16 - May 31
	all salmon		July 16 - Sept. 30
Recreational			
Entire state	all salmon	2 fish bag limit	Feb. 14 - Nov. 1

Oregon

Commercial Troll			
South of Cape Blanco to Oregon/California border	all salmon except coho		May 1 - May 31
	all salmon		July 15 - Sept. 8
	all salmon except coho		Sept. 9 - Oct. 31
South of Cape Falcon to Cape Blanco	all salmon except coho		May 1 - May 31
	all salmon except coho		June 16 - June 30
	(with terminal gear restricted to whole bait or 6" minimum plugs)		
	all salmon		July 6 - Aug. 31
	all salmon except coho		Sept. 1 - Oct. 31
Recreational			
South of Cape Falcon Oregon/California border	all salmon	2 fish bag limit	May 9 - July 5
		3 fish bag limit	July 6 - Sept. 13
	all salmon except coho	3 fish bag limit	Sept. 14 - Oct. 31*

Washington and Oregon

Commercial			
North of Cape Falcon	all salmon except coho		May 1 - May 31
	all salmon		July 6 - Aug. 31
Recreational			
North of Cape Falcon	all salmon	3 fish bag limit	May 9 - July 5
	(only 2 of which may be coho or chinook)		
	all salmon	3 fish bag limit	July 6 - Sept. 13

*Optional proposal.

COMBINED OPTION II

California

			(Dates are inclusive.)
Commercial Troll			
South of Cape Vizcaino	all salmon except coho		May 1 - May 15
	all salmon		May 16 - May 31
	all salmon		July 1 - Sept. 30
North of Cape Vizcaino	all salmon except coho		May 1 - May 15
	all salmon		May 16 - May 31
	all salmon		July 16 - Sept. 30
Recreational			
Entire state	all salmon	2 fish bag limit	Feb. 14 - Oct. 11

Oregon

Commercial Troll			
South of Cape Blanco to Oregon/California border	all salmon except coho		May 1 - May 31
	all salmon		July 15 - Sept. 8
	all salmon except coho		Sept. 9 - Oct. 31
South of Cape Falcon to Cape Blanco	all salmon except coho		May 1 - May 31
	all salmon except coho (with terminal gear restricted to whole bait or 6" minimum plugs)		June 16 - June 30
	all salmon		July 15 - Sept. 8
	all salmon except coho		Sept. 9 - Oct. 31
Recreational			
South of Cape Falcon to Oregon/California border	all salmon	2 fish bag limit	May 9 - July 14
		3 fish bag limit	July 15 - Sept. 13
	all salmon except coho	3 fish bag limit	Sept. 14 - Oct. 31*

Washington and Oregon

Commercial Troll			
North of Cape Falcon	all salmon except coho		May 1 - May 31
	all salmon		July 15 - Sept. 8
Recreational			
North of Cape Falcon	all salmon (only 2 of which may be coho or chinook)	3 fish bag limit	May 9 - July 14
	all salmon	3 fish bag limit	July 15 - Sept. 13

*Optional proposal.

COMBINED OPTION III

California

			(Dates are inclusive.)
Commercial Troll			
South of Cape Vizcaino	all salmon except coho		May 1 - May 15
	all salmon		May 16 - May 31
	all salmon		July 1 - Sept. 30
North of Cape Vizcaino	all salmon		May 16 - May 31
	all salmon		July 16 - Sept. 30
Recreational			
Entire state	all salmon	2 fish bag limit	Feb. 14 - Oct. 11

Oregon

Commercial Troll			
South of Cape Blanco to Oregon/California border	all salmon except coho		May 16 - May 31
	all salmon		July 15 - Sept. 8
	all salmon except coho		Sept. 9 - Oct. 31
South of Cape Falcon to Cape Blanco	all salmon except coho		May 1 - May 31
	all salmon except coho (with terminal gear restricted to whole bait or 6" minimum plugs)		June 16 - June 30
	all salmon		July 15 - Sept. 8
	all salmon except coho		Sept. 9 - Oct. 31
Recreational			
South of Cape Falcon to Oregon/California border	all salmon (possible change to 3 fish bag limit, only 2 of which may be coho or chinook)**	3 fish bag limit	May 30 - Sept. 7
	all salmon except coho	3 fish bag limit	Sept. 8 - Oct. 31*

Washington and Oregon

Commercial Troll			
North of Cape Falcon	all salmon except coho		May 16 - May 31
	all salmon		July 15 - Sept. 8
Recreational			
North of Cape Falcon	all salmon (possible change to 3 fish, only 2 of which may be coho or chinook)**	3 fish bag limit	May 30 - Sept. 7

* Optional proposal.

** Two alternative methods of making this change are proposed: (1) Use of the in-season management procedure; or, (2) automatic change in bag limit on June 15.

COMBINED OPTION IV

California

Commercial Troll (Dates are inclusive.)			
South of Cape Vizcaino		all salmon except coho	April 22 - May 15
		all salmon	May 16 - June 7
		all salmon	July 1 - Sept. 30
North of Cape Vizcaino		all salmon except coho	May 1 - May 15
		all salmon	May 16 - June 7
		all salmon	July 1 - Sept. 30
Recreational			
Entire state	all salmon	2 fish bag limit	Feb. 14 - Nov. 15

Oregon*

Commercial Troll			
South of Cape Falcon to California/Oregon border		all salmon except coho	May 1 - May 31
		all salmon	July 1 - Sept. 8
		all salmon except coho	Sept. 9 - Oct. 31
Recreational			
South of Cape Blanco	all salmon (only 2 of which may be coho or chinook)	3 fish bag limit	May 2 - Sept. 27
	all salmon except coho	3 fish bag limit	Sept. 28 - Oct. 31**
North of Cape Blanco	all salmon (only 2 of which may be coho or chinook)	3 fish bag limit	May 2 - Sept. 27

Oregon and Washington*

Commercial Troll			
North of Cape Falcon		all salmon except coho	May 1 - May 31
		all salmon	July 1 - Sept. 8
Recreational			
Entire State of Washington	all salmon (only 2 of which may be coho or chinook)	3 fish bag limit	May 2 - Sept. 27

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* Apply in-season management guidelines.
** Optional proposal.

COMBINED OPTION V

California

			(Dates are inclusive.)
Commercial Troll			
Entire state	all salmon except coho		May 1 - May 15
	all salmon		May 16 - June 15
	all salmon		July 1 - Sept. 30
Recreational			
Entire state	all salmon	2 fish bag limit	Feb. 14 - Nov. 1

Oregon*

Commercial Troll			
South of Cape Ferrelo to California/Oregon border	all salmon except coho		May 1 - May 31
	all salmon		July 1 - Aug. 25
	all salmon except coho		Aug. 26 - Oct. 31
Cape Ferrelo to Cape Falcon	all salmon except coho		May 1 - May 31
	all salmon except coho (with terminal gear restricted to whole bait or 6" minimum plugs)		June 1 - June 15
	all salmon		July 1 - Aug. 25
	all salmon except coho		Aug. 26 - Oct. 31
Recreational			
South of Cape Blanco	all salmon (only 2 of which may be coho or chinook)	3 fish bag limit	May 9 - Sept. 27
	all salmon except coho	3 fish bag limit	Sept. 28 - Oct. 31**
North of Cape Blanco	all salmon (only 2 of which may be coho or chinook)	3 fish bag limit	May 9 - Sept. 27

Oregon and Washington*

Commercial Troll			
North of Cape Falcon	all salmon except coho		May 1 - May 31
	all salmon		June 21 - Sept. 8
Recreational			
Entire State of Washington	all salmon (adjustment to 2+1 pink at any time it appears the total recreation coho catch will exceed 40% of total allowable ocean harvest by season's end)	3 fish bag limit	May 9 - Sept. 20

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* Apply in-season management harvest guidelines.
** Optional proposal.

COMBINED OPTION VI

California

Commercial Troll (Dates are inclusive.)			
South of Cape Vizcaino	all salmon		July 1 - Sept. 30
North of Cape Vizcaino	all salmon		July 16 - Sept. 30
Recreational			
Entire state	all salmon	2 fish bag limit	Feb. 14 - Oct. 11

Oregon*

Commercial Troll			
South of Cape Blanco to California/Oregon border	all salmon		July 15 - Sept. 8
	all salmon except coho		Sept. 9 - Oct. 31
South of Cape Falcon to Cape Blanco	all salmon except coho		May 1 - May 31
	all salmon		July 15 - Sept. 8
	all salmon except coho		Sept. 9 - Oct. 31
Recreational			
South of Cape Falcon to California/Oregon border	all salmon (only 2 of which may be coho or chinook)	3 fish bag limit	May 30 - Sept. 7
	all salmon except coho	3 fish bag limit	Sept. 8 - Oct. 31**

Washington and Oregon*

Commercial Troll			
North of Cape Falcon	all salmon		July 15 - Aug. 19
Recreational			
North of Cape Falcon	all salmon (only 2 of which may be chinook or coho)	3 fish bag limit	May 30 - Sept. 7

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* Apply in-season management harvest guidelines.
** Optional proposal.

CONSIDERATION OF IN-SEASON MANAGEMENT

In 1980, the first in-season management system was initiated for the ocean. The purpose of in-season management is to provide a mechanism to adjust either season times 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 in-season management would be a more conservative season without in-season 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 in-season 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. The proposed process for 1981 in-season management will attempt to build on the lessons learned from 1980.

Scheduling and Availability of Data

In-season management decisions are based upon analysis of data gathered during the fishing season. This is 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 availability of in-season data and complexities which normally are encountered.

In-season stock and catch evaluation can detect extreme deviations relatively early in the season. The need to reduce the recreational fisheries bag limit 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 to two salmon on July 16, approximately 2 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 in which to make in-season 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 3 weeks of data. In-season 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 is not available until Thursday of each week. With 2 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 the data base being used for analysis and the decision.

Decision Process

Prior to application of in-season 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 in-season management procedures.

The PDT's original concept for in-season 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 2 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 4 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 evening on August 20, by WDF's Harvest Management Division staff. The length of this delay was 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 in-season 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 elapses before reliable information is available to the state agencies to make preliminary assessment of their catch and effort data. The data will be published in the Federal Register. After an additional 7 days of data accummulation, plus 6 more days of agency analysis, final assessments are completed and recommendations are proposed by the state agencies. Agency reports will be available on day 36. Two days are 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 is the absolute minimum for agency and Team action. The SSC and Advisors meet with the Council on the 39th day, with the Regional Director of NMFS making his decision on the 40th Day. Allowing two days for drafting decision documents, the decision would be filed with the Federal Register and become effective on the 43rd day.

It is intended that this decision process would apply to all options. Because the in-season management procedure requires 43 days for implementation, it is

necessary to accommodate the possibility that allowable harvest guidelines may be reached before that time. The following mechanism to deal with this possibility is suggested:

If projections based on catch data indicate that a WPP or OPI harvest guideline would be met before the 43rd day of the all-species troll season, the Northwest Regional Director of NMFS would automatically close ocean troll and/or recreational fisheries in the affected areas on the date of projected harvest guideline attainment. Under these conditions, the Regional Director would publish a notice in the Federal Register as soon as possible before the projected harvest guideline attainment date, stating that the fishery(s) will be closed on that date. If the WPP guideline is reached, the area closed would be north of Cape Falcon. If the OPI guideline is reached, the area closed would be south of Leadbetter Point to the Oregon-California border.

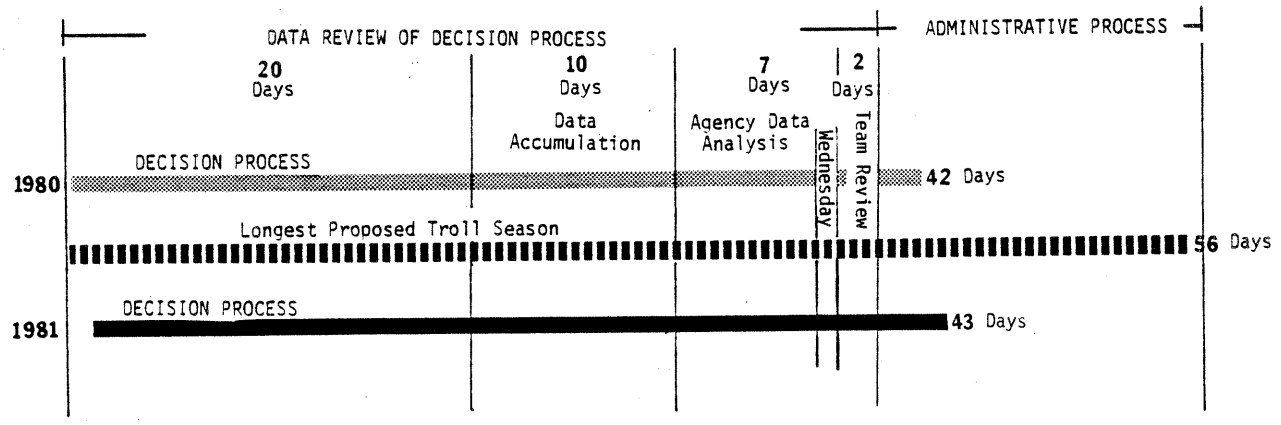
If this automatic closure procedure is to be used, two implementation options must be considered, one of which must be selected:

(1) When the total harvest guideline is projected to be met, all ocean fisheries would be closed in the appropriate area (WPP or OPI) whether or not either the troll or recreational fishery has taken its historic share; OR

(2) Separate harvest guidelines are established for the ocean troll and recreational fisheries, based on the 1971-75 harvest ratios. When the separate harvest guideline is projected to be reached by either fishery, i.e., recreational or troll, that fishery would automatically close in the appropriate area.

The in-season management review process applicable to all options would be implemented subsequent to the automatic closure to decide whether additional fishing time could be justified, i.e. whether stock abundance is higher than pre-season predictions.

IN-SEASON MANAGEMENT REQUIRED TIME SEQUENCE



QUOTAS

A comprehensive discussion of the quota concept was presented in the 1980 Amendment. This discussion is still relevant in 1981 but does 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 two 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. This method has also been used by the North Pacific Fishery Management Council in 1980 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 1980 would also apply in 1981 (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 closed coho seasons in the troll fishery; and coho hold inspection for certain options off California).

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 1981 include:

1. Regulation for Indian Troll Fishery - On March 5, 1981, a U.S. District Court ruled that the State of Washington could not impose a 28-inch troll chinook minimum size limit upon Makah Indian tribal fishermen when fishing in their usual and accustomed areas in Washington waters. Assuming that this decision applies to the Council's regulation of the Indian troll fishery in the FCZ, the implications of the Court's action are as follows:

   a. Achievement of upper Columbia River fall chinook management goals will be more difficult given liberalization of treaty-Indian chinook ocean regulations. Subsequent revisions of both treaty Indian and non-Indian ocean regulations should be considered to address this problem.
   b. Possible limitation of authority to regulate the Indian troll fishery could also have significant management consequences in 1981 for specific conservation problems with Washington coastal coho stocks. A total harvest guideline equitably applied to all ocean user groups, should be considered. One option would be a modification of the opening and closing dates for the Indian troll as well as the non-Indian ocean fisheries.
   c. The state of Washington will have to develop new chinook minimum size limits for the Indian ocean fishery consistent with this ruling. The Council should also consider the possible modification of chinook size limits in the FCZ.

2. Retention of Heads on Marked Salmon Caught by Freezer Boats - In 1980 the dressing of salmon head-off was allowed for freezer boats except for fish with the adipose fin removed (coded-wire tagged fish). The number of freezer boats is increasing in Washington, Oregon and California. Since freezer boats represent potentially large samples of marked fish, it is important in 1981 that heads be retained on fish with the adipose fin removed (coded wire tagged fish) in order to maintain the opportunity of recovering coded wire tag information.

3. 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.

4. Review of recreational size limit in California allowing one fish between 20 and 22 inches.

Other management measures outlined in the 1978 Salmon Plan or in subsequent amendments, could also be considered for 1981.

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, 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 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 1981 season only, it is estimated that OY will fall somewhere in the range of 7,000,000 to 9,000,000 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 1981. 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 1981.

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. Licenses were issued to vessels that were licensed as a charter vessel 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.

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 was 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 in Oregon. Permits can be transferred by the vessel owner to a replacement vessel. Individuals whose vessels do not have an Oregon salmon permit may land salmon for sale in that state if they are duly licensed to fish commercially in another state and purchase a $75 single delivery

permit. This moratorium was enacted for a two-year period and will expire after 1981 if it is not reenacted by the Oregon State Legislature.

The salmon license moratorium enacted by the California State Legislature in 1979 differs from those in the other two 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. The special salmon licenses are valid from date of issue through 1981 at which time this moratorium will end if it is not extended by the legislature. 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.

During 1981, each state legislature will consider amendments to extend and strengthen these existing limits on participation in the salmon fisheries.

APPENDIX A

HABITAT AND ENVIRONMENTAL PROBLEMS

The management objectives of the Pacific Fishery Management Council can best be achieved if habitat and environmental problems are also energetically pursued by the agencies having environmental control and resource management responsibilities over production and harvest in inside marine and fresh waters. Without exception, these objectives should be consistent with the habitat enhancement and production management objectives of the Salmon and Steelhead Advisory Commission Report and enhancement plans authorized by S. 2163, and, to the extent possible, with similar objectives of the California, Idaho, Oregon, and Washington fisheries agencies. It is well recognized that responsibility of achievement of these habitat objectives does not lie solely within the jurisdiction of State agencies, but it 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 FCMA exists.

A major problem of concern to the PFMC, but outside its jurisdiction, is maintaining and maximizing the production potential of the aquatic environment. In 1978, the Pacific Council established an Anadromous Salmonid Environmental Task Force to assess the status of freshwater salmon habitat along the Pacific Coast of the United States, not including Alaska. The Task Force prepared a report entitled, "Freshwater Habitat, Salmon Produced, and Escapements for Natural Spawning along the Pacific Coast of the United States," in June 1979. Estimates of habitat available and fish produced prior to water use developments were made to place present habitat abundance and fish production in a historical perspective and illustrate some of the potential in natural production that might be reached.

The following sections have been extracted from the report.

Figure A-1 shows the major drainage areas considered. Table A-1 contains the amount of habitat formerly, presently and potentially available in those areas.

Sacramento-San Joaquin River Systems

The miles of stream available to anadromous salmon in California's Central Valley has been dramatically reduced from an estimated 6,000 miles to about 950 miles. The primary factor has been the construction of impassable dams.

The Sacramento River presently has approximately 740 miles of chinook habitat, including about 250 miles suitable for spawning. Many miles of stream habitat have been lost, but most of the spawning gravel (and hence spawners) has always been downstream from the dams. Salmon are produced in three hatcheries to mitigate habitat lost above the three major dams in the system. Except in the main stem of the upper Sacramento River, the amount of spawning gravel presently available in the system can support spawning runs equal to those in the pre-water development area.

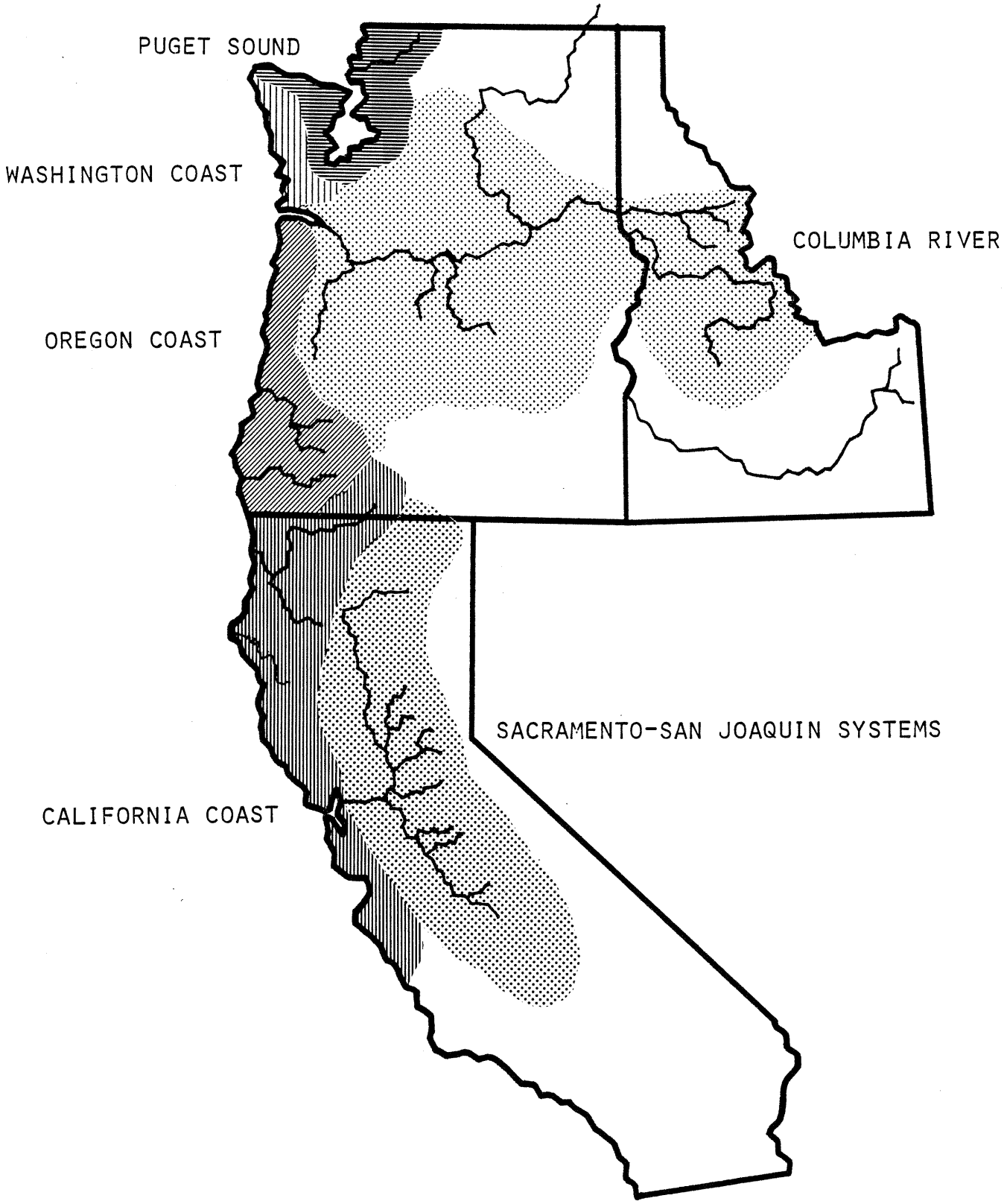


Figure A-1. Major drainage areas analyzed by PFMC Anadromous Salmonid Environmental Task Force

Table A-1. Past, present and potential anadromous salmonid freshwater habitat in California, Oregon, Washington and Idaho.

Geographical Area and Species	Habitat available (miles of stream) Formerly	Present time	Future (10-20 yrs) With present trend	Future (10-20 yrs) With rehabilitation
California Central Valley				
Sacramento - Chinook	5,650	740	658	658
San Joaquin - Chinook	350	210	210	210
California Coastal Streams				
Chinook	-[a]	2,300[b]	Down	-
Coho	-	3,700[b]	Down	-
Columbia River Drainage				
Downstream from Bonneville Dam				
Willamette River				
Chinook	1,400	600	600	1,000
Coho	250	1,600	1,600	1,800
Columbia River mainstem and tributaries				
Chinook	709	552	552	-
Coho	903	703	703	-
Chum	250	144	144	-
Upstream from Bonneville Dam				
Snake River				
Chinook	7,739	4,182	4,000	4,257
Sockeye[c]	1,716	1,391	1,391	1,391
Coho	600	400	350	425
Columbia River mainstem and tributaries				
Chinook	2,098	1,030	1,030	1,400
Sockeye[c]	824	193	193	500
Coho	754	705	705	705
Oregon Coastal Streams				
Chinook	2,500	2,500	2,500	2,500
Coho	6,100	6,100	6,100	6,100
Chum	400	300	300	330
Washington Coastal Streams[d]				
Chinook	-	2,900	-	-
Coho	-	2,900	-	-
Sockeye	-	2,900	-	-
Chum	-	2,900	-	-
Puget Sound Streams[d]				
Chinook	-	3,600	-	-
Coho	-	3,600	-	-
Sockeye	-	3,600	-	-
Pink	-	3,600	-	-
Chum	-	3,600	-	-

Source: PFMC Anadromous Salmonid Environmental Task Force, 1978.

[a] No estimate available when dash (-) used.

[b] California Fish and Wildlife Plan (1965).

[c] Mostly migration requirement.

[d] Total stream miles accessible to salmon.

Production from the remaining habitat is threatened by additional water developments, particularly in the delta area. The proposed Peripheral Canal has the potential to correct existing problems in the Delta and to overcome worsening conditions anticipated with increased water export from the Sacramento River System. The only projects anticipated in the next 10 to 20 years that will eliminate additional habitat are those proposed by the Corps of Engineers. These dams will reduce chinook habitat by 82 miles to a total of 658 stream miles available in the drainage.

Production in the upper Sacramento is also subject to several other potentially critical problems, including: (1) loss of spawning gravels below Keswick Dam on the upper Sacramento River below Shasta Dam; (2) heavy metals contamination below Keswick Dam; (3) altered fish passage at Red Bluff Diversion Dam near the city of Red Bluff; and (4) streamflow manipulation and/or fluctuation below Keswick Dam.

All of these problems are in large measure associated with projects or operational regimes of the U.S. Bureau of Reclamation.

Before water developments, the San Joaquin system had about 350 miles of salmon habitat and supported both fall and spring run chinook salmon. Dams have reduced salmon habitat in the San Joaquin system from about 350 miles to approximately 210 miles. The 100,000-fish spring chinook run was eliminated by the construction of Friant Dam, near Fresno in the mid-1940's by the U.S. Bureau of Reclamation and the failure to release water sufficient to maintain spawning habitat below the dam. The fall run has been restricted to lower tributaries below large dams which have seriously reduced the flows and the water quality.

All production from the system is jeopardized by unfavorable conditions in the delta area such as flow reversal and low dissolved oxygen. Generally the major factor limiting salmon production in the San Joaquin system is inadequate water releases from storage reservoirs.

California Coastal Streams

Approximately 2,300 miles of chinook habitat and 3,700 miles of coho habitat exist in California coastal streams. Most of the coastal streams, with the exception of the Klamath system, have not been dammed. Salmon populations have declined, however, from degradation of habitat caused by land and water use practices, including logging, road building, water diversions, streambed alterations and pollution. These practices have improved in recent years, but serious losses will probably continue to occur from pollution and water diversion from the streams. The Army Corps of Engineers' Warm Springs Dam will eliminate some salmon habitat in the Russian River drainage. Compensation for these losses through the construction of hatcheries is planned.

The Klamath River system, in general, has similar problems to other California coastal streams (e.g., loss of tributaries and spawning areas due to logging and road building). In addition, the Trinity River, which is the main tributary of the Klamath system, has lost 85 percent of its average annual

discharge immediately below Lewiston Dam. This flow reduction occurred in 1963 when Lewiston Dam was completed, and Trinity River water was diverted into the Sacramento River system. Completion of Lewiston Dam on the mainstem Trinity River created the following problems for salmon:

(1) Gravel erosion below the dam
(2) Sediment buildup in the mainstem due to reduced flows
(3) Riparian encroachment into river resulting in constriction of river channel and loss of spawning habitat.

A 5-year plan for habitat improvement has been developed with the Forest Service, and the State of California has recently expanded its enhancement program to improve salmon production in the north coastal streams.

Columbia River System

More than half the habitat formerly available to salmon in the Columbia River system has been eliminated from production by dams. Production from the remaining habitat in the 90% of the basin above Bonneville Dam (river mile 146.1) is jeopardized by current operating regimes at dams operated by the U.S. Army Corps of Engineers, the Water and Power Resources Service, Washington county public utility districts and private utilities on the Columbia and the Snake Rivers. All salmon runs produced in the vast area above the confluence of the Columbia and Snake Rivers are currently under review to determine their status relative to the Endangered Species Act. This review includes now remnant runs of spring and summer chinook salmon from the upper Columbia which once contributed to an annual harvest averaging 30 million to 40 million pounds.

Point source pollution, which once degraded large areas of spawning, rearing and migration habitat, has been significantly reduced in the drainage. Irrigation diversions, channelization, dredging, logging, farming and livestock grazing have significantly degraded and continue to degrade vast reaches of important salmon habitat throughout the basin.

The Federal Government has built some 30 hatcheries and rearing stations to compensate for damage caused by federal dams, and private and public utilities have built others associated with their projects. In addition, habitat enhancement and screen and fishway construction have been extended throughout the basin. With all this, compensation has been far short of the losses in habitat and fish. The decline in catches by ocean and river fisheries supported by Columbia River stocks has been serious.

Below Bonneville Dam (excluding the Willamette River system) habitat for salmon has declined from 709 to 552 miles for chinook salmon, from 903 to 703 miles for coho and from 250 to 144 miles for chum salmon. This has resulted from the construction of dams on major rivers, such as the Cowlitz and Lewis Rivers, and poor land use and logging practices. The amount of habitat is not expected to change with the present trend. The eruption of Mt. St. Helens recently took a serious toll, beyond man-made problems, but its impact will not be fully understood for several years.

The Willamette River with 8,600 miles of drainage (600 presently used by chinook and 1,600 by coho) has had a long history of pollution from cannery and paper mill wastes, as well as blockage caused by dams and falls. Encouraging results have occurred from correcting the pollution problem, improving passage at Oregon City Falls and enhancing habitat. The future of natural production will depend primarily on further improvement of fish passage at Oregon City Falls, and further improvement of the habitat.

Above Bonneville Dam (excluding the Snake River) the salmon habitat has declined from 2,098 to 1,030 miles for chinook, from 824 to 193 miles for sockeye and from 754 to 705 miles for coho. Water development projects are the primary cause of loss of natural spawning and rearing. The only remaining natural spawning area in the main Columbia is a portion of the 50-mile stretch of free-flowing river between McNary and Priest Rapids dams. Natural spawning and rearing habitat for salmon is still available in most tributaries below Chief Joseph Dam. With proper enhancement, the amount of habitat in this area could be increased to 1,400 miles for chinook and 500 miles for sockeye.

The Snake River drainage in the original condition provided an estimated 7,739 miles of spawning, rearing and migration habitat. Approximately 46% of this habitat is no longer available (75% for fall chinook). The largest losses resulted from dams that prevented access to spawning and rearing areas. In addition, water diversion, pollution, dredging and channelization have taken their toll.

The upstream and downstream fish passage problems created by lower Snake and Columbia River dams are the most adverse factors that have affected Snake River salmon runs. Some structural improvements and fish transportation associated with these projects have brought encouraging results, but they have not equalled the losses. A compensation program for losses caused by the lower Snake River dams is being financed by Congress at a cost of well over $100 million. This includes several hatcheries for salmon and steelhead in Idaho, Oregon and Washington.

Oregon Coastal Streams

The historic loss of salmon production in Oregon coastal streams has primarily been the result of habitat degradation rather than physical barriers to fish passage via water project developments. It is estimated that salmon have been blocked from less than 1% of their historic habitat. Currently over half the estimated 11,700 miles of coastal streams are available to salmon. The remaining stream areas are generally steep headwater streams unsuited for spawning and rearing.

The few dams on coastal streams are responsible for only a small part of the total stream miles presently inaccessible to salmon. The largest dam (Lost Creek) is on the upper Rogue River. To compensate for the loss of natural production, a hatchery has been built as part of the mitigation process. Savage Rapids and Gold Ray dams on the Rogue River, near Grants Pass, and Winchester Dam on the North Fork of the Umpqua, near Roseburg, are equipped with fishways. Savage Rapids Dam has inadequate fishways that cause delays and losses to migrating fish, but renovation is under way. Most of the smaller dams on coastal streams are equipped with fishways, although some need improvement.

Water withdrawals for agriculture and other purposes have adversely impacted important salmon production areas. The greatest adverse impacts within coastal watershed, however, have resulted from the sedimentation in spawning and rearing areas due to logging, mining and land cultivation within coastal watershed. In some areas, these impacts are compounded by industrial and municipal waste discharges, and by landfills and other developments which have reduced the productivity of estuarine rearing areas.

Coastal streams have widely fluctuating water flows because most of the precipitation is rain. There are no large snow fields as in the Cascades to maintain summer stream flows. Low summer flows limit the carrying capacity of many coastal streams by reducing fish rearing areas, fish food production areas, and by increasing stream temperatures.

Summer water temperatures reach critical levels in many of the coastal streams because of low flows and lack of streamside cover. For salmonid rearing, stream temperatures should not exceed 18°C, but temperatures over 25°C have been recorded. Outbreaks of diseases, including Columnaris and Furunculosis have been triggered by high temperatures. Upstream migration of adults may also be delayed by high temperatures when adults are forced into cooler tributaries until main stem temperatures drop.

Strengthened environmental legislation and more effective management of fish habitat at both state and federal levels have slowed the rate of habitat degradation in Oregon's coastal basins. Increases in salmon production are possible with improvements in spawning and rearing habitat. Improved streamflows through flow augmentation and increased allocation of these flows for fisheries is a major need. There is little opportunity to increase the number of stream miles available to salmon. Increases in production are possible with improvements in quality of the habitat if spawning escapements are adequate to fully use that habitat.

Washington Coastal Streams

The amount of spawning and rearing area historically available in Washington coastal streams and in Puget Sound and the associated level of fish production are currently being analyzed by the Washington Department of Fisheries as a major aspect of the current litigation of Phase II, U.S. vs. Washington (Boldt Decision), and estimates cannot be presented at this time. There is no doubt that available area and production have declined, but the extent of such decline is as yet undetermined.

Although estimates of future available habitat have not been made at this time, it is safe to assume that removing existing blocks to migration or providing for transportation of adults around such blocks could increase the amount of suitable habitat. Such action would increase coho production by about 10% and other species to a lesser degree.

The South Coast consists of Grays Harbor and Willapa Bay drainages, and produces important runs of fall chinook, coho and chum salmon. The Willapa drainage has more than 1,470 linear miles of streams, with an estimated 630 miles suitable for anadromous fish migration, spawning and rearing. Grays Harbor drainage contains streams totaling 3,353 linear miles, an estimated 40% of which is utilized by anadromous fish.

Major causes of habitat loss in Willapa Bay are related to logging and associated road-building. On the positive side, several Willapa streams that historically had natural blocks to migration have been cleared, opening new areas for production. No significant future developments are anticipated.

The Grays Harbor watershed suffers from problems more severe than Willapa Bay. In addition to problems from logging and road-building, there are water quality problems in some streams and in a portion of the estuary. Sources of these water quality problems are domestic, agricultural and industrial pollutants. Water temperature problems exist during the summer low-flow period in the upper Chehalis River. Some salmon production has been removed from the watershed by construction of two dams. These losses have been mitigated, however.

Several natural blocks have been corrected to allow fish passage, and splash dams formerly blocking many streams have been removed. One major development under construction is the Satsop Nuclear Plant on the lower Chehalis River, the impact of which is undetermined. No other major developments are anticipated.

In the North Coast there are 2,855 miles of stream, over 970 miles of which support anadromous fish runs. Most habitat problems are related to logging and road-building, resulting in siltation, debris, and improperly installed culverts. Many tributaries have natural blocks to fish migration, some of which have been corrected.

Puget Sound

All environmental problems facing salmon occur in some areas of Puget Sound. The Strait of Juan de Fuca streams, being in a less populated area, are most significantly impacted by logging. Dam construction has limited access to some historical spawning areas. Of 1,520 linear stream miles, 374 miles are accessible to salmon.

The Hood Canal area includes 1,526 stream miles, of which 331 miles are accessible to salmon. Major habitat-limiting factors include seasonal flooding, low summer flows, unstable streambeds, impassable falls and cascades, municipal and industrial water demands, and some water quality problems.

The South Puget Sound region, including Lake Washington, has a total of 4,559 stream miles, 1,310 miles of which are accessible to salmon. Many of these are in the heart of the state's population centers.

Major limiting factors include low stream flows, poor water quality and concentrated watershed development. Encroachment of civilization with industrial and urban development has substantially reduced stream area and quality, consequently reducing fish production. Water quality and suitability of the environment for fish production are continuing to be degraded in many areas. Low stream flows and seasonal flooding are also a problem. Over 30 miles of the upper Nisqually River are blocked by two dams. Logging is a significant limiting factor in much of the region.

The North Puget Sound region includes Nooksack, Skagit, Stillaguamish and Snohomish basins with a total of 9,762 stream miles, of which 1,320 miles are accessible to salmon. This is the most important natural salmon production area in Puget Sound.

Major limiting factors include seasonal flooding, low summer flows, extreme river fluctuations and natural barriers. Major logging activities are found throughout much of the area and are characterized by extensive clearcutting. Hydroelectric power developments on Baker River and the upper Skagit, in addition to blocking access, affect anadromous fish production through alteration of such natural river conditions as flow pattern and water quality. A storage dam and diversion complex also exists on the Sultan River. Residential, industrial and commercial expansions in the lower valleys are increasing and adding to the pollution problem.

Proposed Actions

The Anadromous Salmonid Environmental Task Force report (1979) proposed the following actions for the Pacific Fishery Management Council:

"At the present time, the PFMC could best contribute to solution of salmon habitat problems in fresh water by working to secure the positive cooperation of state and federal agencies whose operations have affected or are now adversely affecting salmon production. The Council could:

1. Urge recognition by the U.S. Water and Power Resources Service of fishery resource maintenance and enhancement as a beneficial project purpose, particularly with respect to its Central Valley Project (California).

2. Request prompt relicensing of old Federal Power Commission projects by the Federal Energy Regulatory Commission to include measures for fishery mitigation ignored or unavailable at the time original licenses were issued.

3. Urge Congress to fund proposed anadromous fishery programs on national forest lands in California.

4. Encourage development of off-channel storage and headwater impoundments to increase stream flows.

5. Support adoption of minimum and optimal stream flow recommendations by state and federal regulatory agencies. More rapid adoption of the stream flow recommendations developed by fishery agencies is needed.

6. Support adequate funding of habitat maintenance and improvement programs of the USDA Forest Service, Bureau of Land Management and other appropriate federal agencies.

7. Support studies to determine the extent of degradation of fish habitat from dredging, siltation, pollution and overgrazing. Habitat protection and enhancement is often difficult without adequate assessment of the causes and extent of the problem.

8. Support efforts to retain presently used piscicides and seek approval for new selective chemicals for fish population control.

9. Support ongoing fish passage structural improvements and programs at lower Snake River dams.

10. Strongly advocate additional necessary fish passage structural improvements, flow manipulation programs and research programs at lower Snake River dams.

11. Strongly advocate the development of a region-wide water management plan for the Snake and Columbia Rivers that will include adequate consideration for salmon, along with other water uses.

12. Support classification of certain portions of the national forest lands as Wilderness Areas or Wild and Scenic Rivers, to preserve and protect existing salmon habitat. 1/

13. Support the mineral withdrawal of certain lands in headwaters of the Middle Fork Salmon River for salmon habitat protection, as filed by the U.S. Fish and Wildlife Service.

14. Utilize its authority by effectively controlling ocean fishing rates to achieve escapements along the Pacific Coast sufficient to meet the present capacity of the environment as expressed by the escapement goals.

1/ On January 20, 1981, the Secretary of Interior designated segments of five California rivers as components of the National Wild and Scenic Rivers System. They include the Klamath, Trinity, Eel, American and Smith Rivers. These rivers were placed in the National System because of their value to the propogation of anadromous species. The Pacific Council supported this action.

APPENDIX B

SOCIAL AND ECONOMIC DESCRIPTION OF THE SALMON FISHERIES

The salmon fisheries of the Pacific coast are composed of numerous communities of participants, joined in different ways by geographical, social, cultural, economic and political factors. For the purposes of this section, salmon fishery participants can be grouped into the following categories:

I. Commercial Participants
   - A. Trollers
     1. Washington-based
     2. Oregon-based
     3. California-based
   - B. Net fishermen
     1. Oregon Columbia River gillnetters
     2. Washington Columbia River gillnetters
     3. Willapa Bay and Grays Harbor gillnetters
     4. Puget Sound gillnetters
     5. Puget Sound reefnetters
     6. Puget Sound purse seiners
   - C. Private aquaculturists
   - D. Processors, marketing agents and consumers: the marketing sector

II. Recreational participants
   - A. Ocean charterboat operators and anglers
     Washington, Oregon and California fleets
   - B. Private ocean sport fishermen
     Washington, Oregon and California-based
   - C. Inland sports fishermen
     Washington, Oregon, California and Idaho-based

III. Indian participants
   - A. Commercial fishermen
     1. Net fishermen: Columbia River, Washington coastal rivers, Grays Harbor and Puget Sound
     2. Trollers: Washington-based
   - B. Ceremonial and subsistence fishermen: Washington, Columbia River and Klamath River

IV. Coastal communities
   In Washington, Oregon and California

The Pacific Fishery Management Council's Salmon FMP may impact any or all of these participants. Thus, available social and economic information on all the groups is necessary and will be provided here. However, the Council has specific regulatory authority only over participants operating within the FCZ, i.e., the ocean trollers, ocean charterboats and private ocean sport fishermen. More extensive social and economic information on these groups is required. This description will, therefore, emphasize the ocean fishery participants.

I. COMMERCIAL PARTICIPANTS

Numerous individuals are involved in the commercial salmon fisheries' harvesting and marketing sectors. Although it is difficult to ascertain the exact number of participants, Table B-1 estimates the number of commercial vessels landing salmon on the Pacific coast.

Table B-1. Number of commercial vessels landing salmon.

	Washington[a/]	Oregon[a/]	California[a/]	Pacific Coast (3 states)
1974	4,975	2,304	3,173	9,995
1975	5,022	2,391	3,150	10,071
1976	b/	3,189	3,552	6,292[c/]
1974-76	6,207	4,665	5,013	b/
1980[d/]	2,700-2,900	3,700-3,900	6,500-7,000	b/

a/ Individual state estimates are based on state vessel licenses or salmon landings. Some vessels land or are licensed in more than one state, so that state totals can not be directly added to produce a coastwide total.
b/ Information not available
c/ Combined California and Oregon only
d/ Troll vessels only.
Sources: National Marine Fisheries Service, Coastwide Data Files, La Jolla, CA, 1980.
CDF&G, ODFW and WDF, preliminary unpublished data.

These data give some idea of general magnitudes as well as the degree of salmon vessel overlap among the three Pacific coast states. Most of the commercial vessels on the coast are trollers, although there are also significant numbers of gillnetters in Washington (See Section I.B. of this Appendix).

A. Trollers

Salmon trolling is basically a multiple hook-and-line fishery in which numerous baits or lures are suspended at desired depths behind a moving vessel. Fish are brought on board individually, rather than in bulk, as in net fishing. Trollers harvest chinook (*Onchoryncus tshawytscha*), coho (*O. kisutch*), and pink (*O. gorbuscha*) salmon. Chum and sockeye salmon are not caught in any quantity by U.S. trollers.

The multi-state, multi-species, multi-gear-type nature of the Pacific salmon fisheries makes it difficult to assess the size of the troll fleet. The Pacific salmon troll fleet fishes along the entire Pacific coast, from the Monterey area in California to Cape Suckling in the Gulf of Alaska. Although three Pacific coast troll fleets, based in Washington, Oregon and California have been identified, there is a great deal of mobility and interchange. Petry (1980) estimates that in 1977, 9.4% of Oregon troll vessel owners were Washington residents and 7.6% were California residents. Of Washington troll vessel owners, 5% were Oregon residents.

The California troll fleet fishes primarily off its own coast, but a few boats have fished as far north as the southern coast of Washington.

Although most of the Oregon salmon troll fleet fishes primarily off the coast of Oregon, some vessels, particularly larger ones, follow the salmon runs from northern California to northern Washington.

The Washington troll fleet fishes waters from northern California to southeastern Alaska. Most of the catches by this fleet, however, occur off coastal Washington. Jensen (1978) estimated that in 1978 14.9% of the Washington troll fleet had fished in California waters, 39.2% in Oregon waters and 6.2% in Alaskan waters.

Prior to the late 1960s, U.S. trollers caught substantial numbers of both chinook and coho from waters north of the Strait of Juan de Fuca. From 1970 to June 1978, Canadian trollers were permitted to fish off certain areas of the Washington coast outside territorial waters. In turn, U.S. salmon vessels (mostly Washington trollers) were allowed to fish in certain areas off the British Columbia coast outside territorial waters. This arrangement was part of a bilateral agreement first signed in 1970, dealing with several species in addition to salmon. The agreement was revised several times and was finally discontinued in June 1978. Although provisions for reciprocal groundfish and albacore fishing have been renegotiated, no reciprocal salmon fishing occurred in 1979 and 1980.

The large troll vessels also are mobile in terms of fishing distance from shore. Special research studies involving troll salmon logbooks were conducted in Washington in 1970 and 1971. One analysis of these data was directed at determining distribution of catch by both distance offshore and depth for major fishing areas off Washington's coast. Results were summarized by Wright and Brix (1973) as shown in Table B-2.

Salmon troll mobility extends to other species. Petry (1979) estimates that in 1977, 40% of troll vessels that landed salmon in both Washington and Oregon also landed tuna in Washington; twenty-four percent landed tuna in Oregon. Ten percent of Oregon-only salmon boats also landed crab. Of trollers that operated in both California and Oregon, an estimated 37% landed tuna in Oregon, 27% landed tuna in California, and 22% landed crab in California. Jensen (1978) estimates that 35.2% of Washington-licensed salmon trollers also fish for tuna, 16.3% fish for crab, 14.1% fish for other species (which often include sablefish and halibut), while only 0.9% fish for herring.

An understanding of the mobility of the troll fleet is important in order to:

1. Estimate total fleet size;
2. Estimate the geographical distribution of the fleet, regulatory impacts, and effects on other fisheries;
3. Estimate levels of dependence of various communities, on particular salmon stocks, and on the salmon resource as a whole.

Other measures of dependency on the salmon fisheries relate to characteristics of the fishermen and their vessels.

Table B-2. Distribution of Washington coastal troll catches, 1970-1971.

Year	Species	Distribution by distance offshore: Inside 3 miles	Between 3 & 12 miles	Outside 12 miles	Distribution by bottom depth: Less than 200 meters	Over 200 meters
1970	Chinook salmon					
	Number	28,401	146,890	28,586	203,620	257
	Percent	13.9	72.0	14.0	99.9	0.7
1971	Chinook salmon					
	Number	32,410	195,978	5,226	233,158	456
	Percent	13.9	83.9	2.2	99.8	0.2
1970	Coho salmon					
	Number	72,338	514,824	145,514	722,863	9,813
	Percent	9.9	70.3	19.9	98.7	1.3
1971	Coho salmon					
	Number	89,939	1,111,173	38,799	1,233,566	6,345
	Percent	7.3	89.6	3.1	99.5	0.5
1970	Pink salmon					
	Number	164	3,651	1,745	5,205	355
	Percent	2.9	65.7	31.4	93.6	6.4
1971	Pink salmon					
	Number	3,075	14,804	152	16,753	1,278
	Percent	17.1	82.1	0.8	92.9	7.1

Source: Wright and Brix, 1973.

Non-Fishing Employment

Of major importance in understanding fishermen dependence on salmon fisheries are the level, types and distribution of non-fishing employment among trollers. Jensen (1978) surveyed 230 Washington trollers, 244 Washington gillnetters, 53 purse seiners and 14 reefnetters during the winter of 1978. According to his survey, 41.2% of Washington salmon tollers supported themselves entirely through fishing. (This compares with 47.9% of Washington gillnetters, 72.5% of Washington purse seiners and 58.3% Washington reefnetters). Among all the fishermen surveyed by Jensen, there were only two welfare recipients. Table B-3 shows Jensen's breakdown for 1977 Washington trollers.

In Petry's (1980) study, the percentage of troll vessel owners with non-fishing employment varied from 10% (California trollers with gross receipts over $20,000) to 78.9% (Oregon trollers with gross receipts of $5,000 or less). In general, fewer fishermen in the high gross receipts ranges had non-fishing employment than those in the lower ranges. (This compares with gillnetters who showed a similar trend although a narrower range, i.e., fewer gillnetters in the low gross receipt ranges, and relatively more in the higher ranges had non-fishing employment.)

Table B-3. Income sources of Washington troll fishermen, 1977.

Full time fishing employment	41.2%
Other full-time employment	28.9%
Other part-time employment	16.4%
Pension	20.2%
Social Security	8.7%
Other income sources	20.19%
Working spouse	33.9%
Unemployment compensation	10%
Welfare (Approx.)	0%

Source: Jensen, 1978.

Types of non-fishing employment among Pacific coast trollers included laborer (11.5%), craftsman (10.5%), businessman (5.2%) and teacher (3.8%), (Petry, 1980).

Petry (1980) estimates the mean 1977 non-fishing income before taxes of Pacific coast trollers to be $16,321; 18.6% earned $5,000 or less from non-fishing jobs. Only 5.3% earned over $30,000 from non-fishing employment. Fifty percent of the trollers surveyed were in the $8,000-$20,000 range of non-fishing income before taxes.

Gross Receipts from Fishing

Another measure of dependence upon salmon fisheries is gross receipts from salmon fishing and from all commercial fishing. According to Petry's survey, mean gross receipts from all fishing decreased for trollers from 1976 to 1977. Mean gross receipts from Washington and Oregon salmon fishing decreased even more during the same period. There were more vessel owners in the low gross receipts ranges in 1977 than in 1976. There was a reduction in vessel owners in the over $30,000 gross receipts class during that same period. Salmon prices and salmon abundance were both relatively high in 1976.

Petry's (1979) estimates of Washington and Oregon trollers' dependence on salmon, based on gross receipts from fishing, indicate that the two lower gross receipts classes ($0-5,000 and $5,001-10,000) were almost totally dependent upon salmon caught in the two states (94-100% dependence in both 1976 and 1977). Trollers in the middle range ($10,000-$20,000) were 90-99% dependent on regionally-caught salmon, except in 1977, when Washington coastal trollers were apparently able to switch species or locations to a greater extent, so that they were only 79% dependent. Washington coho salmon fishing was poor in 1977 which probably triggered this move to other fisheries. Regionally-caught salmon accounts for 51-81% of gross receipts in the over $20,000 class. Again, mobility with regard to species or location probably accounts for this lesser dependence on salmon in the high gross receipts category.

Table B-4. Gross receipts from fishing: Washington and Oregon troll fishermen.

	From all Fishing 1976	From all Fishing 1977	From Salmon in WA & OR 1976	From Salmon in WA & OR 1977
Mean $	$14,874	$12,368	$11,289	$8,387
Range (±25%)	$2,600-22,400	$1,700-17,000	$2,100-15,000	$1,500-11,000
% in $0-2,500 Range	24.9%	33.0%	27.5%	37.1%
% in Range over $30,000	15.4%	11.5%	18.7%	10.0%

Source: Petry, 1979, Vol. I, pp. 135-136.

Petry also estimated gross receipts per day from all commercial fishing in 1977, by gross receipts class and "fishing group." "Fishery groups" are based on the home port of the fishermen. Gross receipts per day reflect some measure of fishing expertise, quality and quantity of gear and mobility of vessels. It should, however, be noted that 1977 was a relatively bad year for coho fishing. Values ranged from $50.8/day for Puget Sound-based trollers in the lowest class to $382.0/day for Washington coastal trollers in the highest class. In each troll fishery, gross per day rises with gross receipts class. Gross per day in the over $20,000 class was generally 4-6 times that of the $0-5,000 class. Petry points out that gross per day from gillnetting is approximately double that from trolling in all classes. (Note, however, that gillnetters are allowed far fewer days to fish.) Similar trends are evident in Petry's analysis of mean gross receipts per day of commercial salmon fishing in Washington-Oregon. Again, the least dependence on salmon was shown by the over $20,000 class.

Fishing Expenditures

Knowledge of levels and patterns of expenditures by salmon fishermen is useful in estimating the impact of salmon fishing on local economies (see section on Coastal Communities) and in understanding the economic involvement of fishermen in the salmon fisheries. Documentation of expenditures is necessary for the calculation of net income, an indicator of economic dependence on the salmon fisheries. Furthermore, an understanding of the pattern of expenditures may be useful in predicting changes in the fishing behavior of salmon fishermen in response to natural, market or regulatory changes.

"Expenditures" in Petry's analysis (1980) were divided into "new capital purchases" (which have a useful life of more than one year) and "expenses" (which generally last one year or less). "Capital purchases" include vessels, electronic gear, fishing gear other than nets and tackle, and transportation equipment. "Expenses" were further divided into "variable expenses" (wages, fuel, bait, ice, nets, tackle, food, lodging, travel, repair and maintenance) and "fixed expenses" (moorage, insurance, personal and property taxes, license fees and "other"). Vessel and gear depreciation may also be included in the variable expense category.

Table B-5 shows how total expenditures as a percentage of gross receipts decrease with increasing gross receipts class. It should be noted that these figures do not include interest on mortgages (e.g., boat payments). Trollers with home ports on the Washington coast showed relatively more profitability in 1977 than Puget Sound-based and Oregon-based trollers, despite a poor season that year. Of the fixed expenses, vessel and gear depreciation was the biggest factor. Insurance was also significant, and in the lower gross receipt classes, moorage was an important fixed expense. Of the variable expenses, repair and maintenance, and equipment purchase were significant in all classes. However, wages were the largest expense in the high receipt classes, while fuel expenses dominated in the lower receipt classes.

Table B-6 provides further information on total expenditures of Washington and Oregon troll fleets.

Table B-5. Expenses excluding interest and federal income taxes of commercial trollers by type of fishery for each major geographic area for 1977 as a percentage of gross receipts by gross receipts class.

Gross Receipts Class	$0-5,000	$5,001-10,000	$10,001-20,000	over $20,000
Fishery Type				
Puget Sound Troll				
Variable expenses	90.53%	54.28%	47.61%	41.91%
Fixed expenses	44.56%	28.07%	23.98%	20.06%
Total expenses	135.09%	82.35%	71.59%	61.97%
Washington Coast Troll				
Variable expenses	82.13%	48.34%	41.76%	36.12%
Fixed expenses	47.62%	27.20%	18.26%	15.20%
Total expenses	129.75%	75.54%	60.02%	51.32%
Oregon Troll				
Variable expenses	90.04%	47.98%	42.55%	40.84%
Fixed expenses	54.84%	31.22%	20.74%	20.86%
Total expenses	144.88%	79.20%	63.29%	61.70%

Source: Petry, 1979, Vol. I, Page 153.

Net Income

Petry (1979) also did a comparison of fishery net incomes with other small businesses. He concluded that, for 1976 and 1977, average returns to salmon fishermen (including trollers) compared favorably to other industries. For

Table B-6. Expenditures by non-Indian troll fishermen for salmon fishing in Washington and Oregon during 1976 and 1977 by the various Washington and Oregon based fleets.

	Puget Sound		Washington Coast		Columbia River Wash.		Columbia River Oregon		Oregon Coast	
Expenses	1976 ($000)	1977 ($000)	1976 ($000)	1977 ($000)	1976 ($000)	1977 ($000)	1976 ($000)	1977 ($000)	1976 ($000)	1977 ($000)
Wages (Shares)	774	858	336	312	181	175	155	130	1136	1118
Fuel	558	580	247	253	125	128	95	114	716	734
Bait & Ice	103	105	90	89	42	41	42	40	319	321
Nets & Tackle	803	937	290	288	145	155	122	124	870	912
Food	429	544	173	186	86	100	73	78	521	588
Lodging	103	107	52	59	26	30	20	23	152	168
Travel	202	225	91	89	46	45	36	36	272	268
Moorage	232	263	81	88	41	45	33	36	245	271
Insurance	401	553	150	224	75	113	60	90	452	676
Per.&Prop. Taxes	72	78	30	33	15	17	12	14	89	98
Interest	377	415	98	108	49	54	73	80	550	605
Repair & Maint.	772	849	348	365	176	193	118	130	891	980
Salmon Lic. Fees	259	261	121	122	61	62	26	27	200	211
Other	87	90	40	39	20	18	15	16	123	119
TOTAL EXPENSES	5172	5865	2147	2255	1088	1176	880	938	6536	7069
New Capital Purchases										
Vessels & Boat Trailers	246	714	111	273	56	147	40	105	334	861
Electronic Gear	554	743	266	357	154	205	95	126	587	783
Fishing Gear (Incl. Nets & Tackle)	372	402	171	185	87	94	55	59	474	572
Buildings (Incl. House Trailers)	68	87	9	10	7	5	5	4	79	102
Transp. Equipment	638	711	288	293	143	147	124	125	865	878
TOTAL CAP. PURCHASES	1878	2657	845	1118	447	598	319	419	2339	3196
GRAND TOTAL	7050	8522	2992	3373	1535	1774	1199	1357	8875	10265

Source: Petry, 1980.

those in the higher gross receipts classes ($10,001-20,000 and over $20,000), fishery returns exceeded those in other small businesses.
Net fishing income and earning power were substantially lower for salmon fishermen in the $0-5,000 class than for most small businesses. Most of these fishermen supplement their income with non-fishing employment.

Other Factors

Petry's analysis dealt strictly with economic value of the commercial fisheries. No information was available on the social value many fishermen derive from the fishing lifestyle. Although some studies of recreational fisheries have attempted to quantify social value [see, for example, Crutchfield & Schelle's (1978) use of willingness-to-pay/willingness-to-sell methodology], no such studies have been directed toward the commercial fishing sector. It should be noted, however, that social considerations may play an important role in fishermen's behavior and may make up a significant, although unquantified, portion of the value of the fisheries.

Other social and economic troll fishery indicators are presented in Tables B-7 and B-8. In addition to the mean vessel and owner characteristics and financial data available therein, the following information should be noted:

1. Average crew size (including skipper) on Washington and Oregon troll vessels in 1977 averaged one or two, with larger average crew sizes on vessels in the higher gross receipts categories and on vessels whose home port is in Puget Sound.

2. Approximately 50% of Washington and Oregon troll vessels are dayboats (taking one-day trips only) while 50% are trip boats (trip lengths varied from 2 to 9 days).

3. Approximately 15% of trollers surveyed by Petry in 1977 had refrigeration on board. Most of these were in the highest gross receipt categories.

4. Less than 0.5% of trollers surveyed by Petry indicated any ownership of vessels by processing or canning firms in 1977.

B. Net Fisherman

Pacific coast non-Indian net fisheries include three gear types (gillnet, purse seine and reefnet) in 5 locations (Oregon and Washington sectors of the Columbia River, Willapa Bay, Grays Harbor, and Puget Sound). Purse seine and reefnet fisheries only occur in Puget Sound, while gillnetting occurs in all 5 locations.

Purse seining involves encircling a school of fish with a net 200-300 fathoms long by 10-15 fathoms deep. The top of the net is supported by corks while the bottom is closed by a purse-line strung through metal rings at the bottom of the net. The entire "pursed" net full of fish may then be lifted on board, or smaller amounts may be dipped out of the net onto the boat.

The reefnet technique requires two large skiffs anchored in shallow water, with an approximately 50-foot square net rigged at a sloping angle between them. When salmon swim over it, the net is raised, trapping the fish.

Table B-7. Mean characteristics of the vessels and owners based upon states fished during 1977.

States Fished	Vessel Age (1)	Year of Vessel Purchase (2)	Overall Vessel Length (3)	Vessel Beam (4)	Gasoline Main Engine Horsepower (5)	Diesel Main Engine Horsepower (6)	Vessel Gross Tons (7)	Vessel Mortgage ($000) (8)	Current Mkt. Value of Vessel & ($000) Gear (9)	Year in Fishing (10)
Trollers										
Washington only	16.2	1971.2	27.9	9.3	173.1	158.2	8.6	2.2	22.9	12.0
Oregon only	14.6	1973.6	27.1	9.2	138.7	142.6	6.3	2.7	18.1	8.6
Oregon & California	21.8	1973.9	36.8	11.2	122.7	153.1	13.0	12.9	54.6	10.2
Washington & Oregon	26.0	1972.1	39.5	11.5	177.8	146.5	16.8	9.2	63.0	13.5
Alaska & any other state(s)	17.6	1969.6	42.5	12.8	133.3	155.2	25.6	10.3	96.1	17.5
Gillnetters										
Washington only	13.3	1972.0	30.4	9.9	226.1	157.5	7.6	5.0	35.2	18.5
Oregon only	22.9	1968.0	27.6	8.7	213.4	135.0*	4.2	1.7	18.6	25.5
Washington & Oregon	11.4	1972.8	28.7	9.4	249.5	195.0*	6.3	2.3	34.6	20.8
Alaska & any other state(s)	12.6	1970.1	32.1	10.4	284.0	176.8	9.1	4.1	48.3	23.2
Combination										
Washington only	12.6	1970.8	35.0	11.0	299.0	137.3	12.1	5.7	47.3	15.8
Oregon only	8.7	1973.8	29.5	10.3	262.0	135.0*	6.3	8.4*	32.7	21.0
Washington & Oregon	11.5	1972.8	36.2	12.3	350.0*	186.5	14.3	11.3	82.9	24.9
Alaska & any other state(s)	8.5	1972.5	37.0	11.6	-	188.6	15.0	12.5	67.2	16.6
*4 or less observations.										
Purse Seine	29.4	--	52.4	15.1	224.5		--	--	--	--

-- Information not available

Source: Petry, 1979 & 1980, Vol. I & II

Table B-8. Summary, salmon harvesting costs and earnings.

Harvest Method	Boat LOA In Feet	% of Gross[1] From Salmon	Pounds Production	Fixed & Var.[2] Cost/Lb.	Fixed, Var. & Opp. Cost/Lb.[2]	Return to[3] L, M & I	L & M	I
Gillnet	35	100	20,500	.59	1.30	12,915	11,265	0 %
Gillnet	32	100	19,800	.58	1.45	12,834	7,794	1.6
Gillnet	32	100	20,000	.73	1.73	10,050	2,250	-3.5
Gillnet	28	100	13,300	.71	1.75	9,323	6,823	-7.8
Gillnet	30	100	14,000	1.08	2.16	6,235	1,285	-21.0
Gillnet	28	100	12,000	1.07	1.66	5,869	4,369	1.7
Seine	58	100	235,100	.43	.62	30,992	12,992	3.0
Troll	45	13	16,000	1.69	3.07	49,650	39,450	11.4
Troll	50	14	8,600	2.86	4.57	36,563	23,313	6.9
Troll	55	35	9,000	2.19	4.01	21,569	5,569	1.5
Troll	42	60	13,000	1.50	2.84	19,147	9,397	8.6
Troll	46	70	14,800	.78	1.51	18,336	12,836	8.6
Troll	42	93	16,800	.81	1.51	15,785	10,885	12.1
Troll	32	44	9,600	1.07	1.84	15,158	11,558	3.7
Troll	52	11	3,700	2.18	3.46	14,947	5,847	-4.5
Troll	36	100	10,800	.78	1.73	11,211	6,861	12.2
Troll	40	48	12,400	1.07	1.69	10,549	3,649	-5.3
Troll	24	52	4,200	1.41	2.12	2,411	911	-26.5
Mean for Gillnet				.79	1.68	9,539	5,631	-4.8
Mean for Troll				1.49	2.58	19,577	8,257	2.6
Mean for All				1.24	2.17	16,866	7,645	.15

[1] Gross refers to gross returns or gross income. For operations with less than 100% of gross from salmon, crab fishing and tuna fishing is the most common alternative activity. See Tables VII-13 through VII-30 more detail.

[2] See Tables VII-13-VII-30 for explanation of these costs. Costs were allocated to salmon production on the basis of effort.

[3] See Tables VII-13-VII-30 for explanation of these terms. The returns to labor, management and investment (individually and collectively) are from all fishing activities.

Source: OSU, Vol. A, 1978.

Salmon gillnetting in Washington and Oregon is a driftnet method in which a boat lowers into shallow water a 200-300 fathom long by 14-20 foot deep net and allows it to drift. The net has floats at the top and weights at the bottom. The gillnet catches fish by entangling their gill covers in the mesh. The net is then hauled in and the fish are removed. In the lower Columbia region, two separate groups of gillnet fishermen, "floaters" and "drifters," employ different variations of this gear.

Vessels licensed for several gear types or for several areas again make it difficult to estimate total fleet size. Petry (1980) provides an estimate of numbers of vessels with multiple Washington licenses in 1977. (See Table B-9). Approximately 59% of Washington vessels had two or more gillnet licenses in 1977. About 165 vessels had multiple gillnet or gillnet/troll licenses in 1977, falling to 133 in 1978 (because of the buy-back program and license transfers).

Table B-9. Number of vessels with multiple Washington salmon licenses during 1977.

Type of Multiple License	Estimated Number of Vessels	Percentage of the Total
Troll/Gillnet	48	24.2%
Grays Harbor/Willapa Bay Gillnet	41	20.7%
Puget Sound/Willapa Bay Gillnet	35	17.7%
Puget Sound Gillnet/Purse Seine	29	14.7%
Grays Harbor/Puget Sound Gillnet	27	7.1%
All Three Gillnet Licenses	14	7.1%
Troll/Purse Seine	4	2.0%
Total	198[1/]	100.0%

1/ A slight underestimate since the study was done in October 1977 and, therefore, does not account for transfers of license ownership later in the year.

Source: Petry (1980)

In 1977, net vessel licenses were 94.5-100% owned by in-state residents, except for Oregon gillnetters (6.7% of owners lived in Washington) and Grays Harbor/Columbia River gillnetters (10.5% of owners lived in Oregon). Many Washington net fishermen also have Alaska licenses.

Petry (1980) estimates the following fleet sizes for the net fisheries in 1977 (Table B-10):

Table B-10. Salmon net fishery fleet sizes in 1977.

Fishery	Number of Vessels
Puget Sound gillnet:	1,425
Willapa Bay/Columbia River gillnet:	384
Grays Harbor/Columbia River gillnet:	238
Oregon gillnet:	358
Washington purse seine:	349
Washington reefnet:	77

Source: Petry, 1980.

In 1977, 5.6% of Washington-only gillnetters also landed crab. Of gillnet vessels fishing both Washington and Oregon, 6.5% also landed crab in Washington. Small numbers of gillnet vessels that also fished Alaska landed some crab and tuna in the three Pacific coast states. However, most gillnetters and reefnetters fished exclusively for salmon. Many purse seine vessels fish salmon in Alaska and seine for herring in addition to seining salmon in Puget Sound. A discussion of areas fished and landings by the Washington and Oregon inside-net fisheries is found in other sections of this 1981 salmon plan amendment.

Percentages of gillnetters having non-fishing employment in 1977 ranged from 10% (Washington coastal gillnetters in the upper-middle gross receipts category) to 76.5% (gillnetters in the lower-middle gross receipts class with home ports in Oregon). In all classes, more Oregon gillnetters had non-fishing employment than Washington coastal or Puget Sound gillnetters. Among gillnetters, laborer and craftsman were the two most prevalent types of employment, although a significant number surveyed stated they were teachers or businessmen. Mean non-fishing income before taxes in 1977 for gillnetters was $13,549. The percentage of gillnetters earning $5,000 or less from non-fishing employment was 21.1% (compared to 18.6% for trollers). Only 0.9% made over $30,000 from outside employment (compared to 5.3% for trollers). Fifty percent of gillnetters surveyed were in the $7,000-18,000 range of non-fishing income before taxes (Petry 1980). It should be noted that 1977 was a relatively bad salmon fishing year for most fishermen. Comparable data were not available for the purse seine and reefnet fleets.

Jensen (1978) estimates that the following percentages of Washington net fishermen received income from outside sources in 1977 (Table B-11):

Table B-11. Income sources of Washington net fishermen.

Income Source	Percentage of Fishermen Washington Gillnet	Purse Seine	Reefnet
Full-time fishing employment	47.9%	72.5%	58.3%
Other full-time employment	21.5%	9.8%	20.0%
Other part-time employment	30.5%	17.6%	50.0%
Pension	8.0%	6.7%	0.0%
Social Security	4.0%	0.5%	0.0%
Other income sources	13.6%	15.4%	10.0%
Working spouse	30.5%	32.0%	9.1%
Unemployment Compensation	9.5%	25.0%	42.9%
Welfare (approximately)	0	0	0

Source: Jensen, 1978.

Gross Receipts from Fishing

Mean gross receipts from all fishing by gillnetters increased slightly from 1976 to 1977, although mean gross receipts from salmon fishing in Washington and Oregon decreased. This indicates a change of species, or more probably, a greater involvement in Alaskan fisheries. From 1976 to 1977 there was an increase in the percentage of gillnetters in the $0-2,500 gross receipts range. However, this percentage (12.6% for all fishing in 1977) was still much lower than the equivalent figure for the troll fleet (33.0%).

Table B-12. Gross receipts from fishing: Washington and Oregon gillnetters.

	All Fishing 1976	All Fishing 1977	Salmon in WA & OR 1976	Salmon in WA & OR 1977
Mean $	$16,240	$16,363	$12,062	$10,963
Range (±25%)	$5,300-22,000	$5,000-22,000	$5,000-16,000	$4,000-16,000
% in $0-2,500 Range	11.8%	12.6%	14.4%	18.3%
% in Range over $30,000	15.2%	14.0%	14.8%	13.1%

Source: Petry, 1979, Vol. I, pp. 135 & 136.

Petry's (1979) analysis indicated that gillnetter dependence on Washington and Oregon salmon (based on gross receipts) generally decreased in 1977 compared to 1976. Gillnetters in the over $20,000 gross receipts class were less dependent on Washington and Oregon salmon than gillnet fishermen in the lower gross receipts categories, probably because of greater mobility and ability to participate in Alaskan fisheries. In the lower categories, gillnetters were 89-100% dependent on Washington and Oregon salmon in 1977. These values are comparable to troll fishery values, except for Washington coastal trollers, who were only 79% dependent. In the highest gross receipt category, dependency values ranged from 56% to 72%, slightly less than trollers in the same category. The Purse Seine Vessel Owners Association has indicated that reduced seasons have forced reduced dependency on local salmon for its members, causing more seiners to enter herring fisheries and Alaskan salmon fisheries (1980).

Petry's (1979) estimates of gross receipts per day for gillnetters show similar patterns as those described for trollers. For instance, gross per day in the highest gross receipts class is 4-6 times that in the lowest class. However, as previously noted, gross per day by gillnetters was approximately double that by trollers.

Fishing Expenditures

Gillnetters and trollers showed similar patterns in their total expenses as a percentage of gross receipts. (It sould be noted that the expense data in Table B-13 excludes interest on mortgates, e.g., boat payments.) However, gillnetters in each category tended to show more profitability than trollers in the same gross receipts category. (Compare Table B-13 with Table B-5.) Gillnetters with home ports on the Washington and Oregon coast showed more profitability than Puget Sound gillnetters in all categories except the lowest gross receipts class. Gross receipts are much higher for purse seiners than other net fishermen so their profitability is not directly comparable to that of trollers and gillnetters.

Fuel was generally a relatively greater expense for trollers than for netters, particularly in the lower gross receipt categories. Wages were the most significant expense for purse seiners.

Tables B-14 and B-15 provide additional information on gillnet and purse seine expenditures. These tables are comparable to Table B-6 on troll expenditures.

Net Income

As in the case of Pacific trollers, Petry's analysis of net income and assets concludes that in 1977, average return to gillnetters, especially in the upper gross receipts classes, compares favorably with other small businesses. The general net income before interest and federal taxes was greater for gillnetters than for trollers, although trollers had greater assets in book value. No comparable data were available for purse seiners and reefnetters.

Table B-13. Expenses, excluding interest and federal income taxes, of commercial gillnetters for each major geographic area for 1977 as a percentage of gross receipts by gross receipts class.

Gross Receipts Class	$0-5,000	$5,001-10,000	$10,001-20,000	over $20,000
Fishery Type				
Puget Sound Gillnet				
Variable expenses	61.76%	48.32%	42.44%	36.30%
Fixed expenses	28.41%	28.92%	21.24%	10.13%
Total expenses	90.17%	77.24%	63.68%	46.43%
Washington & Oregon Coastal Gillnet				
Variable expenses	79.37%	41.93%	39.66%	32.23%
Fixed expenses	32.56%	23.20%	16.68%	10.07%
Total expenses	111.93%	65.13%	56.34%	42.30%

	$50,000 or less	$50,001-100,000	Over $100,000
Puget Sound Purse Seiners			
Variable expenses	62.5%	61.9%	56.7%
Fixed expenses	9.6%	8.8%	8.5%
Total expenses	72.1%	70.7%	65.2%

Source: Petry, 1979, Vol. I, page 153.

Other Factors

Other social and economic net fishery indicators are presented in Tables B-7 and B-8. In addition to the mean vessel and owner characteristics and financial data available therein, the following information should be noted:

a. Crew size (including skipper) on Washington and Oregon gillnetters in 1977 averaged one or two. Number of crew on purse seiners was 5 or 6.

b. Seventy percent of gillnetters in 1977 took one-day trips only and very few vessels took trips longer than 3 days.

c. Less than 2% of gillnetters surveyed by Petry indicated any ownership of vessels by processing or canning firms in 1977. The Purse Seine Vessel Owners Association indicates that in 1980, approximately 50% of their vessels were owned by processing or canning companies.

d. No information was available regarding the "social value" placed by net fishermen on the salmon fisheries.

C. Private Aquaculturists

No economic or social data on private aquaculturists were available at the time of writing.

Table B-14. Expenditures by non-Indian gillnet fishermen for salmon fishing in Washington and Oregon during 1976 and 1977 by the various Washington and Oregon based fleets.

	Puget Sound		Washington Coast incl. Col. R. (WA)		Columbia River Oregon	
Expenses	1976 ($000)	1977 ($000)	1976 ($000)	1977 ($000)	1976 ($000)	1977 ($000)
Wages (Shares)	$602	$903	$340	$306	$185	$176
Fuel	468	546	169	197	111	129
Nets & Tackle	1342	1635	698	862	385	475
Food	255	299	125	127	67	74
Lodging	21	23	14	16	8	9
Travel	153	171	81	80	46	46
Moorage	127	162	45	48	25	28
Insurance	195	257	79	89	45	51
Pers. & Prop. Taxes	93	119	36	43	21	22
Interest	208	228	79	86	14	16
Repair & Maintenance	595	695	265	289	149	166
Salmon License Fees	151	150	75	73	26	27
Other	121	133	64	70	36	40
TOTAL EXPENSES	$4331	$5321	$2070	$2286	$1118	$1259
New Capital Purchases						
Vessels & Boat Trailers		341	357	208	201	77
Electronic Gear	325	423	96	102	52	59
Fishing Gear	205	267	106	117	64	70
Buildings (Incl. House Trailers)	58	68	53	56	33	44
Transportation	494	568	302	294	119	116
TOTAL CAPITAL PURCH.	$1423	$1683	$ 765	$ 770	$ 345	$ 368
GRAND TOTAL	$5754	$7004	$2835	$3056	$1463	$1627

Source: Petry 1980

Table B-15. Expenditures by non-Indian purse seine fishermen for salmon fishing in Washington during 1976 and 1977 by the Washington based fleet.

Expenses	1976 ($000)	1977 ($000)
Wages (shares)	2959	4568
Fuel	316	395
Nets & Tackle	664	830
Food	297	371
Lodging & Travel	25	31
Moorage	58	73
Insurance	498	623
Pers. & Prop. Taxes	6	7
Interest	138	207
Repair & Maint.	733	916
Salmon License Fees	76	75
Other	49	61
Total Expenses	5819	8157
New Capital Purchases		
Vessels (incl. skiffs)	1764	2427
Electronic Gear	184	240
Fishing Gear (excl. nets & tackle)	289	361
Transportation equipment	40	45
Total Capital Purchases	2277	3073
Total Capital Purchases and Expenses	8096	11230

Source: Petry, 1980.

D. Processors, Marketing Agents and Consumers: The Marketing Sector

Up to this point, this appendix has focused on the harvesting sector of the Pacific coast commercial salmon industry. The marketing sector is also very complex. Salmon regulatory decisions impact this sector, and the dynamics of the marketing sector influence fishermen and salmon harvesting patterns.

Some information on the salmon processing industry is contained in Appendix B's section on coastal communities. In addition, a brief description of the structure and dynamics of the salmon marketing system is provided here. This description is based primarily on Oregon State University's Socio-Economics of the Idaho, Washington, Oregon and California Coho and Chinook Salmon Industry (1978) and an unpublished article by R. Lent and R. Johnston entitled, "The Marketing of Pacific Salmon," (1979).

Figure B-1 provides a simplified overview of marketing channels for Pacific Northwest salmon. Processors, brokers, distributors and retailers provide the link between harvesters and consumers. Salmon may be channelled into domestic or export markets. Complexities not taken into account in the diagram include: 1) the considerable trade that occurs between market participants throughout the process; and 2) the vertical integration often found in the salmon industry (e.g., processing companies may own fishing vessels, brokerage firms or transportation facilities).

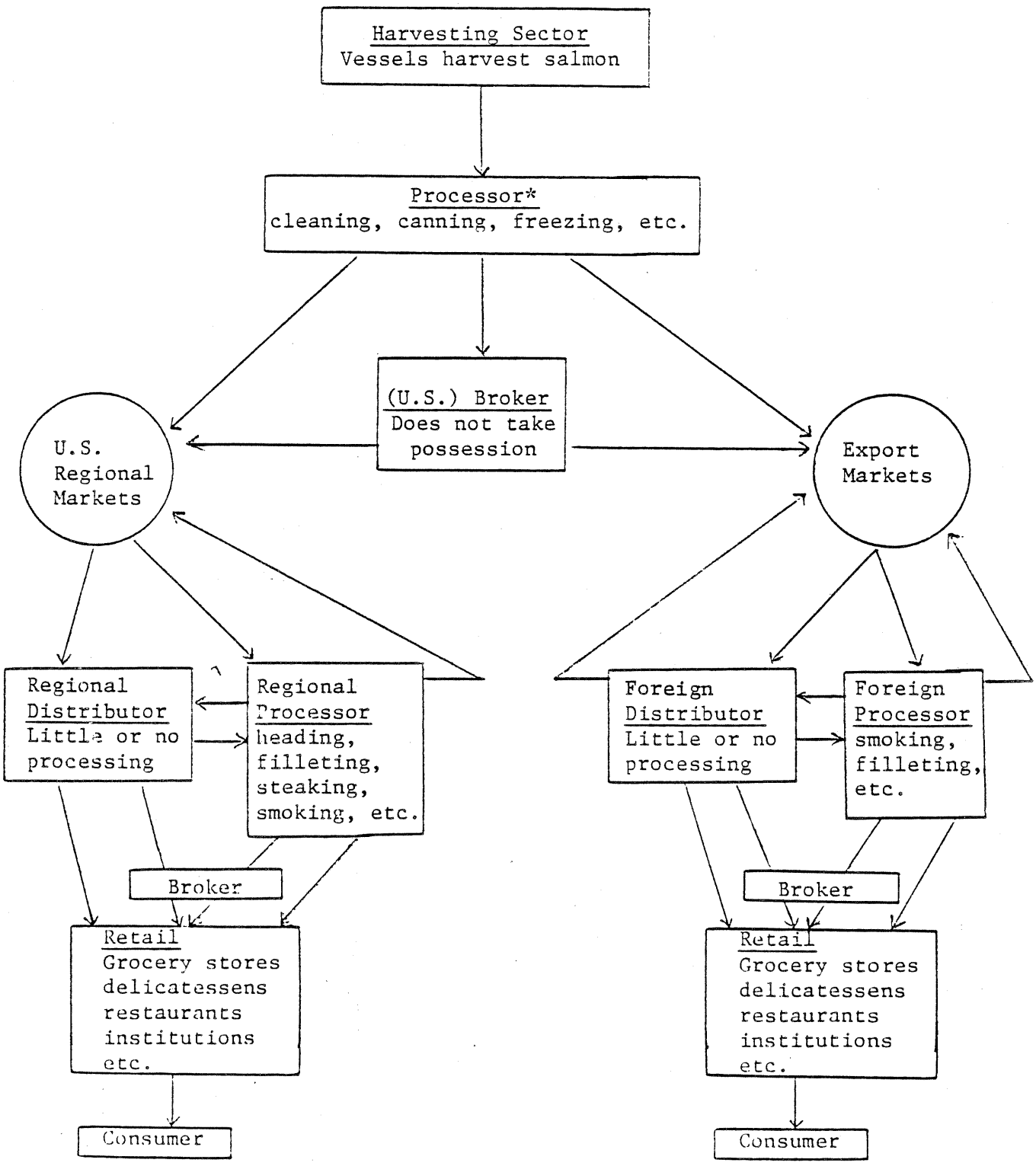
Salmon Products

Pacific salmon is processed and sold in many forms. Major product forms include fresh and frozen fillets, steaks and small whole fish, canned salmon, smoked sides and slices, and salmon roe. Different "types" of salmon are preferred for processing into different product forms for different markets. The salmon typology is based on species (chinook, coho, pink, chum or sockeye), size (e.g., under 4 pounds, 4-6 pounds, 6-9 pounds and over 9 pounds), harvest gear type (troll, gillnet, seine, etc.), geographical origin (e.g. "Yakutat Kings" from the Yakutat area in Alaska), and in some cases, boat type ("dayboat" versus "trip boat"). These features are indicators of freshness, oil content, condition (e.g., bruising), color and size. They determine suitability for processing into various product forms.

Fresh and frozen salmon products have been gaining in popularity in the United States and in export markets in recent years. Chinook and coho salmon have traditionally supplied the majority of the non-canned market, although these two species also contribute to the canned market. From 1960 to 1977, the percentage of United States coho landings entering the non-canned market rose from 52% to 92%, while for chinook the percentage rose from 72% to 98%. In many cases, troll-caught chinook and coho are preferred over net-caught fish for the fresh, frozen and smoked markets. Net-caught coho do, however, enter these markets (OSU, 1978).

Sockeye, pink and chum salmon have traditionally entered the canned market. This situation is changing, however, particularly with regard to chum and sockeye salmon. The percentage of chum landings entering non-canned markets rose from 8% to 39% from 1960 to 1977, and for sockeye the percentage rose from 3.5% to 29.7% (OSU, 1978). Sockeye and chum salmon were particularly popular in fresh and frozen form on the Japanese market.

Figure B-1. Marketing channels of Pacific Northwest salmon.



*There is also an undetermined volume of salmon traded between processors.

Source: Lent and Johnston, 1979.

Troll-caught chinook and coho have traditionally been considered the most desirable types of salmon for smoking. Bruises often associated with gillnet salmon turn black in the smoking process and must be excised, so that this type of fish is considered less desirable. Larger fish are also generally preferred by many smokers. However, depending on relative prices and other circumstances, many types of salmon -- all five species, troll and gillnet-caught, large, medium and small -- may be used for the smoked salmon market (OSU, 1978).

Chum salmon roe is preferred for the Japanese salmon roe market, although roe from other salmon species is also used. In 1975, salmon roe was Japan's most highly valued seafood import from the United States.

The preceding discussion indicates that some substitutional relationships with regard to product form exist among the different types of salmon. In addition, some substitutional relationships appear to exist between canned tuna and some types of canned salmon.

As Figure B-1 points out, Pacific salmon is distributed to both domestic and export markets. Information is available on four major domestic market centers (San Francisco, Los Angeles, Chicago and New York) and several export markets. In recent years, the major countries importing North American salmon have been Japan and the European countries, particularly France.

Supply Regions

The OSU Study (1978) provides information on the destination of salmon handled by processors in the various Pacific coast supply regions in 1977. It should be noted that, in some cases, these destinations are not final since salmon are re-exported after further processing. Highlights of the OSU information base are presented here.

Salmon caught by troll gear off the northern California/southern Oregon coast were distributed in a variety of markets in 1977. The majority of small chinooks went to markets in the San Francisco Bay and Puget Sound areas, while the majority of medium and large chinooks were destined for southern California. Seventy-seven percent of small cohos went into markets in Puget Sound. Of the medium-sized and large cohos, 71-91% were exported.

High percentages of troll-caught chinook landed at Columbia River ports were also exported in 1977. Most of the net-caught chinook in this region in 1977 were shipped to southern California and Oregon. Export markets were most important for coho, although the east coast, southern California and the Great Lakes region also received Columbia River coho.

Information on the destination of salmon caught on the Washington coast was not available at the time of writing.

Domestic Demand Regions

Data on the San Francisco Bay area suggest that restaurants, institutions and wholesale and retail outlets are important users of salmon products. Four to seven pound salmon tend to be preferred by restaurants for filleting, while smaller salmon, particularly coho, are preferred by institutional users and retail outlets because of their lower price.

Los Angeles area "imports" of salmon are dominated by large chinooks which are used for smoking and curing and are subsequently "re-exported" from the area.

Smokers in the Chicago area also prefer large troll-caught chinook and coho, although price differentials have caused some shift to chum salmon and net-caught salmon. Retail outlets in New York and Chicago preferred small cohos in 1977, while restaurants generally preferred 6 to 10 pound chinook and coho.

Export Markets

In 1977, an estimated twenty percent of total United States and Canadian Pacific salmon landed was exported. Seventy percent of the total volume of non-canned salmon from the region was exported. [U.S. and Canadian data in the OSU Study (1978) were aggregated for statistical purposes.] Table B-16 shows how North American fresh and frozen salmon exports have risen dramatically over time. Table B-16 also presents the percentage of salmon imports by country.

The United Kingdom was one of the world's largest importers of canned Pacific salmon in 1977. Sockeye is the preferred species, although some substitution of pink and chum salmon occurs, depending on price. U.S.-caught salmon competes with Japanese and Soviet-caught Pacific salmon for the U.K. canned salmon market. In the U.K. fresh and frozen market, small cohos were preferred in 1977, although silverbrite chums, pinks and sockeyes may substitute. The U.K. market is highly sensitive to price fluctuations, apparently as a result of inflation and the devaluation of the British pound.

In France, canned salmon imports have historically been low. Fresh and frozen Pacific salmon imports are high and have been increasing, coinciding in part with a decline in the supply of Atlantic salmon and increases in population and real per capita income. Similar trends are found in West Germany and Sweden. Much of the fresh and frozen salmon imported into France is smoked, although supermarkets are a new and expanding French market for smaller salmon (particularly coho and sockeye).

Empirical evidence suggests that, unlike the U.K., demand for salmon in France is relatively inelastic, i.e., the quantity demanded is fairly stable relative to price fluctuations (OSU, 1978).

One potentially important future competitor for Pacific salmon in European markets is Norwegian-farmed salmon. These fish are well liked for their uniformity, quality and freshness, and production is increasing. If prices should decline over time, Norwegian farmed salmon may seriously compete with Pacific salmon exports to European markets.

Some of Japan's sources of domestically-caught salmon have been reduced in recent years, due to restrictions on Japanese fishing in United States and Soviet waters. Rising population, rising real per capita income and the strength of the yen relative to the dollar have also contributed to a generally increasing trend in fresh and frozen salmon imports. Small, high quality sockeye and pink salmon were favored by Japanese buyers in 1977. More recently however, imports of fresh and frozen Pacific salmon from the United States have slowed. Apparently, excessively high levels of imports in 1978 left large Japanese inventories at the end of that year. Subsequent record runs of chum salmon in Japan and sockeye and other species in Alaska, in

Table B-16. U.S. and Canadian fresh and frozen salmon export, by country of destination, 1949-1977.

Year	North American Total Fresh & Frozen Salmon Export (Pounds)	Percent of Imports by Country									
		France	U.K.	Sweden	Japan	Belgium	West Germany	Den-mark	Nether-lands	Italy	Others
1977	89,943,641	26.35	5.10	7.95	40.62	3.35	5.17	3.75	1.23	1.64	4.84
1976	74,701,190	29.57	10.73	9.81	7.26	4.19	5.77	3.11	2.17	2.42	24.97
1975	75,999,715	34.37	9.08	10.97	14.16	3.95	4.75	4.06	1.96	1.62	15.08
1974	45,054,899	32.09	8.94	18.10	11.20	5.35	5.70	5.87	2.00	2.42	5.73
1973	88,869,394	19.88	11.11	8.83	40.29	4.42	3.15	3.84	1.93	1.97	4.58
1972	68,003,272	30.48	15.07	14.45	6.68	4.11	3.26	3.53	1.12	1.86	19.44
1971	50,952,992	28.68	16.10	12.24	20.52	4.99	4.41	5.37	0.94	2.58	6.27
1970	36,719,512	32.21	19.56	13.95	19.92	3.97	3.18	4.59	0.85	1.83	2.11
1969	46,928,810	23.32	18.24	9.90	36.50	3.08	2.40	2.83	1.12	0.93	1.68
1968	29,996,550	32.18	28.62	10.13	10.78	3.74	2.32	1.28	1.23	1.29	8.43
1967	32,617,612	34.12	28.22	6.96	6.33	3.93	2.06	2.35	1.87	0.72	13.44
1966	30,248,630	34.63	33.82	5.54	7.42	3.07	1.50	3.87	0.61	0.20	9.34
1965	18,915,947	34.88	33.55	5.43	7.57	5.61	1.32	0.94	1.11	0.60	8.99
1964	30,867,754	8.34	20.08	0.87	47.17	1.83	0.54	0.59	0.53	0.35	19.70
1963	11,945,079	42.32	37.95	0.77	0.05	4.27	1.45	1.03	1.04	1.34	9.78
1962	6,553,173	37.09	9.69	0.52	0.03	7.59	0.68	0.58	0.26	0.95	42.61
1961	4,368,174	31.71	34.11	0.13	0.00	8.24	1.55	0.31	0.40	0.51	23.04
1960	6,030,832	24.54	19.70	0.80	12.88	8.81	1.05	0.34	0.69	0.35	30.84
1959	1,978,591	27.34	12.58	2.38	0.00	26.95	1.91	0.05	6.99	0.78	21.02
1958	1,617,768	8.79	0.00	0.00	0.00	35.77	6.76	8.09	1.43	0.00	39.16
1957	2,325,604	19.89	0.67	0.26	0.09	14.69	2.90	0.05	0.17	0.00	61.28
1956	3,177,943	19.84	0.00	0.00	3.25	15.19	1.68	1.52	2.08	0.20	56.24
1955	1.579,244	37.10	0.87	2.69	0.17	21.58	0.90	0.13	2.73	0.00	33.83
1954	1,723,699	49.69	0.00	3.99	0.00	21.52	0.82	0.04	5.63	0.00	28.32
1953	1,697,667	29.30	0.00	9.88	0.00	16.61	1.37	0.19	3.12	0.00	39.53
1952	801,092	20.86	0.00	0.00	0.00	37.11	0.00	0.12	0.44	0.00	21.47
1951	518,827	8.21	0.00	0.00	0.00	68.10	0.00	0.00	0.04	0.00	23.65
1950	362,148	0.00	0.00	0.00	0.27	59.69	0.00	0.00	0.00	0.00	40.04
1949	347,037	0.00	0.00	0.00	0.39	53.00	0.00	0.79	0.00	0.00	45.82

Source: OSU, 1978.

conjunction with Japanese consumer resistance to high salmon prices, compounded the market situation in Japan. This led to a substantial drop in the price of coho, processing/distributing company financial losses worldwide, and a slowing of Japanese salmon imports.

Japanese imports of canned salmon have traditionally been low; Japan is a net exporter of canned salmon. Salmon roe imports (primarily chum roe) were by far the highest valued fishery product imports from the United States in 1977, and roe remains a very important export for Pacific Northwest producers.

In summary, the salmon marketing sector is extremely complex. Numerous steps exist in the distribution of salmon from harvesters to consumers. Domestic and foreign markets have varying preferences and rates of substitution with regard to types of salmon and end products, and may be more or less sensitive to price fluctuations.

II. RECREATIONAL PARTICIPANTS

The Pacific coast salmon sport fisheries can be divided into three groups: ocean charter fisheries, private ocean sport fisheries and inland sport fisheries. All three types exist in Washington, Oregon, and northern/central California, and inland sport fisheries occur in Idaho.

A. Ocean Charters

Charterboats operate out of many ports along the Pacific coast. A description of the historical development, facilities, fishing areas, private and charter angler effort and catch for the major recreational fishing ports on the Washington coast, is provided in the 1978 PFMC Salmon FMP. Some comparable information on the Oregon recreational salmon fisheries is also included in that document.

This section will expand briefly on the information in the 1978 plan, providing available economic information on the Washington, Oregon and California charterboat fleets.

The number of vessels in both Oregon and California has been declining in recent years. The Oregon Coast Charter Association (OCCA) estimated the Oregon salmon charterboat fleet totaled 250 in 1975, but the fleet has declined in numbers somewhat. The Oregon Department of Fish and Wildlife issued 194 charter vessel licenses in 1980. (Some of these vessels probably did not fish for salmon.) Membership in Golden Gate Sportfishers, Inc., representing charter vessel owners in California, has declined from approximately 130 to 65 in the last 3-4 years. Washington salmon charter vessel numbers jumped from 427 in 1976 to 570 in 1977 but have gradually declined since then (535 in 1978 and 516 in 1979). Most of Washington's charter vessels are based in Ilwaco and Westport (WDF, 1980). In some areas, the decline in numbers has coincided with an increase in the average size of vessels. For instance, some large vessels retired from the Washington fleet have been sold to California and Oregon operators (OCCA, 1980).

Vessels range in length from about 30 to 56 feet, although most of the California salmon charter vessels are in the 45 to 47 foot range. Passenger

TABLE B-17
Washington Charterboats:
Mean Values for Selected Characteristics of the Vessels Reported in the Sample (1976)

	Entire Sample Statewide 200 Survey	Westport 112 Surveys	Ilwaco 62 Surveys	Grays Harbor (Westport, Aberdeen, Ocean Shores) 119 Surveys	Columbia Head (Ilwaco, Chinook) 63 Surveys
Length	41.875ft.	45.063ft.	39.629ft.	44.496ft.	39.794ft.
Age of Vessel	8.02yrs.	6.848yrs.	10.484yrs.	6.773yrs.	10.444yrs.
Rated Passenger Capacity	16.086	17.75	15.541	17.529	15.661
Desired Maximum Capacity	13.395	15.214	12.290	15.025	12.333
Percent Using Diesel Fuel	87.5%	97.3%	83.9%	95.8%	84.1%
Percent Using Gas.	12.5%	2.7%	16.1%	4.2%	15.9%
Percent Documented	93.5%	98.2%	93.5%	98.3%	93.7%
Percent with Fiberglass Hulls	58.9%	63.1%	51.7%	64.4%	50.8%
Percent with Wood Hulls	36.1%	35.1%	40.0%	33.9%	39.4%
Percent with Metal Hulls	5.0%	1.8%	8.33%	1.7%	9.8%
Percent with Single Engines	39.5%	33.9%	41.9%	33.6%	42.9%
Percent with Twin Engines	60.5%	66.1%	58.1%	66.4%	57.1%
Estimated Present Value of Vessel	$60,351.57	$72825.69	$47900.13	$71168.103	$48,740.45
Percent with the Following Equipment:					
RDF	36.5%	25.0%	53.2%	25.2%	54.0%
LORAN	72.5%	82.1%	69.4%	80.7%	68.3%
RADAR	36.5%	35.7%	35.5%	35.3%	36.5%
OMEGA	0%	0%	0%	0%	0%
AM radio	45.0%	42.0%	46.8%	42.9%	47.6%
CB	94.0%	92.9%	95.2%	93.3%	95.2%
VHF	95.0%	96.4%	91.9%	96.6%	92.1%
SSB	17.0%	17.0%	22.6%	16.0%	22.2%
Estimated Present Value of Navigation Equipment	$4032.219	$4370.32	$3821.72	$4828.672	$3840.726
Estimated Present Value of Fishing Gear	$832.81	$608.24	$1047.82	$632.09	$1055.00
Avg. '76 Gasoline Gallons Consumed (on vessels with gas engines)	2250.06	3539.5	1645.7	3571.67	1695.70
Avg. '76 Diesel Gallons Consumed (on vessels with diesal engines)	5505.96	6591.5	3601.88	6473.02	3617.92

Source: Crutchfield and Schelle (1977)

TABLE B-17 (continued)
Washington Charterboats:
Mean Values for Selected Characteristics of Vessels Reported in the Sample (Selected Subareas)

	Neah Bay and LaPush 7 Surveys	Straits (Sekin and Port Angeles) 5 Surveys	Puget Sound (Port Orchard and Blaine) 2 Surveys	Tacoma and Olympia (3 Surveys)
Length	35.143ft.	30.80ft.	32.5ft.	29.0ft.
Age of Vessel	6.571yrs.	9.5yrs.	8.0yrs.	9.667yrs.
Rated Passenger Capacity	6.857	6	14	7.33
Desired Maximum Capacity	6.571	5.6	10	5.33
Percent Using Diesel Fuel	85.7%	20.0%	50.0%	0%
Percent Using Gas.	14.3%	80.0%	50.0%	100.0%
Percent Documented	100.0%	60.0%	50.0%	0%
Percent with Fiberglass Hulls	57.1%	40.0%	100.0%	$33^1/_3$%
Percent with Wood Hulls	42.9%	60.0%	0%	$33^1/_3$%
Percent with Metal Hulls	0%	0%	0%	$33^1/_3$%
Percent with Single Engines	57.1%	60.0%	100.0%	$66^2/_3$%
Percent with Twin Engines	42.9%	40.0%	0%	$33^1/_3$%
Estimated Present Value of Vessel	$38,142.857	$29000.00	$43500.00	$15000.00
Percent with the Following Equipment:				
RDF	71.4%	60.0%	50.0%	0%
LORAN	57.1%	20.0%	50.0%	0%
RADAR	85.7%	40.0%	0%	0%
OMEGA	0%	0%	0%	0%
AM radio	71.4%	60.0%	50.0%	0%
CB	100.0%	100.0%	50.0%	100.0%
VHF	100.0%	100.0%	100.0%	100.0%
SSB	14.3%	0%	0%	0%
Estimated Present Value of Navigation Equipment	$4121.429	$3530.00	$3100.00	$900.00
Estimated Present Value of Fishing Gear	$1007.14	$1830.0	$2012.50	.00
Avg. '76 Gasoline Gallons Consumed (on vessels with gas engines)	4172.000	3016.75	1000	1464
Avg. '76 Diesel Gallons Consumed (on vessels with diesal engines)	2756.167	1700	9000	0

Source: Crutchfield and Schelle (1977).

capacity in the California fleet ranges from 6 to 24 . The Oregon fleet tends to have more 6-passenger vessels than either Washington or California. Average number of passengers per trip on ocean charter vessels on the Washington coast varied from 8.35 to 9.71, depending on location. However, passenger capacity averaged 15.5 - 17.8 (except in the Neah Bay/La Push area, which averaged 6.9 passenger capacity/vessel). Further data on Washington charter vessels, including equipment, value and fuel consumption, are included in Table B-17. Average number of passengers per-boat-per-year in a 1980 California sample taken by the Golden Gate Sportfishers was approximately 1,300. Charter fishing usually takes place every weekend of the open season, plus several weekdays each week. Crutchfield and Schelle (1977) estimate that Washington charterboats statewide (including ocean and inside salmon and non-salmon boats) fished an average of 6.74 days per week in August, 5-6 days/week in June, July and September, and 2.92 days/week in May in 1976. Washington's ocean charters fished slightly less frequently than the statewide average except in August, when they exceeded the average.

Average trip length varies by location and may be a significant variable in estimating the impacts of salmon management measures. Charter salmon fishing trips out of San Francisco and many other California ports average 9-10 hours, travelling up to 30 miles offshore and up to 40-50 miles northward or southward. Charter trips out of Westport, Ilwaco, Astoria and Warrenton are usually full-day trips. Ilwaco and Westport boats may travel an hour or more to salmon grounds. Astoria and Warrenton boats frequently must travel even longer distances. Southern Oregon charterboats have much closer salmon grounds available and can sell shorter trips, allowing two and in some cases, up to five vessel trips per day. Thus, the catch per vessel has the potential for being much greater than that of a similar sized vessel in northern Oregon, Washington or California. In addition, the price per trip is lower for shorter trips.

The Oregon Coast Charter Association estimates the average 1980 price per trip out of Newport was $24 (4 hours), compared to $45 out of Astoria (8 hours). Westport and Ilwaco charters run about $35-$40 for a full day trip, including gear and bait. Increasing fuel, insurance, moorage, new equipment, and other expenses have necessitated a continuing rise in trip prices. The structure of consumer demand for salmon charter fishing trips is not known; however, charter vessel owners have begun to experience a decline in demand for the higher priced trips. There is concern that charters may end up "pricing themselves out of business." Demand for the shorter, lower-priced trips has continued, although there has been some drop-off in demand for afternoon 4-hour trips (which are usually less productive in terms of salmon catch). Some charter operators in the Columbia River area have begun to sell "packaged deals," in which food, bar and sleeping accommodations are provided in addition to the fishing experience, to appeal to a slightly different clientele.

Although they are also full-day trips, salmon charter trip prices in California average $27-30.

Another element in determining the viability of charter fishing fleets and thus, their dependence on salmon, is the availability of other species for sport fishing. Ports such as Brookings, Gold Beach, Garibaldi, Coos Bay and Newport offer charter vessels access to groundfish stocks to supplement salmon

fishing. Astoria and Winchester Bay do not. Westport has access for groundfish, and some large Ilwaco vessels are capable of travelling to parts of the Oregon coast where groundfish are available. Charter fleets that do not have the opportunity to fish for other species may be more severely impacted by reduced salmon fishing seasons.

It is estimated that the number of charterboat operators with supplemental non-fishing employment is greater in those areas where groundfish charter fishing is not available (Oregon Coast Charter Association, 1980). Golden Gate Sportfishers estimate that 50% or more of California charterboat operators work only part-time in the fisheries. Data on non-charter-fishery jobs and income of Washington charter skippers are presented in Table B-18.

About 80% of California salmon charters are owner-operated. In Newport, about 50% are owner-operated and hired skippers are frequently students or retired people. In Washington in 1976, 71.2% of charters were owner-operated, although this varies by port (Crutchfield and Schelle, 1977).

It is estimated that highly successful charterboat owner/operators derive a net income from the fishery of approximately $25,000 in the San Francisco area. Average part-time income may be $3,000-4,000 per year (Golden Gate Sport Fisheries, 1980). Average skipper salary in Washington in 1976 was $8,642. More information on Washington charterboat crews and skippers is presented in Table B-19 (Crutchfield and Schelle, 1977).

In a sample of San Francisco salmon charter vessels surveyed by the Golden Gate Sportfishers in 1980, 12 out of 35 vessels were valued at over $100,000. Average vessel value was $70,000. The larger, newer vessels tended to be mortgaged. It was estimated that 50% of California salmon charter vessels have mortgages. In the Newport area most operators are long-time fishery participants and have paid off their vessel mortgages. The Columbia River mouth area has many larger charter vessels (40-45 feet long and valued at $90,000 - $100,000 on average) most of which are mortgaged. (Westport Charters, 1980).

B. Ocean and Freshwater Sport Fishermen

Ocean anglers fish for chinook, coho and pink salmon. Unlike commercial troll gear which can discriminate somewhat between chinook and coho salmon, salmon sport gear is generally non-selective with regard to species. Sport fishermen can only discriminate among species in a limited way through choice of fishing area.

Crutchfield and Schelle (1978) surveyed ocean salmon sport fishermen in 1978 and obtained the following information on their socio-economic characteristics. "The average age of ocean sport anglers in the sample was approximately 41 years. 77.4% of these anglers were male; 81.3% were high school graduates and 29.9% were college graduates; 73.8% were married. Mean family income of all ocean anglers in the sample was $25,798; 44.4% of these individuals owned fishing boats; 46.4% of the fishing boats owned were thought to be usable in ocean areas. The anglers in the sample averaged about 11.0 years of salmon fishing experience and 6.8 years of ocean salmon fishing experience." (Crutchfield and Schelle, 1978, page 52).

Table B-18. Washington charterboats: Off-season residence and job status of skippers (sample means), 1976.

	Entire sample 200 surveys	Westport 112 surveys	Ilwaco 62 surveys	Grays Harbor (Westport, Aberdeen, Ocean Shores) 119 surveys	Columbia Head (Ilwaco, Chinook) 63 surveys	Neah Bay, LaPush 7 surveys
Percent of owners who live in WA in the off season	86.4%	99.1%	59.7%	98.3%	60.3%	100.0%
Percent of skippers who live in WA in the off season	87.5%	98.2%	64.5%	97.5%	65.1%	100.0%
Percent of skippers reporting in the following categories during the season:						
Retired	4.04%	4.5%	3.2%	5.1%	3.2%	.0%
Unemployed	23.23%	30.6%	17.7%	29.1%	17.5%	.0%
Off season job	64.65%	51.4%	77.4%	53.0%	77.8%	100.0%
Not reported	8.08%	13.5%	1.6%	12.8%	1.6%	.0%
Students	5.50%	8.0%	3.2%	7.6%	3.2%	.0%
School teachers	14.10%	7.1%	17.7%	7.6%	17.5%	57.1%
Job in port-related activity	12.60%	19.6%	3.2%	18.6%	3.2%	14.3%
Commercial fishing (some)	21.60%	18.8%	19.4%	20.3%	19.0%	85.7%
Percent of skipper's 1976 income from charterboats	71.10%	80.5%	69.9%	79.2%	60.8%	57.9%

Source: Crutchfield and Schelle (1977).

Table B-19. Washington charterboats: Wages and employment (sample means, selected subareas), 1976.

	Entire sample 200 surveys	Westport 112 surveys	Ilwaco 62 surveys	Grays Harbor 119 surveys	Columbia Head 63 surveys	Neah Bay/La Push 7 surveys
No. of crew reported with wages/boat	1.199	1.07	1.4	1.131	1.393	1.286
Total crew reported per boat	1.357	1.179	1.655	1.244	1.644	1.429
No. of family crew members/boat	.388	.33	.379	.345	.373	.714
Average wage	$1479.817	$1507.379	$1651.204	$1486.962	$1630.647	$1132.25
Percent of skippers owning the vessel which they operate	71.2%	59.8%	81.7%	60.5%	82.0%	100.0%
Average skipper salary	$8642.347	$9366.33	$6089.391	$9227.40	$6089.391	
Percent using alternate skippers	1.0%	.89%	.0%	1.68%	.0%	.0%
Average wage of an alternate skipper	$2652.00	$1080.00	---	$2652.00	---	---

Source: Crutchfield and Schelle (1977).

Ocean salmon sport fishermen were also classified according to occupational categories. The results are summarized in Table B-20.

Table B-20. Occupations of Washington ocean anglers in 1978.

Occupational Category	Percent of Ocean Anglers in Sample (weighted est.)
Professional and Technical Workers	21.3%
Managers and Administrators	15.9%
Sales Workers	6.2%
Clerical and Kindred Workers	6.6%
Craftsmen	9.2%
Operatives	7.6%
Laborers, except Farm	3.5%
Farm Workers	1.0%
Service Workers	5.4%
Homemakers	7.0%
Nonclassifiable, Missing, or Unemployed	16.3%

Source: Crutchfield and Schelle, 1978.

No significant differences in age, education or occupation were noted between users of charterboat services and non-users. Crutchfield and Schelle did find, however, that users of charterboat services, on the average, had less salmon fishing and ocean salmon fishing experience, were less likely to own fishing boats and took fewer ocean angler trips per year. Average income of charterboat users was also slightly higher.

The averages presented in Table B-21 are only averages; considerable variation in socio-economic characteristics was found in the ocean salmon sport fisheries.

Washington charterboat operators note the existence of two basic categories of sport fishermen using charter services. The first category is sometimes called the "novice sport fisherman." They generally fish for salmon from a charterboat once or twice per season, renting fishing gear for the trip. On average, anglers in this category are married, have children, and are regularly employed. Fishermen of this type predominate as users of charterboat services from late June through August, which corresponds to the school vacation period. Charterboat operators have observed that while "novice sport fishermen" are interested in catching fish, much of the value they derive from the fishery is associated with the "excursion" atmosphere, such as the opportunity to spent time outdoors, and participation in a family vacation.

The second category of angler identified by Washington charterboat operators is sometimes called the "dedicated sport fisherman." These anglers tend to go sport salmon fishing on charterboats from five to twenty-five times per season, using their own fishing gear. Many of these anglers are retired or semi-retired, and prefer to fish in the early and late parts of the fishing season to avoid mid-season crowds. Charterboat operators have observed that,

while "dedicated" anglers and "novice" anglers enjoy the "excursion" aspects of the charterboat trip, the two categories differ in that the "dedicated" angler is primarily interested in the opportunity to catch fish.

Bag limits are likely to have differential impacts on these two types of sport salmon fishermen. Thus, recognition of these two distinct categories may be a significant consideration in the use of bag limits to regulate the recreational salmon fishery in Washington.

Table B-21. Social and economic characteristics of ocean salmon sport fishermen.

	Users of Charterboat Services	Non-Users
Average salmon fishing experience (years)	9.8	13.8
Average ocean salmon fishing experience (years)	5.9	9.2
% of sample owner fishing vessels	36.8%	65.9%
% of vessel owners with boats usable in ocean areas	28%	74.8%
Average number of ocean angler trips in 1977	2.6	6.6
Average earnings income	$16,093.4	$17,686.5
Average total income	$25,083.4	$26,423.9
Average hourly wage	$7.59	$8.34

Source: Crutchfield and Schelle, 1978.

Crutchfield and Schelle (1978) also estimated average expenditures per angler day for various items. These are provided in Table B-22.

Table B-22. Average expenditures per angler (weighted estimates, rounded) and average angler days per angler (1977 dollars).

Expenditure Item	Marine Area 1 (Ilwaco)	Marine Area 2 (Westport)
Food and Drinks Purchased at		
Restaurants, Bars, or Taverns	$ 5.22/angler day	$ 8.21/angler day
Groceries	3.08/angler day	3.50/angler day
Camping Fees	1.41/angler day	2.36/angler day
Lodging Fees in Motels & Hotels	2.26/angler day	5.16/angler day
Charter Vessel Fees	8.89/angler day	20.75/angler day
Boat and Moter Rental Fees	.05/angler day	.02/angler day
Boat Launching Fees	.42/angler day	.18/angler day
Gas for Boat	3.07/angler day	1.45/angler day
Miscellaneous Expenditures	3.07/angler day	2.31/angler day

(Note: Based on all anglers in the sample who fished in these areas.)

Source: Crutchfield and Schelle, 1978.

Table B-23. Estimated fishing trip expenses in 1977 by type of expenditure for Oregon residents with yearly S-S tags and daily licenses, non S-S fishing, and all fishing totals.

Item	Yearly S-S Tags	Daily Licenses	Total S-S Fishing Trip Expenses	Percent of S-S Total	Non S-S Fishing Trip Expenses	Total All Fishing Trip Expenses
Travel Costs						
Vehicle costs	8,098,400	792,800	8,891,200	29.96	24,606,000	33,497,200
Food while travelling	4,010,900	509,800	4,520,700	15.23	16,147,700	20,668,400
Lodging while travelling	1,096,100	293,100	1,389,200	4.68	3,212,200	4,601,400
TOTAL	13,205,400	1,595,700	14,801,100	49.87	43,965,900	58,767,000
Destination Costs						
Food at destination	3,560,600	380,900	3,941,500	13.28	5,019,800	8,961,300
Lodging at destination	2,105,400	119,400	2,224,800	7.50	4,496,100	6,720,900
Guide and charter boat service	3,969,600	386,700	4,356,300	14.68	4,432,500	8,788,800
Rental equipment	801,100	58,300	859,400	2.90	2,242,600	3,102,000
Launching fees	360,100	5,300	365,400	1.23	754,400	1,119,800
Boat gas	1,602,300	31,200	1,633,500	5.50	1,555,000	3,188,500
Other rental equipment	96,500	---	96,500	.32	161,800	258,300
Miscellaneous	1,369,400	29,000	1,398,400	4.72	4,116,000	5,514,400
TOTAL	13,865,000	1,010,800	14,875,800	50.13	22,778,200	37,654,000
GRAND TOTAL	27,070,400	2,606,500	29,676,900	100.00	66,744,100	96,421,000

Source: Brown, Sorhus and Gibbs, 1980.

Table B-24. Estimated total replacement value of equipment owned by Oregon (residents only) anglers.

Item	All Fishing Equipment		S-S Fishing Equipment	
	Total	Percent	Total	Percent
Tackle	68,737,200	19.5	16,277,600	7.67
Boat equipment	79,842,700	22.6	100,119,600	47.16
Clothing	2,186,700	.7	3,550,900	1.67
Camping equipment	197,561,000	56.0	91,445,100	43.08
Miscellaneous	4,292,100	1.2	894,800	.42
TOTAL	352,619,700	100.0	212,288,000	100.0

Table B-25. Estimated expenditures for S-S fishing, non S-S fishing, and all fishing for fishing and fishing-related equipment purchased during 1976 by Oregon residents.

Item	Total Expenditures for S-S Fishing Equipment	Total Expenditures for non S-S Fishing Equipment	Total Expenditures for All Fishing Equipment
Tackle	1,084,700	5,336,500	6,421,200
Boating equipment	7,856,300	7,900,700	15,757,000
Clothing	160,300	313,900	474,200
Camping equipment	5,568,000	28,640,500	34,208,500
Miscellaneous	8,800	1,688,500	1,697,300
TOTAL	14,678,100	43,880,100	58,558,200

Source: Brown, Sorhus and Gibbs, 1980.

Table B-26. 1977 Washington resident and out-of-state sport angler salmon trip expenses, categorized by type.

Item	Washington Residents	Out-of-State Residents	Total Expenditures
Travel Cost			
Vehicle cost	13,812,300	5,206,600	19,018,900
Food expenses while traveling	4,994,300	5,434,800	10,429,100
Lodging expenses while traveling	1,848,900	3,134,900	4,983,800
Destination Costs			
Food expenses at destination	7,948,600	4,314,400	12,263,000
Lodging expenses at destination	4,816,700	2,438,700	7,255,400
Charterboat and guide service	9,394,600	3,405,600	12,800,200
Rental equipment	3,383,200	1,862,600	5,245,800
Launching fees	2,014,300	380,100	2,394,400
Boat gas	8,445,800	770,000	9,215,800
Other rental equipment	385,400	167,600	553,000
Miscellaneous	2,284,600	61,800	2,346,400
Total travel costs	20,655,500	13,776,300	34,431,800
Total destination costs	38,673,200	13,400,800	52,074,000
GRAND TOTAL TRIP COSTS	59,328,700	27,177,100	86,505,800

Source: Brown, Sorhus and Gibbs, 1980.

Table B-27. Estimated total replacement value of fishing and related salmon equipment owned by Washington anglers.

Item	Total	Percent
Tackle	16,108,100	4.8
Boating equipment	235,607,800	70.5
Clothing	1,144,400	.5
Camping equipment	77,877,700	23.3
Miscellaneous	3,072,500	.9
TOTAL	334,107,500	100.0

Table B-28. Estimated salmon equipment expenditures by Washington resident anglers during 1977.

Item	Expenditures for Salmon Equipment	Percent
Tackle	1,031,000	2.3
Boating equipment	30,239,300	76.0
Clothing	180,400	.4
Camping equipment	8,187,700	20.6
Miscellaneous	158,200	.4
TOTAL	39,796,600	100.0

Source: Brown, Sorhus and Gibbs, 1980.

Estimates of total salmon fishing trip expenses and equipment value are provided in Tables B-23 through B-28.

Brown, Sorhus and Gibbs also provide estimates of net economic benefits per angler day for Oregon salmon anglers. The average value for ocean sport salmon angling was $51.82/angler trip. For fresh-water salmon angling, the average value of net economic benefits was $16.80/angler trip.

The total net economic benefits accruing to Washington and Oregon resident sport salmon fishermen in 1978 are estimated in Table B-30.

All of these figures are rough estimates and the Washington figures, particularly, are based on very limited information. No information was available for the California sport salmon fisheries.

A number of researchers have attempted to estimate the value of the salmon sport fishing experience and the total net value of the sport salmon fisheries. Brown, Sorhus and Gibbs', Estimated Expenditures by Sport Anglers and Net Economic Values of Salmon and Steelhead for Specified Fisheries in the Pacific Northwest (1980) provides the following summary of net economic benefits per angler day as estimated by various researchers (Table B-29):

Table B-29. Comparison of estimated net economic benefits (consumers' surplus) per salmon fishing day in ocean areas of Washington from several studies.

Investigators	Methodology	Net Benefits per Angler Day
Mathews & Brown	Direct Question, willingness to sell, $500 upper bound	$63[a/]
Crutchfield & Schelle	Direct Question, willingness to pay, $500 upper bound	$18[b/]
Crutchfield & Schelle	Direct Question, willingness to sell, $500 upper bound	$40[b/]
Crutchfield & Schelle	Direct Question, willingness to sell, $1,000 upper bound	$55[b/]
Crutchfield & Schelle	Direct Question, willingness to sell, $2,000 upper bound	$75[b/]
Brown, Sorhus, & Gibbs	Travel Cost Approach	$45[c/]

a/ 1968 price level
b/ 1978 price level
c/ 1977 price level
Source: Brown, Sorhus and Gibbs, 1980.

Table B-30. Total net economic benefits of 1978 salmon fisheries (benefits to Washington and Oregon resident sport fishermen only).

Fishery	Net Benefits
Oregon ocean sport salmon fisheries:	$13,081,150
Oregon freshwater sport salmon fisheries:	$ 3,447,160
Washington ocean sport salmon fisheries:	$20,265,400
Puget Sound salmon sport fishery:	$10,800,000
Washington fresh water sport salmon fisheries:	$2,500,000-3,100,000

Source: Brown, Sorhus and Gibbs, 1980.

III. INDIAN FISHERMEN

Indians from many tribes in Washington, Oregon and California fish salmon for commercial, subsistence and ceremonial purposes. Figure B-2 presents the location of Indian reservations in Washington, Oregon and Idaho and indicates which tribes have adjudicated fishing rights. Fishing rights of Indians on the Klamath River in northern California are currently being adjudicated.

Indian salmon fishing techniques in the Columbia River before settlement of the area by non-Indians included trolling, seining, trapping, gaffing and dipnetting. After settlement by non-Indians, dipnetting was the primary technique, until 1957 when a set net fishery in the pools behind Bonneville, The Dalles and John Day dams became predominant. Some dipnetting is still practiced in the Columbia River (OSU 1978).

Estimates of Indian population and numbers of fishermen in the mid-Columbia Basin are presented in Table B-31. The Northwest Indian Fisheries Commission estimates a total population of 18,000-19,000 people formally enrolled in the 19 treaty tribes of the Puget Sound and Washington coastal areas. They also estimate that there are about 2,000-2,200 Indian fishermen among the western Washington treaty tribes. In many cases whole families get involved in fishing, but these extra participants are not included in the estimate. Table B-32 presents an estimate of Indian fleet sizes by gear type. [Note: some gear units involve several fishermen (e.g., purse seine) while in other cases, several gear units are owned and operated by a single fisherman (e.g., setnets).]

Although some Indian organizations were contacted in the preparation of this report, no economic information on the Indian fisheries was available at the time of writing. Some socio-cultural information is available in Oregon State University's Socio-Economics of the Idaho, Washington, Oregon and California Coho and Chinook Salmon Industry.

Table B-31. Mid-Columbia basin Indian population and fishers estimates.

Year	Population	Fishers
1977	14,600	350-550
1976		
1975		
1974		
1973		300
1972		
1971		
1970	11,300	
1969		164
1968		
1967		
1966		
1965		
1964		
1963		
1962		
1961		
1960	8,500	
1959		
1958		
1957		118
1956		446
1955		555
1954		555
1953		555
1952		500
1951		496
1950		596

Year	Population	Fishers
1949		887
1948		938
1947		789
1946		
1945		1148
1944		823
1943		783
1942		768
1941		674
1940		641
1939		641
1938		431
1937		385
1936		471
1935		477
1934		311
1933		290
1930		261
1931		310
1930	4,900	306
1920		
1910	4,600	
1900		
1892		75
1891		83
1890	5,200	103
1889		110
1851	5,000	
Aboriginal	25,000	

Source: OSU, Vol. A, 1978

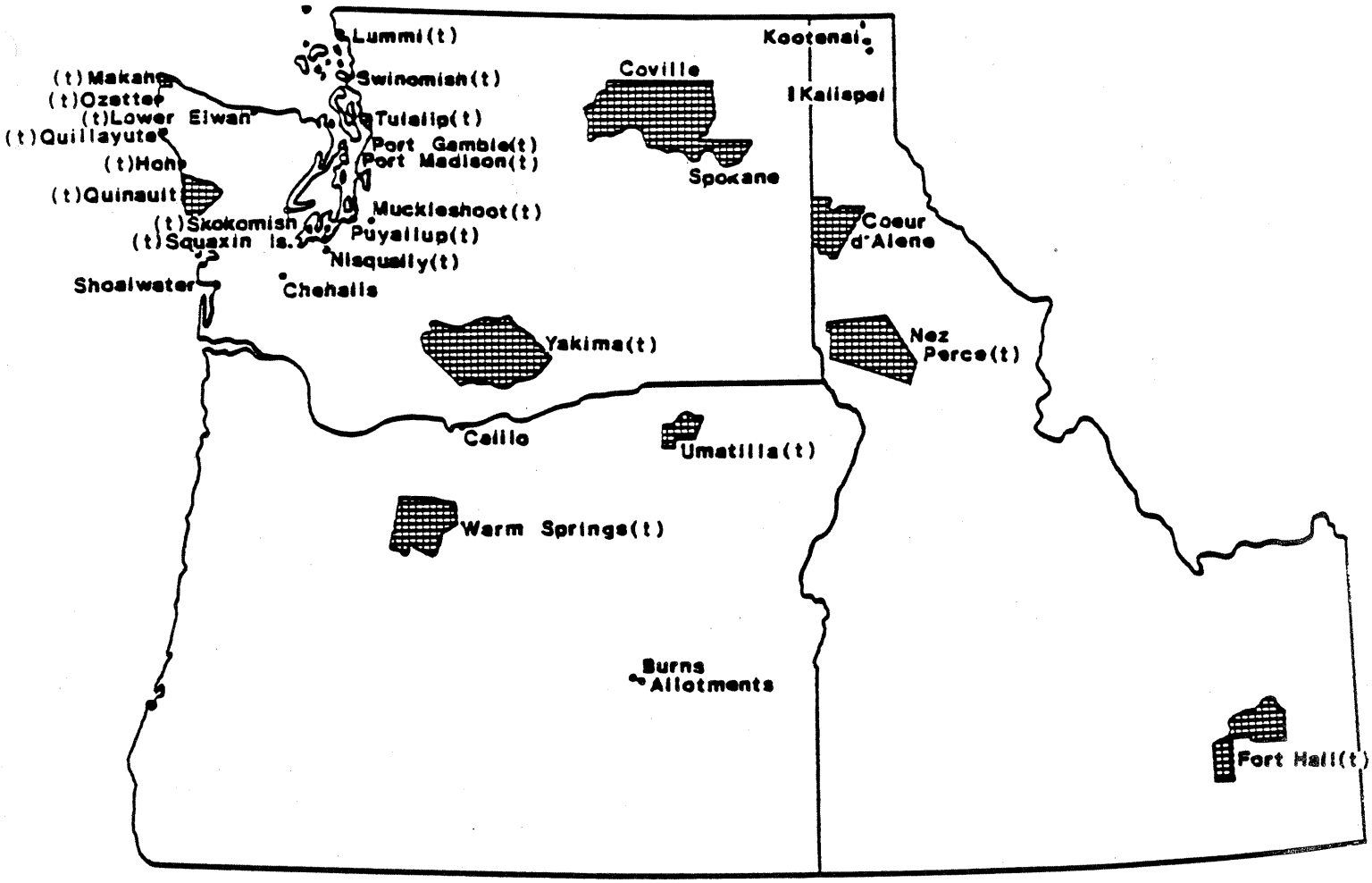


Figure B-2. Northwest Indian reservations. (t) denotes fishing rights. (Source: U.S. Bureau of Indian Affairs, 1977. Background information on Indian Fishing Rights in the Pacific Northwest (Portland).

Source: OSU, Vol. A, 1978.

NOTE: Northwest Indian tribes which have treaty fishing rights but do not have reservations are the Stillaguamish, Nooksack, Upper Skagit, and Sauk-Suiattle tribes.

Table B-32. Number of Indian salmon gear units in Puget Sound and on the Washington Coast north of Grays Harbor

Type of Gear	No. of Units 1977	% of Total	No. of Units 1978	% of Total	No. of Units 1979	% of Total
Troll	39	3.5%	56	4.1%	75	3.5%
Power reef marine gillnet	245	21.9%	296	21.4%	351	16.3%
Purse seine	10	0.9%	10	0.7%	14	0.7%
Handpull gillnet from marine skiffs	313	27.9%	390	28.3%	422	19.6%
River gill (set net and drift net)	508	45.3%	620	44.9%	968	45.0%
Beach seine	6	0.5%	8	0.6%	30	1.4%
Reef net	-	-	-	-	2	0.1%
Other[a/]					287	13.4%
Total	1,121	100.0%	1,380	100.0%	2,149	100.0%

a/ Other" includes set and drift nets, spear, gaff, dipnet, trap, polenet, stakenet, and other traditional gear including smelt and other non-salmon gear.

Source: Northwest Indian Fisheries Commission, 1980.

IV. COASTAL COMMUNITIES

Tables B-33 and B-34 give some indication of the economic importance of the salmon industry to coastal communities. The tables are based on Oregon State University's Socio-Economics of the Idaho, Washington, Oregon and California Coho and Chinook Salmon Industry, Vol. B, including an input-output study of the region. Input-output studies document the degree of economic interdependency of various sectors of the regional economy. An understanding of the economic linkages between sectors can aid in the prediction of regional economic impacts. For instance, input-output studies may reveal that the fishing sector buys heavily from other sectors of the regional economy and these sectors in turn tend to buy from within the region, rather than importing. This indicates that expansion or reduction of the fishing industry may have large direct and indirect impacts on the regional economy. It must be noted that impacts on individual communities may differ from the aggregate regional impact. There are also many other limitations on the conclusions that may be safely drawn from the input-output information available for the Pacific coast at this time.

"Multipliers" estimate the magnitude of the economic effects of regional interdependency among sectors. High multipliers indicate a relatively large economic impact on a regional economy, i.e., most of the money spent on purchases for that sector remain in the region. Conversely, sectors which import many goods and services tend to have low multipliers.

A multiplier of 3.11, for example, indicates that, each dollar of output from that sector is worth $3.11 to the region's economy. Multiplication of the value of the sector's output (sales) by the multiplier estimates the total dollar impact on the region.

The OSU Study focused on Humboldt and Mendecino counties in California and Tillamook and Clatsop counties in Oregon. Some data was also provided for the Puget Sound region (Pierce, Kitsap, King and Snohomish counties). Table A-33 provides multipliers and total dollar impacts of various fishing and fish processing sectors for each county. Ranking of multipliers is also provided to facilitate an understanding of the relative impact of these sectors in comparison with other sectors of the economy (e.g., agricultural production, logging, construction, hotels, wholesale and retail trade, etc.). A high ranking indicates a relatively large impact on the economy.

Table B-33 also presents salmon fishing and processing output (sales) as a percentage of total county sales.

Another indicator of a sector's importance to the local economy is the percentage of its purchases spent on labor as payments to households. Table B-34 presents this figure for various fishing and fish processing sectors. Ranking is provided to allow comparison with other sectors of the regional economy (e.g., a high ranking indicates a relatively great dependence of the industry on local labor for its inputs). Table B-34 also provides the percentage of a sector's inputs that were imported from outside the region. Money spent on imports leaves the regional economy, so that industries relying heavily on imports may contribute less to the region than those which import little.

Examination of Tables B-33 and B-34 reveals, for example, that in Humboldt County in 1977, salmon processing had the fourth largest relative impact on the County's economy ($3.75 of economic activity generated per dollar output by the industry). In absolute terms, total economic activity generated in the county was approximately $12,380,000. However, salmon fishing and processing direct sales constituted only 0.3% of the total county sales. The salmon processing industry was 29th out of 32 sectors surveyed in terms of percentage of inputs that go to households as labor payments (23%). However, salmon processors also only imported 4% of their inputs (second lowest ranking in the county). Most of the salmon processing industry's inputs are locally-produced goods (62% of their inputs are locally-landed salmon).

Similar characteristics of the salmon processing industry are evident in Mendecino County. There, the industry has the highest multiplier of all sectors indicating great relative importance in the economy, although, in absolute dollar terms, the salmon processing industry generates less economic activity than in Humboldt County. In both counties, percentage payments to local households are small. In Mendecino County, however, imports are relatively more important to the salmon processing industry than in Humboldt County.

Tables B-33 and B-34 focus on the impacts of commercial fishery sectors on the regional economy. Crutchfield and Schelle (1978) conducted an economic analysis focusing on the importance of sport salmon fisheries to coastal communities in Washington. Their analysis indicates that in the Grays Harbor

and Pacific County regions, the salmon sport fisheries are most closely tied economically with the charterboat industry, restaurants, bars, grocery stores, hotels, motels, campgrounds and gas stations. For 1977, Crutchfield and Schelle predicted that a reduction in the sport bag limit from three salmon to two salmon would cause decreased angler effort. This would, in turn, affect the regional economy, and particularly the above-mentioned industries. They estimated that value-added in the region would fall by $5,177,441 (1977 dollars), labor income would fall by $2,678,775 (1977 dollars) and 245.6 jobs would be lost.

Curtis (1977) provides a more qualitative account of Washington coastal community dependency on commercial and sport fisheries. This study focused on Neah Bay, La Push, Westport and Ilwaco, and assessed employment and other economic links within the communities.

Curtis points out that in 1977, Neah Bay and La Push were heavily dependent on fishing, especially sport fishing. Apart from a grocery store, fuel distributors and a gift shop (in Neah Bay), which are partially dependent on fishing customers, all of the businesses in these communities are primarily dependent on the recreational and commercial fishing industries. These heavily dependent businesses are: seafood wholesalers (three in La Push and one in Neah Bay), a fishing gear shop (La Push), and resorts and campgrounds (12 in Neah Bay and 5 in La Push) which cater to ocean sport fishermen.

Ilwaco and Westport are larger communities with a greater variety of businesses. Many of these businesses are also directly dependent on the fisheries. For example, in 1977, Westport had four seafood wholesalers, four canners/processors, and one fish by-product company, and Ilwaco had two fish brokers, two fish packers/processors and one other seafood wholesaler. Other businesses directly and indirectly affected by fishing activities in Westport and Ilwaco include banks (one Ilwaco bank manager reported 80% of his business was with the recreational fishing industry and 99% of the bank's loans were boat loans), machine shops, boat works, marine supply stores, accounting firms, electronic companies, engine repair shops, bait suppliers, fuel suppliers, grocery and retail stores, restaurants (20 around Ilwaco, 23 in Westport), motels (57 around Ilwaco, 39 in Westport), campgrounds and gift shops.

Quantitative estimates of the degree of economic interdependency among these sectors is not available.

Table B-33. Input-output multipliers and total generated sales by sector and by coastal county, 1977.

County	Sector	Salmon Troll	Combination Salmon Troll	Salmon Gillnet	Other Fishing	Salmon Processing	Other fish Processing	Sport fishing (Marine)	Salmon Fishing & Processing Output as % of County Sales
Humboldt	a. Multiplier		3.11		3.83	3.75	4.15	-	
	b. Ranking out of 32		(19)		(2)	(4)	(1)	-	0.3%
	c. Generated Sales (10^6)		6.28		15.32	12.38	-	-	
Mendecino	a. Multiplier		2.88		2.69	3.38	3.21	-	
	b. Ranking Out of 24		(7)		(12)	(1)	(2)	-	0.6%
	c. Generated Sales (10^6)		5.4		-	10.1	-	-	
Tillamook	a. Multiplier	2.43	2.26	-	1.95	2.39	2.04	2.43	
	b. Ranking out of 27	(3)	(13)	-	(21)	(6)	(19)	(4)	0.6%
	c. Generated Sales (10^6)	0.67	3.48	-	4.71	2.63	40.25	1 48	
Clatsop	a. Multiplier	2.57	2.04	2.44	3.16	2.73	2.06	-	
	b. Ranking out of 26	(12)	(20)	(14)	(1)	(8)	(19)	-	2.7%
	c. Generated Sales (10^6)	3.17	16.51	2.72	19.51	18.86	123.04	-	
Puget Sound	a. Multiplier		1.21		1.21	1.90	-	-	
	b. Ranking out of 21		(13)		(14)	(1)	-	-	0.3%

-: Information not available
Source: OSU, Vol. B, 1978

Table B-34. Percentages of sector inputs spent directly on payments to households (H) and on out-of-county imports (I), 1977.

	Humboldt Co.		Mendecino Co.		Tillamook Co.		Clatsop Co.	
	H	I	H	I	H	I	H	I
Salmon fishermen	46% (17th)[a/]	33% (8th)[a/]	48%	17%	49%	b/	21%	5%
Other fishermen	71% (6th)[a/]	10% (25th)[a/]	68%	11%	47%	b/	68%	7%
Salmon processors	23% (29th)[a/]	4% (31st)[a/]	18%	13%	19%	b/	8%	24%
Other fish processors	33% (21st)[a/]	3% (32nd)[a/]	28%	9%	b/	b/	16%	58%
Sport fishing (marine)	b/	b/	b/	b/	38%	b/	b/	b/

a/ Ranking out of 32 sectors
b/ Information not available

Source: OSU Study, Vol. B (1978)

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Appendix C

CALIFORNIA AND OREGON FISHERY PARTICIPANTS/MANAGEMENT AGENCY CONSENSUS STATEMENTS

At the urging of the Council's Salmon Advisory Subpanel, the statements below are included in the 1981 Salmon Plan Amendment.

The following statement was agreed upon by representatives of the California troll fishery, charterboat operators, recreational fishermen, and the California Department of Fish and Game in Monterey, California on January 7, 1981.

"California Consensus Statement

1. The coast of California chinook stocks will support a traditional troll fishery of April 15 to September 30, given normal fleet fishing effort and patterns.

2. It is not desirable to concentrate the entire Oregon and Washington and California troll fleet in one small section of the coastline.

3. Ocean fishing restrictions alone will not benefit the Klamath River chinook stocks. An aggressive management program is needed including in-river management and improved environmental conditions."

The following statements were agreed upon by representatives of Oregon troll fishermen, charterboat operators, ocean recreational fishermen, and the Oregon Department of Fish and Wildlife in Newport, Oregon on December 30, 1980.

"Oregon Statements of Fact and Concensus

Statement of Fact

The chinook stocks off the coast of Oregon have shown a steady increase in escapement for 30 years.

Statements of Consensus

1. Oregon coastal chinook stocks will support a traditional troll fishery of May 1 to October 31, given normal fleet fishing effort and patterns.

2. With in-season management of coho stocks, the traditional June 15 coho opening would not biologically impact coho stocks any differently than a July 15 late opening.

3. It is not desirable to concentrate the entire Oregon/Washington/California troll fleet on one small section of coastline.

4. Klamath River chinook stocks will not benefit from ocean fishing restrictions so long as an uncontrolled gillnet fishery continues on the Klamath River."

APPENDIX D

ANALYSIS OF IMPACTS OF PROPOSED 1981 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 13, 1981

ANALYSIS OF IMPACTS OF PROPOSED 1981 REGULATION OPTIONS ON THE OCEAN SALMON FISHERIES OF CALIFORNIA, OREGON, AND WASHINGTON

INTRODUCTION

The Salmon Plan Development Team presented three management options to the Pacific Fishery Management Council for consideration in managing the 1981 ocean salmon fishery. Two additional options incorporate suggestions from the Advisory Subpanel and a sixth option was accepted by the Council in the event subsequent stock size evaluation warranted more restrictive regulation. The following report provides an analysis of the predicted impacts of these proposed actions on the ocean salmon fisheries off California, Oregon, and Washington.

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 by the summer of 1981.

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 1978 levels. In 1978, the north coast troll harvest was 292,000 chinook and Klamath River fall chinook in-river run size was 96,000 fish. The comparable figures for 1980 are 299,000 north coast troll harvest with an in-river run size of 46,000 chinook.

Three- and 4-year old Klamath chinook that will be harvested in this year's troll fishery are progeny of 1977 and 1978 spawners. In both 1977 and 1978, the Klamath escapements were approximately double 1979 and 1980 escapements. In addition, for the Klamath River area, both 1977 and 1978 were post-drought years with favorable river environmental conditions.

For the Sacramento River, 1981 stock abundance is estimated at 15% above 1980, due primarily to the fact that only 4-year old fall chinook (1977 brood year) are predicted to be depressed from the 1976-77 drought. In 1980, both 3- and 4-year old Sacramento River natural spawners were depressed due to the drought years. The vast majority of troll caught salmon consist of 3- and 4-year old chinook.

There is a bill in the California legislature that would eliminate future reciprocal fishing rights for out-of-state residents in California. Passage of this bill could be expected to limit future increases in out-of-state vessels but minimal impacts on current vessel levels.

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 and/or reduced bag limits were first subtracted from base period catches, and these subtracted values were then parcelled out to escapement, later capture by the same fishery, or later capture by the opposite fishery. Analyses were run using 1979-80 catch distribution statistics. For Option V, it was assumed that effort would be reduced 50% by moving the experimental chinook fishery to early June.

The number of fish difference between a 3- or 2-fish sport bag limit was estimated by examining the number of limits caught during 1977 and 1978 seasons. Total potential savings for those years were calculated by counting all single-species limits and prorating (by % composition within a limit) fish from mixed limits. This estimate was adjusted to reflect the 1980 stock size (which was used for all basic calculations), but no change in effort associated with changes in bag limit from 3 to 2 (or vice versa) fish was assumed in the analysis.

For each proposed option: (1) a base period catch was subtracted from the expected total catch, (2) the subtracted value was parcelled into savings and later captures, (3) savings were parcelled into California and Oregon coastal and Columbia River escapement, (4) later captures were parcelled 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 parcelled into coastal and Columbia River escapement, natural mortality, and immatures that would re-enter the system in later years. Changes in escapement for chinook were determined for coastal streams only from the calculated increase in escapement for 1980 under the various regulation options and the recent escapement trend (160,000 fish).

California-Oregon-Washington Coho

The proposed 1981 ocean salmon fishery regulations off the Washington, Oregon, and California coast were analyzed using the Washington Department of Fisheries-National Bureau of Standards Catch/Regulation Analysis Model as employed during the development of the 1978 Salmon Plan.[1/] This model has undergone expansion by increasing its capacity to handle increased numbers of stocks and fisheries (Table 1) but remains unchanged in its function and operation.

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.

Table 1. List of coho salmon stocks and fisheries defined in Catch/Regulation Model.[a/]

Stock	Former[b/]	Present[c/]
Canadian:	X	
West Coast Vancouver Island		X
North Georgia Strait		X
Georgia Strait/Resident		X
Southeast Vancouver Island		X
Fraser River		X
Capilano Early		X
Puget Sound:	X	
Strait of Juan de Fuca		X
Nooksack/Samish (ocean and resident stocks)		X
Skagit River " " " "		X
Stillaguamish/Snohomish " " "		X
South Sound " " " "		X
Hood Canal " " " "		X
Washington Coast:		
Quillayute Summers		X
Quillayute/Hoh Falls		X
Queets/Quinault		X
Grays Harbor	X	X
Willapa Bay	X	X
Columbia River:	X	
Lower Columbia River Early		X
Lower Columbia River Late		X
Upper Columbia River		X
Oregon:	X	
North Coastal		X
South Coastal		X
Area/Fishery		
Alaska - Southeastern - Troll	X	X
Canada - North B.C. - Troll	X	X
- Net		X
- Central B.C. - Troll	X	X
- Net	X	X
- West Coast Vancouver Island - Troll	X	X
- Net		
- Southwest Vancouver Island - Troll		
- Net		
- Johnstone Strait - Net		
- Georgia Strait - Troll	X	X
- Net		X

Table 1. (continued)

Area/Fishery (continued)	Former[b/]	Present[c/]
- Juan de Fuca Strait - Troll		X
- Net	X	X
- Fraser River - Net	X	X
Puget Sound - Juan de Fuca Strait - Net	X	X
- Sport	X	X
- San Juan Islands - Net	X	X
- Sport	X	X
- Georgia Strait - Net	X	X
- Sport	X	x
- Bellingham Bay - Net		X
- Sport		X
- Skagit River - Net		X
- Sport		X
- Discovery/Admiralty - Net	X[d/]	X
- Sport	X[d/]	X
- Stillaguamish/Snohomish - Net		X
- Sport		X
- South Sound - Net		X
- Sport		X
- Hood Canal - Net		X
- Sport		X
Washington Coast - Area 4 - Troll	X	X
- Sport	X	X
- Canadian Troll	X	X
- Area 3 - Troll	X	X
- Sport	X	X
- Area 2 - Troll	X	X
- Sport	X	X
- Area 1 - Troll	X	X
- Sport	X	X
- Quillayute/Hoh - Net		X
- Sport		X
- Queets/Quinault - Net		X
- Sport		X
- Gray Harbor - Net	X	X
- Sport	X	X
- Willapa Bay - Net	X	X
- Sport	X	X
- Columbia River - Net	X	X
- Sport	X	X
Oregon Coast -	X[e/]	
- Tillamook - Troll		X
- Sport		X
- Newport - Troll		X
- Sport		X

Table 1. (continued)

Area/Fishery (continued)	Former[b/]	Present[c/]
- Coos Bay - Troll		X
- Sport		X
- Brookings - Troll		X
- Sport		X
- North Oregon Coastal - Sport	X[f/]	X
- South Oregon Coastal - Sport	X[f/]	X
California Coast -	X[e/]	
- Crescent City - Troll		X
- Sport		X
- Eureka - Troll		X
- Sport		X
- Fort Bragg - Troll		X
- Sport		X
- San Francisco - Troll		X
- Sport		X
- Monterey - Troll		X
- Sport		X
- Sacramento River - Sport		

a/ Washington Department of Fisheries-National Bureau of Standards Catch/ Regulation Analysis Model.

b/ Section 9.3.1, Final EIS and Fishery Management Plan for Commercial and Recreational Salmon Fisheries Off the Coasts of Washington, Oregon, and California Commencing in 1978. March 1978.

c/ Basic Input Data for the Washington Department of Fisheries-National Bureau of Standards Catch/ Regulation Analysis Model for Salmon. WDF Harvest Management Division, February 1980.

d/ Single fishery upon Puget Sound-origin stock represented after stock separated from Canadian-origin stocks.

e/ Coastal fishery represented as single coastwide (California to southern Washington border) fishery off Oregon or California for troll and recreational fisheries separately.

f/ Coastal rivers fishery represented by single fishery, not split into two regions.

Before 1981 regulation proposals were analyzed, the model was calibrated to preliminary 1981 run size projections for coho. Thus, regulation analysis for coho reflects actual anticipated 1981 stock size. The analysis for the OPI area includes the estimated catch of coho originating from private hatcheries.

All options were analyzed assuming 1979-80 effort levels for the troll fishery and no effort reduction was assumed as the result of 3-fish vs. 2-fish bag limit for the recreational fishery.

Upper Columbia River and Washington Coastal Chinook

Impacts of 1981 regulatory options on upper Columbia River fall chinook were evaluated with the WDF/NBS Catch Regulation Analysis model. Differential ocean distribution of upriver brights and hatchery tules is discussed in the 1981 plan amendment. These stocks have been modeled separately to evaluate the differential impact of PFMC regulations. Percentage rather than numerical impacts have been presented. Currently modeled chinook stocks do not represent a complete picture of ocean chinook harvest.

Washington coastal spring/summer and fall chinook contribute heavily off southeast Alaska and northern British Columbia, similar to upper Columbia River brights (Figures 1-3). The minor 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 1981 regulatory options would be minor and have not been modeled.

REGULATORY ANALYSIS OF OPTIONS I THROUGH VI

Table 2 shows the impacts of 1981 management options in numbers of fish in the California, Oregon, and Washington coho fisheries and transfers to Canadian fisheries. Table 3 includes the impact of these options, in percentage changes from 1980, in the California, Oregon, and Washington chinook fisheries. Table 5 shows the expected 1981 percentage changes in the ocean catches of Columbia up-river fall chinook compared with regulations in effect in 1980. Table 4 compares 1981 management goals for escapement and allocation with respect to Options I through VI. Estimates have been adjusted for predicted year class abundance.

Option I - This option will not allow for any significant in-river harvest of Klamath River chinook and will not provide adequate escapement for OPI coho. It will not meet Sacramento River chinook goals and is slightly below the interim Columbia River fall run chinook goal. Options I through VI do not meet the run-by-run escapement on Washington coastal coho.

Option II - Comes closer to meeting 1981 goals. It probably will meet the Sacramento River chinook goals. It almost meets Puget Sound coho terminal run size goal. Options II through V do not meet 1981 OPI escapement goals or Washington coastal coho goals, but will meet Oregon coastal chinook goals.

Option III - Probably will meet Sacramento River chinook goals. Meets Puget Sound coho goals. Provides increased in-river run size for Klamath and Columbia River chinook.

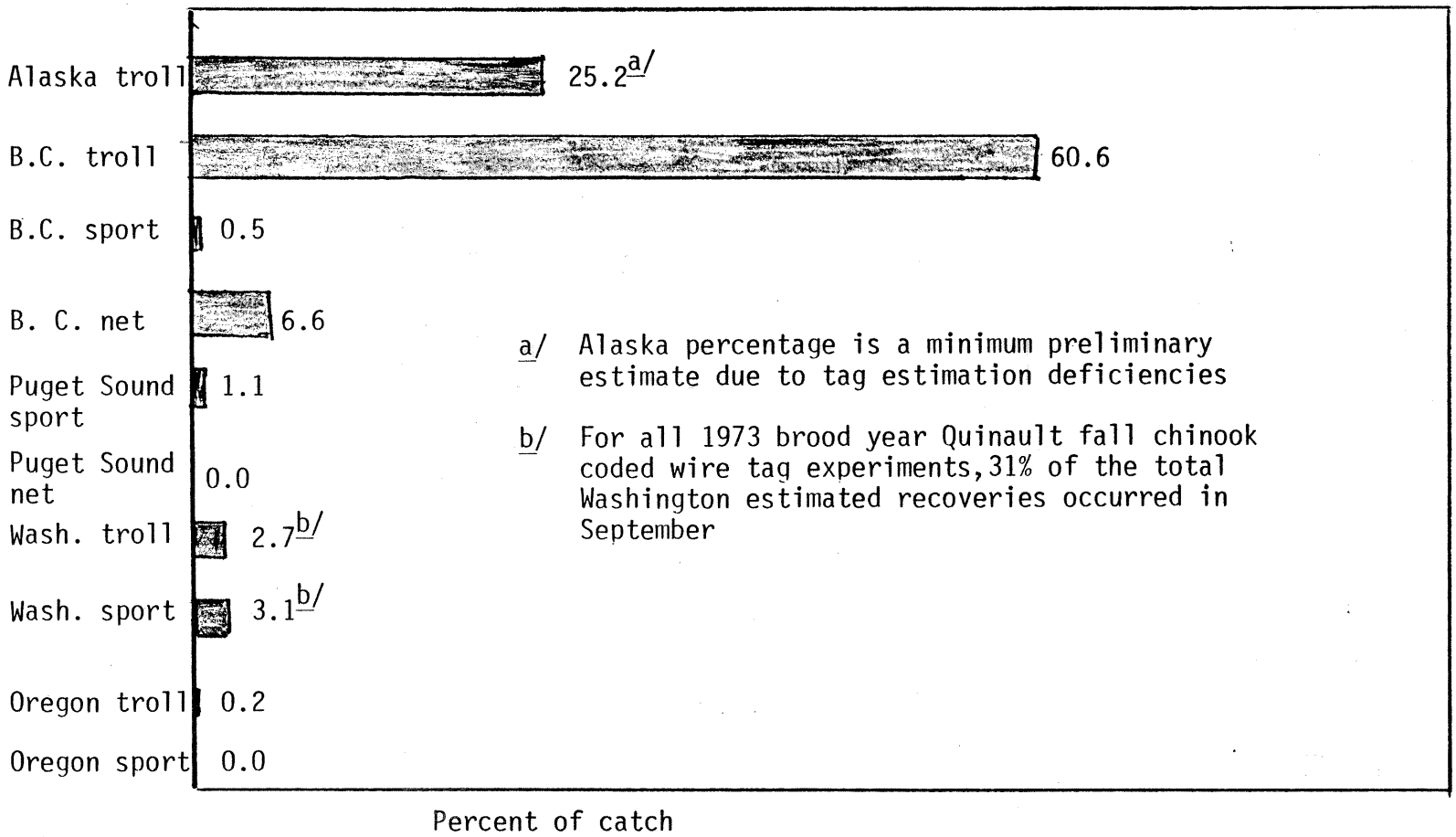


Figure 1. Ocean catch distribution of Quinault River fall chinook as represented by a composite of three 1973 brood year coded-wire tag experimental groups released from Quinault Hatchery

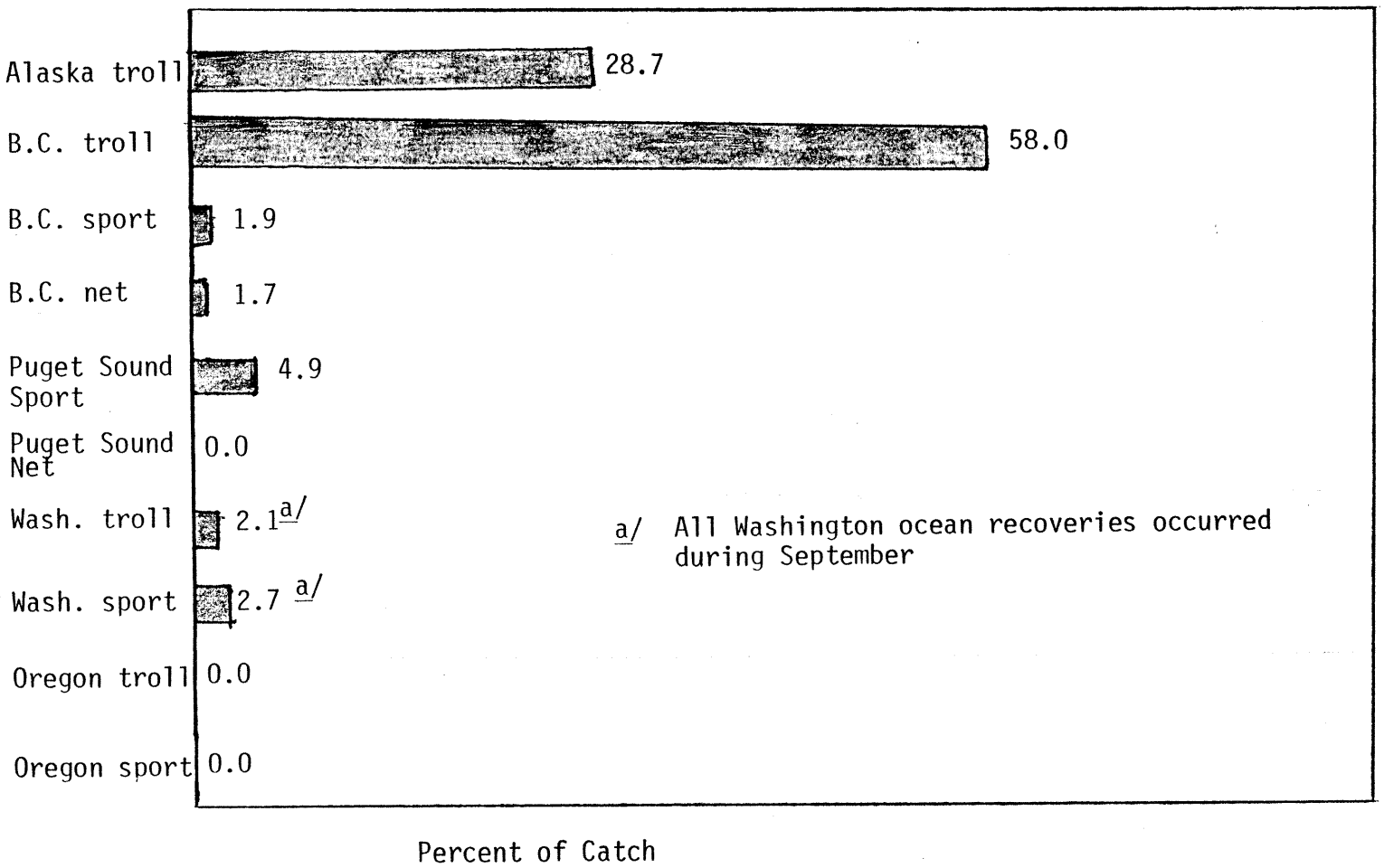


Figure 2. Ocean catch distribution of Quillayute fall chinook as represented by one '71 brood year yearling coded-wire tag release from Soleduck Hatchery

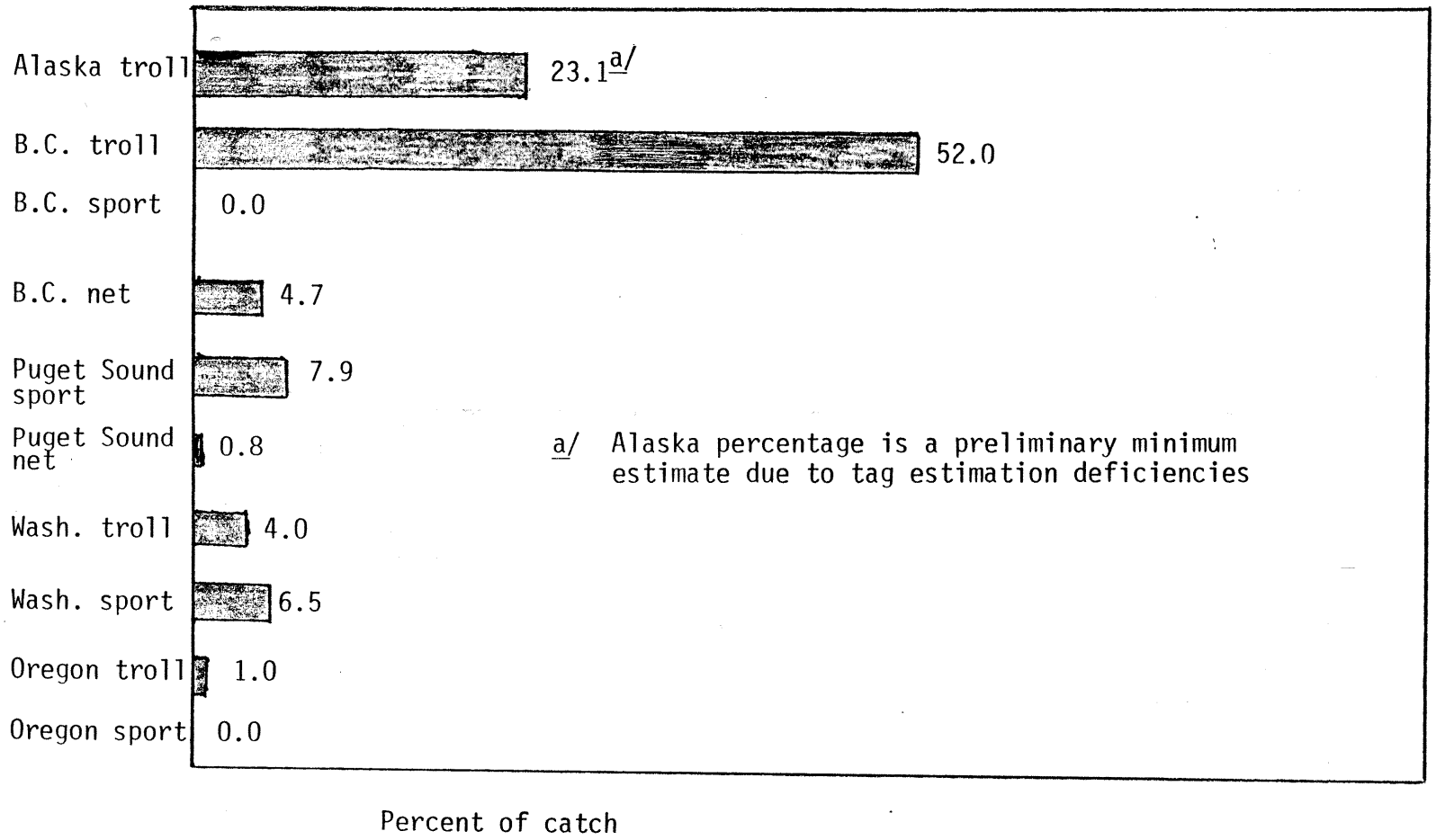


Figure 3 . Ocean catch distribution of Quillayute hatchery summer chinook as represented by one 1973 brood year yearling coded-wire tag release from Soleduck Hatchery

Table 2. Impact of 1981 management options on California, Oregon, and Washington coho in terms of estimated harvest, escapement from ocean, and increased transfer to Canadian fisheries.

Area	Options I	II	III	IV[a/]	V[a/]	VI	1980 Actual[b/]	1981 Goal
Ocean Harvest								
California								
Troll	88.5	89.4	89.1	122.1	134.1	37.3	50	-
Sport	12.3	12.4	12.4	12.0	11.9	10.4	21	-
Total	100.8	101.8	101.5	134.1	146.0	47.7	71	-
Oregon[c/]								
Troll	704.8	639.8	638.5	804.3	802.5	572.8	492	645
Sport	292.0	299.3	294.1	272.1	266.5	289.5	508	264
Total	996.8	939.1	932.6	1,076.4	1,069.0	862.3	1,000	909
Washington[d/]								
Troll	523.1	476.7	477.0	608.2	658.4	345.9	418	330-372
Sport	318.5	323.5	300.9	298.6	290.0	275.2	411	220-248
Total	841.6	800.2	777.9	906.8	948.4	621.1	829	550-620[e/]
Escapement From Ocean								
OPI	212.5	270.2	276.7	132.9	140.3	347.0	318	300
Wash. Coast[f/]	139.3	144.3	145.5	128.0	127.2	158.8	148	156[g/]
Puget Sound	898.9	921.2	927.0	871.7	860.1	985.2	1,388[h/]	925
Canadian Transfer								
Change[i/]	-15.4	0	+2.5	-28.3	-36.4	+28.4	-	-

a/ Options IV and V were submitted by the Salmon Advisory Subpanel and include a mandate for in-season management to achieve management goals.
b/ Preliminary.
c/ Modeled for entire OPI area and includes estimated catch of coho originating from private hatcheries. Since California and Washington totals include portions of the OPI catch, the totals for California, Oregon, and Washington are not additive.
d/ Washington/Oregon ocean catch north of Cape Falcon.
e/ WPP harvest ceiling could vary depending on Oregon and California regulatory options and distribution of Washington fishing effort.
f/ Minus Willapa Bay.
g/ Actual goal is to meet specific spawning escapement goals - total terminal run to meet these goals may vary.
h/ Does not include catch in Puget Sound sport fishery.
i/ Increases in the transfer of fish to the Canadian fisheries represent incremental changes from catch transfers - Option II assumed to be base.

Table 3. Impact of 1981 management options on California, Oregon, and Washington chinook in terms of estimated percentage change from 1980 ocean harvest and escapement.[a/]

	Options						1980
	I	II	III	IV	V	VI	(fish x 1000)
	(Percentages)						
Ocean Harvest							
California							
No. Pt. Arena[b/]							
Troll	+25	+25	-13	+36	+44	-26	299
Sport	+25	+25	+50	-50	-60	+75	8
Total	+25	+25	-12	+35	+43	-25	307
So. Pt. Arena[c/]							
Troll	+19	+15	+15	+18	+19	-30	276
Sport	-25	+10	+10	-24	-25	+20	78
Total	+5	+12	+12	+5	+5	-15	354
Oregon							
Troll	+3	0	-1	-2	+1	-7	209
Sport	-1	-2	-2	-4	-4	-6	18
Total	+3	-T	-1	-2	+1	-6	227
Washington[d/]							
Total	+4	0	-13	+12	+21	-42	182
Escapement							
California							
Klamath[e/]	+95	+95	+116	+88	+83	+128	46[e/]
Sacramento	-10	+10	+10	-10	-10	+30	140[e/]
Oregon Coast	-1	+T	+1	-2	-3	+4	160
Upper Columbia River	-1	0	+3	-2	-3	+9	160[f/]

a/ Canadian transfers are very slight and are omitted from this table.
b/ For Options I, II, III, and VI, Cape Vizcaino was used as the dividing line for Klamath River stocks during the first two weeks in July.
c/ Analyses used 15% increase in Sacramento River fall run chinook stock abundance.
d/ Columbia River fall stocks only. Information on other chinook is not available.
e/ In-river run size. Analyses used 1978 Klamath River fall run chinook stock abundance compared to 1980 harvest and escapement patterns.
f/ In-river run size.

Option IV - Option IV will not meet 1981 management goals except for Oregon coastal chinook.

Option V - Slightly decreased escapement compared to Option IV.

Option VI - Exceeds the OPI, Puget Sound and Washington coastal coho escapement goals. It also exceeds Oregon coastal and Sacramento River chinook goals. It provides increased in-river run sizes for Columbia River and Klamath River chinook stocks.

Table 4. 1981 Regulation analysis compared to 1980 regulations for upper Columbia River fall chinook stocks.

Options	Washington Coastal Ocean Catch of Upper Columbia River Fall Chinook Stock	Adult Run Above Bonneville Dam	
		Hatchery Stock	Natural Stock
I	+4	-2	-2
II	0	0	0
III	-13	+5	0
IV	+12	-4	-1
V	+21	-7	-1
VI	-42	+14	+2

General Comments Regarding Options I through VI

None of the paired options (recreational and troll) totally meet 1981 escapement and allocation goals in all areas. Within any particular option, some goals may be exceeded and/or not met. In-season management and/or modification of the options will be required for 1981.

The majority of the Team does not support the "experimental" chinook fishery off Oregon, as proposed. We do support the concept of a limited number of boats, adequately monitored, fishing a particular area with experimental gear. This applies to both the June and potential August chinook-only fisheries off Oregon.

Extending the management boundary from Cape Blanco south to Cape Ferrelo would reduce needed protection on depressed Klamath River stocks. The Team strongly recommends that the Cape Blanco management boundary be retained until adequate stock information justifies changes.

It is desirable that the all-species season off Washington be planned to encompass the peak abundance of pink salmon which is generally August 13 to August 20. A pink-only fishery off Washington is not viable due to large concurrent catches of coho.

Table 5. Comparison of 1981 management goals for fall run chinook and coho escapement and allocation with the level of achievement of goals under proposed 1981 regulatory options (thousands of fish).

Area/Species	1981 Goal	Level of Achievement Under Proposed Options I	II	III	IV[a/]	V[a/]	VI
Escapement							
Puget Sound Coho	925[b/]	898.9	921.2	927.0	871.7	860.1	985.2
Washington Coastal Coho	156[c/]	139.3	144.3	145.5	128.0	127.2	158.8
OPI Coho[d/]	300	212	270	277	133	140	347
Upper Columbia River Chinook[d/]	160[e/]	158	160	165	157	155	174
Oregon Coastal Chinook	150-200	158	160	162	157	155	166
Klamath River Chinook	86[f/]	90[g/]	90[g/]	99[g/]	86[g/]	84[g/]	105[g/]
Sacramento River Chinook	146[h/]	126[i/]	154[i/]	154[i/]	126[i/]	126[i/]	182[i/]

a/ Options IV and V were submitted by the Salmon Advisory Subpanel and include a mandate for in-season management to achieve management goals.
b/ Puget Sound net catch plus escapement. Provides overall Puget Sound natural escapement goals, treaty allocation needs and 200,000 fish opportunity for inside non-Indian net fishermen.
c/ Represents total terminal return to coastal rivers north of Willapa Bay which would meet individual spawning escapement requirements. Total run needed to meet these individual goals may vary depending on catch and effort patterns relative to ocean distribution. Coastal treaty salmon allocations computed on an aggregate basis would be exceeded by meeting coastal conservation needs. The run-by-run allocation goal would be 180,000 (Figures 4 and 5).
d/ In-river run size estimates.
e/ Assuming 1980 stock size.
f/ 1981 goal is fall run adult spawning escapement only.
g/ 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.
h/ Estimated using 15% increase in Sacramento River stocks over 1980 abundance. Expressed as numbers of adult fall run chinook spawners. 1981 goal is spawning escapement only.
i/ Level of achievement is expressed as total in-river run-size. In-river size must exceed escapement goal to allow for river sport harvest.

HARVEST GUIDELINES FOR COHO SALMON

Analysis of the options shows that most options presented will not meet escapement goals in the OPI or Washington coastal areas. Further, it is likely that the allowable catch by the troll fishery could occur before the 43 days required for implementation of the in-season management procedure. Therefore, the 1981 pre-season harvest guidelines (Table 2) must be the key to coho management in 1981. The in-season management procedure has been modified to accomodate the possibility that the allowable harvest guidelines may be reached before the in-season management procedure can be effected. The following discussion presents the 1981 coho stock size estimates for the OPI and WPP areas and the harvest guidelines established for each management unit.

Oregon Production Index (OPI)

Pre-season estimates of abundance for the OPI and private hatchery production in 1981 have been completed and are presented in Section IV of the 1981 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 1,209,000. Table 6 shows the expected stock size and harvest guidelines in the OPI area with an escapement goal of 300,000. Utilizing the allocation of 71% troll and 29% recreational, the harvest guidelines for the respective fisheries are 645,000 and 264,000. The total allowable harvest is 909,000 fish.

Table 6. Expected 1981 OPI area coho stock size, escapement component and allowable harvest.

Stock Component	Number of Fish	Accountable by OPI
OPI stock size (excludes private hatchery)	1,069,000	1,069,000
OPI escapement goal	-300,000	
Allowable harvest[a/]	769,000	
Expected ocean contribution by private hatchery production	+140,000	140,000
Allowable Harvest Total	909,00	
OPI total stock size (including private hatchery)		1,209,000
Harvest guidelines:		
Troll	645,000	
Recreational	264,000	
Total Harvestable	909,000	

a/ From wild and public hatchery production only.
b/ Based on 1971-75 average coho catch distribution in ocean fishery of 71% troll and 29% recreational (excluding California).

Washington Production Projections (WPP)

1981 Management Considerations

The WDF minimum 1981 management goal for Washington ocean fisheries is to meet spawning escapement requirements for individual northern Washington coastal coho stocks. Natural terminal runs to the Quillayute, Hoh, and Queets rivers have been projected to return at or below escapement goals, given 1980 fishery conditions. The total allowable ocean harvest to obtain this goal would range between 550,000-620,000 coho north of Cape Falcon. This range corresponds to differences in specified regulatory proposals for the Oregon coast, especially as related to the all-species troll opening data.

While overall Puget Sound natural coho spawning escapement would be achieved at this 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, would still not provide the Skagit River natural spawning objective.

Therefore, an ocean coho harvest of 550,000 would meet individual coastal conservation needs and coastal allocation requirements computed with either aggregation scheme. Overall Puget Sound allocation and natural spawning escapement objectives would be exceeded. The tribal position of river-by-river, run-by-run sharing would limit the ocean catch north of Cape Falcon to 260,000 (based on Hoh River as weakest coastal stock).

Options I - VI, along with three additional management regimes which would meet specific goals, are presented in Figures 4 and 5. The relationship between ocean harvest and terminal runs (coastal and Puget Sound) for each option is presented. Vertical lines in these figures represent various conservation and allocation goals. Any option to the left of a particular goal (line) would not achieve that management objective. In addition, Table 7 summarizes impacts of Options I-VI compared to Option II for Washington ocean catch and escapements from the ocean fishery.

Table 7. Impacts of various options for coho compared to Option II (thousands of coho).

Area	Options I	II	III	IV	V	VI
Washington Ocean Catch	+41	0	-22	+107	+148	-179
Escapements						
Washington Coastal	-5	0	+1	-16	-17	+14
Puget Sound	-22	0	+6	-50	-61	+64
OPI	-58	0	+6	-137	-130	+77
Canadian Transfers	-15	0	+2	-28	-36	+28

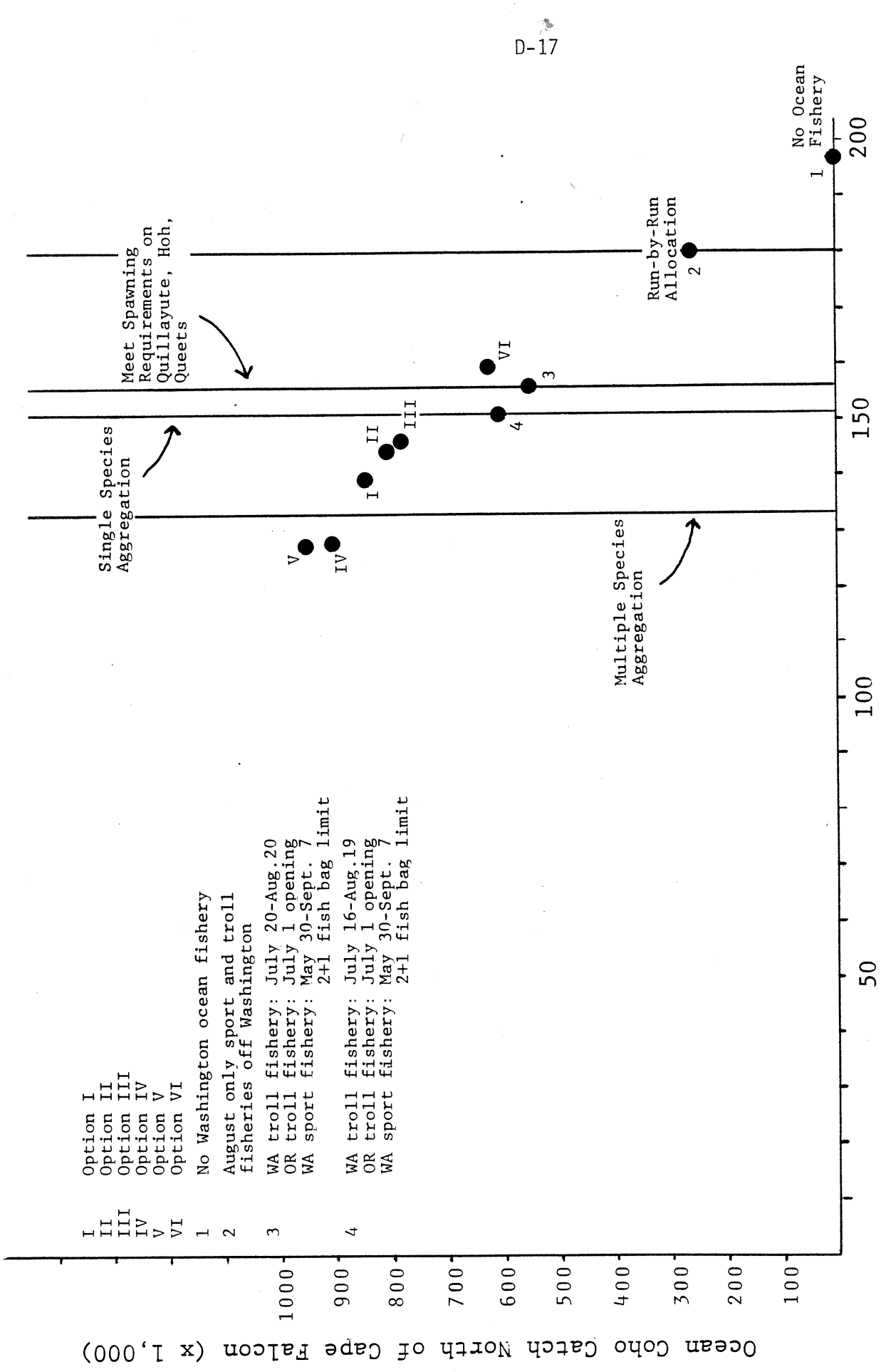


Figure 4. WASHINGTON OCEAN COHO CATCH vs. NORTH COASTAL TERMINAL RUN, 1981 FORECASTS (Preliminary)

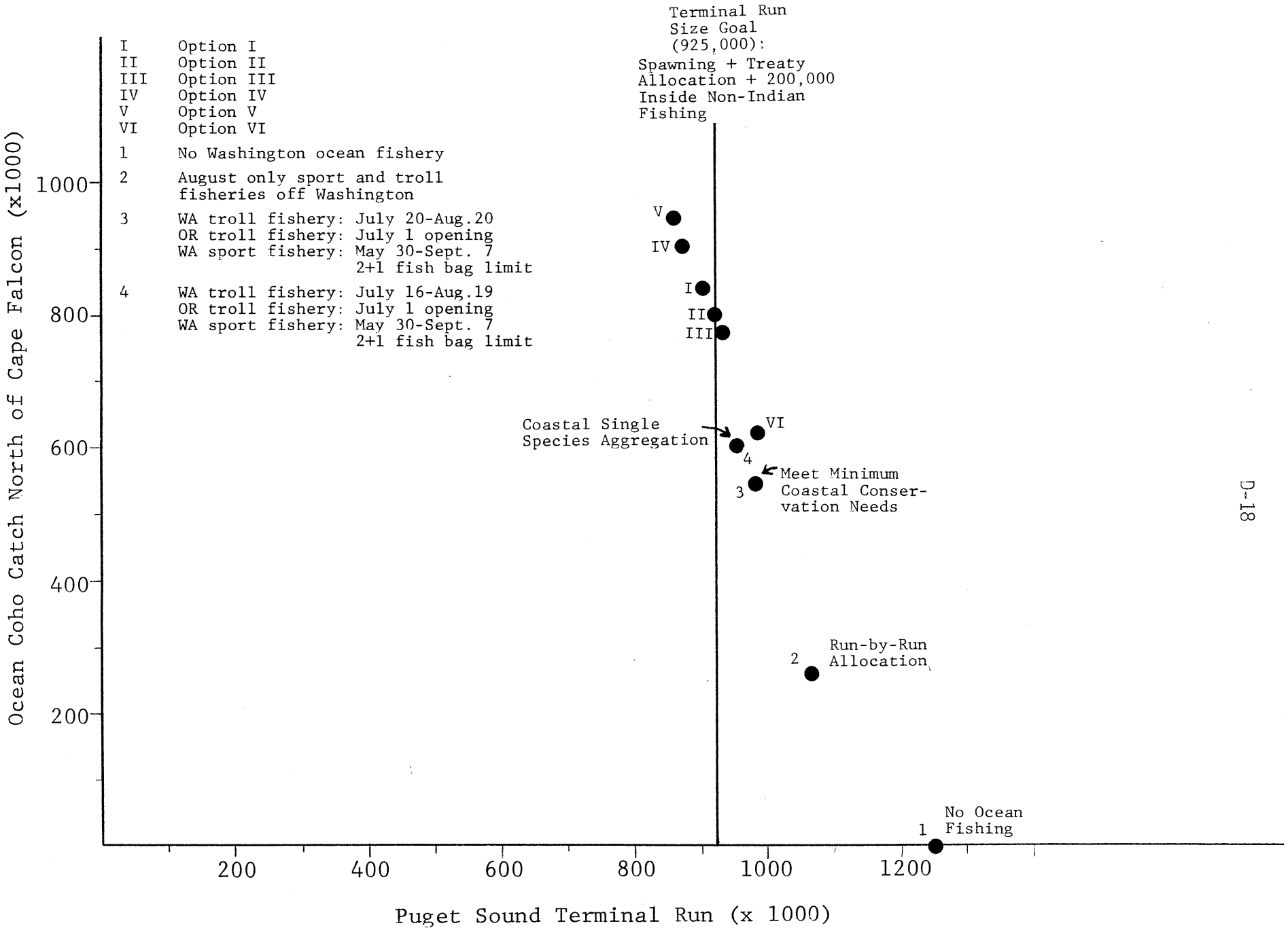


Figure 5. WASHINGTON OCEAN COHO CATCH vs. PUGET SOUND COHO TERMINAL RUN 1981 FORECASTS (Preliminary)

Harvest Guideline

Assuming an ocean management goal of meeting 1981 coastal conservation needs, the WPP total harvest ceiling would be built upon a specific harvest goal for northern Washington coastal coho. An example follows (Table 8).

Table 8. 1981 WPP Allowable Harvest Analysis.

	North Coastal Coho	Other Stock	Total
Terminal Run[1/] Goal	156,000		
Total Ocean Harvest	61,800	488,200	550,000
Harvest Guideline			
Troll (.60)			330,000
Recreational (.40)			220,000

1/ To meet individual spawning escapement objectives on north coastal coho stocks.

The harvest guideline would provide for an automatic closure if the ocean harvest was projected to reach this level prior to implementation of the in-season management procedure. Potential adjustment to the total allowable catch would then be considered based on actual in-season estimates of ocean harvest of coastal stocks. As long as the harvest of these stocks is not exceeded (given 1981 resource status), the "incidental" catch of other stocks could vary depending on changes in abundance or distribution of ocean fishing effort.

APPENDIX E

ANALYSIS OF IMPACTS OF 1981 REGULATIONS TENTATIVELY ADOPTED ON MARCH 19, 1981 ON THE OCEAN SALMON FISHERIES OF CALIFORNIA, OREGON, AND WASHINGTON

Report
to the
Pacific Fishery Management Council

Salmon Management Plan Development Team
March 20, 1981

INTRODUCTION

At Renton, Washington on March 19, 1981, the Council selected a set of regulations for the 1981 ocean salmon fisheries that it recommended for promulgation by the Secretary of Commerce. These regulations were selected primarily from a series of Options (I to VI) that were the subject of public review from January 30 to March 16, 1981. As a guide, the Council used a March 13, 1981 report of the Salmon Plan Development Team, entitled "Analysis of impacts of proposed 1981 regulation options on the ocean salmon fisheries..."

Inasmuch as the adopted regulations differed from the described options that had been analyzed by the Team, the Council requested the Team to prepare an analysis of the new regulations. This report presents the Team's analysis showing the impact on the 1981 fisheries, and the extent the new proposals would fulfill the goals that have been set by the states of California, Oregon and Washington and used by the Council. The analysis is shown for each state and is summarized in Table 1 for coho and Table 2 for chinook. Table 3 is duplicated here from the March 13 report of the Team to emphasize the changes that would occur in the Columbia River fall chinook stocks from the levels that existed in 1980.

ADOPTED REGULATIONS

For California the Council adopted regulations that are different from any of the options (Options I through VI) evaluated by the Team in its impact report of March 13. The regulations adopted for the California coast approximate the impacts presented in Option V in the Team report. The recreational regulations are the same as in Option IV, and the troll are the same as Option V except for changing the May 16-31 fishery from two weeks of all species to 2 weeks of all salmon species except coho. The regulations adopted for California are much more liberal for the ocean fisheries than those adopted in 1980.

For the North coast troll fishery (North of Cape Vizcaino) the 1981 regulations allow one month more of chinook fishing during the early season (the first half of June and the first half of July) compared to 1980. This represents a 100% increase in July time during the early season. The 2-week coho season was moved from the last half of May in 1980 to the first half of June in 1981. For the south coast troll fishery (South of Cape Vizcaino), 1981 regulations allow 2 additional weeks of troll fishing during the first two weeks of June and changes the two weeks of all species fishing from the last half of May to the first half of June. The remainder of the all species troll season is the same as 1980. The recreational fishing season was extended one month over 1980 from October 15 to November 15, which puts it back to the historical season (February 15 to November 15).

For Oregon south of Cape Falcon the Council adopted troll regulations that are most similar to Option IV and recreational regulations that are most similar to Option V.

For the troll fishing regulations, the all salmon except coho season extends from May 1 to May 31 and September 9 to October 31. This is similar to 1980. The all salmon season is scheduled to open two weeks earlier than in 1980, running from July 1 to September 8 with the provision that if there is an in-season closure on coho, then an all species except coho season will be allowed from Cape Blanco to Cape Falcon, with whole bait or 5-inch plugs only, starting at the time of a coho closure through September 8. Size limits and other regulations remain the same as in 1980.

For the recreational fishery, the all salmon season extends from May 15 to September 20 with a 2-fish bag limit for the entire season. Minimum size limits are 22 inches for chinook salmon and 16 inches for coho. The coho size limit applies to the entire state of Oregon. An all salmon except coho season is scheduled south of Cape Blanco to the Oregon-California border from September 21 to October 31 with a 2-fish bag limit. This is similar to 1980 although the area is more restricted than in 1980.

In-season management for coho salmon is applicable for the 43-day period ending on August 12. Separate harvest guidelines were established for the ocean troll and recreational fisheries for that area of the Oregon Production Index south of Cape Falcon, based on a 71% and 29% allocation between commercial troll and recreational fisheries, respectively. The total harvest guideline for the area, including California, is 772,000 coho. The commercial troll harvest guideline is 548,000 coho compared with the recreational harvest guideline of 224,000 coho. When the separate harvest guideline is projected to be reached by either fishery, i.e., troll or recreational, that fishery would automatically close excluding California. Expected coho losses during any commercial chinook-only fishery prior to September 9 will be deducted from the harvest guideline of the troll fishery.

On August 12, in-season modifications may be made by the Northwest Regional Director of the National Marine Fisheries Service following in-season procedures similar to those used in 1980 to adjust coho stock abundance, based on in-season data, and modify seasons or harvest guidelines.

For the ocean troll fishery off Washington and Oregon North of Cape Falcon the Council adopted regulations similar to those adopted in 1980. One difference is a one week earlier closure of the all-species troll season. Council action further provided for a troll harvest guideline of 372,000 coho with possible modifications through in-season management. This is based on a 60% troll/40% recreational fishery coho allocation ratio in the Washington Production Projection (WPP). In addition, a troll coho-only test fishery regulation was adopted. This allows a maximum of 10 boats with observers, to fish colored spoon gear only, from September 20 to October 3 between Cape Falcon and Leadbetter Point.

The adopted recreational seasons off Washington and Oregon north of Cape Falcon represent a 3 week reduction from adopted 1980 regulations. A 2 salmon bag limit was adopted from Cape Falcon to the Queets River. North of the Queets River a 3 salmon bag limit, only 2 of which may be chinook or coho, was adopted to provide additional pink salmon harvest opportunity. The Washington coho recreational size limit was increased to 20 inches. A recreational harvest guideline of 248,000 coho was adopted, based on the 60%/40% allocation ratio.

PREDICTED IMPACTS OF ADOPTED REGULATIONS

California

Klamath River Chinook Stock - The extremely liberal regulations adopted in the areas of Klamath River stock abundance will significantly increase the ocean harvest of Klamath chinook with a consequential decrease in escapement that will not come close to meeting the 1981 stated escapement goal. Under the adopted regulations the estimated 1981 adult fall chinook escapement in the Klamath River would be only 54,000 spawners, which is 37% less than the 1981 goal of 86,000.

The ocean troll chinook catch off the California north coast area will increase by an estimated 50% over 1980 landings of 299,000 chinook (the 1971-75 average is also 299,000 chinook). Due to the less restrictive season off California there will undoubtedly be a significant increase in boats from Oregon and Washington. We cannot quantify the magnitude of this effort shift; however, it certainly will be significant, which in turn will further reduce Klamath River chinook escapement.

Coho - The California harvest of coho will be increased considerably over 1980. The peak coho abundance off California occurs in June. In 1980, the California fishery was closed during June, however, the 1981 regulations shift the early all species fishery from the last half of May to the first half of June. In addition, due to poor coho price and lack of market orders for coho during May 1980, California coho landings were significantly reduced. The estimated 1981 California troll coho landings will be about 123,000 coho, an increase of 140% over last year's small landings of 50,000 coho.

Sacramento River Chinook - Harvest of Sacramento River chinook is expected to be increased by 20% over 1980 landings. The troll harvest will increase by 25% over 1980, while the month added on to the recreational fishing season will reduce Sacramento River chinook escapement by approximately 2,000 fish.

The 1981 adult fall run Sacramento River chinook escapement goal of 146,000 chinook will not be met with the regulations adopted by the Council. Estimated 1981 escapement will be approximately 113,000 chinook; less than the 1980 escapement of 120,000, and 18% less than the 1981 goal of 146,000 chinook. Most of the escapement deficit will be in the upper Sacramento River. Lower river escapement goals will probably be met.

Oregon

With the application of in-season management and adoption of harvest guidelines, the 1981 regulations will meet the OPI escapement goal and allocation goal for coho salmon south of Cape Falcon. The anticipated 1981 catch for the OPI area south of Cape Falcon will be 772,000 fish with an allocation between troll and recreational users of 71% and 29%, respectively.

The expected harvest by the commercial troll and recreational fishery will be 548,000 and 224,000, respectively. Of the total harvest south of Cape Falcon, 135,000 (17%) is expected to be harvested off California. Due to the earlier

all species troll opening (July 1) the harvest guideline for the troll fishery will probably be met by early August at the latest, requiring an automatic closure of coho fishing subject to the August 12 in-season review procedure. It is quite possible the recreational fishery may also reach its harvest guideline before the scheduled closing date, necessitating an earlier closure of that fishery. Assuming an August 11 closure of the troll fishery, a minimum estimated 19,000 coho will be lost during chinook-only fishing prior to September 9. This will reduce the commercial troll harvest guideline accordingly. If it is projected that the harvest guideline will be met earlier than August 11, the harvest guideline would need to be further reduced.

Expected escapement to the OPI would be 300,000 adult coho, which is the stated 1981 goal. Escapement of natural spawning coho to Oregon coastal streams should approach 125,000 adults (1981 goal) compared to the long-term goal of 200,000 adults.

Expected impacts of the adopted regulations on Oregon coastal chinook salmon will be similar to Option V. Assuming 1980 stock abundance and effort the anticipated 1981 chinook catch for Oregon will approach 205,000, representing a reduction of 2% from 1980. The recreational catch will approximate 17,800 which is 4% below the catch of 18,500 in 1980. Estimated escapement to Oregon coastal streams will approach 157,000 which meets the 1981 goal of 150,000 to 200,000 adults.

Washington

Chinook - Ocean harvest pressure on chinook salmon stocks off the Washington coast will be reduced in 1981 compared to previous seasons. Recreational bag limit and season reductions will decrease the chinook catch. In addition a probable reduction of the all-species troll season north of Cape Falcon will further lower chinook harvest rates in 1981. Liberalization of the Makah troll chinook size limit from 28" to 24" will offset these savings to a small extent.

If upper Columbia River fall chinook stock abundance is similar to 1980, the 1981 in-river returns should also be similar. Preliminary expectations of upriver bright stock abundance indicate in-river returns at or below 1980. However, troll regulatory restrictions off Southeast Alaska, where a large percentage of this stock is harvested, should help stabilize terminal returns. No specific run size forecast has been made for 1981 Bonneville Pool hatchery stocks which contribute heavily to the Washington ocean fisheries. The impact of these same fisheries on Washington coastal, upper Columbia River spring and summer, and Puget Sound chinook stocks is minor compared to their total marine harvest and terminal run sizes. Therefore, the specific impacts of 1981 regulations on these stocks has not been computed.

Coho - The harvest guideline of 620,000 coho north of Cape Falcon will reduce ocean coho harvest and harvest rates off Washington to record low levels. Washington coastal coho natural spawning escapement requirements will be met for individual rivers managed for natural production. In addition, coastal salmon treaty allocation requirements will be met on either a single- or multiple-species aggregation basis (Figure 1). Terminal returns to Puget

Sound will exceed the 1981 goal by approximately 55,000 coho as a result of managing for weaker coastal coho stocks. This management constraint will also increase coho transfers to Canadian fisheries by about 28,000 fish over 1980 regulations. The July 15 all-species troll opening date should also provide maximum harvest opportunity for pink salmon.

The recreational fishery will probably meet its harvest guideline north of Cape Falcon before September 7 unless a 5-10% effort reduction occurs in comparison to 1980.

ECONOMIC AND SOCIAL IMPACTS

Regulations adopted by the Council in 1981 are likely to result in substantially higher gross revenues to the troll fleets as a whole in California and Oregon south of Cape Falcon compared to 1980. Total gross revenues in the troll fisheries of Washington and the Columbia River area are expected to be significantly reduced compared to 1980 which was already a poor year for these fisheries. Charter vessel revenues and total economic benefits to anglers are likely to be significantly reduced compared to 1980 in Washington and the Columbia River mouth area, and reduced to a lesser degree in Oregon south of Cape Falcon. These impacts will be reflected in the economic condition of the numerous coastal communities involved in the commercial and recreational salmon fisheries.

It is generally anticipated that coastwide coho and chinook prices will recover somewhat from low 1980 levels. These increased prices, in conjunction with the increased troll catch levels expected as a result of the Council's 1981 regulations south of Cape Falcon, could increase total gross troll revenues in the area by 60-80% over 1980. Effort shifts due to early quota closures in Oregon and Washington and relatively liberal seasons off California, however, may distribute these economic gains among a larger number of fishermen. In 1980, total troll catches off California were similar to the 1971-75 average but increased effort levels (and low chinook prices) resulted in relatively low average gross revenues per boat. The elimination of the Oregon experimental chinook fishery in June is unlikely to reduce per boat revenues greatly.

The early opening and longer scheduled season adopted for the Oregon troll fishery may provide Oregon trollers with increased bargaining power in price negotiations with salmon processors. However, this advantage may be offset by lower average poundage of coho caught earlier in the season.

The coho quota in Oregon south of Cape Falcon is expected to be reached fairly quickly, because of:

1. The early (July 1) all species troll season opening -- coho "bite" better early in the season and are more abundant.

2. Coho will be more abundant off California in June than during the equivalent opening in 1980 (late May). Furthermore, in 1980 a price dispute between fishermen and buyers kept coho catches down in 1980. Assuming price agreements can be reached in 1981, California coho catches are expected to be much higher than in 1980.

Although the season will remain open for all species except coho after the Oregon coho quota is reached, this season extension will be restricted to the Cape Falcon to Cape Blanco area. Thus, although the more mobile vessels in the Oregon troll fleet may fish off California or north of Cape Blanco after the coho quota is met, southern Oregon dayboats are likely to suffer economically from the early closure.

Low coho quotas in Washington and Oregon north of Cape Falcon are likely to result in the shortest troll season ever experienced in Washington. Even with potentially increased salmon prices in 1981 compared to 1980, the total gross economic value of the Washington troll fisheries is expected to be significantly less than the low level experienced in 1980.

Puget Sound "inside" net fishery total gross revenues are likely to be reduced over the high average revenues in these fisheries in 1980. Gross revenues in most coastal treaty-Indian fisheries north of the Quinault River are expected to be low. Columbia River treaty and non-treaty net fisheries are projected to experience continued low average gross revenues in 1981.

In the recreational fisheries, the two-fish bag limit all season in Oregon and Washington south of the Queets River is likely to result in a significant reduction in angler effort levels, the economic value of angler benefits, charterboat gross economic revenues and coastal community economic levels compared to 1980. This is especially true of the Westport and Columbia River areas. The "three fish, only two of which may be coho or chinook" (i.e., "2+1") bag limit north of the Queets River may lessen the economic impact of the coho/chinook bag limit for northern Washington coastal communities such as Neah Bay and La Push.

The recreational seasons have been reduced to the shortest ever. The 1981 recreational coho quota will be 32% lower than the 1980 coho catch south of Cape Falcon and 67% less than the 1980 coho catch north of Cape Falcon. With such low coho quotas, it is possible that the recreational fisheries may have to close even before the end of their abbreviated seasons, further reducing the economic value of these fisheries.

The net socio-economic impact of increasing the Washington recreational coho size limit from 16" to 20" is unclear. It may reduce angler participation and/or it may slow the attainment of the recreational harvest guideline, thus preventing an in-season closure.

The Council's adopted regulations restore the California sport fisheries to their traditional fishing season, with a 2-fish bag limit. However, high fuel prices and other factors outside the Council's control will continue to place the economic pressure on these and all the Pacific coast salmon fisheries in 1981.

SUMMARY OF TEAM CONCERNS REGARDING 1981 SALMON REGULATIONS

The Team would like to reemphasize some of the concerns it has with the regulations adopted by the Council.

1. The OPI harvest south of Cape Falcon will be reached earlier than scheduled - probably by late July or early August and will shorten seasons south of Cape Falcon, particularly for the troll fishery.

2. An increased proportion of the coho catch will be made in California (about 135,000 fish) which will further shorten seasons off Oregon as well as reducing the allowable Oregon catch.

3. The proposed regulations will increase ocean harvest in the area of Klamath River chinook abundance by 50% over 1980 and will result in a spawning escapement of only 63% of the 1981 goal of 86,000 chinook.

4. The projected 1981 Klamath River spawning escapement would not meet the 1981 goal even without in-river sport and Indian harvest.

5. The regulations will not meet 1981 upper Sacramento River chinook escapement goals.

6. The chinook-only fishery off Oregon, after any coho closure, would cause an unnecessary wastage of coho.

7. The increase in recreational coho size limit off Washington to 20 inches will cause increased coho losses, and preclude harvest opportunity on jack coho. It will also result in different recreational size limits on the Oregon and Washington sides of the Columbia River mouth.

In summary the Team is extremely concerned regarding the actions taken by the Council. We regret the need to make these closing comments. However, we feel we would be remiss in our jobs as professional resource managers if we did not emphasize the negative impacts the Council's 1981 salmon regulatory option will have on the salmon resource.

Table 1. Impact of Adopted 1981 Regulations on California, Oregon and Washington Coho in Terms of Estimated Harvest, Escapement and Increased Transfer to Canadian Fisheries.

Area	1980[a/] Actual (in thousands)	1981 Council Adopted Regulations (in thousands)	1981 Goal (in thousands)
OCEAN HARVEST			
California and Oregon South Cape Falcon			
California			
Troll	50	123	-
Recreational	21	12	-
Total	71	135	-
Oregon			
Troll	347	425	-
Recreational	276	212	-
Total	623	637	-
Total South of Cape Falcon			
Troll	397	548[b/]	548[b/]
Recreational	297	224	224
Total	694	772	772
Washington and Oregon North of Cape Falcon			
Troll	418	372	372
Recreational	411	248	248
Total	829	620	620
ESCAPEMENT FROM OCEAN[c/]			
OPI	318	300	300
Washington Coast[d/]	148	156	156[e/]
Puget Sound	1,388	980	925
CANADIAN TRANSFERS INCREASE[f/]	-	28	-

a/ Preliminary estimate.
b/ The 71% harvest guideline of 548,000 would need to be reduced by 19,000 fish to account for anticipated coho losses which would occur during a chinook-only fishery prior to September 9, assuming the coho harvest guideline is achieved August 11. If it is projected that the harvest guideline will be met earlier than August 11, the harvest guideline would need to be further reduced.
c/ In-river size, net catch plus escapement only.
d/ Minus Willapa Bay.
e/ Represents total in-river run size north of Willapa Bay which satisfies individual natural spawning escapement requirements on coastal rivers. This run size would also meet treaty allocations on a single- or multiple-species aggregation basis.
f/ Increases in the transfer of fish to the Canadian fisheries compared to 1980 regulations.

Table 2. Impact of Adopted 1981 Regulations on California, Oregon, and Washington Chinook in Terms of Estimated Percentage Change from 1980 Harvest and Projected 1981 Escapement from the Ocean.[a/]

Area	1980 Actual (In thousands)	1981 Council Adopted Regulations (% change from 1980)[b/]	1981 Goal (In thousands)
Harvest			
California-No. of Point Arena[c/]			
Troll	299	+50	---
Sport	8	-50	---
Total	307	+50	---
California-So. of Point Arena			
Troll	276	+25	---
Sport	78	-10	---
Total	354	+20	---
Oregon			
Troll	209	-2	---
Sport	18	-4	---
Total	227	-2	---
Washington	186[d/]	0	---
Escapement[e/] (in thousands)			
California			
Klamath	29	54	86
Sacramento	120	113	146
Oregon Coast[f/]	160	157	150-200
Upper Columbia River[g/]	160	160	160

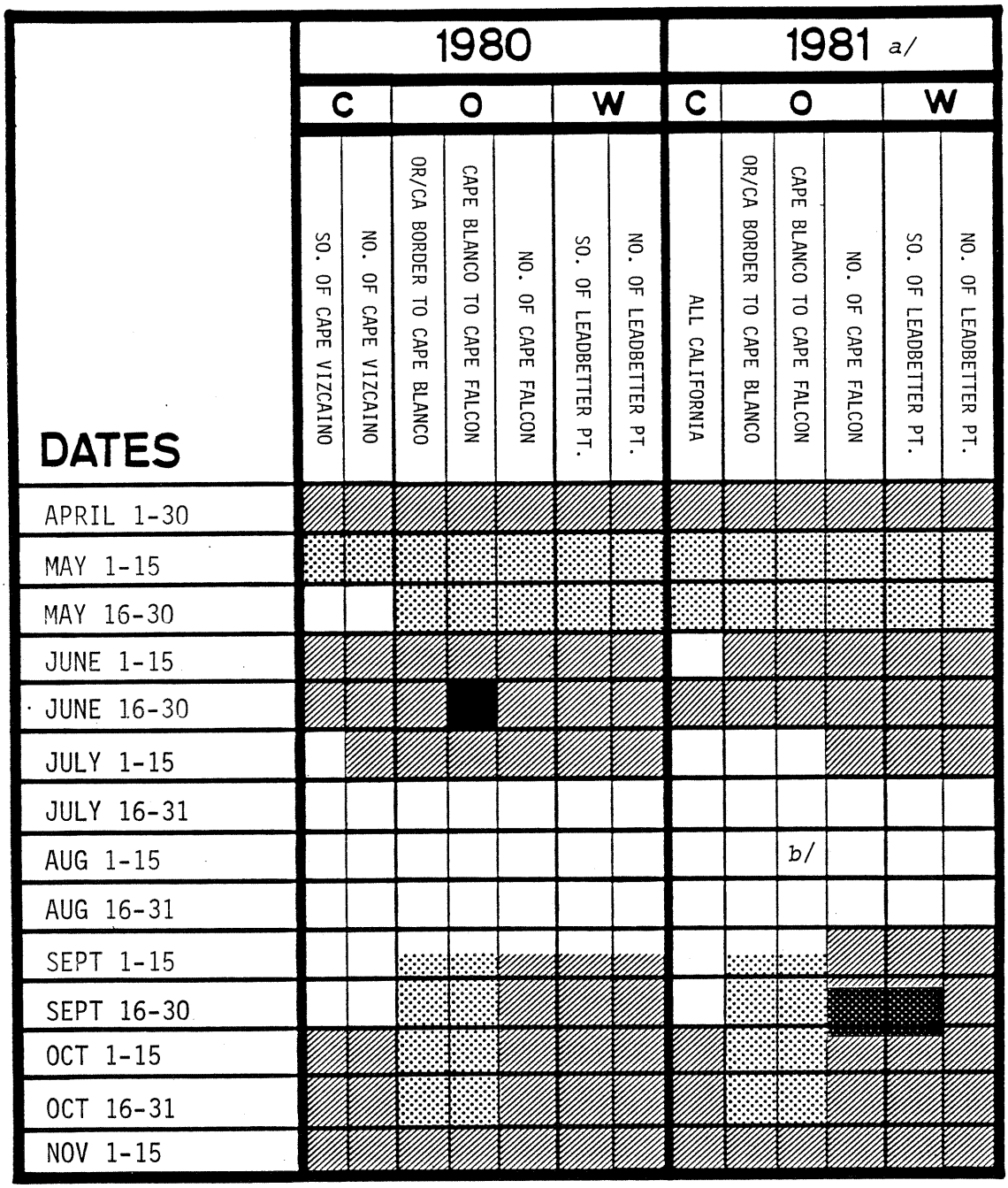
a/ Increases in Canadian transfers of all Columbia River fall chinook are negligible.
b/ California estimates for 1981 are based on predicted 1981 stock abundance and availability. Oregon and Washington based on 1980 stock abundance.
c/ Primary area of Klamath River stock abundance.
d/ Includes catches made off Oregon, California, and Alaska and landed in Washington.
e/ Expressed as adult fall run spawning escapement.
f/ Includes some spring chinook spawners.
g/ In-river run size of Columbia River upper fall stocks only. Information on other chinook stocks is not available.

Table 3. 1981 Regulation Analysis Compared to 1980 Regulations for Upper Columbia River Fall Chinook Stocks.

Options	PERCENTAGE CHANGE		
	Wash. Coastal Ocean Catch of Columbia R. Fall Chinook Stock	Adult Run Above Bonneville Dam	
		Hatchery Stock	Natural Stock
I	+4	-2	-2
II	0	0	0
III	-13	+5	0
IV	+12	-4	-1
V	+21	-7	-1
VI	-42	+14	+2
Proposed Regulations by Council (March 19, 1981)	0	0[a/]	0[a/]

a/ Fishing restrictions in Alaska and possible early closures for coho may increase these figures a few percent.

TROLL



ALL SALMON

ALL SALMON EXCEPT COHO

CLOSED

COHO ONLY (out to 12 miles only, maximum ten boats, coho gear only).

EXPERIMENTAL FISHERY

a/ Adopted by Council, March 19, 1981

b/ ALL SALMON EXCEPT COHO, live bait or 5-inch plugs, after coho catch reaches harvest guideline.

RECREATION

DATES	1980					1981 a/					
	C	O		W		C	O			W	
	ALL CALIFORNIA	SO. OF CAPE FALCON	NO. OF CAPE FALCON	SO. OF LEADBETTER PT.	NO. OF LEADBETTER PT.	ALL CALIFORNIA	OR/CA TO CAPE BLANCO	C.BLANCO TO C.FALCON	NO. OF CAPE FALCON	SO. OF QUEETS	NO. OF QUEETS
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	b/		b/		2	2	2	2	2	2+1
SIZE LIMIT — COHO	c/	16"		16"		c/	16"			20"	
SIZE LIMIT — CHINOOK	c/	22"		24"		c/	22"			24"	

OPEN

CLOSED

ALL SALMON EXCEPT COHO

a/ Adopted by Council, March 19, 1981.
b/ 1980 season began with 3-fish bag limit; this was reduced to 2 fish.
c/ 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.

APPENDIX F

ANALYSIS OF IMPACTS OF ADOPTED 1981 REGULATIONS AS REVISED ON MARCH 26, 1981* ON THE OCEAN SALMON FISHERIES OF CALIFORNIA, OREGON, AND WASHINGTON

Report
to the
Pacific Fishery Management Council

Salmon Management Plan Development Team
March 27, 1981

Italicized text indicates significant changes from the Salmon Plan Development Team's "Analysis of Impacts of Adopted 1981 Regulations.." dated March 20, 1981.

INTRODUCTION

At Portland, Oregon on March 26, 1981, the Council reconvened to reconsider the regulations adopted at Renton, Washington on March 19. In light of concerns raised about the impact of adopted regulations on Klamath River chinook escapement, the Council revised California's ocean regulations. In addition, the Council made changes in the chinook seasons off Oregon between Cape Blanco and Cape Sebastian.

Inasmuch as the adopted regulations differed from the described options that had been analyzed by the Team, the Council requested the Team to prepare an analysis of the new regulations. This report presents the Team's analysis showing the impact on the 1981 fisheries, and the extent the new proposals would fulfill the goals that have been set by the states of California, Oregon and Washington and used by the Council. The analysis is shown for each state and is summarized in Table 1 for coho and Table 2 for chinook. Table 3 is duplicated here from the March 13 report of the Team to emphasize the changes that would occur in the Columbia River fall chinook stocks from the levels that existed in 1980.

ADOPTED REGULATIONS

For California the Council adopted *revised* regulations that are different from any of the options (Options I through VI) evaluated by the Team in its impact report of March 13. *The recreational regulations are the same as Option IV, and the troll regulations are the same as Option II (1980 adopted regulations) except for an increase of two weeks (July 1-14) off the north coast. However, this two-week increase is offset by establishing allowable harvest guidelines for chinook for both the north and south coast areas. The 1981 allowable harvests of chinook for these areas were developed as follows (in thousands of fish):*

	North Coast (North of Pt. Arena)	*South Coast (South of Pt. Arena)*	*Totals*
Troll	*300*	*265*	*565*
Recreational	*15*	*115*	*130*
Total	*315*	*380*	*695*

When a chinook harvest guideline is met in either the north or south coast area, the fishery(s) would be closed to salmon fishing for any species in the respective area(s). The regulations adopted for California, with the addition of these harvest guidelines on the 1981 chinook catch, are more restrictive than 1980 regulations would have been for chinook considering projected increased 1981 stock abundance.

For Oregon south of Cape Falcon the Council adopted troll regulations that are most similar to Option IV and recreational regulations that are most similar to Option V.

For the troll fishing regulations, the all salmon except coho season extends from May 1 to May 31 and September 9 to October 31. This is similar to 1980. The all salmon season is scheduled to open two weeks earlier than in

1980, running from July 1 to September 8 with the provision that if there is an in-season closure on coho, then an all species except coho season will be allowed from Cape *Sebastian* to Cape Falcon, with whole bait or 5-inch minimum plugs only, starting at the time of a coho closure through September 8. Size limits and other regulations remain the same as in 1980.

For the recreational fishery, the all salmon season extends from May 15 to September 20 with a 2-fish bag limit for the entire season. Minimum size limits are 22 inches for chinook salmon and 16 inches for coho. The coho size limit applies to the entire state of Oregon. An all salmon except coho season is scheduled south of Cape Blanco to the Oregon-California border from September 21 to October 31 with a 2-fish bag limit. This is similar to 1980 although the area is more restricted than in 1980.

In-season management for coho salmon is applicable for the 43-day period ending on August 12. Separate harvest guidelines were established for the ocean troll and recreational fisheries for that area of the Oregon Production Index south of Cape Falcon, based on a 71% and 29% allocation between commercial troll and recreational fisheries, respectively. The total harvest guideline for the area, including California, is 772,000 coho. *This total includes 632,000 OPI fish and an estimated 140,000 coho originating from private hatcheries.* The commercial troll harvest guideline is 548,000 coho compared with the recreational harvest guideline of 224,000 coho. When the separate harvest guideline is projected to be reached by either fishery, i.e., troll or recreational, that fishery would automatically close excluding California. Expected coho losses during any commercial chinook-only fishery prior to September 9 will be deducted from the harvest guideline of the troll fishery.

On August 12, in-season modifications may be made by the Northwest Regional Director of the National Marine Fisheries Service following in-season procedures similar to those used in 1980 to adjust coho stock abundance, based on in-season data, and modify seasons or harvest guidelines.

For the ocean troll fishery off Washington and Oregon North of Cape Falcon the Council adopted regulations similar to those adopted in 1980. One difference is a one week earlier closure of the all-species troll season. Council action further provided for a troll harvest guideline of 372,000 coho with possible modifications through in-season management. This is based on a 60% troll/40% recreational fishery coho allocation ratio in the Washington Production Projection (WPP). In addition, a troll coho-only test fishery regulation was adopted. This allows a maximum of 10 boats with observers, to fish colored spoon gear only, from September 20 to October 3 between Cape Falcon and Leadbetter Point *out to 12 miles.*

The adopted recreational seasons off Washington and Oregon north of Cape Falcon represent a 3 week reduction from adopted 1980 regulations. A 2-salmon bag limit was adopted from Cape Falcon to the Queets River. North of the Queets River a 3 salmon bag limit, only 2 of which may be chinook or coho, was adopted to provide additional pink salmon harvest opportunity. The Washington coho recreational size limit was increased to 20 inches. A recreational harvest guideline of 248,000 coho was adopted, based on the 60%/40% troll/recreational allocation ratio.

PREDICTED IMPACTS OF ADOPTED REGULATIONS

California

Klamath River Chinook Stock - *The regulations adopted by the Council provide harvest guidelines north of Pt. Arena of 300,000 troll and 15,000 sport-caught chinook. Based on the assumption that there will be no significant transfer outside of chinook caught in the harvest guideline areas, the estimated 1981 fall chinook in-river run to the Klamath River will be about 100,000 adults. If the in-river harvest is 14,000 chinook or less, the 1981 escapement goal of 86,000 chinook would be met.*

The ocean troll chinook catch off the California north coast area will be the same as 1980, due to the chinook harvest guideline. Again, this is based on the assumption that there will be no transfer of chinook catch outside the harvest guideline areas.

Coho - *The California harvest of coho will be increased considerably over 1980. In 1980, the California fishery was closed during the first half of July north of Cape Vizcaino. In addition, due to poor coho price and lack of market orders for coho during May 1980, California coho landings were significantly reduced. The adopted 1981 regulations provide for a statewide all-species July 1 troll opening. As a result, the estimated 1981 California troll coho landings will be about 110,000 fish, an increase of 120% over last year's small landings of 50,000 coho.*

Sacramento River Chinook - *Harvest of Sacramento River chinook is expected to be increased 7% over 1980 landings. The troll harvest will be decreased 4% from 1980, and the sport harvest increased 47%. These percentage changes would be a direct result of application of the chinook harvest guideline of 265,000 troll and 115,000 recreational fish south of Point Arena, and is based on the assumption that there would be no transfer of fish outside of the harvest guideline area.*

The estimated adult fall run spawning escapement would be about 150,000 chinook and would meet the escapement goal of 146,000 fish.

Harvest Guidelines - The harvest guidelines for Sacramento and Klamath River chinook stocks were developed from the 1971-80 California data-base. Achievement of the escapement goals predicted in these analyses is dependent upon minimal transfers of chinook out of guideline areas. Large transfers of chinook catches out of California into areas north of California would reduce the predicted escapement numbers. However, the common early season openings and closures off California and Oregon should reduce effort shifts and assist in minimizing catch transfers.

Oregon

With the application of in-season management and adoption of harvest guidelines, the 1981 regulations will meet the OPI escapement goal and allocation goal for coho salmon south of Cape Falcon. The anticipated 1981 catch for the OPI area south of Cape Falcon will be 772,000 fish with an allocation between troll and recreational users of 71% and 29%, respectively. *The harvest guideline of 772,000 coho includes 632,000 OPI fish and an estimated 140,000 coho originating from private hatcheries.*

The expected harvest by the commercial troll and recreational fishery will be 548,000 and 224,000, respectively. Of the total harvest south of Cape Falcon, *122,000 (16%)* are expected to be harvested off California. Due to the earlier all species troll opening (July 1) the harvest guideline for the troll fishery will probably be met by early August at the latest, requiring an automatic closure of coho fishing subject to the August 12 in-season review procedure. It is quite possible the recreational fishery may also reach its harvest guideline before the scheduled closing date, necessitating an earlier closure of that fishery. Assuming an August 11 closure of the troll fishery, a minimum estimated 19,000 coho will be lost during chinook-only fishing prior to September 9. This will reduce the commercial troll harvest guideline accordingly. If it is projected that the harvest guideline will be met earlier than August 11, the harvest guideline would need to be further reduced. The all salmon except coho fishery off Oregon, after the coho closure, will cause an unnecessary wastage of coho.

Expected escapement to the OPI would be 300,000 adult coho, which is the stated 1981 goal. Escapement of natural spawning coho to Oregon coastal streams should approach 125,000 adults (1981 goal) compared to the long-term goal of 200,000 adults.

Expected impacts of the adopted regulations on Oregon coastal chinook salmon will be similar to *Option IV*. Assuming 1980 stock abundance and effort the anticipated 1981 chinook catch for Oregon will approach 205,000, representing a reduction of 2% from 1980. The recreational catch will approximate 17,800 which is 4% below the catch of 18,500 in 1980. Estimated escapement to Oregon coastal streams will approach 157,000 which meets the 1981 goal of 150,000 to 200,000 adults.

Impacts on Klamath River chinook stocks would be similar to those in 1980. The effect of the July 1-15 all-species troll opening in 1981 would be offset by the loss of the June 16-30 selective chinook fishery off Oregon in 1980. Also, the area south of Cape Sebastian is expected to be closed for much of August through September 8 when the coho quota harvest guideline is reached, compared to 1980 when the entire Oregon coast was open for all salmon fishing for the same period.

Washington

Chinook - Ocean harvest pressure on chinook salmon stocks off the Washington coast will be reduced in 1981 compared to previous seasons. Recreational bag limit and season reductions will decrease the chinook catch. In addition, a probable reduction of the all-species troll season north of Cape Falcon will further lower chinook harvest rates in 1981. Liberalization of the Makah troll chinook size limit from 28" to 24" will offset these savings to a small extent.

If upper Columbia River fall chinook stock abundance is similar to 1980, the 1981 in-river returns should also be similar. Preliminary expectations of upriver bright stock abundance indicate in-river returns at or below 1980. However, troll regulatory restrictions off Southeast Alaska, where a large percentage of this stock is harvested, should help stabilize terminal returns. No specific run size forecast has been made for 1981 Bonneville Pool hatchery stocks which contribute heavily to the Washington ocean fisheries.

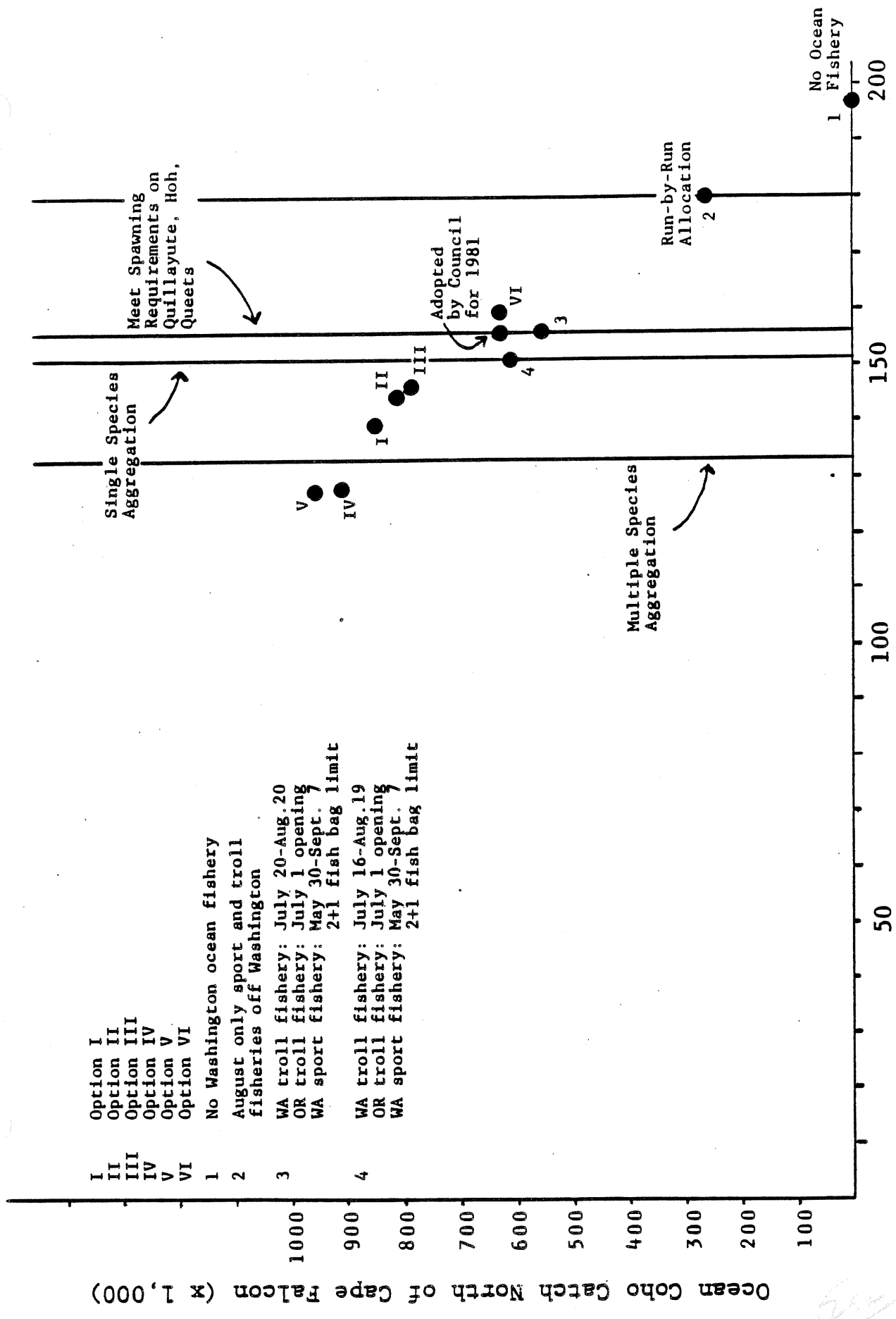


Figure 1. WASHINGTON OCEAN COHO CATCH vs. NORTH COASTAL TERMINAL RUN,

The impact of these same fisheries on Washington coastal, upper Columbia River spring and summer, and Puget Sound chinook stocks is minor compared to their total marine harvest and terminal run sizes. Therefore, the specific impacts of 1981 regulations on these stocks has not been computed.

Coho - The harvest guideline of 620,000 coho north of Cape Falcon will reduce ocean coho harvest and harvest rates off Washington to record low levels. Washington coastal coho natural spawning escapement requirements will be met for individual rivers managed for natural production. In addition, coastal salmon treaty allocation requirements will be met on either a single- or multiple-species aggregation basis (Figure 1). Terminal returns to Puget Sound will exceed the 1981 goal by approximately 55,000 coho as a result of managing for weaker coastal coho stocks. This management constraint will also increase coho transfers to Canadian fisheries by about 28,000 fish over 1980 regulations. The July 15 all-species troll opening date should also provide maximum harvest opportunity for pink salmon.

The recreational fishery will probably meet its harvest guideline north of Cape Falcon before September 7 unless a 5-10% effort reduction occurs in comparison to 1980.

ECONOMIC AND SOCIAL IMPACTS

Regulations adopted by the Council in 1981 are likely to result in substantially higher gross revenues to the troll fleet as a whole in Oregon and California south of Cape Falcon compared to 1980. Total gross revenues in the troll fisheries of Washington and the Columbia River area are expected to be significantly reduced compared to 1980 which was already a poor year for these fisheries. Recreational charter vessel revenues and total economic benefits to anglers are likely to be significantly reduced compared to 1980 in Washington and the Columbia River mouth area, and reduced to a lesser degree in Oregon south of Cape Falcon.

It is generally anticipated that coastwide salmon prices will recover somewhat from low 1980 levels. These increased prices, in conjunction with the increased troll catch levels expected as a result of the Council's 1981 regulations *in Oregon* south of Cape Falcon, could increase total gross troll revenues in the area by *25-30%* over 1980. *In California, increased coho catch levels, chinook catch levels similar to 1980, and increased prices are expected to result in generally increased total gross revenues to the troll fleet. Common season dates between Oregon and all of California should help minimize effort shifts and associated reductions in average gross revenues per local boat.* In 1980, total troll catches off California were similar to the 1971-75 average but increased effort levels (and low chinook prices) resulted in relatively low average gross revenues per California boat. *The two-week extension of the California all-species season in the north coast area allows the troll fleet more flexibility in meeting their harvest guideline than regulations in 1980. The extra time may reduce the need for vessels to fish in bad weather. However, if the "highliners" in the fleet catch the California chinook harvest guidelines quickly, the seasons may be cut short, negatively impacting the fishermen who operate smaller vessels and the coastal communities closely associated with these small boat fleets.*

The elimination of the Oregon experimental chinook fishery in June is unlikely to reduce per boat revenues greatly.

The early opening and longer scheduled all-species season adopted for the Oregon troll fishery may provide Oregon trollers with increased bargaining power in price negotiations with salmon processors. However, this advantage may be offset by lower average poundage of coho caught earlier in the season.

The coho harvest guideline in Oregon south of Cape Falcon is expected to be reached fairly quickly, because of:

1. The early (July 1) all species troll season opening -- coho "bite" better early in the season and are more abundant.

2. Furthermore, a price dispute between fishermen and buyers in California kept coho catches down in 1980. Assuming price agreements can be reached in 1981, California coho catches are expected to be much higher than in 1980.

Although the season will remain open for all species except coho after the Oregon coho harvest guideline is reached, this season extension will be restricted to the Cape Falcon to Cape *Sebastian* area. *All of the southern Oregon troll ports are included in this zone except Brookings. Brookings is approximately 20 miles south of Cape Sebastian, so that the open area would still be accessible to small vessels from this port.*

Low coho harvest guidelines in Washington and Oregon north of Cape Falcon are likely to result in the shortest troll season ever experienced in Washington. Even with potentially increased salmon prices in 1981 compared to 1980, the total gross economic value of the Washington troll fisheries is expected to be significantly less than the low level experienced in 1980.

It is possible that the coho harvest guideline south of Cape Falcon will be met before the coho harvest guideline north of Cape Falcon is met. If this occurs, many Oregon trollers may move into the Columbia River area from Cape Falcon to the Oregon/Washington border and into waters off Washington to take advantage of the all-species fishing there, rather than fish for chinook only between Cape Falcon and Cape Sebastian. This could cause the northern quota to be reached more quickly.

Puget Sound "inside" net fishery total gross revenues are likely to be reduced over the high average revenues in these fisheries in 1980. Gross revenues in most coastal treaty-Indian fisheries north of the Quinault River are expected to be low. Columbia River treaty and non-treaty net fisheries are projected to experience continued low average gross revenues in 1981.

In the recreational fisheries, the two-fish bag limit all season in Oregon and Washington south of the Queets River is likely to result in a significant reduction in angler effort levels, the economic value of angler benefits, charterboat gross economic revenues and coastal community economic levels compared to 1980. This is especially true of the Westport and Columbia River areas. The "three fish, only two of which may be coho or chinook" (i.e., "2+1") bag limit north of the Queets River may lessen the economic impact of the coho/chinook bag limit for the northern Washington coastal communities of Neah Bay and La Push.

The *Oregon and Washington* recreational seasons have been reduced to the shortest ever. The 1981 recreational coho harvest guidelines will be 23% lower than the 1980 coho catch south of Cape Falcon and 37% less than the 1980 coho catch north of Cape Falcon. With such low coho harvest guidelines, it is possible that the recreational fisheries may have to close even before the end of their abbreviated seasons, further reducing the economic value of these fisheries.

The net socio-economic impact of increasing the Washington recreational coho size limit from 16" to 20" is unclear. It may slow the attainment of the recreational harvest guideline, possibly preventing an in-season closure.

The Council's adopted regulations restore the California sport fisheries to their traditional fishing season, with a 2-fish bag limit. *It is unlikely that the chinook harvest guideline imposed on the California sport fisheries will require early closures, in light of recent trends in the reduction of charter fleet effort levels.*

The impacts described above will be reflected in the economic condition of the communities--Indian and non-Indian, coastal and "inside"--that are heavily involved in the commercial, recreational and subsistence salmon fisheries.

High fuel prices and other factors outside the Council's control will continue to place economic pressure on all the Pacific coast salmon fisheries in 1981.

SUMMARY OF TEAM CONCERNS REGARDING 1981 SALMON REGULATIONS

The Team would like to reemphasize some of the concerns it has with the regulations adopted by the Council.

1. The OPI harvest south of Cape Falcon will be reached earlier than scheduled - probably by late July or early August and will shorten seasons south of Cape Falcon, particularly for the troll fishery.

2. The chinook-only fishery off Oregon, after any coho closure, will cause an unnecessary wastage of coho.

3. The increase in recreational coho size limit off Washington to 20 inches will cause increased coho losses, and preclude harvest opportunity on jack coho. It will also result in different recreational size limits on the Oregon and Washington sides of the Columbia River mouth.

4. *The chinook harvest guidelines have not been used before and have many unknowns that could reduce their effectiveness. Not the least of these is the degree of transfers of chinook catches outside of California which could reduce the chances of reaching projected 1981 chinook escapement estimates.*

However, in spite of these concerns, the Team feels that the revised regulations adopted by the Council on March 26, 1981 will, in general, meet the stated goal and objectives of the plan.

Table 1. Impact of Adopted 1981 Regulations on California, Oregon and Washington Coho in Terms of Estimated Harvest, Escapement and Increased Transfer to Canadian Fisheries. (As revised March 27, 1981.)

Area	1980[a/] Actual (in thousands)	1981 Council Adopted Regulations (in thousands)	1981 Goal (in thousands)
OCEAN HARVEST			
California and Oregon South Cape Falcon			
California			
Troll	50	110	-
Recreational	21	12	-
Total	71	122	-
Oregon			
Troll	347	438	-
Recreational	276	212	-
Total	623	650	-
Total South of Cape Falcon			
Troll	397	548[b/]	548[b/]
Recreational	297	224	224
Total	694	772	772
Washington and Oregon North of Cape Falcon			
Troll	418	372	372
Recreational	411	248	248
Total	829	620	620
ESCAPEMENT FROM OCEAN[c/]			
OPI	318	300	300
Washington Coast[d/]	148	156	156[e/]
Puget Sound	1,388	980	925
CANADIAN TRANSFERS INCREASE[f/]	-	28	-

a/ Preliminary estimate.
b/ The 71% harvest guideline of 548,000 would need to be reduced by 19,000 fish to account for anticipated coho losses which would occur during a chinook-only fishery prior to September 9, assuming the coho harvest guideline is achieved August 11. If it is projected that the harvest guideline will be met earlier than August 11, the harvest guideline would need to be further reduced.
c/ In-river size, net catch plus escapement only.
d/ Minus Willapa Bay.
e/ Represents total in-river run size north of Willapa Bay which satisfies individual natural spawning escapement requirements on coastal rivers. This run size would also meet treaty allocations on either a single- or multiple-species aggregation basis.
f/ Increases in the transfer of fish to the Canadian fisheries compared to 1980 regulations.

Table 2. Impact of Adopted 1981 Regulations on California, Oregon, and Washington Chinook in Terms of Estimated Percentage Change from 1980 Harvest and Projected 1981 Escapement from the Ocean. (As revised March 26, 1981.)[a/]

Area	1980 Actual (In thousands)	1981 Council Adopted Regs. (% change from 1980)[b/]	1981 Goal (In thousands)
Harvest			
California-No. of Point Arena[c/]			
Troll	299	0	---
Sport	8	+88	---
Total	307	+3	---
California-So. of Point Arena			
Troll	276	-4	---
Sport	78	+47	---
Total	354	+7	---
Oregon			
Troll	209	-2[d/]	---
Sport	18	-4	---
Total	227	-2[d/]	---
Washington	186[e/]	0	---
Escapement (in thousands)			
California			
Klamath	46[f/]	100[f/]	86
Sacramento[g/]	120	150	146
Oregon Coast[e/h/]	160	157	150-200
Upper Columbia River[i/]	160	160	160

a/ Increases in Canadian transfers of all Columbia River fall chinook are negligible.
b/ California estimates for 1981 are based on predicted 1981 stock abundance and availability. Oregon and Washington based on 1980 stock abundance.
c/ Primary area of Klamath River stock abundance.
d/ The revised regulations will increase the Oregon catch above the figures shown in this table but it is not possible to quantify this at this time.
e/ Includes catches made off Oregon, California, and Alaska and landed in Washington.
f/ In-river run size expressed as adult fall run escapement. If the in-river harvest exceeds 14,000 chinook, the 1981 escapement goal will not be met.
g/ Expressed as adult fall run spawning escapement.
h/ Includes some spring chinook spawners.
i/ In-river run size of Columbia River upper fall stocks only. Information on other chinook stocks is not available.

Table 3. 1981 Regulation Analysis Compared to 1980 Regulations for Upper Columbia River Fall Chinook Stocks.

Options	PERCENTAGE CHANGE		
	Wash. Coastal Ocean Catch of Columbia R. Fall Chinook Stock	Adult Run Above Bonneville Dam	
		Hatchery Stock	Natural Stock
I	+4	-2	-2
II	0	0	0
III	-13	+5	0
IV	+12	-4	-1
V	+21	-7	-1
VI	-42	+14	+2
Proposed Regulations by Council (March 26, 1981)	0	0[a/]	0[a/]

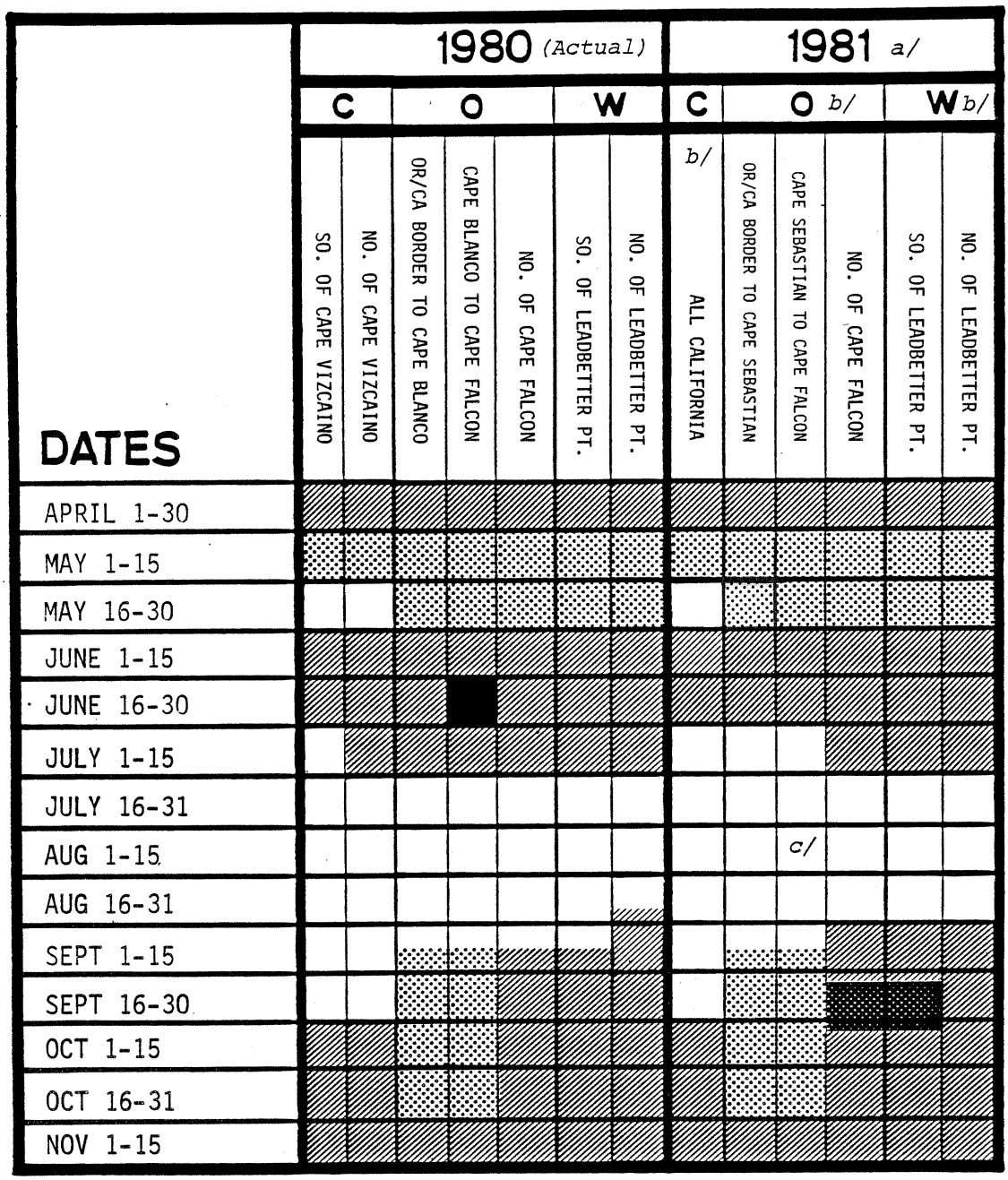
a/ Fishing restrictions in Alaska and possible early closures for coho may increase these figures a few percent.

Table 4. Proposed 1981 Ocean Salmon Fishing Regulations as Compared with 1980 Regulations.

1981 Proposed Regulations[a/] (Adopted by Pacific Council on 3/19/81)	1980 Regulations[a/]
***** NORTH OF CAPE FALCON, OREGON TO WASHINGTON/CANADA BORDER ***** (unless otherwise specified)	
Commercial Troll Fishery	
1. May 1-31, all salmon except coho.	1. May 1-31, all salmon except coho.
2. July 15-September 1, all salmon. Automatic closure when troll coho harvest guideline projected to be reached (if before August 26).	2. July 15-September 8, all salmon (emergency in-season closure implemented on August 26 north of Leadbetter Point).
3. September 20-October 3, 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	3. 28" minimum chinook, 16" minimum coho.
Recreational Fishery	
1. May 23-September 7, all salmon. If coho recreational harvest guideline projected to be reached before August 26, automatic closure.	1. May 10-September 14, all salmon. (Emergency in-season closure implemented on August 26 north of Leadbetter Pt. and on September 2 south of Leadbetter Pt.).
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).	2. Begin season with 3-fish bag limit. Adjust downward to 2 fish if in-season data indicate the total catch by September 1 will exceed 333,000 coho. Fishery will be monitored weekly. Projections will be made July 15 and August 15. (Bag limit was reduced by Oregon Dept. of Fish & Wildlife and Washington Dept. of Fisheries from 3 fish to 2 fish on July 16.)
3. 24" minimum chinook, 20" minimum coho off Washington, and 16" minimum coho off Oregon.	3. 24" minimum chinook, 16" minimum coho.
***** SOUTH OF CAPE FALCON, OREGON TO OREGON/CALIFORNIA BORDER ***** (unless otherwise specified)	
Commercial Troll Fishery	
1. May 1-31, all salmon except coho.	1. May 1-31, all salmon except coho.
2. July 1-September 8, all salmon. Automatic closure when troll coho harvest guideline projected to be reached (if before August 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 September 8.	2. June 16-30, chinook only from Cape Falcon south to Cape Blanco. Terminal gear restricted to whoe bait or 6" minimum plugs. Minimum hook size 6/0. 3. July 15-September 8, all salmon.
3. September 9-October 31, all salmon except coho.	4. September 9-October 31, all salmon except coho.
4. Size limits and other regulations same as in 1980.	5. 26" minimum chinook, 16" minimum coho.
Recreational Fishery	
1. May 15-September 20, all salmon. If coho recreational harvest guideline projected to be met before August 12, automatic closure.	1. May 10-September 14, all salmon. (Emergency in-season closure implemented September 2.)
2. September 21-October 31, all salmon except coho for Cape Blanco to Oregon/California border only.	2. September 15-October 31, all salmon except coho.
3. 2-fish bag limit.	3. Begin season with 3-fish bag limit. Adjust downward to 2 fish if in-season data indicate the total catch by September 14 will exceed 240,000 coho in Oregon Production Index (OPI) area. Fishery will be monitored weekly. Projections will be made on July 15 and August 15. (Bag limit was reduced by Oregon Dept. of Fish & Wildlife on July 16.)
4. Same size limits and other regulations as in 1980.	4. 22" minimum chinook; 16" minimum coho.
***** NORTH OF CAPE VIZCAINO, CALIFORNIA[b/] TO OREGON/CALIFORNIA BORDER *****	
Commercial Troll Fishery	
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-September 30, all salmon. *Automatic closure when troll chinook harvest guideline projected to be reached.*	3. July 16-September 30, all salmon.
4. Same size limits and other regulations as in 1980.	4. 26" minimum chinook, 22" minimum coho.
Recreational Fishery	
1. February 14-November 15, all salmon. *Automatic closure when recreational harvest guideline projected to be reached.*	1. February 17-October 13, all salmon.
2. 2-fish bag limit.	2. 2-fish bag limit.
3. Same size limits and other regulations as in 1980.	3. 22" minimum size except that one chinook or coho salmon per day may be less than 22" but not less than 20".
***** SOUTH OF CAPE VIZCAINO, CALIFORNIA TO CALIFORNIA/MEXICO BORDER *****	
Commercial Troll Fishery	
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-September 30, all salmon. *Automatic closure when troll chinook harvest guideline projected to be reached.*	3. July 1-September 30, all salmon.
4. Same size limits and other regulations as in 1980.	4. 26" minimum chinook, 22" minimum coho.
Recreational Fishery	
1. February 14-November 15, all salmon. *Automatic closure when recreational chinook harvest guideline projected to be reached.*	1. February 17-October 13, all salmon.
2. 2-fish bag limit.	2. 2-fish bag limit.
3. Same size limit and other regulations as in 1980.	3. 22" minimum, except that one chinook or coho salmon per day may be less than 22" but not less than 20".

a/ 1980 and 1981 regulations include in-season management.
b/ Cape Vizcaino is located approximately 20 miles north of Fort Bragg at 39°49'4".

TROLL



a/ Adopted by Council, March 26, 1981.

b/ 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

c/ ALL SALMON EXCEPT COHO, whole bait or 5-inch plugs, after coho catch reaches harvest guideline.

RECREATION

DATES	1980 (Actual)					1981 a/					
	C	O		W		C	O b/			W b/	
	ALL CALIFORNIA	SO. OF CAPE FALCON	NO. OF CAPE FALCON	SO. OF LEADBETTER PT.	NO. OF LEADBETTER PT.	b/ ALL CALIFORNIA	OR/CA TO CAPE BLANCO	C.BLANCO TO C.FALCON	NO. OF CAPE FALCON	SO. OF QUEETS	NO. OF QUEETS
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	c/		c/		2	2	2	2	2	2+1
SIZE LIMIT — COHO	d/	16"		16"		d/	16"			20"	
SIZE LIMIT — CHINOOK	d/	22"		24"		d/	22"			24"	

OPEN

CLOSED

ALL SALMON EXCEPT COHO

a/ Adopted by Council, March 26, 1981.

b/ 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

c/ 1980 season began with 3-fish bag limit; this was reduced to 2 fish.

d/ 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.

APPENDIX G

1981 SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

FOR THE OCEAN SALMON FISHERIES OFF

WASHINGTON, OREGON AND CALIFORNIA

Prepared Jointly by:

Pacific Fishery Management Council
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U.S. Department of Commerce
National Oceanic and
Atmospheric Administration
National Marine Fisheries Service
Northwest Region
1700 Westlake Avenue North
Seattle, Washington 98109

April, 1981

COVER SHEET

( ) Draft (X) Final

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Title of Proposed Action:

1981 Amendment to the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978.

Abstract:

This action amends the fishery management plan for the ocean commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California for the 1981 season. The 1981 amendment provides a similar coastwide management regime to the one that governed the fishery in 1980. Notable exceptions for 1981 are the proposed chinook harvest guidelines (quotas) off California and the change in the process of making in-season management decisions for coho salmon in the OPI and WPP areas to provide for automatic closures if applicable harvest guidelines are reached prior to the end of the regularly scheduled season[s]. The amendment is designed to protect the long-term productivity of the salmon resources and will involve no irreversible or irretrievable commitments of those resources.

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SUMMARY

Description of Action:

The management plan amendment for 1981 continues the basic plan that was approved by the Council in March, 1978. The current amendment provides a similar coastwide management regime to the one governing the ocean fishery during 1980. However, this year's management regime presents a change in the provision for in-season regulatory modifications of the coho fishery off Washington and Oregon to provide for automatic closures if applicable harvest guidelines are reached prior to the end of the regularly scheduled season[s]. In addition, chinook harvest guidelines (quotas) have been established for the first time for the commercial and recreational fisheries off California.

Management Tools:

The regulations adopted for the 1981 fishing season apply to both the commercial and recreational fisheries in the areas offshore between three and two hundred miles known as the fishery conservation zone (FCZ). The management regime includes provisions for open and closed fishing seasons, gear restrictions, daily recreational bag limits, minimum size limits for the retention of coho and chinook salmon, harvest guidelines (quotas) for chinook salmon off California, and in-season management of the coho fisheries of the Washington Production Projection (WPP) and Oregon Production Index (OPI) areas.

Summary: The Pacific Fishery Management Council's (Council) Salmon Plan Development Team (Team) indicated in its January, 1981 status report that several salmon stocks that are subject to harvest by the ocean fisheries would be depressed in 1981. The Team identified Klamath River chinook, upper Sacramento River chinook, upper Columbia River chinook, some Oregon coastal coho stocks, Washington coastal coho stocks and several natural runs of Washington coastal chinook stocks to be the stocks in most need of protection.

The proposed management regime that was adopted by the Council at its March 18-19 meeting in Renton, Washington and at the March 26 meeting in Portland, Oregon is expected to achieve the 1981 coastwide spawning escapement goals that were established by the state fishery agencies of Washington, Oregon and California and adopted by the Council in the FMP.

Some of the estimated impacts of the 1981 regulations are that the salmon fishing seasons for the commercial fishery off California should generate about the same catches and higher gross revenues (because of more favorable market conditions) as compared to 1980. The commercial fishery off Oregon south of Cape Falcon is expected to do considerably better in 1981 (in terms of total gross revenue) as compared to the 1980 fishing season. However, a reduction in the allowable troll harvest north of Cape Falcon will have an adverse impact on vessels participating in that fishery compared to 1980. Coastwide charter vessel revenues and angler effort are expected to decline relative to 1980.

a. Background: The Council continues to face the task of allocating shares of the mixed stock resource to the ocean commercial and recreational fisheries while also providing inside treaty and non-treaty fisheries an opportunity to harvest a portion of the resource and, of utmost importance, assuring that enough salmon survive the gauntlet of ocean and inside fisheries to spawn and perpetuate the runs. The task is complicated even more by the fact that some under-harvested, healthy hatchery produced salmon stocks mingle in the ocean with over-harvested natural spawning salmon stocks and neither can be readily identified until they return to the spawning grounds.

At the January 7-8, 1981 meeting, the Council approved for public review and comment six regulatory options for the 1981 commercial troll and recreational salmon fisheries. Public comments were sought and received during the period January 30 to March 16. In addition, six public hearings were held during the public review period.

At the March 18-19, 1981 meeting the Council adopted a management regime for the 1981 ocean salmon fisheries and recommended that the Secretary of Commerce approve the regime and issue regulations. Subsequent to the Council's action, the Team met to analyze the impacts of the proposed regulatory package. The Team's analysis indicated that the fishing seasons the Council had recommended for the California fisheries were too liberal and that, given the expected inside harvest rates, it was quite likely that ocean harvests of Klamath River chinook stocks and upper Sacramento River chinook stocks would prevent those stocks from achieving the Council's 1981 spawning escapement goals. The Council was requested to reconvene on March 26, 1981 and reconsider its management proposal for the California ocean fisheries. Accordingly, the Council met in Portland, Oregon on March 26, 1981 and modified the California ocean fishing regulations in order to assure that, to the extent practicable, the regulations would achieve the chinook spawning escapement goals for the Klamath/Trinity River and the upper Sacramento River. In addition, the Council adopted, for the first time, chinook harvest guidelines (quotas) for the California fisheries, and modified the chinook only season between Cape Blanco and Cape Sebastian, Oregon.

The most difficult and controversial issue that faced the Council during the process of developing and approving the 1981 amendment concerned the needs of the resource, i.e. the 1981 spawning escapement goals, as balanced against, the socioeconomic needs of the resource user groups. More restrictive ocean fishing regulations, rising costs, unusally bad weather and depressed market conditions combined in 1980 to bring about an economically disastrous season for many coastwide commercial trollers.

At nearly all the public hearings members of the commercial trolling fleet and many charterboat owners and operators, testified about the disastrous impacts of the 1980 regulations and the need for liberalized fishing seasons in 1981. By far, the majority of public response to the Council's six proposed management regime alternatives supported the most liberal ocean fishing regulations. However, representatives of treaty fishing groups and "inside" commercial and recreational non-treaty fishing groups urged the Council to adopt more restrictive ocean fishing regulations than those of 1980. The Council's Salmon Team determined that 1981 regulations more liberal than 1980, would not achieve 1981 management goals.

b. Alternatives Including the Proposed Action:

A complete discussion of the Council's six management regime alternatives and the two in-season management proposals that were submitted for public review is presented in the FMP Amendment (Section IV). The proposed options ranged from much less restrictive (Option V) to much more restrictive (Option VI) than the 1980 regulations. The Team's assessment of the impacts of the six proposed 1981 regulation options (3/13/81) is presented in Appendix D of the 1981 FMP Amendment.

The 1981 regulations, although similar to the 1980 regulations, differ in several areas. The most significant changes are presented below:

1) The California commercial troll season north of Cape Viscaino has been extended two weeks by opening the all-species season on July 1, rather than July 15 as in 1980. However, if the chinook harvest guidelines are met prior to the end of the season, the season would close early for either the troll or recreational fishery or both in the relevant area.

2) The California recreational fishery has been extended about five weeks longer than the 1980 season.

3) Chinook salmon harvest sharing guidelines (quotas) were established for the California ocean fisheries. If a guideline is met that fishery will automatically be closed by field order by the Northwest Regional Director of the NMFS. Chinook harvest guidelines north of Point Arena to the Oregon/California border are 300,000 for the troll fishery and 15,000 for the recreational fishery; south of Point Arena, 265,000 for the troll fishery and 115,000 for the recreational fishery.

4) A commercial troll coho salmon-only test fishery was added from Cape Falcon, Oregon to Leadbetter Point, Washington out to 12 miles for the period from September 20 to October 3 (a maximum of ten vessels, each with a WDF observer, using only coho gear).

5) The special June 16-30 commercial troll chinook-only season using whole bait and 6 inch plugs from Cape Falcon to Cape Blanco was not approved for 1981.

6) The all-species commercial troll season for the area from Cape Falcon south to the California/Oregon border opens two weeks earlier, July 1, as compared to July 15 in 1980. In addition, if there is an in-season closure of the fishery as a result of reaching the coho harvest guideline, an all-salmon except coho season will be allowed from Cape Falcon south to Cape Sebastian until September 8 (gear restricted to whole bait or 5 inch plugs and larger).

7) The harvest guideline for the ocean fisheries from Cape Falcon south to the Oregon/California border is 772,000 fish, 548,000[a/] = troll and 224,000 = recreational.

8) The all-salmon commercial troll season north of Cape Falcon to the Washington/Canada border is scheduled to close one week earlier (September 1) this year than was adopted by the Council for 1980.

9) The harvest guideline for the ocean fisheries north of Cape Falcon is 620,000 fish, 372,000 = troll and 248,000 = recreational.

10) The recreational fishing season north of Cape Falcon to the Washington/Canada border has been reduced by about three weeks compared to 1980. In addition, the coho salmon minimum size limit (off Washington only) has been increased from 16 inches to 20 inches. The recreational daily bag limit was reduced for the area south of the Queets River (Washington) to two fish as compared to the three fish daily bag limit that the season opened with in 1980. North of the Queets River, the daily bag limit will be three salmon, only two of which may be coho or chinook.

11) The all-salmon recreational fishing season south of Cape Falcon to the Oregon/California border opens five days later (May 15) than in 1980 but closes six days later (September 20) unless the coho harvest guideline is met before August 12, at which time the fishery would be automatically closed, or after August 12, which would necessitate a meeting to reevaluate the preseason abundance forecasts and a determination (by the NMFS Regional Director) to close the fishery or permit it to continue through its preset season, i.e. closure would not be automatic after August 12 for either the troll or recreational fisheries. The all-salmon except coho recreational fishery south of Cape Blanco will open about one week later (September 21) than in 1980 but closes at the same time (October 31). The 1981 daily bag limit is two salmon (any species) as opposed to the three fish daily bag limit that the recreational season opened with in 1980.

12) The chinook minimum size limit for the ocean troll fishery of the Makah treaty tribe has been reduced in response to a Federal Court Order to 24 inches from 28 inches in 1980.

Overall, the 1981 seasons (as compared to 1980) are slightly less restrictive off California, less restrictive off Oregon and more restrictive north of Cape Falcon. However, the California chinook salmon harvest guidelines provide assurance that the 1981 spawning escapement goals for Klamath River chinook and upper Sacramento River chinook will be met. In addition if the coho harvest guidelines in the OPI and WPP areas are met prior to the scheduled season closing dates, the season would close early.

If the Council had not adopted a new regulatory regime for the 1981 ocean fishing season, the 1980 regulations would have been carried over to the 1981

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a/ Subject to necessary modification. See, Salmon Team Impact Analysis dated March 27, 1981, Appendix E, footnote b/.

fishing season. However, because the 1980 regulations (as well as regulations more or less restrictive than the 1981 proposed regulations) did not satisfy the Council's management goals and objectives for the 1981 ocean salmon fisheries, including the spawning escapement goals, there was need to adopt a new regulatory package for 1981.

c. Impacts of the Proposed Action

No change in the physical environment is expected as a result of the amended plan and its implementing regulations for 1981.

A complete discussion of the impacts of the proposed management options and of the measures that were adopted by the Council for the 1981 ocean salmon fishery is presented in the revised Regulatory Impact Review (available upon request from the Pacific Fishery Management Council) and in Appendices D, E and F of the 1981 FMP Amendment.

The regulations that were adopted by the Council for the 1981 season should result in higher gross revenues to the commercial troll fleet off Oregon compared to 1980. The salmon fishing seasons for the commercial troll fishery off California should generate about the same catches and higher gross revenues (because of more favorable market conditions) as compared to 1980. However, total gross revenues in the commercial troll fisheries off Washington and the Columbia River area may be reduced compared to the 1980 season. Charter vessel revenues and total economic benefits to recreational anglers are likely to be down from 1980 in Washington and the Columbia River mouth area and in Oregon south of Cape Falcon. These impacts will be reflected in the economic condition of the numerous coastal communities involved in the commercial and recreational salmon fisheries. Factors beyond the Council's regulatory authority such as fuel prices and wholesale and retail market conditions will continue to have a significant impact on the coastal fishing communities and the salmon fishing participants.

The Salmon Plan Development Team analyzed the impacts of the proposed regulations and estimated that the coastwide 1981 spawning escapement goals and Treaty Indian allocations would be achieved. In addition, the Team concluded that the more restrictive ocean fishing regulations north of Cape Falcon coupled with a proposed 15% reduction in chinook harvest by the ocean troll fleet off Southeast Alaska (for details of the 1981 amendment to the High Seas Salmon Plan, write North Pacific Fishery Management Council, Anchorage, Alaska, 99510) could reduce the ocean harvest of Columbia River and Washington coastal chinook stocks, thus increasing the in-river run sizes and the chances for greater harvests by Washington and Oregon inside treaty and non-treaty fisheries in the Columbia River.

Comments Requested:

Federal Agencies	State Agencies & Other Organizations
U.S. Corps of Engineers	Fisheries Agencies, States of Oregon, Washington, California, Idaho, and Alaska
U.S. Coast Guard	Conservation Organizations
Environmental Protection Agency	Salmon Processing Industry
Department of Interior	Northwest Indian Fisheries Commission
Fish & Wildlife Service	North Pacific Fishery Management Council
Bureau of Land Management	Columbia River Inter-Tribal Fish Commission
Bureau of Indian Affairs	Trollers Associations
Bureau of Outdoor Recreation	Gillnetters Associations
Fisheries Service of Canada	Labor Organizations
Department of Agriculture	Recreational Fishery Organizations
Forest Service	Charter Boat Associations
Soil Conservation Service	Land Conservation and Development Commission (Oregon)
Department of Energy	California Coastal Zone Conservation Committee
Bonneville Power Admin.	Washington Department of Ecology
	San Francisco Bay Conservation and Development Commission

Comments were due by March 16, 1981.

Hearings were held at the following locations:

City	Time and Date	Location
North Bend, Oregon	7 pm, February 19, 1981	Pony Village Lodge Virginia Avenue
Astoria, Oregon	7 pm, February 20, 1981	Astoria Middle School
Eureka, California	7 pm, February 20, 1981	Eureka Inn
Pocatello, Idaho	7 pm, February 20, 1981	Student Union Building Room 409, Idaho State University, Eighth St.
Burlingame, California	2 pm, February 21, 1981	Burlingame Hyatt
Renton, Washington	2 pm, February 21, 1981	Sheraton Renton Inn

Draft Statement to EPA: 1/23/81

Final Statement to EPA: 4/24/81

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1.0 Statement of Purpose and Need

This action amends the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978, and implements the amendment by federal regulations for the 1981 fishing season. The amendment is divided into four sections and includes six appendices (including this SEIS). The amendment contains a description of 1981 salmon management problems (Section I), a review of the 1980 salmon fisheries (Section II), an evaluation of the 1980 salmon fishery and management regime (Section III), recommendations for 1981 salmon management (Section IV), and several appendices concerning habitat and environmental problems (A), socioeconomic characteristics of the fishery participants (B) consensus statements from California and Oregon fishing representatives (C), an impact analysis for the six management regime alternatives approved by the Council for public review (D) and of the management regime adopted by the Council for the 1981 fisheries (E and F).

The 1981 amendment is necessary in order to update the 1978 plan, as amended in 1979 and 1980, with the most current information on the status of the stocks, the estimates of run sizes and spawning escapement requirements for 1981, allocation requirements, and management regime alternatives for 1981.

If the Council took no action in 1981, the 1980 regulations would automatically extend to the 1981 fishing season. However, because the 1980 regulations would not satisfy the Council's management goals and objectives for the 1981 ocean salmon fishery, the Council adopted a new regulatory package for 1981 that better satisfies the needs of the resource and the resource user groups.

2.0 Alternatives Including the Proposed Action

See Section IV of the FMP Amendment for a complete discussion of the six management regime alternatives that were selected by the Council for public review and comment.

Council Adopted Regulations for 1981:

Council regulations for 1981 are the same as 1980 except as provided in this Section 2.0.

COMMERCIAL

CALIFORNIA (entire state)

All salmon except coho	May 1-15
All salmon	May 16-31
[b/] All salmon	July 1-September 30
Chinook minimum size limit:	26 inches
Coho minimum size limit:	22 inches

b/ Subject to modification by in-season management provisions.

OREGON/CALIFORNIA BORDER TO CAPE FALCON

All salmon except coho — May 1-31
b/ All salmon — July 1-September 8
Note: If there is an in-season closure on coho, then an all species except coho season will be allowed from Cape Sebastian to Cape Falcon, with whole bait or 5" plugs only, starting at the time of the closure to September 8.
All salmon except coho — September 9-October 31
Chinook minimum size limit: 26 inches
Coho minimum size limit: 16 inches

CAPE FALCON TO US/CANADA BORDER

All salmon except coho — May 1-31
b/ All salmon — July 15-September 1
Chinook minimum size limit: 28 inches
Coho minimum size limit: 16 inches

CAPE FALCON TO LEADBETTER POINT

Coho only — September 20-October 3
(maximum 10 boats with observers; coho gear only; out to 12 miles)
Coho minimum size limit: 16 inches

RECREATIONAL

CALIFORNIA (entire state)

All salmon — 2-fish bag limit — February 14-November 15
Chinook/Coho minimum size limit: 22 inches, except that one chinook or coho salmon per day may be less than 22 inches but not less than 20 inches.

OREGON/CALIFORNIA BORDER TO CAPE FALCON

b/ All salmon — 2-fish bag limit — May 15-September 20
Chinook minimum size limit: 22 inches
Coho minimum size limit: 16 inches (entire state of Oregon)

OREGON/CALIFORNIA BORDER TO CAPE BLANCO

All salmon except coho — 2-fish bag limit — September 21-October 31

b/ Subject to modification by in-season management provisions.

CAPE FALCON TO US/CANADA BORDER

[b/] All salmon 2-fish bag limit May 23-September 7
EXCEPT 2+1-fish bag limit from Queets River mouth north to US/Canada border (Areas 3 and 4)
Chinook minimum size limit: 24 inches
Coho minimum size limit: 20 inches (only state of Washington)

IN-SEASON MANAGEMENT

Oregon and Washington (OPI and WPP) Coho

1. For the 43-day period ending on August 12 in the area from Cape Falcon south and on August 26 in the area from Cape Falcon north

Separate harvest guidelines were established for the ocean troll and recreational fisheries, based on the 1971-75 harvest ratios, as follows:

Washington Production Projection Area (WPP), Cape Falcon to US/Canada Border

Total quota for area: 620,000 coho
Recreational harvest guideline: 40% or 248,000 coho
Troll harvest guideline: 60% or 372,000 coho

When the separate harvest guideline is projected to be reached by either fishery i.e., troll or recreational, that fishery would automatically close from Cape Falcon north.

Oregon Production Index Area (OPI) South of Cape Falcon (including California)

Total quota for area: 772,000 coho
Recreational harvest guideline: 29% or 224,000 coho
Troll harvest guideline: 71% or 548,000[c/] coho

When the separate harvest guideline is projected to be reached by either fishery, i.e., troll or recreational, that fishery would automatically close from Cape Falcon south to the Oregon/California border.

2. For the period, after August 12 for the area from Cape Falcon south to Oregon/California border and after August 26 for the area north of Cape Falcon

b/ Subject to modification by in-season management provisions.
c/ See, note a/

In-season modifications following in-season procedures similar to those used in 1980 may be made by the Regional Director as follows:

a. Adjust pre-season estimates of coho abundance, as appropriate, based on in-season data;

b. Modify troll and recreational seasons (shorten or lengthen) and harvest guidelines for either area or any portion thereof, based on adjusted abundance levels, projected catch and effort levels, and harvest ratios between commercial and recreational fisheries.

California Chinook

Separate harvest guideline were established for the California ocean troll and recreational fisheries, as follows:

For the area South of Point Arena

Total catch for area:	380,000
Troll fishery	265,000
Recreational fishery:	115,000

For the area North of Point Arena to the Oregon/California Border

Total catch for area:	315,000
Troll fishery:	300,000
Recreational fishery:	15,000

When the separate harvest guidelines in either area are projected to be reached by either fishery, i.e. troll or recreational, that fishery would automatically close in the appropriate area. If it appears that either one of the fisheries will not catch all of its quota in either area, by the end of the regularly scheduled season the unused surplus shall be reallocated to the other fishery.

TREATY INDIAN FISHERIES

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-October 31
Chinook minimum size limit:	28 inches
Coho minimum size limit:	16 inches

3.0 Affected Environment

See Section 1.2 of the EIS in the March, 1978 FMP entitled Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California Commencing in 1978 (available from the Council or the Northwest Regional Office of the NMFS; see addresses on the cover of this document) and Appendix A and B of the 1981 FMP Amendment for a thorough description of the species covered by the salmon plan, the origin, habitat and distribution of the salmon covered by the plan, and the fishery participants and communities most affected by the salmon regulations.

4.0 Environmental Consequences

See Appendix D of the 1981 FMP Amendment for the Salmon Plan Development Team's analysis of the impacts of the six management regime alternatives selected by the Council in January, 1981 for public review and comment. The alternatives ranged from less restrictive than the 1980 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 with the liklihood of having the most severe impact on the salmon spawning escapements and harvest opportunities of inside treaty and non-treaty fishing groups. The most restrictive ocean fishing regulatory option would have had the most negative short-term socioeconomic impact on the ocean fishery user groups and coastal communities with the least adverse impact on the salmon spawning escapements and on the harvest opportunities of inside treaty and non-treaty fishing groups.

See Appendix F of the 1981 FMP Amendment for a complete evaluation of the expected impacts of the Council adopted regulations as revised on March 26, 1981. In general, the Team estimates that the 1981 coastwide spawning escapement goals for coho and chinook salmon should be achieved by the implemention of the 1981 regulations. The commercial troll fleet of California is expected to obtain about the same catches and higher gross revenues (because of more favorable market conditions) while the Oregon troll fleet south of Cape Falcon is expected to have increased landings and total gross revenues. Total gross revenues in the commercial troll fisheries off Washington and the Columbia River area are expected to be reduced compared to 1980. Recreational charter vessel revenues and total economic benefits to recreational anglers are likely to be reduced compared to 1980 in Washington, the Columbia River mouth area, and Oregon south of Cape Falcon.

5.0 Relationship of the Proposed Action to Land Use Plans, Policies, and Controls for 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 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 fisheres 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 1980 salmon plan amendment 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 state coastal zone management commissions of California and Washington have concurred that the 1981 salmon plan amendment is consistent with their respective state CZM programs and copies of their review comments are attached to Section 7.0. However, the Department of Land Conservation and Development of Oregon declined to comment on the Council's proposed alternatives for 1981 until a final regulatory package was selected, i.e. after the decision of March 26, 1981 (copy attched). The NMFS has issued a determination of consistency to the Oregon Department of Land Conservation and Development and is awaiting notification from that agency.

6.0 List of Preparers

Name	Education	Experience	Discipline
Robert Ayers (NMFS)	B.S.	25	Fishery Biology
Stacy Hall (PFMC)	M.S.	1	Social Science
Ken Henry (NMFS)	Ph.D.	32	Fishery Biology
Harvey Hutchings (NMFS)	Ph.D.	25	Economics
Steve Lewis (ODFW)	M.S.	14	Fishery Biology
Rich Lincoln (WDF)	B.S.	7	Fishery Biology
Lee Morgan (NMFS)	M.M.A.	5	Marine Resource Management
Pat O'Brien (CDFG)	B.S.	15	Fishery Biology
Tim Roth (USFW)	B.A.	5 1/2	Fishery Biology

7.0 Comments and Responses

This section summarizes the comments that were received by the Council and the NMFS about the draft supplemental environmental impact statement and the proposed plan for managing the 1981 ocean salmon fisheries. Over 175 individuals and organizations submitted comments during the public review

period. The public comments and recommendations were considered by the Council before they selected their perferred management regime for the 1981 ocean salmon fisheries and by the Secretary of Commerce before he approved the amendment and issued regulations.

The comments presented below have been categorized into major subject areas in order to facilitate representing the many individual comments that were received on related topics in the draft plan. The responses to the comments, where appropriate, cite that section of the plan amendment, the EIS or the regulatory analysis where the reader will find a more detailed discussion or analysis of that particular issue.

State and federal agency comments and a list of individuals and organizations that submitted comments during the public review period, have been included as attachments to this section.

A. Management Measures

1. Comment: Many of the comments that were submitted during the public review period concerned the length of fishing seasons for the ocean commercial and recreational fisheries. By far, the majority of respondents favored management option #5, which proposed the most liberal coastwide fishing season among the six management regime alternatives.

Representatives of the commercial troll industry generally agreed that the earlier part of the season (May, June and July) was the most important to them, and that season reductions, if necessary, should be made during the latter part of the season (September). They emphasized that reduced fishing seasons, coupled with unpredictable and adverse weather conditions, could spell economic disaster for their operations.

Representatives of the ocean recreational charterboat fleet testified that "time on the water" was their most critical need in 1981. Washington charterboat representatives indicated that a minimum 130 day uninterrupted fishing season was necessary to have an economically viable season. Regulatory options 4 and 5 received the most support from ocean recreational fishermen.

Members of Indian tribes with treaty fishing rights and some representatives of "inside" commercial and recreational fishing groups urged the Council to reduce the fishing seasons in the ocean in order to increase the escapement of salmon to the terminal or river fishing areas and to provide for adequate spawning escapement. Regulatory option #3 got the most support from these groups, followed by option #6.

Response: The Council has recognized that the management strategy it selects each year will affect the socioeconomic well-being of the various ocean and inside resource harvesting and processing groups as well as the many coastal communities that are dependent of the fishing industry for economic and social stability. However, the Council's number one management priority for salmon is to make certain that enough fish survive the array of ocean and inside fisheries to assure the perpetuation of the individual salmon runs. To accomplish this goal on an annual basis the Council may have to change the ocean fishing season of the commercial troll and the recreational fisheries

depending on the annual needs of the resource (i.e., the spawning escapement requirements) as determined by estimates of stock strength.

The Council's second management priority is to allocate the resource among the various resource harvesters with a special awareness of the litigated rights of treaty fishing groups. The successful modification of ocean fishing seasons is also a major factor in determining whether each fishing group will harvest it's proportional share of the resource. Thus the length and timing of the coastwide ocean fishing seasons for the commercial troll and recreational fisheries may be the major factor in determining whether the Council's resource conservation and allocation goals are achieved.

Based upon its two priority management goals and the 1981 preseason estimates of the coastwide conditions of the various chinook and coho salmon runs the Council found it necessary in some instances to recommend modifications in the ocean fishing seasons in order to protect the weakest salmon runs. For example, the commercial troll fishing season off California will be closed from June 1-30 because of the specific need to protect depressed Klamath River chinook stocks and Oregon Production Index (OPI) coho stocks. On the other hand, the Council adopted chinook harvest guidelines (off California) and coho harvest guidelines (off Oregon and Washington) in order to assure a proportional sharing of the resource (allocation) between the ocean commercial and recreational fisheries. The ocean fishery harvest guidelines also assure the inside treaty and non-treaty fisheries an opportunity to harvest proportional shares of the resource because as soon as the ocean fisheries harvest their predetermined share, the fishery will close, thus providing a level of survival from the ocean fisheries sufficient to permit inside fishery harvests. The Council also adopted other regulatory modifications, e.g. the recreational daily bag limit reduction to two salmon (south of the Queets River, Washington to Cape Falcon) in order to help maximize the length of season the charterboat owners and operators of the area so desparately wanted.

The management regime chosen by the Council and approved by the Secretary of Commerce represented a balance or compromise of management priorities between the need to assure adequate spawning esccapement of the salmon resource (i.e. conservation) and the need to assure each resource harvesting group an opportunity to participate in the ocean and inside fisheries (i.e. allocation).

2. Comment: A special commercial troll season from 9/20 to 11/10 between Cape Falcon and Leadbetter Point, was requested in order to harvest surplus coho salmon destined for lower Columbia River hatcheries.

Response: The Council approved a limited experimental commercial troll fishing season for coho salmon between Cape Falcon and Leadbetter Point from 9/20 through 10/3. The fishery will be limited to a maximum of ten troll vessels and each vessel must provide accommodations for one fishery agency observer. The fishery will extend out to 12 miles off the coast and vessels will be permitted to use coho gear only. A limited experimental fishery was deemed necessary in 1981 in order to obtain data to evaluate the merits of such a fishery.

3. Comment: Several representatives from Oregon commercial troll fishing groups urged the Council to move the Klamath River stock protection boundary

line from Cape Blanco, Oregon south to Cape Ferrelo, Oregon or to the California/Oregon boundary. They stated that the Council lacked sufficient Klamath River chinook stock migration evidence to justify a boundary as far north as Cape Blanco. Moreover, they stated that the Cape Blanco boundary line prevented them from fully utilizing the healthy salmon stocks that originate in the Rogue River system.

Response: The most recent coded-wire tag information from 1976 and 1977 brood year Trinity River hatchery fall run chinook salmon recovered in the ocean fisheries in 1979 as 3-year olds and in 1980 as 3 and 4 year olds indicates that a substantial number of tagged salmon were landed north of Cape Blanco in 1980 indicating that moving the line south of that point could increase ocean fishing pressure on those stocks which are depressed. A complete discussion of the proposed management boundaries and why they were selected is presented in Section IV, pages 22-26, of the 1981 FMP Amendment.

4. Comment: As in 1980, many representatives of the commercial trolling fleet opposed the 28 inch minimum size restriction for chinook salmon caught north of Cape Falcon, Oregon. They argued that this regulation was discriminatory because the commercial trollers fishing off California and Oregon south of Cape Falcon are permitted to retain smaller chinooks as are the recreational fishermen and the Canadian trollers. They also argued that the high rate of hooking mortality of sublegal size chinooks in the 26 to 28 inch range justified reducing the minimum size to 26 inches.

Response: The Salmon Plan Development Team reviewed the chinook minimum size restriction issue including the substantial amount of research conducted by state, federal and Canadian agencies over past years, and concluded that the increase of poundage of fish caught (and increase in value as size increases) more than offset the increased loss of shorter fish from hooking mortality. The measure is also necessary to increase escapement of chinook to the Columbia River. As recreational fishermen are limited in the number of fish they can take daily, equitable distribution of the resource is maintained.

5. Comment: Most ocean recreational anglers and charterboat representatives favored a 3-fish daily bag limit from the opening of the season. Charterboat representatives from Washington stated that if the season started with a 2-fish daily bag limit and switched to 3-fish at the midpoint of the season, their early season business could be severely disrupted. At the final March 18-19 Council meeting Washington Charterboat Association, because of their concern for the resource and their need for time on the water, recommended a 2-fish bag limit.

Response: Out of concern for the resource and in an effort to distribute ocean recreational harvest over a longer period the Council adopted a management regime for the 1981 ocean recreational fishery that permits a 2-salmon (any species) daily bag limit coastwide, except that a 3-salmon (only 2 of which could be chinook or coho) season would be permitted north of the Queets River.

6. Comment: Many respondents urged the Council to adopt a fair and equitable system of allocating salmon harvests (by species), between the commercial and recreational fisheries, between the ocean and inside fisheries and between the treaty and non-treaty fisheries. In addition, many respondents questioned the

adequacy of the Council's in-season management proposals. Some respondents claimed that the timing of the in-season management decision process would prevent them from harvesting their proportional share while others stated that the fishery assessment period before the decision process was far too lengthy and would render the decision moot when it is made in August. Several comments were received pertaining to the application of in-season management measures to the California ocean salmon fisheries.

Response: The Council adopted a 2-tiered system for in-season management. Harvest guidelines were established based on pre-season run size predictions for each fishery, i.e. commercial troll and recreational, for chinook off California in the areas north and south of Point Arena, and for coho in the OPI area south of Cape Falcon and for the WPP area north of Cape Falcon. When any one of these harvest guidelines is met that fishery will be closed by field order.

The adoption of in-season management procedures in the form of harvest guidelines for chinook salmon is new to the California ocean fisheries this year. In consideration of the adverse social and economic impacts of the abbreviated 1980 troll season on California coastal communities, the Council adopted in 1981 a more liberal commercial troll season for northern California and a more liberal recreational season for the entire state. In order to protect depressed Klamath River and upper Sacramento River chinook stocks, the Council also adopted harvest guidelines for the California commercial troll and recreational fisheries north and south of Point Arena. The harvest guidelines for Sacramento and Klamath River chinook stocks were developed from the 1971-80 California salmon fisheries data-base (see Appendix F, page 4 for further explanation.)

About August 12 for the area from Cape Falcon south to the Oregon/Calfornia border and about August 26 for the area north of Cape Falcon in-season modifications may be made by the Regional Director following in-season procedures similar to those used in 1980. These are the first dates on which adjustments can be made in the pre-season coho abundance estimates, based on data collected during the 1981 fishing season. Troll and recreational seasons or harvest guidelines may be modified for either area or any portion of an area based on the adjusted abundance levels, projected catch and effort levels, and harvest ratios between commercial and recreational fisheries.

For more detail concerning the 1981 in-season management provisions see pages 43-45, Section IV of the plan amendment.

B. Data in the 1981 Salmon Plan Amendment

1. Comment: Many California commercial trollers questioned the accuracy of the plan's biological data and the analysis presented in the plan about the contribution of certain northern California stocks to the commercial troll catch, particularly Klamath River chinook. They stated that Eel River, Rogue River and Sacramento River chinook stocks were as important to the ocean fishery as the Klamath River stocks and that the Salmon Plan Development Team's ocean catch rate estimate of Klamath River chinooks was much too high.

Several individuals criticized the social and economic data and analysis in the plan as inadequate. They felt that social and economic impact data were

at least as important as biological information when it came to setting restrictions on the ocean salmon fisheries.

Response: The Salmon Plan Development Team has used in the 1981 plan amendment the most recent Klamath River chinook salmon migration data obtained by the California Department of Fish and Game. These data indicate that Klamath River system chinooks are a major contributor to the north (California) coast ocean salmon fishery catch.

The Council admits that the quantity and quality of socioeconomic data used to date has not been as good as it would like. However, the Council has made a sincere effort to obtain more detailed socioeconomic data for the 1981 plan amendment and the regulatory impact review. In this regard, Appendix B has been added to the proposed 1981 plan. Socio-economic factors were an important consideration to the Council in setting the 1981 management measures.

2. Comment: It is misleading and unrealistic for the Council to continue using 1971-75 "base years" for average landings in the face of the decreasing abundance of coho and chinook stocks coastwide. The situation of declining stock abundance requires a more realistic index of base catch; for example, the 1977-79 period.

Response: The 1981 estimate of stock abundance was used by the Salmon Team in analyzing the projected impacts of the various regulation options. The 1971-75 figures were used to determine the percentage distribution of fish between ocean users and not to determine harvest levels in terms of absolute numbers of fish.

3. Comment: Several members of Washington coastal Indian tribes with treaty rights commented that the draft plan failed to include stock assessments for Washington coastal spring and summer chinook stocks.

Response: Concur. The stock status report of Washington coastal spring and summer chinooks has been included in the final 1981 Plan amendment. It was omitted in the draft plan amendment because the stock status evaluations had not been completed by the printing date of the draft amendment.

4. Comment: Washington State coastal Indian tribes with treaty fishing rights stated that in order for the Council to be in compliance with Federal court rulings, ocean fishery management in 1981 must be premised on the requirement that allocation of Washington coastal salmon runs be calculated on species-by-species, run-by-run basis.

Response: In 1980, the Council managed the ocean fishery on the basis of single species-mixed stream data. The Council believes that the expertise required to manage a mixed-stock ocean salmon fishery on a species-by-species, run-by-run basis is lacking at this time. Moreover, to attempt to manage the ocean fishery on a species-by-species, run-by-run basis could result in severe economic dislocation to the ocean fisheries and under-harvests of many stocks and would require closure of the entire ocean fishery north of Cape Falcon for the entire 1981 season.

5. Comment: The Salmon Plan Advisory Subpanel recommends that the Council

initiate and fund a coastwide commercial troll logbook program with adequate sampling validation.

Response: Some of the management agencies believe a troll log book program does not provide sufficiently reliable data to justify the costs involved. Particularly in view of the increased budget restrictions currently being applied.

C. Miscellaneous

1. Comment: Several respondents urged the Council to adopt uniform (coastwide) seasons to avoid effort transfers and to minimize fishing effort being concentrated in small areas.

Response: The Council attempted to minimize major shifts of concentrated fishing effort when it adopted its management regime for 1981. However, in some areas it is necessary to have shorter ocean fishing seasons than in other areas in order to protect depressed stocks, to assure adequate spawning escapement, and to provide inside and terminal area fisheries their opportunity to harvest their proportional share of the resource. Likewise, uniform season openings often negate attempts to equitably distribute the resource between ocean users and for 1981 could result in the missed opportunity to fish a healthy pink salmon resource north of Cape Falcon.

2. Comment: Several respondents asked the Council to develop an effort limitation scheme for the commercial troll and charterboat fisheries.

Response: The Council declined to initiate a Federal commercial fishing license moratorium during the 1979 fishing season because of the understanding that the states of California, Oregon and Washington would develop their own effort limitation schemes. At present, the Council is satisfied that the states are actively pursuing a course of controlling effort. The Council continues to pledge its support for responsible effort limitation schemes.

3. Comment: Many respondents asked the Council to take a more active role in spawning habitat (freshwater) protection.

Response: A major problem of concern to the Council, but outside its statutory authority and jurisdiction, is maintaining and maximizing the production potential of the aquatic environment. In 1978, the Pacific Council established an Anadromous Salmonid Environmental Task Force to assess the status of freshwater salmon habitat along the Pacific Coast of the United States, not including Alaska. The Task Force prepared a report entitled, "Freshwater Habitat, Salmon Produced, and Escapements for Natural Spawning along the Pacific Coast of the nited States," in June 1979. Estimates of habitat available and fish produced prior to water use developments were made to place present habitat abundance and fish production in a historical perspective and illustrate some of the potential in natural production that might be reached. Appendix A to the 1981 Plan Amendment, abstracts several meaningful sections of the 1979 report.

Council members representing the state fishery agencies, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service have indicated that habitat protection and enhancement are priority areas of emphasis within

their agencies. The Council is hopeful tht recent enactment of salmon enhancement legislation (Pub. L. 96-561) will direct attention to solutions to habitat problems. They also urge concerned state citizens to contact their state legislators and make them aware of the danger of habitat degradation to anadromous fishery resources.

LIST OF INDIVIDUALS AND ORGANIZATIONS THAT SUBMITTED COMMENTS

Roger Adkins
Chris Aiello
Lars Akerblom
Hank Alameda
John Anderson
Alan Aries
Associated Sportsmen of California
Glen Aundahl
Michael Baldwin
Steve Bales
Robert Barg
Jim Baumgartner
Frank Bauman
Bay Area Chamber of Commerce
Philip Bentivegna
Greg Bloom
Scott Boley
Sue Bower
California Salmon Research Committee
Delbert Cantrell
Donald Carleson
Mark Cedergreen
Harold Christensen
Les Clark
Roger Cole
Sherman Cole
Kevin Collins
Raymond Collins
Columbia River Fishermen's Protective Union
Columbia River Inter-Tribal Fish Commission
Milton Cook
Kenneth Cuneo
Dale Dearing
Joseph De La Cruz
Joan DeMay
Jacqueline Douglas
Phillip L. Dunn
Donald R. Dussault
Dwight Eager
Jon Englund
Melvin Erdman
Federation of Independent Seafood Harvesters
Ernest L. Feigenberg
Mel Fitzhugh
Ted Foster
Scott Frederick
James French
Douglas Fricke
Gary L. Friedrichsen
Fred Gagnon
Margaret Gamin

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Walter Ghera
Frank Gist
Herb Goblirsch
Golden Gate Sportfishers
Charles Gott
Gary R. Graham
Steve Gray
Grays Harbor Gillnetters Assoc.
Norm Green
Russell Green
Bill Gunnari
Albert Haar
Larry Hale
Don Hall
Don Hamilton
D. G. Hankin
Richard Haugen
Ronald Haworth
Robert Hayman
Eric Hedlund
Wendell Heim
Kenneth Hensley
Hoh Indian Tribe
Barney Holder
Ira Hoover
Bill Hornbrook
Yvonne Hudson
Humboldt Chapter AFS
Humboldt Fishermen's Marketing Association
William Hurst
Albert Jackson
Thomas R. Joiner
Dick Kelley
Don Krogel
Walter Lava
Lawrence Lazio
Mary Leitka
Thomas M. Lesher
Sam Long
Guy Lutz
Jack Lyon
William Maahs
Makah Indian Tribal Council
Iomi Maki
Walter Marchel
Robert Markem
Donna Martin
Stephen B. Mathews
Bill Matson
Doug McCullough
Metro Trollers Association
Louis Miller
Mario Mochi
Chris Morganvoth

J. C. Murphy
Ralph Myers
Andy Nasburg
Ron Nass
Ray Nelson
Northwest Indian Fisheries Commission
Northwest Steelhead and Salmon Council
NOYO Commercial Fishermen's Wives
Oregon Wildlife Federation
Pacific Coast Federation of Fishermen's Assoc.
Pacific Trollers Association
Frank Parsons
Keith Payne
Don Pease
Thomas H. Peters
Ken Peterson
Poggie Club of Washington
Tom Pope
Port of Coos Bay
Port of Ilwaco
Port San Luis Sportfishing
Donald Power
Jackie Prest
Quileute Tribal Council
Quinalt Indian Nation
Doris Rambo
Jack Rice
Harold W. Richardson
William H. Richardson
Vernon Roach
Jim Robertson
Ray Robison
R. L. Ross
Salmon Trollers Marketing Association
Skip Sato
David Satterlee
David Schlip
Conrad Schloredt
George Setzer
Harold Shook
Sierra Club - Redwood Chapter
George Silbersdorff
Manual Silvera
Henry Sockbeson
Ted Souza
Albert Spadaro
Jack Steen
Dick Steimart
Cheryl Stillwell
Dwight Streamfellow
Frank Stutsma
Tom Swain
Joseph D. Swithenbank
Kathy Vanderpool

Louie Van Hoy
Paul and Helen Wagar
Danny Walsh
Frank Warrens
Washington Sportsmens League
Washington State Commercial Passenger
  Fishing Vessel Association
Washington Trollers Association
David White
Steve Willis
Judy Winnie
Paul Wood
Russell Woodruff
LeRoy Wright
Dick Wunsch
Jeff Yoon
Dave Zebo

OTHER GOVERNMENT AGENCIES

Bureau of Land Management
Challis National Forest
Idaho Department of Fish and Game
Idaho Division of Economic and Community Affairs
Oregon Department of Land Conservation and Development
Oregon Intergovernmental Relations Division
Resources Agency of California
State of California - Office of the American
  Indian Coordinator
United States Coast Guard
United States Department of Agriculture -
  Forest Service Region 1
United States Department of Agriculture -
  Six Rivers National Forest
United States Environmental Protection Agency - Region X
United States Fish and Wildlife Service
Washington Department of Ecology
Washington Department of Fisheries

Copies of State and Federal Agency Comments:

VICTOR ATIYEH
GOVERNOR

Department of Land Conservation and Development

1175 COURT STREET N.E., SALEM, OREGON 97310 PHONE (503) 378-4926

March 27, 1981

Larry M. Nakatsu, Executive Director
Pacific Fishery Management Council
526 S.W. Mill Street
Portland, OR 97201

Dear Mr. Nakatsu:

The Department of Land Conservation (DLCD) has reviewed the draft, Proposed Plan for Managing the 1981 Salmon Fisheries off the Coast of California, Oregon and Washington. Although no Oregon agencies have provided disfavorable comments through the state A-95 clearing house, it is again not possible to concur with the PFMC's consistency determination.

The DLCD in its March 31, 1980 letter (attached) to Gene Kruse, the then Acting Regional NMFS Director, expressed the concern that any concurrence with the consistency determination of the PFMC could not occur until management program alternatives were developed. The 1981 salmon amendment follows same format as the 1980 amendment, i.e. a range of component options for a possible salmon management program is given but no management program alternatives are developed. In order for the Land Conservation and Development Commission (LCDC) to concur with the PFMC determination of consistency, it would have to be assumed that all options, or any combination of options which could be combined to form a management program, would be consistent with the Oregon Coastal Management Program. This situation places the LCDC and its Department in untenable positions as reviewers.

The National Environmental Policy Act and the Council on Environmental Quality regulations indicate that when it is advantageous alternatives should be developed. The PFMC certainly has the expertise to restructure its salmon amendments to include alternative management regeims, including a prefered regeim in the final EIS. Although "wide open" draft EIS's might provide for a greater variety of public comment, this format seriously affects agencies with review responsibilities. Three solutions to the consistency review problem are proposed by the DLCD:

1. Restructure the draft EIS format to more closely follow the CEQ regulations (i.e., provide management program alternatives), or

2. Provide a second or revised draft EIS with management program alternatives, or

3. Include the PFMC consistency determination for a preferred management program alternative only in the final EIS.

It appears that the third solution will provide the most timely concurence with the 1981 salmon amendment. In subsequent years the DLCD strongly advises the first approach. This will allow the LCDC to provide concurence with the PFMC's consistency determination early in the EIS process.

Sincerely,

Al Burns

Al Burns
Coastal Program Coordinator

AB:af
4849A

Attachment

cc: Gene Kruse, NMFS - Seattle
Lee Morgan, NMFS - Seattle
Joyce M. T. Wood, NMFS - Washington D.C.
Larry Six, PFMC
Shelley Tanenbaum, OCZM
Bill Travis, California Coastal Commission
Don Peteterson, Washington DOE
Jim Lauman, ODFW
Kay Wilcox, IRD

Resources Building
1416 Ninth Street
95814

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Boating and Waterways
Department of Parks and Recreation
Department of Water Resources

EDMUND G. BROWN JR.
GOVERNOR OF CALIFORNIA

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THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Conservation Corps
Colorado River Board
Energy Resources Conservation and Development Commission
Regional Water Quality Control Boards
San Francisco Bay Conservation and Development Commission
Solid Waste Management Board
State Coastal Conservancy
State Lands Commission
State Reclamation Board
State Water Resources Control Board

(5-3)

Salmon 120

Mr. Lorry M. Nakatsu, Executive Director
Pacific Fishery Management Council
526 S.W. Mill Street
Portland, OR 97201

March 2, 1981

Dear Mr. Nakatsu:

The State of California has reviewed the draft proposed plan for managing the 1981 salmon fisheries, dated January 1981, submitted through the Office of Planning and Research in the Governor's Office.

The State's review, in accordance with Office of Management and Budget Circular A-95, was coordinated with the Departments of Boating and Waterways and Fish and Game; the State Water Resources Control Board; and the Coastal, San Francisco Bay, and State Lands Commissions.

Although we have no comments or recommendations to offer, the State greatly appreciates having been given an opportunity to review this report.

Sincerely,

Charles C. Jackson

for JAMES W. BURNS
Assistant Secretary for Resources

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(SCH 80021103)

321

John V. Evans, *Governor*
Daniel T. Emborg, *Administrator*

IDAHO Salmon 120

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Terminal Date Init

State Capitol Building
Boise, Idaho 83720

DIVISION OF ECONOMIC AND COMMUNITY AFFAIRS

March 3, 1981

Mr. Lorry M. Nakatsu
Executive Director
Pacific Fishery Managemnt Council
526 S. W. Mill Street
Portland, Oregon 97201

Dear Mr. Nakatsu:

The Idaho State Clearinghouse has completed its review of the Draft Environmental Impact Statement Proposed Plan for Managing the 1981 Salmon Fisheries off the Coast of California, Oregon and Washington - SAI #00215421. The following agencies were contacted for review and comment:

Clearwater Economic Development Association
Panhandle Area Council
Department of Fish and Game
Department of Water Resources
Division of Economic and Community Affairs

We received no comments from the listed agencies prior to the completion of this review period. Any late comments or requests received will be forwarded to your agency. We were pleased to assist you in this project. If you have any questions, please do not hesitate to call either myself or Lois Wade at 208-334-4718.

Sincerely,

Gloria Mabbutt, Coordinator
Idaho State Clearinghouse

GM/lw

IDAHO

322

IN REPLY REFER TO:

United States Department of the Interior

6522.72 (240)

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

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Date Init
Salmon 1981

Mr. Lorry M. Nakatsu
Executive Director
Pacific Fishery Management Council
526 S.W. Mill Street
Portland, Oregon 97201

Dear Mr. Nakatsu:

Thank you for the opportunity to comment on the Draft Proposed Plan For Managing The 1981 Salmon Fisheries Off The Coast of California, Oregon and Washington. We have no significant comments to offer regarding the plan.

A copy of the comments submitted to the Regional Director, Fish and Wildlife Service, Region I, by our Oregon State Director is enclosed for your information.

Sincerely,

J. Rand Atwood

for John E. Crawford
Chief, Division of Wildlife
and Endangered Species

1 Enclosure:
Encl. 1 - Comments on the Proposed Plan for Managing
The 1981 Salmon Fisheries, etc.

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IN REPLY REFER TO
1793(932)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
OREGON STATE OFFICE
P.O. Box 2965 (1729 NE Oregon Street)
Portland, Oregon 97208

MAR 11 1981

ER 81/235

Salmon 1981

Memorandum

To: Regional Director, Fish & Wildlife Service, Region 1

From: State Director, Oregon

Subject: Comments on the Proposed Plan for Managing the 1981 Salmon Fisheries off the coast of California, Oregon, and Washington and the Supplemental Environmental Impact Statement for the 1981 Plan (Appendix C)

We appreciate the opportunity to comment on the subject 1981 plan, including the supplemental environmental impact statement, which is an amendment to the "Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the coast of Washington, Oregon, and California commencing in 1978."

The Bureau of Land Management has resource management responsibilities on nearly 2.4 million acres of mostly forest land in western Oregon. There are over 4,700 miles of perennial streams on these public lands which provide important habitat for anadromous fish, of which 800 miles produce wild coho salmon. We have had an active stream habitat protection and improvement program since 1969. Many of our habitat improvement projects, noted in the PFMC report "Freshwater Habitat, Salmon Produced, and Escapements for Natural Spawning along the Pacific Coast of the U.S.," have been joint cooperative projects with the Oregon Department of Fish and Wildlife. We have budgeted about $350,000 in FY 1981 for such cooperative habitat improvement projects, designed primarily to benefit native coho salmon.

The BLM also manages some important anadromous fish habitat in eastern Oregon and a lesser amount in the state of Washington. Important streams in Idaho and northern California administered by our Idaho and California state offices provide habitat for chinook and coho salmon. Stream habitat improvement projects are also conducted in these geographic areas.

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Because of our management responsibilities to provide good habitat conditions, we recommend the Pacific Fishery Management Council adopt the management option and any other measures needed for 1981 commercial and recreational fishing that will result in the greatest likelihood of obtaining the desired escapement goals for wild coho salmon in the "OPI" area and chinook salmon in the Columbia and Klamath River system. Maximum production of wild salmon can be achieved only if natural escapement goals are obtained.

Thank you for considering our recommendations.

cc: SD California, Idaho
Manager, Pacific OCS office
WO (240)

JOHN SPELLMAN
Governor

DONALD W. MOOS
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 753-2800

604-13-

March 16, 1981

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Terminal ____ Date ____ Init ____

Salmon 1981

Mr. Lorry M. Nakatsu
Executive Director
Pacific Fishery Management Council
526 S.W. Mill Street
Portland, Oregon 97201

Dear Mr. Nakatsu:

Thank you for the opportunity to review and comment on the draft amendment to the Fishery Management Plan for commercial and recreational salmon fisheries off the coast of Washington, Oregon, and California. Department staff have reviewed the amendment, 1981 Salmon Fisheries, and have no comments.

If you have any questions, please call me at (206) 753-6892.

Sincerely,

Debbie Fristoe
Environmental Review Section

DF:bjw

cc: Ms. Joyce M.T. Wood

326

EDMUND G. BROWN JR.
GOVERNOR

OFFICE OF
PLANNING AND RESEARCH

State of California

GOVERNOR'S OFFICE
OFFICE OF AMERICAN INDIAN COORDINATOR
1400 TENTH STREET
SACRAMENTO 95814
916-322-4811

March 16, 1981

Lorry M. Nakatsu, Executive Director
Pacific Fishery Management Council
526 South Mill Street
Portland, Oregon 97201

Dear Mr. Nakatusu:

Draft Proposed Plan for Managing the 1981 Salmon Fisheries
Off the Coast of California, Oregon and Washington

This Office has reviewed the above-mentioned document and submits the following comments.

The north coast Indian tribes have for generations utilized the Klamath River drainage salmon and steelhead fisheries for subsistence, ceremonial and economic purposes. The Indian people have historically practiced sound conservation and management measures even to this day.

While the issue of commercial Indian fisheries on the Klamath River is currently awaiting a judicial determination, the Department of Interior has recognized the right of the Indian reservation residents to fish for commercial purposes. Since 1978 both the federal government and the Hoopa Valley Tribal Council have imposed moratoriums on Indian commercial fishing efforts. Yearly figures continue to show a relatively steady ocean troll effort (27,687 in 1979 and 25,990 in 1980) and chinook landings (1971-75 average of 299,000 and 1980 total of 298,995); however, there is continued decline of in-river chinook run size (59,000 in 1979 and 50,000 in 1980), decreased spawning escapement estimates (38,000 in 1979 and 33,000 in 1980), and lower Indian net harvests (20,000 in 1979 and 13,000 in 1980).

The draft statement on page 5-III attributes the major factors to failure in achievement of the 1980 management objective to (1) the 1976 drought; (2) the high 1979 ocean harvests; and (3) the higher than anticipated 1980 troll effort. Since it appears that the 1981 escapement goal of 86,000 adult fall run chinook cannot be achieved (or even the long term goal of 115,000) the available data clearly confirms the fact that more stringent measures are necessary to regulate the ocean troll fisheries.

This Office therefore recommends the PFMC adopt Option VI, the most restrictive option available to regulate the commercial troll fisheries. Reduction of the commercial troll season by four weeks is necessary to fully insure the achievement of the long term escapement goal and to guarantee Indian fishing harvests pursuant to judicially recognized Indian fishing rights.

In addition, we urge adoption of an in-season system of management modification for California to achieve conservation and allocation objectives. Empowering the Regional Director to lengthen or shorten the commercial troll seasons to facilitate meeting the objectives would go far to insure compliance with the 1981 plan. For example, had in-season modifications existed in 1980, the exercise of such powers could have averted the commercial troll fisheries' subversion of the PFMC mid-season closure. It is estimated that during the July 4-12 opening approximately 1900 chinook salmon of Klamath River origin were harvested by the troll fishery.

Your consideration of these recommendations is appreciated.

Sincerely,

Rachel A. Bluestone

Rachel A. Bluestone
American Indian Coordinator

Salmon 120

(G-OLE-4/31)
(202) 755-1155

16214.61

MAR 1 - 1981

Mr. Roland Finch
Chief, Plan Review Division
National Marine Fisheries Service
Washington, D.C. 20235

Dear Mr. Finch:

The draft 1981 Amendment to the Fishery Management Plan (FMP) for Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon and California has been reviewed as requested in your letter of 10 February 1981.

The amendment continues the management methods of previous plans and presents no new problems with enforcement. It should be understood that the options presented will require extensive at-sea enforcement.

The opportunity to comment on this FMP amendment is greatly appreciated. Please feel free to contact LT Bill CHAPPELL of my staff at (202) 755-1155 commercial or FTS if you have further questions regarding this matter.

Sincerely,

L. H. SCHOWENGERDT, JR.
Commander, U.S. Coast Guard
Chief, Operational Law Enforcement
Division
By direction of the Commandant

Copy to:
COMPACAREA (Pol)
Mr. Lorry Nakatsu, Executive Director
Pacific Fishery Management Council

The Washington Department of Fisheries has discussed with the Salmon Plan Development Team several reservations it has regarding in-season management and the 1981 regulatory options. The Department would like to take this opportunity to share these reservations with the Council as a basis for receiving public comment on additional management considerations which may be needed in 1981.

The 1981 Draft Salmon Plan proposes regulatory options which are similar to those proposed in 1980 for fisheries north of Cape Falcon. Notable exceptions are: (1) early season recreational bag limit restrictions for chinook and coho in Options I and II; (2) a 4-week season reduction for the recreational fishery in Option III; and (3) a 2-week reduction in the troll fishery's May chinook-only season in Option III.

While pre-season forecasts of 1981 coho salmon stock abundance cannot be quantified until March, preliminary projections indicate northern Washington coastal and Puget Sound natural coho stock sizes could be significantly less than final 1980 pre-season forecasts for these areas. As a result, total allowable ocean harvest on these stocks, especially Washington coastal, possibly could occur from one to two weeks earlier than the proposed in-season management decision point. Therefore, it is likely that the Council will need to consider more restrictive regulatory options than those presented in the 1981 Draft Salmon Plan to achieve Washington coastal and Puget Sound coho conservation and treaty allocation requirements.

Specific management recommendations to achieve these goals cannot be developed until March when forecasts of pre-season coho abundance are available. Additional regulatory measures and management concepts which the Council may need to consider in 1981, however, can be identified as follows:

1. A continuous recreational bag limit of three salmon, only two of which may be chinook or coho.

2. Time reductions in the all-species troll season.

3. Ocean coho catch ceilings defined within season and area guidelines.

4. Area management to maximize ocean harvest opportunity on Columbia River hatchery coho stocks while providing necessary protection for Washington coastal and Puget Sound coho and while considering Columbia River chinook management goals.

5. Specific guidelines on how ocean recreational vs. commercial allocation will be viewed, thus providing a clear basis for developing regulatory proposals.

In light of these comments, we respectfully request that the Team reexamine the 1981 regulatory options and make any necessary changes to the 1981 Draft Salmon Plan which would enable the Council to consider more restrictive regulatory measures in March.

January 7, 1981
Washington Department of Fisheries

Salmon

STATE OF IDAHO

DEPARTMENT OF FISH AND GAME

600 SO. WALNUT ST. — P.O. BOX 25
BOISE, IDAHO 83707

STATEMENT OF IDAHO FISH AND GAME COMMISSION TO THE PACIFIC FISHERY MANAGEMENT COUNCIL, FEBRUARY 20, 1981, POCATELLO, IDAHO

Comments on "Draft Proposed Plan for Managing the 1981 Salmon Fisheries Off the Coast of California, Oregon and Washington" dated January, 1981

Terminal

Salmon 1981

Gentlemen:

We appreciate the opportunity to review and comment on the draft plan, and for the opportunity to meet tonight and discuss the plan with Council representatives. The Idaho Fish and Game Commission is particularly interested in assurance that the plan adequately considers the status of Columbia River spring and summer run chinook stocks and mechanisms to assist in the effort to provide sufficient spawning escapement.

Since the mid-1970s, these runs have been in a depressed state, as noted in your plan. Rehabilitative actions have begun and others are forthcoming. Early indications are that rearing summer chinook at the Corps of Engineers' new hatchery at McCall, Idaho will be a successful program. We are gearing up to begin artificial propagation of upper Salmon River spring chinook in 1981. This will be followed by construction of spring chinook hatcheries on the Salmon River and Clearwater River systems, some of which should be operational in 1983.

The continuing work to improve survival of downstream migrant salmon at lower Snake and Columbia River dams is showing promise.

Fisheries interests on the Columbia and in the headwaters are maintaining a strong resolution that these runs be restored. The groups include all the Columbia River's "inside" fishery interests -- sportsmen, commercial gillnetters, treaty Indian fishermen, and the state and federal fisheries agencies. We look to the Pacific Fishery Management Council for a continuity of approach in restoring the runs.

We recognize that, in the words of the plan, "The Pacific Council, since its establishment, has taken a series of progressive steps to reduce ocean harvests of chinook salmon north of Cape Falcon." The list of those steps is, indeed,

impressive. However, we wish to reiterate our concern for harvest of summer chinook that we expressed a year ago while addressing last year's plan. Summer chinook enter the Columbia River from mid-May to mid-July and are, therefore, grouped in the area of the Columbia River mouth during much of this period. A May fishery in this area must come as close as is possible for an ocean fishery to target on this stock. We urge that the Council adopt proposals that do not contain the traditional May seasons for the troll and recreational salmon fisheries.

We agree that it is very probable that certain goals for inside escapements, such as Columbia River spring, summer, and fall chinook, may not be achieved in 1981 even with a total closure of the Oregon and Washington coastal fisheries. We fail to appreciate, however, that this realization provides a basis for deliberate, further underachieving of escapement goals.

This concludes our Commission's general statements. The Department of Fish and Game will submit more detailed technically-oriented comments in the near future.

Richard A Schwarz Member

~~Steven J. Herrett, Chairman~~
Idaho Fish and Game Commission

STATE OF IDAHO

DEPARTMENT OF FISH AND GAME

600 SO. WALNUT ST. — P.O. BOX 25
BOISE, IDAHO 83707

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1504-13-SAL-00-120

March 11, 1981

Mr. Lorrie Nakatsu
Executive Director
Pacific Fishery Management Council
526 S.W. Mill Street
Portland, OR 97201

Dear Mr. Nakatsu:

The following comments relate to your draft proposed plan for managing the 1981 salmon fisheries off the coast of California, Oregon and Washington, dated January, 1981. The Idaho Fish and Game Commission provided a general statement to your Council at the public hearing in Pocatello, Idaho on February 20, 1981 (copy attached). The following are more technically oriented comments.

Page 2-I: Upper Columbia River spring and summer chinook may contribute a relatively small proportion of the total chinook catches off Oregon and Washington, however, an important issue is the magnitude of the catches relative to the abundance of those spring and summer chinook stocks. Additional specific perspective of the ocean harvest to escapement ratios for these stocks would be helpful. The generalization that little additional protection can reasonably be given to these stocks in the ocean fishery implies that a policy decision has been made by the Council. A data presentation to this effect would be more useful than a generalized statement that is unsupported by data.

Page 3-I: Much of the section titled "Legal" must be rewritten in the interest of accuracy. The statement that treaties have given Indians fishing rights to harvest 50% of the resource is in error. The commonly held interpretation is that the rights entitle Indians the opportunity to harvest up to 50% of the harvestable supply.

Page 26-II: Table II-23 lists the 1980 Washington chinook catch for the month of April as 11,300 fish. This appears to be in error since chinook fishing did not open until May. Therefore, we suppose that the May chinook catch must have been that which was reported for April and May, or 56,200 fish. The May chinook catch at 44% of the yearly total could be a highly significant impact. We would be interested in seeing in the report a breakdown of the catch by month as well as by catch area, i.e. Cape Flattery, Quillayute, Grays Harbor, Columbia River.

Page 10-III: In the discussion for upriver spring chinook, it should be clarified that the goal of at least 30,000 fish at Lower Granite Dam is only a spawning escapement goal and does not provide fish for in-river fisheries. Likewise, the goals listed in Tables III-9, III-10, III-11 and III-12 should be clarified as being purely for spawning escapement requirements without provision for the desired in-river fisheries.

Page 20-III: We believe that the Columbia River agreement that was adopted by the Federal District Court for Oregon as settlement in U. S. v. Oregon is a mandate that the allocation deficit of 20,300 fall chinook which is now owed the treaty Indian fishery must be corrected in 1981, which is the last year before expiration of the agreement. To do otherwise, or to do less than everything possible toward making up the deficit will no doubt be viewed by the tribes, and potentially by the Court, as a showing of bad faith on the part of the fisheries management agencies. A data presentation is needed to illustrate the extent to which the various options will meet correction of the deficit, and to what extent it may be theoretically possible to correct the deficit by any means.

Page 14-IV: In Table IV-6, it is not clear which of the goals listed are purely for spawning escapement and which of the goals may also provide for in-river fisheries.

Sincerely,

Jerry M. Conley
Director

cc: Joyce M. T. Wood

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