PROPOSED PLAN FOR MANAGING THE 1983 SALMON FISHERIES OFF THE COASTS OF CALIFORNIA, OREGON, AND WASHINGTON

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

Pacific Fishery Management Council
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ACKNOWLEDGMENTS

This plan was prepared by a team of scientists with special expertise in the salmon resources and with the advice of a panel representing the various interests in the salmon fisheries. Special recognition of the contributions of other Council and NMFS staff is also due.

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M E M O R A N D U M

DATE: May 26, 1983

TO: Interested Persons

FROM: Joseph C. Greenley, Executive Director

SUBJECT: Status of 1983 Salmon Plan Amendment and Regulations

Attached is the "Proposed Plan for Managing the 1983 Salmon Fisheries off the Coasts of California, Oregon and Washington" (Amendment) adopted by the Pacific Fishery Managment Council on March 23, 1983. Three actions have been taken to date on the proposed plan amendment.

The first action (which was requested by the Council on March 17 by unanimous vote) was to delay the 1983 opening date from May 1 to May 16 for the commercial troll salmon fishery for all salmon species except coho, between Cape Blanco, Oregon and Cape Vizcaino, California.

This emergency action was filed with the Federal Register and was effective on April 19, 1983. It appeared in the FR on April 22, 1983.

The second action was to implement the 1983 management measures by emergency regulations. This action was requested by majority vote of the Council on March 23.

The management measures as recommended by the Council were approved by the Secretary of Commerce as emergency regulations on April 29. They were filed with the Federal Register on May 5 and published on May 11. Comments on these emergency regulations were invited until May 23 when the regulations became effective. After the action was taken to delay the troll season opening from Cape Blanco to Cape Vizcaino, the 1983 regulations are essentially the same as the 1982 regulations until May 25. For that reason it was decided that the effective date of the 1983 emergency regulations could be delayed until May 23, allowing further public comments. The emergency regulations will remain in place for 90 days until August 21, and they may be extended for a second 90 days until November 19. They, of course, may be superseded by final regulation before that date.

The third action is the approving of the 1983 amendment and the proposing and finalizing of the regulations implementing that amendment. This third action has been delayed somewhat, because all of the National Marine Fisheries Service (NMFS) efforts up until the last few days have been devoted to completing the first two actions. However, the amendment, the SEIS, the RIR and other supporting documents have been prepared and the NMFS is in the process of getting this package back to Washington, D.C. so that the 75-day review and approval process can be started.

It is our best guess that day 1 will begin about June 1. The proposed regulations will be published about July 1 with a 45-day comment period on the amendment and the proposed regulations running until about mid-August. By August 20 (or day 90) the Council will be advised of the approval action on the amendment. Final regulations should be filed with the Federal Register and become effective on or before day 110, or about mid-September. These regulations will remain in effect until superseded.

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

JCG-HMH/dt

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

PREAMBLE

Status of the Salmon Resource in 1983

Current information on the abundance of the major stocks of chinook and coho salmon that are available to the ocean fisheries in 1983 indicates that (1) some stocks continue to be depressed to such an extent that ocean harvests must be regulated to assure adequate escapement to inside fisheries and spawning grounds, and (2) other stocks continue to be at or near optimum levels of abundance. The status of stocks is presented in detail in Chapter IV of the report accompanying the 1983 FMP amendment.

Council Proposals for 1983

The Council and its advisors considered the status-of-stocks information included in the report accompanying the 1983 amendment, along with other factors including public comments, during their deliberations on the 1983 amendment. Since none of the management options contained in the draft amendment would have met the Council's management goals, none was eventually adopted by the Council; however, components of the Council-adopted management measures were discussed in the draft document and included within the range of options chosen and, consequently, presented here as emergency regulations.

In January, 1983, the Council adopted for public review the draft 1983 FMP amendment, which contained four regulatory options for managing the commercial fishery and four options for the recreational fishery. The options ranged from more restrictive to less restrictive than the 1982 management measures. That document, including the draft supplemental environmental impact statement and draft regulatory impact review, was widely distributed and was the subject of discussion at six public hearings held in Washington, Oregon, California, and Idaho. As a result of comments that were received during the public comment period and of the analyses of the impacts of the options that were drafted by the Council's Salmon Plan Development Team, the Council adopted the management measures contained in the 1983 amendment. Further public comments were heard by the Council in Portland, Oregon on March 16-17 and 23, 1983 prior to adoption of management measures.

1983 Management Measures

The 1983 management measures that were adopted by the Council for commercial and recreational fishing along the entire coast are intended to achieve spawning escapement, treaty Indian allocation, and inside allocation goals and to equitably distribute the regulatory burden and minimize unpredictable shifts in fishing effort along the coast. The measures adopted are described below. They contain ocean fishing season, area, gear, and bag limit requirements, and place quotas on some coho and chinook harvests. Minimum harvest lengths for salmon in all ocean fisheries are unchanged from 1982.

North of Cape Falcon, Oregon, area openings and conservation closures for 1983 maximize season length and harvest by concentrating fishing effort on healthy salmon stocks while minimizing harvest of depressed stocks. Openings of

limited areas (e.g., inside 3 miles or inside 6 miles) in the recreational fishery focus effort on healthy Columbia River hatchery, Washington hatchery, and Oregon coastal chinook near shore until such time as depressed, natural stocks of upper Columbia River chinook appear. The fishing area then expands seaward and the fishery is directed toward healthy hatchery coho stocks further offshore. The result of limited area openings should be a longer recreational season than that which occurred in 1982.

Enforcement of these limited area restrictions will be carefully coordinated among U.S. Coast Guard, National Marine Fisheries Service, and state agency personnel to determine the extent of compliance with this type of management measure. Consideration of such area openings in the future may be dependent upon the degree of voluntary compliance experienced in 1983.

Because directed chinook fisheries might increase ocean harvest of some depressed natural stocks, and disrupt the normal relationship between ocean and inside harvest on Columbia River hatchery fall chinook stocks, the level of ocean harvest north of Cape Falcon, Oregon is directly limited for the first time by chinook quotas. Conservation closures around the mouth of the Columbia River protect immature chinook and coho feeding in the area and mature upriver spring/summer and fall chinook returning to the river.

Columbia River and Oregon coastal coho stocks are important to ocean fisheries off the southern Washington coast as well as the fisheries off the coasts of Northern California and Oregon. These stocks are the primary component of the Oregon Production Index (OPI), which is an index of the annual abundance of California, Oregon coastal and Columbia River coho stocks from Leadbetter Point, Washington south, including California. The OPI uses the number of two-year old jack (precocious male) coho that return to selected facilities in the prior year to predict season abundance of three-year-old adult coho off Northern California, Oregon, and Southern Washington.

During the period 1979-82, actual stock sizes exceeded preseason predictions for the OPI. The greatest error, 23 percent or 321,000 fish, occurred in 1982. Following the 1982 season, a thorough review of the stock abundance estimation procedure was undertaken to improve the accuracy of the stock size forecast for 1983. As a result of this review, a revised data base for predicting coho abundance was adopted. Changes in the abundance predictor include upward adjustments in (1) Lewis River hatchery jack counts that reflect the increased production at that facility, and (2) Columbia River jack counts that reflect a lower jack-to-adult ratio and a higher survival rate because smolt releases have been delayed until later in the spring. A more recent data base (1977-82) was used, which reflects a changed jack-to-adult relationship due to variations in hatchery production, stock utilization, and harvest patterns, and reduction in the proportion of wild fish comprising the total stock. Using this recent base data, the preseason estimate of coho stock size in the OPI area in 1983 is 1,657,000 coho, including private hatchery contributions. This compares to 1,090,800 coho predicted for 1982.

Although the Council initially adopted a harvest ceiling of 501,000 coho for the area north of Cape Falcon, subsequent allocations to user groups necessitated an adjustment to 494,000 coho in order to maintain the same level of impact on coastal coho stocks. The 494,000 harvest ceiling was adjusted to account for shaker mortality, resulting in a non-Indian ocean quota of 482,000 coho north of Cape Falcon.

Despite the relative stock abundance indicated by the OPI estimate for 1983, serious conservation concerns with regard to natural stocks of Washington coastal, Puget Sound, and Oregon coastal coho caused the Council to adopt measures shifting a significant portion of the Northern Washington and Southern Oregon troll harvest to Central and Northern Oregon and the Columbia River mouth area. This will maximize harvest opportunity on healthy Columbia River hatchery coho stocks and reduce the harvest of wild coastal coho.

North of Cape Falcon, the unlimited all-species troll season is restricted to the area south of the Columbia River and seaward to 10 miles, from August 10-September 8. This restriction is designed to allow trollers to harvest surplus hatchery coho while protecting upriver bright chinooks returning to the Columbia River and weak runs of Washington coastal coho returning to rivers fished by treaty Indians which trollers seem to impact more than an ocean recreational fishery.

Management measures for the area north of Cape Falcon in 1982 were designed to allocate 58 percent of the coho to the troll fishery and 42 percent to the recreational fishery (47 percent troll and 53 percent recreational allocation from Cape Falcon to Leadbetter Pt. and 64 percent troll, 36 percent recreational allocation north of Leadbetter Pt.). In 1983, coho quotas allocate 34 percent to the troll fishery and 66 percent to the recreational fishery north of Cape Falcon. This shift in Washington coho allocations is offset by (1) a special troll fishery for pink and sockeye salmon, (2) a troll fishery for all-species-except-coho with special gear in the area north of Cape Falcon, and (3) a sizeable troll coho quota south of the Columbia River designed to attract Washington trollers away from weak runs of Washington coastal coho and Columbia River chinook.

The directors of the Washington Department of Fisheries and the Oregon Department of Fish and Wildlife have agreed to make the necessary arrangements to allow Washington trollers to participate in the all-species fishery south of the Columbia River and be allowed to land in Washington ports though ocean areas off Washington may be closed at the time. Presently, a Washington troller may not land in Oregon unless he qualifies for a permit under that State's moratorium or unless he is forced into an Oregon port due to bad weather or mechanical problems.

The two-week troll fishery beginning August 7 north of Carroll Island for pink and sockeye salmon only will harvest predominently Fraser River origin pink stocks. These stocks are expected to be at recent record high abundance, and gear is limited to bare blued hooks and flashers.

During July, the troll fishery north of Cape Falcon will target on chinook using only plugs equal to or greater than 6-inches. This troll terminal gear is documented as highly selective for legal chinook. The incidental catch of coho in this chinook fishery is limited to 33 percent of the chinook and coho catch, not to exceed 20,000 coho.

The impacts of troll and recreational fisheries on coho from Northern Washington are vastly different. In order to meet spawning escapements and treaty Indian harvest entitlements, the Council either had to reduce the total coho harvest of both fisheries (allowing an overescapement of stronger runs) or allow only the fishery which would have the lesser impact on weaker runs (the recreational fishery) to increase.

The Council-adopted management measures, which include some modified fishing areas and generally later open periods, are expected to minimize the impacts of fishing pressure on natural coho stocks, particularly the coastal Oregon and Washington coho stocks. The decision to concentrate ocean fishing on hatchery stocks also should help pass several wild salmon stocks to the inside treaty Indian fisheries in Washington. The Council's reprogramming effort to shift more of the allowable troll harvest of coho to Central and Northern Oregon and the Columbia River area will serve to allow the ocean fisheries an opportunity to increase the allowable catch, thus minimizing the potential adverse economic consequences that result when the fisheries close early.

The area from Cape Falcon to Cape Blanco, Oregon, includes a 66-mile long subarea from Heceta Head to Cape Kiwanda which is managed by two overlapping troll quotas, the first beginning on July 1 and the second beginning August 1. The overlap area includes Newport, the state's second largest port for commercial landings. Troll landings at Newport count toward the quota from Cape Kiwanda south to the Oregon-California border until that quota is reached. Then, beginning when the southern quota is reached, but not before August 1, Newport landings will apply to the quota from Heceta Head north to Cape Falcon. As a result, the fishing effort for coho will be shifted northward later in the season onto Columbia River hatchery stocks and away from Oregon coastal wild coho stocks.

The recreational fishery from Cape Falcon to Cape Blanco opens on June 18, almost a week later than in 1982.

From Cape Blanco, Oregon, to Cape Vizcaino, California a multiyear rebuilding schedule for Klamath River chinook is established with the goal of increasing in-river run size by an average of 20 percent over the previous four years. Unexpected changes in the fisheries, resource, or environment would be accommodated, but otherwise management measures would not change for four years. If the average increase in inriver run size over four years is higher than 20 percent over the previous four years, the goal for the following four years would be 20 percent greater than the increased average. If the average increase in escapement is lower than 20 percent, the goal for the following four years would remain at 20 percent above the goal for the previous four years.

The southern boundary of this area has been moved 46 miles northward, from Pt. Arena to Cape Vizcaino, in view of new information from coded wire tags which indicate that most of the chinook landed at Ft. Bragg (just south of Cape Vizcaino) with current stock sizes, are of Sacramento not Klamath River origin.

Escapement from the ocean to the Klamath River was 62,700 chinook in 1982. The 1983 management measures are expected to result in 70,100 chinook returning to the river, an 11.8 percent increase over 1982. The Council's 1983 ocean escapement goal is 68,900 chinook. The full benefit of the proposed regulations will be realized in 1984 when a 20.5 percent increase over 1982 is expected to escape the ocean fisheries. These estimates should be considered as maximum, since undoubtedly there will be some shifts in fishing effort precipitated by these regulations, the impacts of which cannot be evaluated until they occur.

Although the recreational season in the area is essentially the same as in 1982, the troll season is reduced from 1982. Changes in troll regulations off California include use of barbless hooks in all troll fisheries, a limitation of 6 trolling wires per vessel to minimize shaker losses, a May 16 (instead of May 1) opening of the chinook fishery, a June 1 (instead of May 25) opening of the all-species season, a 12-mile square ocean closure at the Klamath River mouth during August, and a month shorter all-species season (closing August 31 instead of September 30).

In addition, a coho quota has been imposed on the troll fishery off California for the first time. In previous seasons, the catch of coho off California was counted toward the OPI quota south of Cape Falcon, but the fishery off California did not close when that quota was reached. In 1983, the all-species troll fishery between the Oregon-California border and Cape Vizcaino will close when 71,000 coho are projected to have been caught and an all-species-except-coho season subsequently will continue in that area.

The troll season from Cape Blanco to the Oregon-California border is shortened from 1982. The May all-species season opens two weeks later than in 1982 (May 16 instead of May 1) and the September all-species-except-coho season is limited to two weeks (September 1-15) in a 12 x 24-mile rectangular area at the mouth of the Rogue River.

As a result of changes made in management measures from 1982 to 1983, but without considering potential effort shifts, the recreational catch from Cape Blanco to Cape Vizcaino is expected to increase by almost 3 percent over 1982, while the troll catch is expected to be nearly 12 percent less than in 1982.

South of Cape Vizcaino, California, a similar rebuilding schedule for Sacramento chinook was adopted. The 1983 Sacramento River escapement goals are 65,800 upper and 82,000 (71,000 natural and 11,000 hatchery) lower river spawners. The 1983 emergency regulations provide for an opening of the troll chinook season later than in 1982 (May 1 instead of April 22). However, the 1983 regulations may not be in effect until after May 1 and the fishery may open under 1982 regulations. It is projected that the overall escapement goal to the Sacramento River will be reached in 1983, regardless of whether the troll season opens on April 22 or May 1. However, the upper river goal may not be reached.

In-season adjustments to management measures in 1983 could include the following:

- The recreational daily catch limit may be reduced from 2-fish to 1-fish to extend the recreational season through Labor Day off Oregon and Washington.

- The area restrictions north of Cape Falcon may be modified to permit the recreational fishery to move offshore earlier, to reduce effort on chinook and to increase the likelihood of achieving the coho quota.

- If either recreational chinook quota north or south of Klipsan Beach is projected to be uncaught, a portion of the unused balance may be reallocated to the other subarea during the season.

- The estimated abundance of private hatchery coho in the Oregon Production Index (OPI) will be reassessed to determine if coho quotas need adjustment.

- The troll coho quota for the August fishery from the Columbia River to Cape Falcon may be increased by the amount of fish (if any) remaining in the quota for the July plugs-only season north of Cape Falcon. Likewise, the troll chinook quota for the August fishery from the Columbia River to Cape Falcon may be increased by the amount of fish (if any) remaining in the chinook quota for the May and July fisheries north of Cape Falcon.

Determinations necessary for in-season adjustments will be made by the NMFS Northwest Regional Director, in consultation with the directors of the State fishery management agencies, and adjustments will be implemented by the Secretary.

Treaty Indian Fisheries

Four Northern Washington Indian tribes, the Makah, Quileute, Hoh, and Quinault tribes, have Indian treaty rights to fish for all salmon species in the ocean adjacent to the State of Washington. Between 1972 and 1981, the ocean treaty troll catch of chinook and coho increased 2 and 3 fold respectively. In 1982, the actual treaty Indian ocean troll catch totaled approximately 116,800 coho, almost four times the amount anticipated when the non-Indian ocean fishing regulations were established.

Northern Washington fisheries are managed to maximize the catch without causing the natural coho spawning escapements to the Hoh, Queets, or Quilleute to fall below the lower end of the escapement range adopted by the United States District Court for 1982 in Hoh et al. vs. Baldrige. The Queets natural run is the most depressed of the three systems. The lower end of the 1982 court-adopted spawning escapement range on the Queets is 5,600 fish.

The timing and amount of salmon harvested by treaty Indians in the ocean directly influences the amount available to allocate to non-Indian ocean fishermen, and the amount of fish available for inside Indian and non-Indian fisheries and/or spawning. Uncertainty regarding the size and timing of treaty Indian troll harvest creates a situation where the impact of ocean fishing regulations upon individual salmon runs, which are of management concern, is nearly impossible to determine.

The Council urged the treaty tribes to agree upon the timing and specific catch level for 1983 ocean treaty Indian fisheries. The Makah tribe has been unable to reach agreement with the Quileute, Hoh, and Quinault tribes on the number of salmon which will be harvested by treaty Indian fishermen in the ocean in 1983. However, tribal representatives agreed that it would be appropriate for the Council to establish management measures for the non-treaty ocean fishery based on a non-Indian ocean allowable harvest of 482,000 coho north of Cape Falcon. Negotiations among the tribes are continuing in an effort to reach agreement on the size and timing of the 1983 treaty Indian fishery in the ocean. Additional tribal ocean fishing restrictions, including quotas, may be established by the tribes after the date of filing of these emergency regulations.

Federal treaty Indian fishing regulations in 1983 for persons authorized to exercise the Makah Indian treaty ocean fishing rights were adopted as submitted by the Tribe and provide for Makah Indian fishermen to fish in their adjudicated ocean area for all species from May 1 through October 31, and to retain chinook with a minimum length of 24-inches and coho with a minimum length of 16 inches. Either fixed or hand-held lines or poles may be used.

Federal treaty Indian fishing regulations in 1983, for persons authorized to exercise treaty ocean fishing rights of the Quileute, Hoh, and Quinault tribes, provide for fishing by these tribes in their respective adjudicated ocean areas for all-species from May 1 through September 15. Treaty fishermen may not retain chinook smaller than 26-inches or coho smaller than 16-inches but a daily limit of 2 chinook between 24-inches and 26-inches may be kept for ceremonial and subsistence use. Either fixed or hand-held lines or poles may be used. These emergency regulations are less restrictive than those recommended by the three tribes to avoid impeding the process of on-going negotiations between the Makah Tribe and the other three tribes.

Except as noted in Section 661.23(c), all other commercial salmon fishing regulations apply to persons exercising the Makah, Quileute, Quinault, and Hoh treaty right to fish in the ocean.

Related Litigation

Hoopa Valley Tribe vs. Baldrige

In June of 1982, the Hoopa Valley Indian Tribe, whose reservation is on the Klamath River, brought suit against the Secretary. The tribes claimed that emergency regulations implementing a Secretarial FMP amendment approved on May 26, 1982, for the commercial troll fishery between Cape Blanco, Oregon and Point Arena, California, were not designed to prevent overfishing of Klamath River fall chinook and did not adequately consider Indian fishing rights in the river. Because a decision has not yet been rendered by the Court, it is unknown at this time what impact, if any, a judicial determination would have on these 1983 emergency regulations. The Secretary believes that the emergency regulations implementing the 1982 Secretarial amendment adequately prevented overfishing of Klamath River chinook and considered Indian fishing rights, consistent with applicable legal requirements. As indicated above, the 1983 emergency regulations are designed to increase the 1983 in-river run size of Klamath chinook by approximately 12 percent over 1982.

Hoh vs. Baldrige

This case was filed in U.S. District Court in 1981 and the Court maintains jurisdiction. The tribes, the State of Washington and the Department of Commerce meet regularly to discuss and agree on appropriate spawning escapements for coho returning to those Northern Washington coastal rivers on which the tribes fish. For 1983, the parties agreed to adopt spawning escapement goals, which were the same as those established by an order of the court for 1982. The allowable ocean harvest quota of 482,000 coho north of Cape Falcon, Oregon to the U.S./Canada border is expected to allow attainment of these agreed upon spawning escapements.

Confederated Tribes vs. Baldrige

The U.S. District Court also maintains continuing jurisdiction in this action. In this litigation, originally filed in 1981, the court directed the Secretary to evaluate possible management measures for the FCZ off Alaska, Washington, and Oregon which would return more fall chinook salmon to the upper reaches of the Columbia River (bright fall chinook destined for the river above Bonneville Dam, or upriver brights).

The Secretary's evaluation indicated that little could be done by way of restrictions to the ocean fishery off Oregon and Washington north of Cape Falcon to increase the return of upriver bright chinook to the Columbia. No action occurred in this case in 1982 and it is expected that the Secretary's imposition of a chinook harvest quota for the fisheries north of Cape Falcon by these emergency regulations (see discussion above) will be in the best interests of that resource and the tribes.

PLAN AMENDMENTS

1. 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 1983, which regulations shall remain in effect unless and until superseded or otherwise modified."

2. Section 9.4.4 and page ii through v of the Summary of the 1978 FMP (as previously amended) is amended as follows:

   The 1982 ocean salmon regulations are superseded to provide seasons and bag limits for commercial and recreational fisheries in 1983 and to provide for in-season modifications to these as set forth below:

50 CFR PART 661
Subpart A - General Measures

§661.1 Purpose.

The purpose of this part is to provide for the management of the salmon fisheries off the coasts of Washington, Oregon, and California in the fishery conservation zone (the FCZ, also known as the 3-to-200 mile zone) over which the United States exercises exclusive fishery management authority (i.e., the Pacific Fishery Management Council's Salmon Fishery Management Area) under the Magnuson Fishery Conservation and Management Act.

§661.2 Relation to other laws.

(a) This part does not apply to fishing for pink and sockeye salmon conducted under the Convention for the Protection, Preservation, and Extension of the Sockeye Salmon Fishery of the Fraser River System, as amended by the Pink Salmon Protocol, in U.S. Convention Waters between 48° N. latitude and the provisional international boundary between the United States and Canada.

(b) This part recognizes that any State law which pertains to vessels registered under the laws of that State while in the fishery management area, and which is consistent with this part or any applicable Fishery Management Plan for the Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California (Fishery Management Plan), including any State landing law, will continue to have force and effect with respect to fishing activities addressed herein.

(c) Any person fishing subject to this part shall be bound by the international boundaries of the management subareas described in §661.3, notwithstanding any dispute or negotiation between the United States and any neighboring country regarding their respective jurisdictions, until such time as new boundaries are published by the United States.

§661.3 Definitions.

Authorized officer means:

(a) Any commissioned, warrant, or petty officer of the Coast Guard;

(b) Any special agent of the National Marine Fisheries Service or other officer authorized by the Secretary;

(c) Any officer designated by the head of any Federal or State agency which has entered into an agreement with the Secretary and the Secretary of Transportation to enforce the provisions of the Magnuson Act; and

(d) Any Coast Guard personnel accompanying and acting under the direction of any person described in paragraph (a) of this definition.

Barbless hook means a hook with a single shank and point, with no secondary point or barb curving or projecting in any other direction.

Commercial fishing means fishing with troll fishing gear as defined in this section, or fishing for the purpose of sale or barter of the catch.

Conservation Zone (CZ) means one of two conservation zones as follows:

(a) Conservation zone 1: The ocean area surrounding the Columbia River mouth bounded by a line extending for 6 nautical miles due west from North Head along 46°18'00" N. latitude to 124°13'18" W. longitude, then southerly along a line of 167° True to 46°11'06" N. latitude and 124°11'00" W. longitude (lightship buoy), then due east to shore along 46°11'06" N. latitude.

(b) Conservation zone 2: The ocean area surrounding the Klamath River mouth bounded on the north by 41°38'48" N. latitude (approximately 6 nautical miles north of the Klamath River mouth), on the west by 124°23'00" W. longitude, and on the south by 41°26'48" N. latitude (approximately 6 nautical miles south of the Klamath River mouth).

Council means the Pacific Fishery Management Council.

Dressed, head-off length of salmon means the shortest distance between the midpoint of the clavicle arch (see illustration) and the fork of the tail, measured along the lateral line while the fish is lying on its side, without resort to any force or mutilation of the fish other than removal of the head, gills, and entrails.

Dressed, head-off salmon means salmon that have been beheaded, gilled, and gutted without further separation of vertebrae, and are either being prepared for on-board freezing, or are frozen and will remain frozen until landed.

Fishery management area means the fishery conservation zone (FCZ) off the coasts of Washington, Oregon, and California between 3 and 200 miles offshore, and bounded on the north by the Provisional International Boundary between the U.S. and Canada, and bounded on the south by the International Boundary between the U.S. and Mexico. The inner boundary of the FCZ is a line coterminous with the seaward boundaries of the States of Washington, Oregon, and California (the "3-mile limit"). The outer boundary of the FCZ is a line

drawn in such a manner that each point on it is 200 nautical miles from the baseline from which the territorial sea is measured, or is a provisional or permanent international boundary between the United States and Canada or Mexico.

(a) The northeastern, northern, and northwestern boundaries of the fishery management area are as follows:

(1) Northeastern boundary--that part of a line connecting the light on Tatoosh Island, Washington, with the light on Bonilla Point on Vancouver Island, British Columbia, southerly of the International Boundary between the U.S. and Canada (at 48°29'37" N. latitude, 124°43'33" W. longitude), and northerly of the point where that line intersects with the boundary of the U.S. territorial sea.

(2) Northern and northwestern boundary is a line[1/] connecting the following coordinates:

48°29'37.19" N. lat., 124°43'33.19" W. long.;
48°30'11" N. lat., 124°47'13" W. long.;
48°30'22" N. lat., 124°50'21" W. long.;
48°30'14" N. lat., 124°52'52" W. long.;
48°29'57" N. lat., 124°59'14" W. long.;
48°29'44" N. lat., 125°00'06" W. long.;
48°28'09" N. lat., 125°05'47" W. long.;
48°27'10" N. lat., 125°08'25" W. long.;
48°26'47" N. lat., 125°09'12" W. long.;
48°20'16" N. lat., 125°22'48" W. long.;
48°18'22" N. lat., 125°29'58" W. long.;
48°11'05" N. lat., 125°53'48" W. long.;
47°49'15" N. lat., 126°40'57" W. long.;
47°36'47" N. lat., 127°11'58" W. long.;
47°22'00" N. lat., 127°41'23" W. long.;
46°42'05" N. lat., 128°51'56" W. long.;
46°31'47" N. lat., 129°07'39" W. long.

(3) The southern boundary of the fishery management area is the U.S./Mexico International Boundary, which is a line connecting the following coordinates:

32°35'22" N. lat., 117°27'49" W. long.;
32°37'37" N. lat., 117°49'31" W. long.;
31°07'58" N. lat., 118°36'18" W. long.;
30°32'31" N. lat., 121°51'58" W. long.

1/ The line joining these coordinates is the provisional international boundary of the U.S. FCZ as shown on NOAA/NOS Charts #18480 and #18002.

(b) Geographical landmarks referenced in this part are located at the following latitudes:

Carroll Island	48°00'18" N. lat.
Queets River	47°31'42" N. lat.
Point Brown	46°55'42" N. lat.
Leadbetter Point	46°38'10" N. lat.
Klipsan Beach	46°28'12" N. lat.
North Head	46°18'00" N. lat.
Columbia River	46°14'24" N. lat.
South Jetty	46°14'06" N. lat.
Columbia River Lightship Buoy	46°11'06" N. lat.
Cape Falcon	45°46'00" N. lat.
Cape Kiwanda	45°13'12" N. lat.
Cape Perpetua	44°18'00" N. lat.
Heceta Head	44°08'18" N. lat.
Cape Blanco	42°50'20" N. lat.
Rogue River	42°25'18" N. lat.
OR/CA Border	42°00'00" N. lat.
Klamath River	41°32'48" N. lat.
Cape Vizcaino	39°43'30" N. lat.
Point Arena	39°00'00" N. lat.

Fishing means --

(a) The catching, taking, or harvesting of fish;

(b) The attempted catching, taking, or harvesting of fish;

(c) Any other activity which can reasonably be expected to result in the catching, taking, or harvesting of fish; or

(d) Any operations at sea in support of, or in preparation for, any activity described in paragraph (a) through (c) of this definition.

Fishing vessel means any boat, ship, or other craft which is used for, equipped to be used for, or of a type that is normally used for fishing.

Freezer trolling vessel means a fishing vessel, equipped with troll fishing gear, which has a present capability for (a) on-board freezing of the catch, and (b) storage of the fish in a frozen condition until they are landed.

Land or landing means to begin offloading fish, to arrive in port with the intention of offloading fish, or to cause fish to be offloaded.

Magnuson Act means the Magnuson Fishery Conservation and Management Act, 16 U.S.C. 1801 et seq.

Plugs means artificial fishing lures made of wood or plastic with one or more hooks attached.

Recreational fishing means fishing with recreational fishing gear as defined in this section and not for the purpose of sale or barter.

Recreational fishing gear means conventional angling tackle consisting of a rod, reel, line, and hooks with bait or lure attached.

Regional Director means the Northwest Regional Director, National Marine Fisheries Service (7600 Sand Point Way, N.E., BIN C15700, Seattle, Washington 98115) or his designee.

Salmon means any anadromous species of the family Salmonidae and genus Oncorhynchus, commonly known as Pacific salmon, including but not limited to:

Chinook (king) salmon	-	Oncorhynchus tshawytscha
Coho (silver) salmon	-	Oncorhynchus kisutch
Pink (humpback) salmon	-	Oncorhynchus gorbuscha
Chum (dog) salmon	-	Oncorhynchus keta
Sockeye (red) salmon	-	Oncorhynchus nerka

Secretary means the Secretary of Commerce, or a designee.

Special fishery zone means one of two special fishery zones as follows:

(a) Special fishery zone 1: The ocean area south of the Columbia River mouth bounded by a line extending from the tip of the South Jetty (46°14'06" N. latitude and 124°04'00" W. longitude), then southwesterly along a line of 239° True to the lightship buoy (46°11'06" N. latitude and 124°11'00" W. longitude), then due west along 46°11'06" N. latitude to 124°13'24" W. longitude (approximately 10 nautical miles offshore), then south along a line of 180° True (approximately 10 miles offshore from the baseline from which the territorial sea is measured), and then due east to Cape Falcon along 45°46'00" N. latitude.

(b) Special fishery zone 2: The ocean area surrounding the Rogue River mouth bounded on the north by 42°37'18" N. latitude (approximately 12 nautical miles north of the Rogue River mouth), on the west by 124°42'00" W. longitude (approximately 12 nautical miles offshore), and on the south by 42°13'18" N. latitude (approximately 12 nautical miles south of the Rogue River mouth).

Total length of salmon means the shortest distance between the tip of the snout or jaw (whichever extends furthest while the mouth is closed) and the tip of the longest lobe of the tail, without resort to any force or mutilation of the salmon other than fanning or swinging the tail.

Troll fishing gear means fishing gear that consists of one or more lines that drag hooks with bait or lures behind a moving fishing vessel, and which lines are affixed to the vessel and are not disengaged from the vessel at any time during the fishing operation.

Whole bait means a hook or hooks baited with a whole natural bait.

§661.4 [Reserved]

§661.5 Reporting requirements.

This part recognizes that catch and effort data necessary for implementation of any applicable Fishery Management Plan is collected by the States of Washingon, Oregon, and California under existing State data-collection pro-visions. No additional catch reports will be required of fishermen or processors as long as the data collection and reporting systems operated by State agencies continue to provide the Secretary with statistical information adequate for management.

§661.6 [Reserved]

§661.7 General restrictions.

(a) The fishery management area is closed to salmon fishing except as opened by this part or superseding regulations. All open fishing periods begin at 0001 hours and end at 2400 hours local time on the dates specified. Except as otherwise provided by or pursuant to this part, the following restrictions apply to all salmon fishing in the fishery management area.

(b) It is unlawful for any person to --

(1) Take and retain, or land salmon caught with a net in the fishery management area, except that a hand-held net may be used to bring hooked salmon on board a vessel.

(2) Fish for, or take and retain, any species of salmon:
(i) During closed seasons or in closed areas;

(ii) Once any catch limit is attained;

(iii) By means of gear or methods other than recreational fishing gear or troll fishing gear; or

(iv) In violation of any notice issued under §661.22.

(3) Take and retain or possess aboard a fishing vessel any species of salmon which is less than the applicable minimum total length specified in §§661.20(c), 661.21(c), 661.23(a), or 661.23(b)(4).

(4) Possess aboard a fishing vessel a salmon, for which a minimum total length is set by this part, in such a condition that its minimum total length is extended, or cannot be determined, except that "dressed, head-off salmon" may be possessed aboard a "freezer trolling vessel" (unless the adipose fin of such salmon has been removed--see paragraph (6) of this section).

(5) Fail to return to the water immediately and with the least possible injury any salmon the retention of which is prohibited by this part.

(6) Remove the head of any salmon caught in the fishery management area, or possess a salmon with the head removed, if that salmon has been marked by removal of the adipose fin to indicate that a coded wire tag has been implanted in the head of the fish.

(7) Possess, have custody or control of, ship, transport, offer for sale, sell, purchase, import, export, or land, any species of salmon or salmon part which was taken and retained in violation of the Magnuson Act, this part, or any regulation issued under the Magnuson Act.

(8) Refuse to permit an authorized officer to board a fishing vessel subject to such person's control for purposes of conducting any search or inspection in connection with the enforcement of the Magnuson Act, this part, or any other regulation issued under the Magnuson Act.

(9) Forcibly assault, resist, oppose, impede, intimidate, or interfere with any authorized officer in the conduct of any search or inspection described in paragraph (h)(1) of this section.

(10) Resist a lawful arrest for any act prohibited by this part.

(11) Interfere with, delay, or prevent, by any means, the apprehension or arrest of another person knowing that such other person has committed any act prohibited by this part.

§661.8 Facilitation of enforcement.

(a) General. Each person aboard a fishing vessel subject to this part shall immediately comply with instructions issued by an authorized officer to facilitate safe boarding and inspection of the vessel, its gear, equipment, and catch for purposes of enforcing the Magnuson Act and this part.

(b) Signals. Upon being approached by U.S. Coast Guard cutter or aircraft, or other vessel or aircraft authorized to enforce the Magnuson Act, the operator of the fishing vessel shall be alert for signals conveying enforcement instructions. The VHF-FM radiotelephone is the normal method of communicating between vessels. Listen to VHF-FM channel 16 (emergency channel) for instructions to shift to another VHF-FM channel and re-ceive boarding instructions. Visual methods or loudhailer may be used if the radio does not work. The following signals, extracted from U.S. Hydrographic Office publication H.O. 102 International Code of Signals, may be communicated by flashing light or signal flags:

(1) "L", meaning "You should stop your vessel instantly."

(2) "SQ3", meaning "you should stop or heave to; I am going to board you."

(3) "AA AA AA etc.," meaning "Call for unknown station or general call." The operator should respond by identifying his vessel by radio, visual signals or illuminating the vessel name or number.

(4) "RY-CY", meaning "You should proceed at slow speed. A boat is coming to you."

(c) Boarding. The operator of a vessel signaled to stop or heave to for boarding shall --

(1) Stop immediately and lay to or maneuver in such a way as to permit the boarding party to come aboard; and

(2) Take such other actions as necessary to ensure the safety of the boarding party.

§661.9 Penalties.

Any person or fishing vessel found to be in violation of this part will be subject to the civil and criminal penalty provisions and forfeiture provisions prescribed in the Magnuson Act.

Subpart B - Management Measures

§661.20 Commercial fishing.

(a) Areas, open seasons, species, and zone and gear restrictions are set forth in Table 1 and Figure 1.

(b) Gear restrictions.

(1) Troll gear. No person shall engage in commercial salmon fishing using other than troll fishing gear (as defined in §661.3) in the fishery management area; however, between the OR/CA border and the U.S./Mexico border, troll fishing gear need not be affixed to the fishing vessel as specified in §661.3.

(2) Lures commonly known as "spoons," "wobblers," "dodgers," and flexible plastic lures are not considered plugs, and may not be used where "plugs only" are specified. Plugs are defined in §661.3.

(3) Where barbless hooks are specified, hooks manufactured with barbs can be made "barbless" by forcing the point of the barb flat against the main part of the point. Where "barbless hooks only" are specified south of Cape Blanco, Oregon, to the U.S./Mexico border, barbless hooks must be used with all types of gear including whole bait and plugs. Where "barbless hooks" are specified north of Cape Blanco, Oregon, to the U.S./Canada border, barbless hooks must be used with all types of gear except whole bait, plugs, and the bare blued hooks used during the special pink-and-sockeye-only fishery. Barbless hook is defined in §661.3.

(4) Where whole bait is specified, no attraction other than a flasher may be used with the whole bait. Whole bait is defined in §661.3.

(c) Length restrictions. Minimum total lengths of salmon and minimum dressed, head-off lengths of salmon are as follows:

Areas	Species	Minimum total lengths (inches)	Minimum lengths for dressed, head-off salmon inches
U.S./CANADA BORDER - CAPE FALCON	Chinook	28	21-1/2
	Coho	16	12
CAPE FALCON - OR/CA BORDER	Chinook	26	19-1/2
	Coho	16	12
OR/CA BORDER - U.S./MEXICO BORDER	Chinook	26	19-1/2
	Coho	22	16-1/2
ALL AREAS	Species other than chinook and coho	None	None

(d) Steelhead. No person engaged in commercial salmon fishing shall take and retain, or possess any steelhead (Salmo gairdneri) within the fishery management area.

(e) Restriction on use of commercial troll fishing gear for recreational fishing. No person while on a fishing vessel with troll fishing gear on board shall use any part of that troll fishing gear to engage in recreational fishing for salmon.

§661.21 Recreational fishing.

(a) Areas, open seasons, species, and zone and gear restrictions are set forth in Table 2 and Figure 2.

(b) Gear restrictions.

(1) No person shall engage in recreational salmon fishing in the fishery management area using other than recreational fishing gear (as defined in §661.3), to which may be attached not more than one artificial lure or natural bait, with no more than four single or multiple hooks.

(2) No person shall use more than one rod and line for recreational salmon fishing from the U.S./Canada border to the OR/CA border; however, there is no limit to the number of rods or lines used for recreational salmon fishing from the OR/CA border to the U.S./Mexico border.

(3) No person engaged in recreational fishing for salmon from the OR/CA border to the U.S./Mexico border may use weights of more than four (4) pounds attached directly to the line.

(4) Recreational fishing gear (as defined in §661.3) must be held by hand while playing a hooked fish and reducing it to possession.

(c) Length restrictions. Minimum total lengths of salmon are as follows:

AREAS	MINIMUM TOTAL LENGTHS (INCHES) Chinook	Coho	Other Salmon
U.S./CANADA BORDER - CAPE FALCON	24	16	None
CAPE FALCON - OR/CA BORDER	None	None	None
OR/CA BORDER - U.S./MEXICO BORDER	22 1/	22 1/	None

1/ Except that one chinook or coho salmon per day may be less than 22 inches but not less than 20 inches.

Table 1.

AREAS AND OPEN SEASONS [1]	SPECIES	ZONE RESTRICTIONS [2]	GEAR RESTRICTIONS
U.S./CANADA BORDER TO CAPE FALCON			
May 1 - May 31	All except coho	Conservation zone 1 (Columbia River mouth) is closed	Only barbless hooks, whole bait, or plugs not not less than 5"
July 1 - earliest of (1) coho, or (2) chinook quota, or (3) July 31	All except that sockeye and pink salmon may not be retained north of Carroll Island. No more than one coho may be retained for each two chinook retained.	Conservation zone 1 (Columbia River mouth) is closed	Only plugs not less than 6"
U.S./CANADA BORDER TO CARROLL ISLAND			
Aug. 7 -Aug. 20 only	Sockeye and pink salmon only		Only bare blued hooks and flashers
COLUMBIA RIVER TO CAPE FALCON			
Aug. 10 - earliest of (1) coho quota, or (2) chinook quota, or (3) Sept. 8	All	Waters outside special fishery zone 1 (south of Columbia River mouth) are closed	Troll fishing gear
CAPE FALCON TO CAPE BLANCO			
May 1 - May 31	All except coho		Only barbless hooks, whole bait, or plugs not less than 5"
June 1 - June 15	All except coho		Only plugs not less than 5" or whole bait
Sept. 5 - Oct. 31	All except coho		Troll fishing gear
CAPE FALCON TO CAPE KIWANDA			
Aug 1 - coho quota	All		Troll fishing gear
Coho quota - Sept. 4	All except coho		Only plugs not less than 5" or whole bait
CAPE KIWANDA TO HECETA HEAD			
July 1 - coho quota	All		Troll fishing gear
Aug. 1 - earlier of (1) coho quota, or (2) Sept. 4	All		Troll fishing gear
If a coho quota closure occurs prior to Sept. 4, from the time of closure until Sept. 4	All except coho		Only plugs not less than 5" or whole bait
HECETA HEAD TO CAPE BLANCO			
July 1 - coho quota	All		Troll fishing gear
Coho quota - Sept. 4	All except coho	If a coho quota closure occurs prior to Aug. 1, waters north of Heceta Head to Cape Perpetua are open until Aug. 1	Only plugs not less than 5" or whole bait
CAPE BLANCO TO OR/CA BORDER			
May 16 - May 31	All except coho		Barbless hooks only, and no more than 6 troll lines
June 1 - June 15	All except coho		Only plugs not less than 5" or whole bait
July 1 - coho quota	All		
Coho quota - Aug. 31	All except coho		Only plugs not less than 5" or whole bait
Sept. 1 - Sept. 15	All except coho	Only waters inside special fishery zone 2 (Rogue River mouth) are open	Troll fishing gear
Oct. 1 - Oct. 31	All except coho		Troll fishing gear
OR/CA BORDER TO CAPE VIZCAINO			
May 16 - May 31	All except coho		Barbless hooks only, and no more than 6 troll lines
June 1 - June 15	All until coho quota is reached, then all except coho		Barbless hooks only, and no more than 6 troll lines
July 1- Aug. 1	All until coho quota is reached, then all except coho	Conservation zone 2 (Klamath River mouth) is closed Aug. 1 - Aug. 31	Barbless hooks only, and no more than 6 troll lines
CAPE VIZCAINO TO U.S./MEXICO BORDER			
May 1 - May 31	All except coho		Barbless hooks only, and no more than 6 troll lines
June 1 - June 15	All		Barbless hooks only, and no more than 6 troll lines
July 1 - Sept. 30	All		Barbless hooks only, and no more than 6 troll lines

1/ Quotas referenced in this column are set forth in the quota table at §661.22 (2).
2/ Conservation zones and special fishery zones are defined in §661.3.

Figure 1.

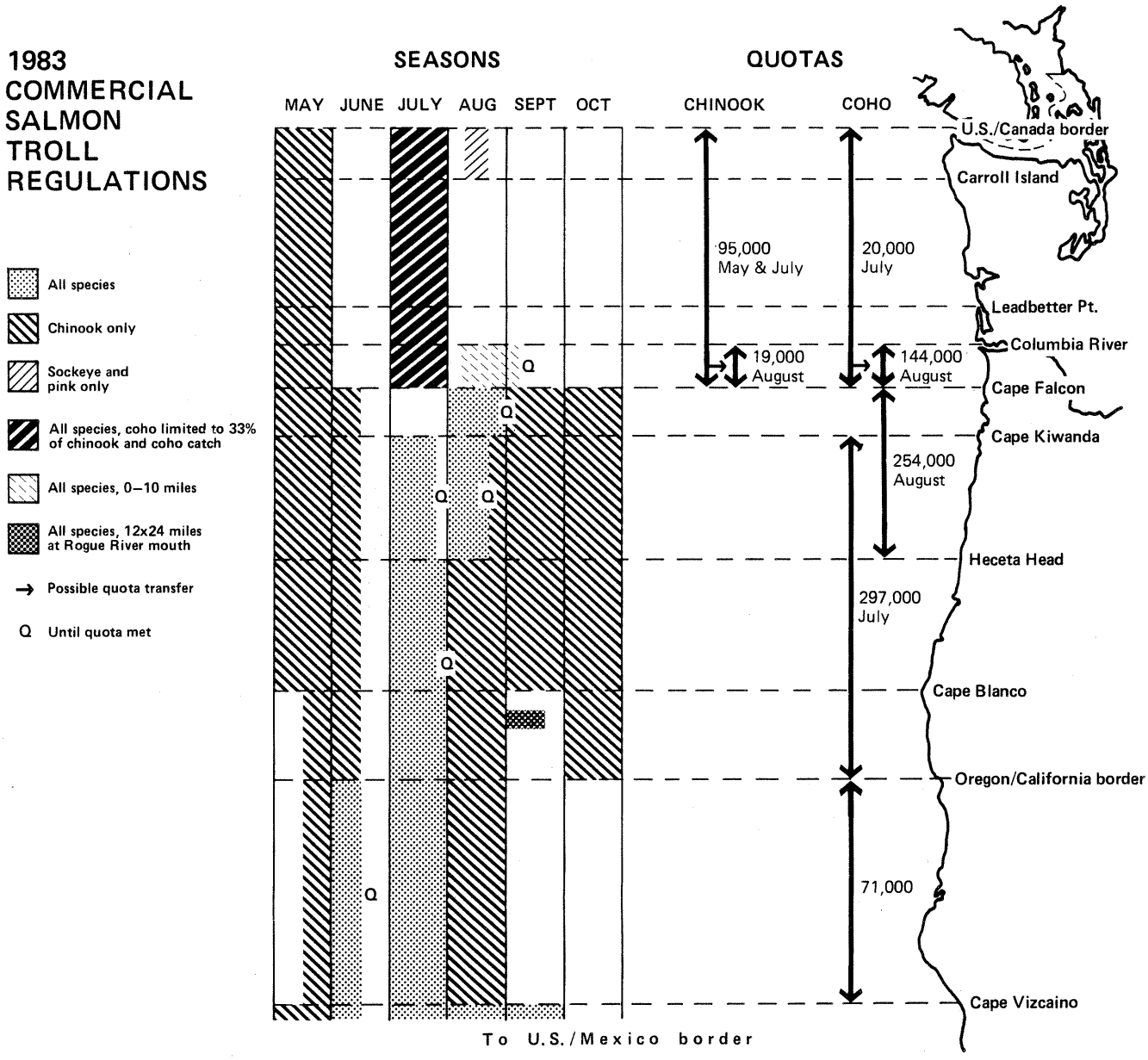

1983
COMMERCIAL
SALMON
TROLL
REGULATIONS
All species
Chinook only
Sockeye and pink only
All species, coho limited to 33% of chinook and coho catch
All species, 0–10 miles
All species, 12x24 miles at Rogue River mouth
Possible quota transfer
Q Until quota met
SEASONS
MAY JUNE JULY AUG SEPT OCT
QUOTAS
CHINOOK
COHO
95,000 May & July
19,000 August
20,000 July
144,000 August
254,000 August
297,000 July
71,000
U.S./Canada border
Carroll Island
Leadbetter Pt.
Columbia River
Cape Falcon
Cape Kiwanda
Heceta Head
Cape Blanco
Oregon/California border
Cape Vizcaino
To U.S./Mexico border

Table 2.

AREAS AND OPEN SEASONS 1/	SPECIES	ZONES 2/ 3/ 0-3 MILES	3-6 MILES	6-200 MILES	DAILY BAG AND LENGTH LIMITS 4/,5/
U.S./CANADA BORDER TO QUEETS RIVER:					
July 1 - July 29	All	open	closed	closed	2 fish legal size
July 30 - Sept. 11	All	open	open	open	2 fish legal size
QUEETS RIVERS TO PT. BROWN:					
May 28 - June 17	All except coho	open	open	closed	2 fish legal size
June 18 - July 29	All	open	open	closed	2 fish legal size
PT. BROWN TO KLIPSAN BEACH:					
May 28 - June 17	All except coho	open	open	closed	2 fish legal size
June 18 - July 29	All	open	open	closed	2 fish legal size
July 30 - Sept. 11	All	open	open	open	2 fish legal size
KLIPSAN BEACH TO NORTH HEAD:					
June 18 - July 29	All	open	open	closed	2 fish legal size
July 30 - Aug. 15	All	open	open	open	2 fish legal size
NORTH HEAD TO SOUTH JETTY:					
July 30 - Aug. 15	All	open	open	open	2 fish legal size
SOUTH JETTY TO CAPE FALCON:					
June 18 - July 29	All				
1. From South Jetty south to 46°06'00" N. lat. (approximately 5 miles south of the Columbia Lighthouse Buoy)		open	closed	closed	2 fish legal size
2. South of 46°06'00" to Cape Falcon	All	open	open	closed	2 fish legal size
July 30 - Aug. 15	All	open	open	open	2 fish legal size
Aug. 16 - Sept. 11	All	Only waters inside special fishery zone 1 6/ (south of Columbia River mouth) are open			2 fish legal size
CAPE FALCON TO CAPE BLANCO:					
June 18 - Sept. 18	All	open	open	open	2 fish; first 2 salmon taken must be retained regardless of size or species
CAPE BLANCO TO OR/CA BORDER:					
May 28 - coho quota	All	open	open	open	2 fish; first 2 salmon taken must be retained regardless of size or species
Coho quota - Oct. 31	All except coho	open	open	open	2 fish; first 2 non-coho salmon taken must be retained regardless of size
OR/CA BORDER TO U.S./MEXICO BORDER:					
Saturday nearest Feb. 15 (1983: Feb. 12) to Sunday nearest Nov. 15 (1983: Nov. 13)	All	open	open	open	2 fish legal size

1/ Seasons are subject to automatic quota closures. See, §661.22(a)(2).

2/ Distances shown are in nautical miles and are measured from "0", the nearest point on the shore from which the baseline used to measure the width of the territorial sea is measured. "0-3" denotes ocean waters within the boundary of the adjacent state which are subject to state and not federal regulation unless federal regulations are in effect under §306(b) of the Magnuson Act. Ocean salmon seasons in state waters shown in Table 2 are seasons adopted by the states in April, 1983 and may be subject to change.

3/ Areas between the U.S./Canada border and Cape Falcon are subject to inseason quota and zone adjustments. See, §661.22(c).

4/ The daily bag limit may be reduced to 1 fish in one or more areas between the U.S./Canada border and the OR/CA border during the season. See, §661.22(d).

5/ Length limits are set forth in the table at §661.21(c).

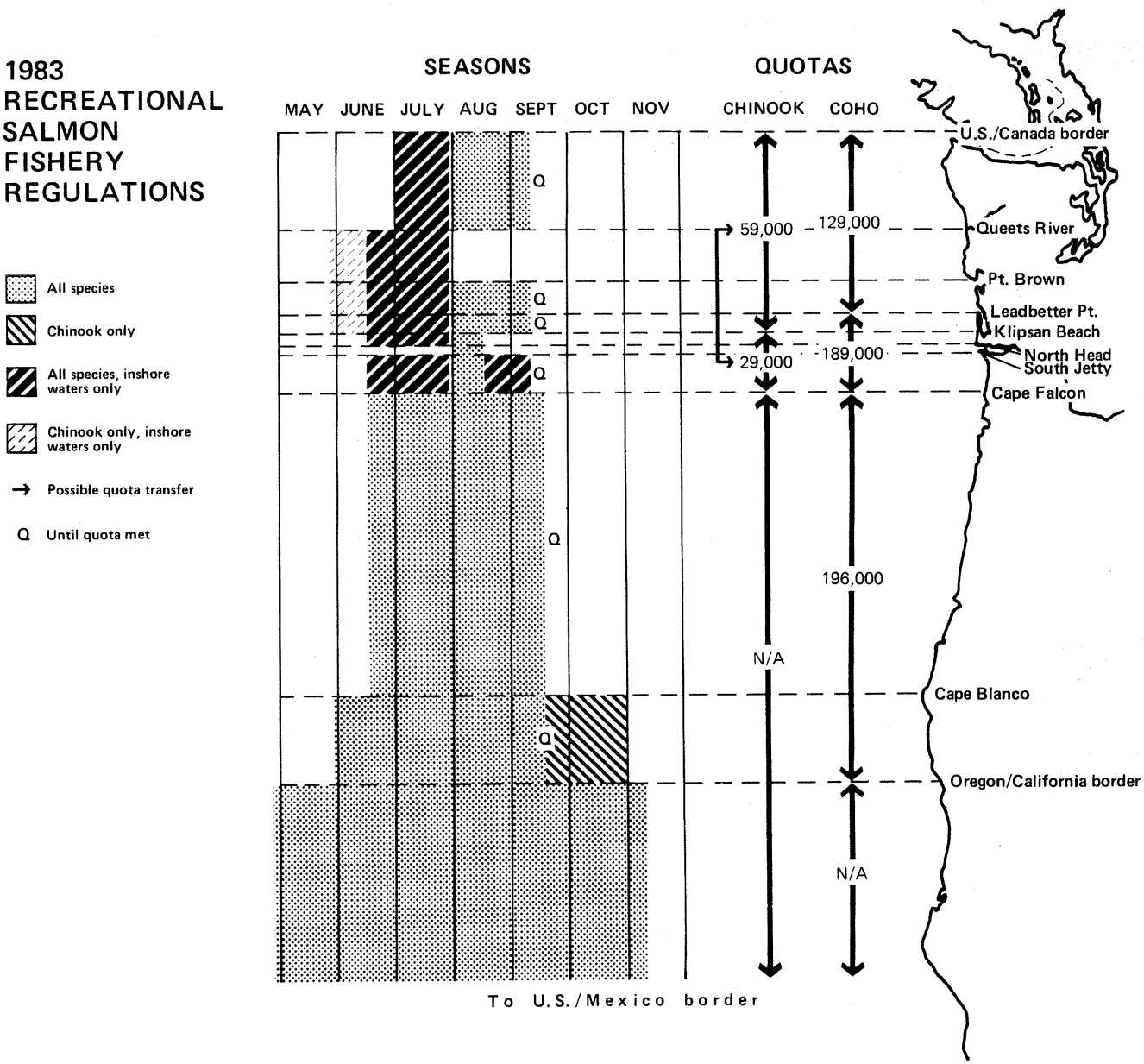
6/ Special fishery zone 1 is defined in §661.3.

Table 3.

AREAS	COHO QUOTAS 1/ Recreational	Commercial	CHINOOK QUOTAS Recreational	Commercial
U.S./CANADA BORDER - CAPE FALCON		20,000 in July plug-only season (incidental to chinook fishery) 2/, 5/		95,000 in May and July season combined 4/
U.S./CANADA BORDER - LEADBETTER POINT	129,000 (0)			
U.S./CANADA BORDER - KLIPSAN BEACH			59,000 8/	
KLIPSAN BEACH - CAPE FALCON			29,000 8/	
LEADBETTER POINT - CAPE FALCON	189,000 2/ (7)			
SPECIAL FISHERY ZONE 1		144,000 2/, 5/ (6)		19,000 4/
CAPE FALCON - HECETA HEAD		254,000 2/, 3/ (32)		
CAPE FALCON - U.S./MEXICO BORDER	196,000 2/, 7/ (21)			
CAPE KIWANDA - OR/CA BORDER		297,000 2/, 3/ (32)		
OR/CA BORDER - CAPE VIZCAINO		71,000 2/, 6/ (5)		

1/ Numbers in parentheses represent expected private hatchery coho contributions in thousands of fish by area, and are included in the quotas.
2/ These are quotas subject to adjustments based on inseason evaluations of private hatchery contributions, to be made on or before August 1. See, §661.22(b).
3/ Coho salmon caught between Cape Kiwanda and Heceta Head will count first toward the coho quota established for Cape Kiwanda-OR/CA border, and when that quota is reached, then toward the coho quota established for Cape Falcon-Heceta Head.
4/ If the 95,000 chinook commercial quota is not reached during the May and and July seasons, the balance will be added to the 19,000 chinook commercial quota for the August season in special fishery zone 1.
5/ If the 20,000 coho commercial quota is exceeded in the July season, the excess will be deducted from the 144,000 commercial troll quota for the August season in special fishery zone 2. If the coho quota for the July season is not reached, the remainder will be added to the coho quota for the August season.
6/ This quota includes landings at Fort Bragg, California.
7/ Coho taken in the recreational fishery between the OR/CA border and the U.S./Mexico border are included in this quota, but if the quota is reached, only the area between Cape Falcon and the OR/CA border will close.
8/ These quotas are subject to reallocation under §661.22 (c)(ii).

Figure 2.


1983
RECREATIONAL
SALMON
FISHERY
REGULATIONS
All species
Chinook only
All species, inshore waters only
Chinook only, inshore waters only
Possible quota transfer
Q Until quota met
SEASONS
MAY JUNE JULY AUG SEPT OCT NOV
QUOTAS
CHINOOK COHO
Q
Q
Q
Q
Q
59,000
29,000
129,000
189,000
196,000
N/A
N/A
U.S./Canada border
Queets River
Pt. Brown
Leadbetter Pt.
Klipsan Beach
North Head
South Jetty
Cape Falcon
Cape Blanco
Oregon/California border
To U.S./Mexico border

(d) Daily bag limits. No person shall fish for, or take and retain, or possess more than two salmon per day (or one salmon if the daily bag limit is reduced under §661.22(d)) while recreationally salmon fishing in the fishery management area.

§661.22 Inseason adjustments.

(a) Automatic season closures based on quotas.

(1) Salmon harvest quotas, which include fish caught in the territorial sea (0-3 nautical miles) seaward of Washington, Oregon, and California, are set forth in Table 3.

(2) When a quota for the commercial or the recreational fishery, or both, in any portion of the fishery management area is projected by the Regional Director to be reached on or by a certain date, the Secretary shall, by publishing a notice in the Federal Register, close the commercial or recreational fishery, or both, as of the date the quota will be reached.

(b) Adjustment of quotas.

(1) The estimated contributions of private hatchery coho to coho quotas are shown in parentheses in the quota table in §661.22(a)(1).

(2) On or before August 1, the Regional Director will review the estimated contributions of private hatchery coho, taking into account coded wire tag and/or scale analysis data gathered during the season.

If the contribution of private hatchery coho varies from the preseason estimates, the Secretary may modify the coho quotas accordingly by publishing a notice in the Federal Register.

(c) Area adjustments. The total recreational quotas between the U.S./Canada border and Cape Falcon are 88,000 chinook (59,000 between the U.S./Canada border and Klipsan Beach, and 29,000 between Klipsan Beach and Cape Falcon) and 318,000 coho (129,000 between the U.S./Canada border and Leadbetter Point, and 189,000 between Leadbetter Point and Cape Falcon). During the season, the Regional Director will monitor catches applicable to these quotas.

The Secretary may, by publishing a notice in the Federal Register --

(1) If the Regional Director determines that a chinook quota will be reached before the corresponding coho quota, extend seaward one or more of the areas open to recreational coho fishing in order to increase the likelihood that the chinook and coho quotas will be filled at or near the same time; and

(2) If the Regional Director determines that any portion of the total 88,000 recreational chinook quota may not be taken, reallocate a part of the quota to the area (U.S./Canada border to Klipsan Beach, or Klipsan Beach to Cape Falcon) which is projected to reach its area allocation first.

(d) Reduction in daily bag limit. When 50% of any recreational quota between the U.S./Canada border and the OR/CA border is projected to be reached, the Regional Director will determine whether a reduction in the daily bag limit from two fish to one fish will avoid an automatic quota closure prior to Labor Day (September5, 1983). If the Regional Director determines that a reduction to one fish is necessary to extend the season until Labor Day, the Secretary may, by publishing a notice in the Federal Register, reduce the daily bag limit to one fish.

(e) Availability of Data. The Regional Director will compile in aggregate form all data and other information relevant to the actions described in this section and shall make them available for public review during normal office hours at the Northwest Regional Office, National Marine Fisheries Service, 7600 Sand Point Way N.E., Seattle, Washington 98115.

(f) Effective dates.

(1) Any notice issued under this section is effective on the date specified in the notice or on the date the notice is filed for public inspection with the Office of the Federal Register, whichever is later.

(2) Any notice issued under this section will remain in effect until the expiration date stated in the notice, or until rescinded or superseded; provided that, no such notice has any effect beyond the end of the calendar year in which issued, at which time provisions of this part that were superseded by such notice again become effective until subsequently modified or superseded.

(g) Nothing contained in this part limits the authority of the Secretary to issue emergency regulations under §305(e) of the Magnuson Act, if the Secretary determines that an emergency involving the salmon fishery exists.

Such emergency regulations are effective upon filing for public inspection with the Office of the Federal Register.

§661.23 Treaty Indian fishing.

(a) Makah Tribe. Persons authorized by the Makah Tribe to exercise fishing rights under the Treaty with the Makah may fish for all salmon species only in that portion of the fishery management area north of 48°02'15" N. latitude (Norwegian Memorial) and east of 125°44'00" W. longitude, and such other areas as may hereafter be authorized for that tribe's treaty fishery by a Federal court, from May 1 through October 31. Minimum legal size limits are 24 inches for chinook salmon and 16 inches for coho salmon.

(b) Quileute, Hoh, and Quinault Tribes.

(1) Quileute Tribe. Persons authorized by the Quileute Tribe to exercise fishing rights under the Treaty of Olympia may fish for all

salmon species only in that portion of the fishery management area between 48°07'36" N. latitude (Sand Point) and 47°31'42" N. latitude (Queets River), and such other areas as may hereafter be authorized for that tribe's treaty fishery by a Federal court, from May 1 through September 15.

(2) Hoh Tribe. Persons authorized by the Hoh Tribe to exercise fishing rights under the Treaty of Olympia may fish for all salmon species only in that portion of the fishery management area between 47°54'18" N. latitude (Quillayute River) and 47°21'00" N. latitude (Quinault River), and such other areas as may hereafter be authorized for that tribe's treaty fishery by a Federal court, from May 1 through September 15.

(3) Quinault Tribe. Persons authorized by the Quinault Tribe to exercise fishing rights under the Treaty of Olympia may fish for all salmon species only in that portion of the fishery management area between 47°40'06" N. latitude (Destruction Island) and 46°53'03" N. latitude (Point Chehalis), and such other areas as may hereafter be authorized for that tribe's treaty fishery by a Federal court, from May 1 through September 15.

(4) Minimum size limits. Minimum legal size limits are 26 inches for chinook salmon and 16 inches for coho salmon, except that a daily limit of two chinook salmon between 24 inches and 26 inches may be retained for ceremonial and subsistence purposes.

(c) Exceptions. Unless otherwise provided by this section, persons specified in paragraphs (a) and (b) are subject to the provisions of this part, the Magnuson Act, and any other regulations issued under the Magnuson Act, except that the restrictions contained in §661.20(b)(1), (d) and (e) and §661.21(b) and (d) do not apply.

(d) The Secretary will give due consideration in promulgating emergency regulations to the treaty fishing rights of Indian tribes with federally-adjudicated usual and accustomed fishing grounds in the area affected by such regulations.

§661.24 Experimental fisheries.

(a) Upon the recommendation of the Council, the Regional Director may allow such experimental fisheries for research purposes in the fishery management area, as may be proposed by the Council, the Federal Government, State Governments, and treaty Indian tribes having usual and accustomed fishing grounds in the fishery management area.

(b) The Regional Director shall not allow any experimental fishery recommended by the Council unless he determines that the purpose, design, and administration of the experimental fishery are consistent with the goals and objectives of the Council's fishery management plan, the national standards (§301(a) of the Magnuson Act), and other applicable law.

(c) Each vessel participating in any experimental fishery recommended by the Council and allowed by the Regional Director is subject to all provisions

of this part, except those portions necessarily relating to the purpose and nature of the experimental fishery. These exceptions will be specified in a letter issued by the Regional Director to each vessel participating in the experimental fishery and that letter must be carried aboard each participating vessel.

§661.25 Scientific research.

Nothing in this part is intended to inhibit or prevent any scientific or oceanographic research in the fishery management area by a scientific research vessel. The Regional Director shall acknowledge any notification he might receive of any scientific or oceanographic research with respect to salmon being conducted by a scientific research vessel, by issuing to the operator or master of that vessel a letter of acknowledgement, containing information on the purpose and scope (locations and schedules) of the activities. The Regional Director shall transmit copies of such letter to the Council, and to State and Federal administrative and enforcement agencies, to ensure that all concerned parties are aware of the research activities.

3. Section 9.5 of the 1978 FMP (as amended) is amended by substituting the last sentence of the first paragreaph with the following:

> "For the 1983 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 10.10 of the 1978 FMP (as amended) is amended for 1983 and subsequent years by substituting the existing text of that section with the following:

> "10.10 Experimental Fisheries." The Northwest Regional Director of the National Marine Fisheries Service may, upon recommendation of the Pacific Fishery Management Council, allow in the Council's management area such experimental fisheries for research purposes as may be prosposed by the Pacific Council, the federal government, state governments, or treaty tribes having usual and accustomed fishing grounds in the Pacific Council management area.:

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

> 13.5 Capacity and Extend 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. There is no recent record of processors refusing fish from fishermen due to inadequate processing capacity.
>
> 13.6 Allowable Level of Foreign Fishing. In view of the adequacy of the domestic fishing industry to harvest the highest conceivable level of abundance, the total allowable level of foreign fishing is zero. The United States historically has allowed Canadian fishing

in U.S. waters under a reciprocal agreement until 1978. Negotiations between the two governments are continuing to seek a resolution of all salmon issues. These negotiations are aimed at stabilizing and reducing, where possible, the interception by fishermen of one country of salmon originating from the other country.

6. Appendicies are added as follows:

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PROPOSED PLAN FOR MANAGING THE

1983 SALMON FISHERIES OFF THE COASTS OF

CALIFORNIA, OREGON, AND WASHINGTON

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

Pacific Fishery Management Council
526 S.W. Mill Street
Portland, Oregon 97201

May 1983

INTRODUCTION

The Fishery Management Plan Amendment for 1983 continues the basic plan approved by the Council in March 1978 entitled "Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California, Commencing in 1978" (FMP) as amended. This report includes a review of the harvest and management of the 1982 fisheries, 1983 projected status of the resources, a presentation of the goals for 1983, 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 prevent complete assessment of the 1982 fishery at this time. 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 1983, changes may be proposed prior to or during the 1983 season.

A performance evaluation of the salmon plan and amendments from 1977 through 1980 became available in March 1982. This evaluation reviews past fishing regulations, management goals, natural escapements and hatchery returns and attempts to evaluate the effectiveness of each year's regulations. The performance evaluation supplements the information in this 1983 Salmon Plan Amendment.

I. DESCRIPTION OF 1983 SALMON FISHERY MANAGEMENT PROBLEMS AND OBJECTIVES

MANAGEMENT PROBLEMS

The problems facing the Pacific salmon fisheries in 1983 are similar in many ways to problems that have been present in the fisheries for the past four or five years.

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

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

(A) Biological

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

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

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

In California, there are habitat and environmental problems in both the Klamath and upper Sacramento River systems. The long-term escapement goals listed in this Plan reflect the current carrying capacity of these river systems. In 1982, Klamath River chinook escapements remained well below 1982 goals as well as long-term goals. The lower Sacramento River escapements improved in 1982, with three tributaries, the Feather, Yuba, and American, exceeding their escapement goals. The upper Sacramento

River escapement decreased from 1981 levels to only 53% of the interim escapement goal. The only fisheries on the Sacramento River salmon are the ocean fisheries and a minor in-river sport fishery.

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

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

The upper Columbia fall chinook run entering the river increased over the all-time low achieved in 1981 (65,900 adults) to 73,900 adults in 1982, but still remains in a depressed status. The total mixed stock chinook catch off Washington increased from 197,900 fish in 1981 to 263,700 fish in 1982 but was well below the annual average Washington catch of 482,900 for 1971-75.

In late 1982, the United States and Canada were in the process of developing a coastwide chinook conservation program as part of a treaty to limit interceptions. If the program is implemented in 1983, substantial reductions in harvests in northern British Columbia and southeast Alaska can be expected to alleviate problems with upper Columbia River stocks.

Another mixed stock harvest problem occurs off the Washington coast. Puget Sound coho stocks are generally more abundant and productive than Washington coastal coho stocks, although both occur simultaneously off the Washington coast. In 1981, management restrictions on Washington ocean fishing effort were instituted to protect coastal and certain weaker Puget Sound coho stocks. As a result, large numbers of Puget Sound coho that would otherwise have been harvested in the ocean reached Puget Sound where harvest by both treaty Indian and non-Indian net fisheries occurred. The problem of the mixture of weak and strong coho stocks in the Washington ocean fishery will continue in 1983.

(B) Legal

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

Two decisions which may have a significant impact on 1983 ocean fisheries management were issued by the U.S. District Court in 1981. As a result of litigation brought by three Washington coastal treaty tribes, a long-term, comprehensive management plan for Washington coastal stocks is being developed by representatives of the U.S. Department of Commerce, the State of Washington, and the Hoh, Quileute and Quinault tribes. In a second, related case initiated by the Columbia River treaty tribes, the court directed tribal, federal and state representatives to examine alternative measures for the regulation of ocean fisheries to increase returns of upriver Columbia River fall chinook stocks.

Another factor which may influence development of the 1983 Plan is the potential for renegotiation of the Columbia River Management Plan.[1/]

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

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

Another factor which must be addressed in the development of the 1983 Plan is the proposed U.S./Canada treaty regarding fishery interceptions. In late 1982, the United States and Canada were involved in final negotiations regarding a treaty to limit fishery interceptions. As part of this treaty, a coastwide conservation program is scheduled to be implemented in 1983. This conservation program involves substantial reductions in chinook harvests by Canadian and southeast Alaska fisheries and would require the Council to adopt regulations to ensure that savings of depressed chinook stocks, resulting from reduced fisheries to the north, would accrue principally to spawning escapement.

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

For the past three years, fishing regulations enacted in state territorial waters have sometimes been inconsistent with management regimes recommended by the Council and adopted by the Secretary of Commerce. In

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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.

1980 and 1981, fisheries occurred due to legal constraints in California state waters when the Fishery Conservation Zone (FCZ) was closed by regulations adopted by the Secretary of Commerce. In 1982, the U.S. Department of Commerce preempted Oregon regulations authorizing a chinook-only recreational fishery in state territorial waters near the Columbia River mouth during May 29-June 11 because of concern for excessive chinook and coho shaker mortalities. In addition, recreational coho fisheries both north and south of Cape Falcon continued in state territorial waters after the seasons were closed by the U.S. Department of Commerce when harvest quotas had been reached. The fishery north of Cape Falcon continued for one week after closure of the FCZ and harvested 9,800 coho and 3,300 chinook. The fishery south of Cape Falcon continued for 12 days after closure of the FCZ and harvested 39,700 coho and 10,900 chinook, negatively impacting depressed, naturally-spawning Oregon coastal coho runs. In Washington, recreational fisheries in an area 5 miles inside the Bonella-Tatoosh line remained open under state jurisdiction in contravention of ocean management intent in offshore state and FCZ waters.

Federal preemption actions are too time-consuming and politically sensitive to prevent states from enacting regulations that are inconsistent with those enacted by the U.S. Department of Commerce. Consistency between salmon management regimes in state territorial and FCZ waters is essential if the objectives of the Council are to be met.

(C) Economic and Social

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

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

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

coordinate salmon regulatory measures with fishing opportunities in other fisheries. At the same time, economic problems in the salmon fisheries may be compounded by poor economic returns from other fisheries.

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

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

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

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

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

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

(D) Institutional

A multitude of agencies is involved in the management of Pacific salmon. The goals and viewpoints of these agencies may conflict while their jurisdictions overlap. The Pacific Fishery Management Council (PFMC), 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 and the treaty tribes for the majority of its salmon data. Each management authority has its own system of data collection and decision-making, involving management agencies, the state legislatures, and other bodies. Coordination of policies within states, and between the states and the Council is necessary.

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

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

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

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

- The value of "time on the water" to recreational fishermen.
- The need of trollers to be present on the fishing grounds when the fish are "biting".
- The influence of the timing of weather patterns on the fisheries.
- Time overlaps of salmon stocks passing through a given ocean area.
- The timing of the growth period for harvestable coho (i.e., rapid growth occurs during the spring and early summer, which has implications for potential poundage yield of coho at different points in the season).
- The time sequence of harvest by different fishery participants (e.g., for a given run, harvest by the ocean fisheries occurs before harvest by the "inside" fisheries).
- The timing of fishing opportunities for other species.

- The timing of data availability for 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 Court orders and inside fishery management plan development.

MANAGEMENT OBJECTIVES

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

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

The 1978 FMP describes the stocks of fish comprising the management unit as follows:

> "Chinook and coho salmon (Oncorhynchus tshawytscha and O. kisutch) are the main species caught in the ocean salmon fisheries operating off Washington, Oregon and California. The catch of pink salmon (O. gorbuscha) in odd-numbered years is also significant."

For this amendment, it is appropriate to further elaborate on the description of the management unit by identifying the specific subunits (fisheries and related stocks) which the Council and the Courts have determined shall be actively managed. These are illustrated in Table I-1.

Coho

Oregon Production Index Area

Coho originating in the Columbia River and Oregon coastal streams generally are managed as one unit within the framework of the Oregon Production Index (OPI) since these fish are essentially intermixed in the ocean fishery. These coho stocks contribute to ocean fisheries off the southern Washington coast as well as to fisheries off the coasts of Oregon and northern California.

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

Table I-1. Summary of coho, chinook, and pink salmon management units and geographic origin of stocks included within the units.

Management Unit	Geographic Origin of Principal Stocks
COHO	
1. Oregon Production Index area	Columbia River Oregon Coast California Coast
2. North of Cape Falcon	Columbia River Washington Coast Puget Sound Southern British Columbia
CHINOOK	
1. South of Cape Vizcaino	California Central Valley - fall, late fall, winter, spring races
2. Pt. Arena or Cape Vizcaino to Cape Blanco	California Coast fall, spring races Oregon Coast south of Coos Bay fall, spring races
3. Cape Blanco to Cape Falcon	Oregon Coast fall, spring races
4. North of Cape Falcon	Oregon Coast north of Coos Bay Columbia River upper fall, spring, summer races lower fall, spring races Washington Coast fall, spring, summer races Puget Sound summer fall, spring races
PINK	
1. North of Cape Falcon	Fraser River Puget Sound

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 south of Leadbetter Point, Washington, regardless of stock origin; (2) Oregon coastal hatchery and Ten Mile Lake (omitted in 1983) returns; and (3) the Columbia River in-river gillnet catch, Bonneville Dam and Willamette counts, and hatchery returns to the Columbia River below Bonneville Dam.

California coastal coho are included in the OPI management unit. Most of the California production is from hatcheries which produce approximately 1 million juvenile fish annually out of a total hatchery production in the unit of 63 million.

Columbia River coho are managed for full utilization of hatchery production, while Oregon coastal stocks are managed to achieve full production from natural spawning. Management objectives for this management unit must address: (1) the need for a viable inside net fishery in the Columbia River; (2) the long-range objective of rebuilding natural stocks of Oregon coastal coho; and (3) any other escapement objective adopted by the Council.

North of Cape Falcon, Oregon

The management unit for coho north of Cape Falcon, Oregon is comprised of a composite of stocks originating in Oregon, Washington, and British Columbia. Ocean fisheries on this unit are regulated on the basis of the regime that meets the management objectives for the most constraining stock. Management considerations for the stocks included in this unit are summarized as follows:

Columbia River Coho

Columbia River coho are managed primarily for hatchery production. Objectives for these stocks are: (1) to obtain adequate escapement to meet production goals; (2) to fulfill Indian treaty obligations; (3) to provide for a viable inside net fishery in the Columbia River; and (4) to meet other ocean fishery escapement objectives adopted by the Council.

Washington Coastal Coho

Willapa Bay - Coho returns to Willapa Bay streams are managed primarily for hatchery production. A non-Indian net fishery operates in Willapa Bay. Ocean fishery escapement objectives relate to hatchery egg take requirements and inside fishery needs.

Grays Harbor - Grays Harbor coho runs are managed for natural production requirements, although a significant component of hatchery production exists. Treaty Indian and non-Indian net fisheries operate in Grays Harbor along with a non-Indian recreational fishery. Management goals for Grays Harbor coho include: (1) providing for natural spawning escapement requirements; (2) meeting treaty Indian allocation requirements (treaty share - ocean treaty harvest); and (3) providing for inside, non-Indian fishery needs.

Quinault - Quinault River coho are managed primarily for hatchery production. A treaty Indian net fishery operates in the system and management goals include meeting treaty allocation requirements and hatchery egg take needs.

Queets - Queets River coho are managed primarily for natural production. Ocean fishery escapement objectives are designed to meet natural spawning escapement objectives and treaty Indian allocation requirements. A non-Indian recreational fishery also operates in the Queets system.

Hoh - Hoh River coho are managed primarily for natural production. Treaty Indian net and non-Indian recreational fisheries operate in the river system. Management goals include achieving natural spawning escapement and treaty allocation requirements.

Quillayute - Summer and fall-run coho stocks return to the Quillayute River system. Summer coho are managed primarily for hatchery production. Treaty Indian net and non-Indian recreational fisheries operate in the system. Ocean fishery escapement objectives for summer coho include meeting hatchery egg take and treaty allocation requirements. Quillayute fall coho are managed primarily for natural production and management goals are designed to meet natural spawning escapement and treaty allocation requirements.

Puget Sound Coho

Strait of Juan de Fuca - Management objectives for Strait of Juan de Fuca coho are designed primarily to meet natural spawning escapement goals and treaty allocation requirements, as well as provide for inside, non-Indian fisheries.

Nooksack/Samish - Nooksack/Samish coho are managed primarily for hatchery production. Ocean fishery escapement objectives are established to meet (1) hatchery egg take requirements; (2) treaty allocation requirements; and (3) inside non-Indian fishery needs.

Skagit - Skagit River coho are managed primarily for natural production. Management objectives are designed to meet natural spawning escapement goals, treaty allocation requirements, and inside non-Indian fishery needs.

Stillaguamish/Snohomish - Stillaguamish/Snohomish coho are managed primarily for natural production. Management objectives are established to achieve natural spawning escapement goals, treaty allocation requirements, and inside non-Indian fishery needs.

South Sound - South Puget Sound coho are managed primarily for hatchery production. Management objectives are to meet hatchery egg take goals, treaty allocation requirements and inside, non-Indian fishery needs.

Hood Canal - Hood Canal coho are managed primarily for natural production. Ocean fishery escapement objectives are designed to meet natural spawning escapement goals, treaty allocation requirements, and inside non-Indian fishery needs.

Southern British Columbia Coho

Canadian management intent for southern British Columbia coho stocks has not been clearly established. Most production is from natural spawning. Canadian Juan de Fuca Strait net fisheries have been restricted in recent years to protect Fraser River coho stocks but no commensurate management action has been taken with Canadian troll or recreational fisheries.

Management of ocean fisheries on this unit is complicated by an overlap with the portion of the OPI area in the vicinity of the Columbia River mouth. Allowable harvests in the area between Leadbetter Point, Washington and Cape Falcon, Oregon will be determined by management considerations associated with the Oregon Production Index.

Chinook

South of Cape Vizcaino

The major chinook stocks contributing to this unit originate in the central valley area rivers, specifically, the Sacramento, Feather, Yuba, and American. Early fall-run chinook are most abundant followed by late-fall, spring, and winter stocks. Chinook hatcheries are located on the upper Sacramento, Feather, American, Mokelumne and Merced rivers. An artifical spawning channel is located on the upper Sacramento. Hatchery production emphasis is on falls. Salmon present in the ocean south of Point Arena are largely central

valley chinook. Considerable overlap of chinook originating in central valley and northern California coastal rivers occurs between Point Arena and Cape Vizcaino. Ocean commercial and recreational fisheries operating on central valley chinook are managed to maximize natural production consistent with meeting inland recreational needs.

Cape Vizcaino North to Cape Blanco

Major chinook stocks contributing to this management unit originate in streams located along the northern California and southern Oregon coasts.

California coastal chinook stocks include those from the Klamath, Smith, Mad, Eel, and Mattole rivers. The major California chinook run in this subunit is from the Klamath system, including its major tributary, the Trinity River. Natural production from the Klamath system is primarily fall chinook, but small runs of spring chinook originate in the Salmon and Trinity rivers. State-operated chinook hatcheries are located on the upper Klamath, Trinity, Mad and Russian rivers.

Oregon coastal chinook stocks contributing to this subunit originate in rivers from Coos Bay south, including the Coos River system, the Coquille, Sixes, Elk, Rogue, and Chetco rivers.

For California stocks, ocean commercial and recreational fisheries operating in this subunit are managed to maximize natural production consistent with meeting Indian subsistence needs on the lower Klamath system and recreational needs in inland areas. For Oregon stocks, ocean fisheries in this unit are managed to achieve full production of natural spawning areas.

Cape Blanco to Cape Falcon

Chinook stocks managed in this unit primarily originate in Oregon coastal rivers located north of Coos Bay, although fish from Oregon coastal rivers from Coos Bay south also contribute to this unit. Stocks originating north of Coos Bay are also harvested by ocean fisheries off Washington, British Columbia and Alaska. Oregon coastal chinook salmon are managed to achieve full production from natural spawning areas.

North of Cape Falcon to United States/Canada Border

Columbia River hatchery fall (tule) chinook comprise a majority of the ocean harvest between Cape Falcon, Oregon and the United States/Canada border. Lower Columbia River (Cowlitz) spring chinook and Oregon coastal fall chinook also contribute significant numbers to the catch. Several stocks contribute relatively minor numbers to the ocean chinook harvest north of Cape Falcon including: upper Columbia River brights, upper Columbia River summers, Washington coastal falls, Washington coastal spring/summers, Puget Sound falls, and southern British Columbia falls, springs and summers.

Management objectives for these fisheries/stocks must address: (1) controlling ocean impacts on depressed, viable natural stocks within acceptable maximum allowable levels; (2) providing treaty Indian harvest opportunity above Bonneville Dam; (3) providing inside, non-Indian fishery needs; and (4) additional management measures as determined by the Council.

Washington Ocean Pink Salmon

Washington ocean pink salmon harvests are predominantly of Fraser River origin. Puget Sound-origin pinks represent a minor portion of the ocean harvest although ocean impacts can be significant in relation to the terminal return and harvestable surplus.

Pink fisheries north of 48° latitude are controlled by the International Pacific Salmon Fisheries Commission (IPSFC) to meet Fraser River natural spawning escapement and U.S./Canada allocation requirements, although the State of Washington can control fishing activity by use of landing laws.

Selective pink fishing allowed after allowable levels of chinook or coho harvests have been met will conflict with management objectives for these species. Pink management objectives must address: (1) meeting natural spawning escapement objectives; (2) maximizing ocean pink harvest within fixed constraints of coho harvest ceilings; and (3) providing for treaty allocation requirements.

Washington Ocean Sockeye Fisheries

No significant Washington ocean sockeye harvests have occurred historically in contrast to a recent large Canadian troll sockeye fishery off Vancouver Island. Any future U.S. fisheries should address objectives similar to those outlined above for pink salmon.

HARVEST MANAGEMENT

The management regimes in 1983 and future years will attempt to address all the biological, legal, economic and social problems described above, while recognizing the constraints imposed by data gaps and the institutional structure of salmon management. These management regimes will be designed to achieve the following general management objectives:

1. Establish ocean harvest rates for commercial and recreational fisheries that are consistent with requirements for optimum spawning escapements and treaty obligations and continuance of established recreational and commercial fisheries. Achievement of this objective requires that:

    a. Escapements of natural spawning stocks of salmon which are deemed important by the Council shall be sufficient to maintain or restore the production of such stocks at optimal levels.

    b. Escapement of hatchery stocks shall be sufficient to maintain production goals.

    c. In managing mixed-stock salmon fishing, the level of exploitation that can be sustained by important natural-spawning stocks will be used by the Council to establish maximum fishing rates.

    d. Harvest allocations of salmon stocks between ocean and inside recreational and commercial fisheries shall be fair and equitable and fishing interests shall equitably share the obligation of fulfilling any treaty or other legal requirements for harvest opportunities.

2. Minimize fishery and other related mortalities for those fish not landed from all salmon fisheries, both ocean and inside, as consistent with OY.

3. Manage and regulate the fisheries so that optimum yield encompasses the quantity and value of food produced, recreational value, and social and economic values of the fisheries.

4. Develop fair and creative approaches to managing fishing effort and evaluate and apply effort management systems as appropriate to achieve these management objectives.

5. Achieve, for the long term, coordination with member states on the Council, the treaty tribes, Canada, the North Pacific Fishery Management Council, Alaska, and other management entities responsible for salmon habitat or production in the development of a coastwide salmon management plan.

HABITAT AND ENVIRONMENTAL

The management objectives of the Pacific Fishery Management Council can best be achieved if the following habitat and environmental objectives are also pursued by the agencies having environmental control and resource management responsibilities over production and harvest in inside marine and fresh waters. These objectives should be consistent with the habitat and production objectives of the California Department of Fish and Game (CDFG), Idaho Department of Fish and Game (IDFG), Oregon Department of Fish and Wildlife (ODFW), and the Washington Department of Fisheries (WDF). However, full responsibility for achievement of these objectives does not lie solely within the jurisdiction of these four agencies, but is shared through a complex maze of overlapping jurisdictions at least as complicated as that which manages the salmon resource. This maze must be identified, and when called upon for support, the Council must be prepared to assist the four agencies. This assistance will most likely occur in the form of support for enhancement programs and in defending salmon needs among competing uses for the limited aquatic environment. This should be an ongoing program of assistance which should occur as long as the MFCMA exists.

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

Environmental Objectives

1. All available or potential natural habitat for anadromous salmonids should be preserved by encouraging management of conflicting uses to assure no obstruction to access, and a maintenance of high standards to protect water quality and quantity for migration, spawning, and rearing of salmon and steelhead.

2. Adequate water should be allocated for anadromous salmonid uses.

3. Improvement of provisions for safe passage of anadromous salmonids at existing or future obstructions, dams, and pump intakes will be advocated, supported, and carried out.

Production Objectives

1. Restore and enhance the natural production of salmon.

2. Whenever fish habitat or population losses occur as a result of various development programs or other action, the fishery agencies should actively seek full mitigation of and compensation for these losses under the following guidelines:

   a. Restoration of lost habitat, where possible, or provision of additional facilities for production of fish, at least equal to that lost.

   b. Replacement of losses, where possible, will be by an appropriate stock of the same fish species or by habitat capable of producing the same species that suffered the loss; mitigation or compensation programs will be located in the immediate area of loss, where possible.

   c. Compensation levels will be based on loss of habitat, production and opportunity to fish. Potential production of the habitat will be considered in measuring needed compensation.

   d. Measures for replacement of runs lost due to construction of water control projects should be completed in advance of, or concurrent with, completion of the project.

3. Maximize the continued production of hatchery stocks consistent with the management objectives 1 through 5.

4. In advance of enhancement programs which include increased artificial production of anadromous fish, assess the potential impact on the carrying capacity of the habitat and avoid negative effects on other stocks.

5. Improve the effectiveness of artificial propogation.

II. REVIEW OF THE 1982 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 1982 season and includes comparisons with previous years. In addition, catch estimates for the 1982 inside fisheries and some comments on escapement to certain areas are included. Totals in tables throughout this report are usually rounded to the nearest hundred and may not agree due to rounding.

OCEAN FISHERIES

CALIFORNIA

Troll Fishery

This summary of the 1982 California troll salmon fishery is preliminary and is based on fish receipts tabulated by California Department of Fish and Game (CDFG) biologists. Catch statistics are reported by area of landing, not actual catch area.

1982 Regulations - California troll salmon seasons since 1978 are summarized in Table II-1. The recent historic season prior to 1979 was April 15-September 30 for chinook and May 15-September 30 for coho. Size limits (head-on) for chinook, 26-inches, and coho, 22-inches, have been unchanged since 1948 and 1972, respectively.

A summary of the events leading to implementation of 1982 regulations is provided as Appendix A.

Effort - Troll salmon fishermen expended 105,700 days fishing for salmon landed in California during 1982.[1/] This is 131% and 120%, respectively, of comparative effort in days fished in 1981 and 1980 (Table II-2). The single-highest area of troll effort this year was San Francisco (33,500), followed by Fort Bragg (25,300), Monterey (19,800), Eureka (15,200), and Crescent City (11,900) (Table II-3).

Number of deliveries increased state-wide to 57,000. Annual number of deliveries during 1979-81 ranged from 46,700-50,400. The 1971-75 average is 45,200 (79% of 1982). All ports except Eureka received more deliveries during 1982 than any year since 1978.

Poor market conditions for albacore tuna prompted many combination vessels (e.g., crab/salmon/tuna) to fish all season for salmon in 1982. This factor coupled with above average chinook catches contributed to boosting troller effort during 1982.

Chinook - Chinook landings of 764,000 fish in 1982 represent an increase of 39% (214,700 fish) over 1981 landings (Table II-2) and are the fifth largest

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1/ During 1982, CDFG developed computer software to process sampling data on commercial salmon landings since 1979 to estimate troller effort in number of days fished by area of landing and time period.

Table II-1. Summary of California commercial salmon seasons, 1979-82.

Year	Area	Dates	Species
1979	FCZ	May 1-23	All salmon except coho
		May 24-June 15	All salmon
		July 1-Sept. 30	All salmon
1980	North of Cape Vizcaino	May 1-15	All salmon except coho
		May 16-31	All salmon
		July 16-Sept. 30[a/]	All salmon
	South of Cape Vizcaino	May 1-15	All salmon except coho
		May 16-31	All salmon
		July 1-Sept. 30	All salmon
1981[b/]	Statewide	May 1-15	All salmon except coho
		May 16-31[c/]	All salmon
		July 1-Sept. 30	All salmon
1982[d/]	North of Pt. Arena	May 1-15	All salmon except coho
		May 16-June 8	All salmon
		July 1-Sept. 30	All salmon
	South of Pt. Arena	April 22-May 15	All salmon except coho
		May 16-June 15	All salmon
		July 1-Sept. 30	All salmon

a/ State waters (0-3 miles) open July 4-12.

b/ Season was subject to closure under harvest guidelines of 300,000 and 250,000 chinook north and south of Point Arena, respectively.

c/ State waters (0-3 miles) open to all salmon June 1-30.

d/ Because of delay in approval of 1982 regulations by the U.S. Secretary of Commerce, 1980 regulations were in place through May 31 except that fishing was permitted in state waters (0-3 miles) by order of the CDFG Director south of Point Arena from April 22-30. (This was done to conform to the recommended Council option for California submitted for approval by the Secretary of Commerce for 1982.)

Table II-2. Commercial troll catch and effort off California, 1971-82.

Year	Effort[a/]		Numbers			Pounds Dressed		
	Del.	Days	Chinook	Coho	Pink	Chinook	Coho	Pink
1971	38,600	NA	433,900	442,100	1,200	4,925,800	3,183,800	7,200
1972	37,800	NA	492,200	158,000	0	5,371,800	1,050,400	200
1973	55,600	NA	817,000	348,100	19,000	7,586,800	1,993,900	88,300
1974	51,100	NA	491,600	655,900	300	5,048,500	3,700,100	900
1975	43,000	NA	578,700	204,000	3,100	5,781,300	1,128,400	15,500
1971-75 Average	45,200	NA	562,700	361,600	7,800[d/]	5,742,800	2,211,300	37,000[d/]
1976	60,000	NA	539,900	621,800	c/	4,943,900	2,843,900	c/
1977[b/]	61,500	NA	562,800	35,000	1,000	5,728,000	204,000	6,000
1978[b/]	NA	NA	518,600	238,400	NA	5,260,000	1,277,000	NA
1979[b/]	47,800	82,000	658,800	164,100	c/	6,860,000	1,050,000	c/
1980[b/]	50,400	88,000	575,000	49,600	c/	5,607,000	300,000	c/
1981[b/]	46,700	80,900	549,300	78,000	7,000	5,471,000	466,000	27,000
1982[b/]	57,000	105,700	764,000	89,800	c/	7,365,800	541,600	c/

a/ Del. = number of deliveries. Days = number of days fished.
b/ Preliminary.
c/ Under 50.
d/ Odd-year average.

since 1951 (when CDFG began sampling landings for species and average weight data).

North Coast landings of 344,200 chinook are 18% (51,600 fish) larger than 1981 landings and 15% (45,600 chinook) over the 1971-1975 average (Table II-3). The majority (51%) of North Coast chinook were landed in Fort Bragg. Fort Bragg landings are up 54% (61,400 fish) from 1981 and 45% (54,300 fish) from the 1971-1975 average. Crescent City and Eureka landings are down slightly (10% and 2%, respectively) from 1981.

South Coast chinook landings in 1982 of 419,800 chinook exceed 1981 landings by 63% (163,000 fish) and are the largest for the area since 1973. San Francisco chinook landings exceeded 1981 landings by 48% (92,600 fish). Monterey landings of 135,600 chinook represent an increase of 108% (70,400 fish) over 1981 landings.

Seasonal peaks in chinook landings occurred in April in the Monterey area; in May in the Eureka and San Francisco areas; in July in the Fort Bragg area; and in August in the Crescent City area (Table II-4).

Coho - Coho landings of 89,800 fish in 1982 exceeded 1981 coho landings by 11,800 (15%) fish (Table II-2), but were the fourth lowest since 1962. North Coast ports received 90% (81,200 fish) of California's coho catch (Table II-3). The major landings were made during July (Table II-4).

Recreational Fishery

Recreational catch and effort data were obtained from sampling surveys at all major California salmon ports through November 14.

1982 Regulations - Recreational fishery salmon bag and size limits were essentially unchanged from 1981. The season for all salmon species began February 13 and ended November 14. The bag limit was two salmon, of which one could be less than 22-inches, but not less than 20-inches.

Effort - Ocean recreational anglers expended 162,800 angler trips (days) fishing for salmon in 1982 (Table II-5). This represents a 27% increase over 1981 effort, but a 33% decrease from the 1971-1975 average (241,500 trips). The San Francisco fishery, which includes the San Francisco Bay charterboat fleet, accounted for 62% (73,800 trips) of the state-wide effort (Table II-6).

Chinook - The estimated 1982 chinook landings of 139,400 fish were up 67% over 1981 landings (83,700 fish), but down 18% from the 1971-1975 average (169,600 fish). The San Francisco fishery, led by the San Francisco Bay charterboat fleet, accounted for 82% (114,600 fish) of the state-wide chinook catch (Table II-6).

Monthly chinook landings since 1977 and the 1971-1975 average are given in Table II-7.

Coho - Estimated coho landings in the recreational fishery of 24,500 fish are up 153% from 1981 landings (9,700 fish), but down 49% from the 1971-1975 average (48,300 fish) (Table II-5). Most of the coho were landed in the Eureka area (13,700 fish) followed by the Crescent City area (7,700 fish) Table II-6). Coho landings were largest state-wide during July (Table II-7).

Table II-3. Summary of California commercial troll effort (deliveries) and catch (numbers of fish) by area of landing, 1976-82 and 1971-75 average.

Year	Area of Landing: North Coast: Crescent City	Eureka	Fort Bragg	Subtotal	South Coast: San Francisco	Monterey	Subtotal	Total
EFFORT								
Deliveries								
1971-75 Average	3,800	8,300	10,600	22,700	14,400	8,200	22,600	45,200
1979[a/]	8,000	7,000	12,600	27,700	12,800	7,300	20,100	47,800
1980[a/]	6,200	7,400	12,400	26,000	13,200	11,200	24,400	50,400
1981[a/]	7,900	7,000	10,100	25,000	12,900	8,800	21,700	46,700
1982[a/]	8,200	6,200	14,400	28,800	15,200	13,000	28,200	57,000
Days Fished								
1979[a/]	9,800	16,200	22,400	48,400	19,800	13,800	33,600	82,000
1980[a/]	7,600	17,900	23,000	48,500	21,000	18,500	39,500	88,000
1981[a/]	10,500	13,400	16,900	40,800	22,500	17,600	40,100	80,900
1982[a/]	11,900	15,200	25,300	52,400	33,500	19,800	53,300	105,700
CATCH								
Chinook								
1971-75 Average	35,700	142,100	120,800	298,600	188,200	75,900	264,000	562,700
1976	21,000	165,400	115,700	302,100	138,200	99,600	237,900	539,900
1977[a/]	44,100	157,700	118,000	319,700	169,800	73,300	243,100	562,800
1978[a/]	62,400	130,700	98,700	291,800	125,500	101,300	226,800	518,600
1979[a/]	70,800	193,000	174,300	438,200	169,900	50,700	220,600	658,800
1980[a/]	34,600	134,500	129,900	299,000	201,800	74,300	276,100	575,100
1981[a/]	80,900	97,900	113,700	292,600	191,600	65,200	256,800	549,300
1982[a/]	72,900	96,200	175,100	344,200	284,200	135,600	419,800	764,000
Coho								
1971-75 Average	84,000	133,900	100,400	318,300	35,500	7,800	43,300	361,600
1976	133,100	204,800	159,300	497,100	83,200	41,400	124,600	621,800
1977[a/]	14,900	16,900	2,000	33,800	1,000	200	1,200	35,000
1978[a/]	99,900	95,200	31,900	226,900	10,100	1,300	11,500	238,400
1979[a/]	72,500	55,000	25,900	153,400	8,900	1,800	10,700	164,100
1980[a/]	15,100	17,900	12,900	45,900	3,400	300	3,700	49,600
1981[a/]	28,800	36,700	11,100	76,600	1,400	b/	1,500	78,000
1982[a/]	24,400	29,300	27,500	81,200	8,200	400	8,600	89,800

a/ Preliminary.
b/ Under 50.

Table II-4. California commercial troll chinook and coho landings, in numbers of salmon by area of landing and month, for 1976-82, with 1971-75 average.[a/]

		CHINOOK							COHO						
		April	May	June	July	August	September	Season	April	May	June	July	August	September	Season
Crescent City															
1971-75 Average	Monthly	200	9,200	14,800	9,800	1,200	500		--	10,200	39,700	32,200	1,600	300	
	Cumulative	200	9,400	24,200	34,000	35,200	35,700	35,700	--	10,200	49,900	82,100	83,700	84,000	84,000
1976	Monthly	100	4,100	9,900	3,000	3,400	500		--	25,000	77,300	26,500	3,700	600	
	Cumulative	100	4,200	14,100	17,100	20,500	21,000	21,000	--	25,000	102,300	128,800	132,500	133,100	133,100
1977	Monthly	600	12,600	5,800	9,000	7,100	1,200		--	2,700	4,600	8,500	400	c/	
	Cumulative	600	13,200	19,000	28,000	35,100	36,300	36,300	--	2,700	7,300	15,800	16,200	16,200	16,200
1978	Monthly	100	26,200	27,100	6,700	1,700	600		--	14,700	73,600	9,600	1,800	300	
	Cumulative	100	26,300	53,400	60,100	61,800	62,400	62,400	--	14,700	88,300	97,900	99,700	100,000	100,000
1979	Monthly	--	13,200	10,400	30,800	14,600	1,800		--	6,700	16,800	44,000	4,800	200	
	Cumulative	--	13,200	23,600	54,400	69,000	70,800	70,800	--	6,700	23,500	67,500	72,300	72,500	72,500
1980	Monthly	--	19,000	500	4,900	5,600	4,800		--	700	neg.	8,500	3,300	2,800	
	Cumulative	--	19,000	19,500	24,400	30,000	34,800	34,800	--	700	700	9,200	12,500	15,300	15,300
1981	Monthly	--	28,400	2,700	6,500	29,600	13,700		--	7,300	1,800	4,900	13,000	1,800	
	Cumulative	--	28,400	31,100	37,600	67,200	80,900	80,900	--	7,300	9,100	14,000	27,000	28,800	28,800
1982	Monthly	--	9,400	7,800	18,300	33,400	4,000		--	100	2,400	14,300	6,700	900	
	Cumulative	--	9,400	17,200	35,500	68,900	72,900	72,900	--	100	2,500	16,800	23,500	24,400	24,400
Eureka															
1971-75 Average	Monthly	3,600	56,700	46,300	32,100	2,800	600		--	57,300	40,300	30,300	5,400	600	
	Cumulative	3,600	60,300	106,600	138,700	141,500	142,100	142,100	--	57,300	97,600	127,900	133,300	133,900	133,900
1976	Monthly	2,600	54,000	41,000	65,900	1,000	1,000		--	105,200	83,400	9,200	7,000	0	
	Cumulative	2,600	56,600	97,600	163,500	164,500	165,500	165,500	--	105,200	188,600	197,800	204,800	204,800	204,800
1977	Monthly	22,100	56,200	32,400	40,800	9,000	600		--	7,900	600	4,800	5,800	100	
	Cumulative	22,100	78,300	110,700	151,500	160,500	161,100	161,100	--	7,900	8,500	13,300	19,100	19,200	19,200
1978	Monthly	1,300	84,100	33,600	9,700	1,200	800		--	20,900	59,800	12,900	1,000	600	
	Cumulative	1,300	85,400	119,000	128,700	129,900	130,700	130,700	--	20,900	80,700	93,600	94,600	95,200	95,200
1979	Monthly	--	91,900	21,500	34,600	34,700	10,300		--	5,700	25,800	16,900	6,600	c/	
	Cumulative	--	91,900	113,400	148,000	182,700	193,000	193,000	--	5,700	31,500	48,400	55,000	55,000	55,000
1980	Monthly	--	91,800	1,800	20,400	9,800	11,100		--	300	c/	10,000	5,300	2,700	
	Cumulative	--	91,800	93,600	114,000	123,800	134,900	134,900	--	300	400	10,400	15,700	18,300	18,300
1981	Monthly	--	46,700	4,000	10,500	29,500	7,200		--	6,500	2,500	11,900	15,000	800	
	Cumulative	--	46,700	50,700	61,200	90,700	97,900	97,900	--	6,500	9,000	20,900	35,900	36,700	36,700
1982	Monthly	200	37,900	9,200	24,400	18,000	6,500		--	400	1,700	21,900	5,000	300	
	Cumulative	200	38,100	47,300	71,700	89,700	96,200	96,200	--	400	2,100	24,000	24,000	29,000	29,300
Fort Bragg															
1971-75 Average	Monthly	1,900	17,600	41,800	46,300	11,000	2,200		--	11,700	40,400	35,500	12,200	600	
	Cumulative	1,900	19,500	61,300	107,600	118,600	120,800	120,800	--	11,700	52,100	87,600	99,800	100,400	100,400
1976	Monthly	1,800	13,900	31,800	54,000	9,900	4,200		--	21,400	101,400	29,600	3,000	1,100	
	Cumulative	1,800	15,700	47,500	101,500	111,400	115,600	115,600	--	21,400	122,800	152,400	155,400	156,500	156,500
1977	Monthly	2,900	28,400	19,300	33,700	20,600	14,300		--	1,000	3,500	800	800	c/	
	Cumulative	2,900	31,300	50,600	84,300	104,900	119,200	119,200	--	1,000	4,500	5,300	6,100	6,100	6,100
1978	Monthly	1,400	28,800	33,900	26,300	8,000	300		--	c/	22,200	8,700	900	c/	
	Cumulative	1,400	30,200	64,100	90,400	98,400	98,700	98,700	--	c/	22,200	30,900	31,800	31,800	31,800
1979	Monthly	--	11,600	22,100	67,600	49,600	23,400		--	0	3,600	18,600	3,600	c/	
	Cumulative	--	11,600	33,700	101,300	150,900	174,300	174,300	--	0	3,600	22,200	25,800	25,800	25,800
1980	Monthly	--	18,800	500	85,100	13,800	12,500		--	200	c/	9,800	2,400	500	
	Cumulative	--	18,800	19,300	104,400	118,200	130,700	130,700	--	200	200	10,000	12,400	12,900	12,900
1981	Monthly	--	21,100	28,800	42,000	15,500	6,300		--	600	2,200	6,900	1,200	200	
	Cumulative	--	21,100	49,900	91,900	107,400	113,700	113,700	--	600	2,800	9,700	10,900	11,100	11,100
1982	Monthly	5,100	22,200	17,200	102,300	19,900	8,400		--	100	700	24,000	2,300	400	
	Cumulative	5,100	27,300	44,500	146,800	166,700	175,100	175,100	--	100	800	24,800	27,100	27,500	27,500

Table II-4 (continued)

		CHINOOK							COHO						
		April	May	June	July	August	September	Season	April	May	June	July	August	September	Season
North Coast															
1971-75	Monthly	5,700	83,500	102,900	88,200	15,000	3,300		--	79,200	120,400	98,000	19,200	1,500	
Average	Cumulative	5,700	89,200	192,100	280,300	295,300	298,600	298,600	--	79,200	199,600	297,600	316,800	318,300	318,300
1976	Monthly	4,500	72,000	82,700	122,900	14,300	5,700		--	151,600	262,100	65,300	13,700	1,700	
	Cumulative	4,500	76,500	159,200	282,100	296,400	302,100	302,100	--	151,600	413,700	479,000	492,700	494,400	494,400
1977	Monthly	25,600	97,200	57,500	83,500	36,700	16,100		--	11,600	8,700	14,100	7,000	100	
	Cumulative	25,600	122,800	180,300	263,800	300,500	316,600	316,600	--	11,600	20,300	34,400	41,400	41,500	41,500
1978	Monthly	2,800	139,100	94,600	42,700	10,900	1,700		--	35,600	155,600	31,200	3,700	900	
	Cumulative	2,800	141,900	236,500	279,200	290,100	291,800	291,800	--	35,600	191,200	222,400	226,100	227,000	227,000
1979	Monthly	--	116,700	54,000	133,000	98,900	35,500		--	12,400	46,200	79,500	15,000	200	
	Cumulative	--	116,700	170,700	303,700	402,600	438,100	438,100	--	12,400	58,600	138,100	153,100	153,300	153,300
1980	Monthly	--	129,600	2,800	110,400	29,200	28,400		--	1,200	c/	28,300	11,000	6,000	
	Cumulative	--	129,600	132,400	242,800	272,000	300,400	300,400	--	1,200	1,200	29,500	40,500	46,500	46,500
1981	Monthly	--	96,200	35,500	59,000	74,600	27,200		--	14,400	6,500	23,700	29,200	2,800	
	Cumulative	--	96,200	131,700	190,700	265,300	292,500	292,500	--	14,400	20,900	44,600	73,800	76,600	76,600
1982	Monthly	5,300	69,500	34,200	145,000	71,300	18,900		--	600	4,800	60,200	14,000	1,600	
	Cumulative	5,300	74,800	109,000	254,000	325,300	344,200	344,200	--	600	5,400	65,600	79,600	81,200	81,200
San Francisco															
1971-75	Monthly	24,200	43,900	32,500	33,100	36,300	18,200		--	5,400	12,800	11,900	4,900	500	
Average	Cumulative	24,200	68,100	100,600	133,700	170,000	188,200	188,200	--	5,400	18,200	30,100	35,000	35,500	35,500
1976	Monthly	28,900	42,200	31,400	17,000	8,200	10,400		--	24,800	44,600	9,700	3,000	1,100	
	Cumulative	28,900	71,100	102,500	119,500	127,700	138,100	138,100	--	24,800	69,400	79,100	82,100	83,200	83,200
1977	Monthly	41,600	47,700	28,000	46,000	6,800	8,400		--	100	300	300	c/	c/	
	Cumulative	41,600	89,300	117,300	163,300	170,100	178,500	178,500	--	100	400	700	700	700	700
1978	Monthly	7,800	46,200	35,800	24,200	7,900	3,600		--	600	2,800	6,700	100	c/	
	Cumulative	7,800	54,000	89,800	114,000	121,900	125,500	125,500	--	600	3,400	10,100	10,200	10,200	10,200
1979	Monthly	--	52,000	41,600	55,800	12,000	8,500		--	100	3,600	4,700	400	100	
	Cumulative	--	52,000	93,600	149,400	161,400	169,900	169,900	--	100	3,700	8,400	8,800	8,900	8,900
1980	Monthly	--	73,100	3,100	108,900	9,700	7,000		--	100	c/	2,900	200	200	
	Cumulative	--	73,100	76,200	185,100	194,800	201,800	201,800	--	100	100	3,000	3,200	3,400	3,400
1981	Monthly	--	48,400	13,500	92,700	28,000	9,000		--	100	100	800	400	c/	
	Cumulative	--	48,400	61,900	154,600	182,600	191,600	191,600	--	100	200	1,000	1,400	1,400	1,400
1982	Monthly	21,600	92,300	26,500	70,900	60,500	12,400		--	700	1,700	4,300	1,200	300	
	Cumulative	21,600	113,900	140,400	211,300	271,800	284,200	284,200	--	700	2,400	6,700	7,900	8,200	8,200
Monterey															
1971-75	Monthly	8,900	20,800	18,700	13,700	9,700	4,100		--	4,000	2,900	600	200	100	
Average	Cumulative	8,900	29,700	48,400	62,100	71,800	75,900	75,900	--	4,000	6,900	7,500	7,700	7,800	7,800
1976	Monthly	23,300	30,100	18,200	9,500	14,300	4,300		--	16,800	16,900	7,700	c/	0	
	Cumulative	23,300	53,400	71,600	81,100	95,400	99,700	99,700	--	16,800	33,700	41,400	41,400	41,400	41,400
1977	Monthly	15,400	24,700	16,000	11,100	8,300	3,200		--	c/	100	100	c/	0	
	Cumulative	15,400	40,100	56,100	67,200	75,500	78,700	78,700	--	c/	100	200	200	200	200
1978	Monthly	10,300	27,200	35,900	23,200	2,900	1,800		--	c/	1,000	300	c/	c/	
	Cumulative	10,300	37,500	73,400	96,600	99,500	101,300	101,300	--	c/	1,000	1,300	1,300	1,300	1,300
1979	Monthly	--	22,900	9,700	12,400	4,300	1,400		--	300	1,000	400	100	c/	
	Cumulative	--	22,900	32,600	45,000	49,300	50,700	50,700	--	300	1,300	1,700	1,800	1,800	1,800
1980	Monthly	--	30,700	2,500	27,100	11,200	2,800		--	c/	c/	200	100	c/	
	Cumulative	--	30,700	33,200	60,300	71,500	74,300	74,300	--	c/	c/	200	300	300	300
1981	Monthly	--	38,000	3,200	17,200	5,600	1,200		--	0	0	c/	c/	0	
	Cumulative	--	38,000	41,200	58,400	64,000	65,200	65,200	--	0	0	c/	c/	c/	c/
1982[b/]	Monthly	33,600	31,600	28,900	27,700	10,600	3,200		--	100	100	100	100	c/	
	Cumulative	33,600	65,200	94,100	121,800	132,400	135,600	135,600	--	100	200	300	400	400	400

Table II-4 (continued)

		CHINOOK							COHO						
		April	May	June	July	August	September	Season	April	May	June	July	August	September	Season
South Coast															
1971-75 Average	Monthly	33,100	64,700	51,200	46,800	46,000	22,300		--	9,400	15,700	12,500	5,100	600	
	Cumulative	33,100	97,800	149,000	195,800	241,800	264,100	264,100	--	9,400	25,100	37,600	42,700	43,300	43,300
1976	Monthly	52,200	72,300	49,600	26,500	22,500	14,700		--	41,600	61,500	17,400	3,000	1,100	
	Cumulative	52,200	124,500	174,100	200,600	223,100	237,800	237,800	--	41,600	103,100	120,500	123,500	124,600	124,600
1977	Monthly	57,000	72,400	44,000	57,100	15,100	11,600		--	100	400	400	c/	c/	
	Cumulative	57,000	129,400	173,400	230,500	245,600	257,200	257,200	--	100	500	900	900	900	900
1978	Monthly	18,100	73,400	71,700	47,400	10,800	5,400		--	600	3,800	7,000	100	c/	
	Cumulative	18,100	91,500	163,200	210,600	221,400	226,800	226,800	--	600	4,400	11,400	11,500	11,500	11,500
1979	Monthly	--	74,900	51,300	68,200	16,300	9,900		--	400	4,600	5,100	500	100	
	Cumulative	--	74,900	126,200	194,400	210,700	220,600	220,600	--	400	5,000	10,100	10,600	10,700	10,700
1980	Monthly	--	103,800	5,600	136,000	20,900	9,800		--	100	c/	3,100	300	200	
	Cumulative	--	103,800	109,400	245,400	266,300	276,100	276,100	--	100	100	3,200	3,500	3,700	3,700
1981	Monthly	--	86,400	16,700	109,900	33,600	10,200		--	100	100	800	400	c/	
	Cumulative	--	86,400	103,100	136,700	170,300	180,500	256,800	--	100	200	1,000	1,400	1,400	1,400
1982[b/]	Monthly	55,200	123,900	55,400	98,600	71,100	15,600		--	800	1,800	4,400	1,300	300	
	Cumulative	55,200	179,100	234,500	333,100	404,200	419,800	419,800	--	800	2,600	7,000	8,300	8,600	8,600
Total															
1971-75 Average	Monthly	38,800	148,200	154,100	135,000	61,000	25,600		--	88,600	136,100	110,500	24,300	2,100	
	Cumulative	38,800	187,000	341,100	476,100	537,100	562,700	562,700	--	88,600	224,700	335,200	359,500	361,600	361,600
1976	Monthly	56,700	144,300	132,300	149,400	36,800	20,400		--	193,200	323,600	82,700	16,700	2,800	
	Cumulative	56,700	201,000	333,300	482,700	519,500	539,900	539,900	--	193,200	516,800	599,500	616,200	619,000	619,000
1977	Monthly	82,600	169,600	101,500	140,600	51,800	27,700		--	11,700	9,100	14,500	7,000	100	
	Cumulative	82,600	252,200	353,700	494,300	546,100	573,800	573,800	--	11,700	20,800	35,300	42,300	42,400	42,400
1978	Monthly	20,900	212,500	166,300	90,100	21,700	7,100		--	36,200	159,400	38,200	3,800	900	
	Cumulative	20,900	233,400	399,700	489,800	511,500	518,600	518,600	--	36,200	195,600	233,800	237,600	238,500	238,500
1979	Monthly	--	191,600	105,300	201,200	115,200	45,400		--	12,800	50,800	84,600	15,500	300	
	Cumulative	--	191,600	296,900	498,100	613,300	658,700	658,700	--	12,800	63,600	148,200	163,700	164,000	164,000
1980	Monthly	--	233,400	8,400	246,400	50,100	38,200		--	1,300	c/	31,400	11,300	6,200	
	Cumulative	--	233,400	241,800	488,200	538,300	576,500	576,500	--	1,300	1,300	32,700	44,000	50,200	50,200
1981	Monthly	--	182,600	52,200	168,900	108,200	37,400		--	14,500	6,600	24,500	29,600	2,800	
	Cumulative	--	182,600	234,800	403,700	511,900	549,300	549,300	--	14,500	21,100	45,600	75,200	78,000	78,000
1982[b/]	Monthly	60,500	193,400	89,600	243,600	142,400	34,500		--	1,400	6,600	64,600	15,300	1,900	
	Cumulative	60,500	253,900	343,500	587,100	729,500	764,000	764,000	--	1,400	8,000	72,600	87,900	89,800	89,800

a/ 1978-82 estimates are preliminary.
b/ Includes 14,400 chinook (113,300 lbs.) estimated landed south of Point Conception during June.
c/ Less than 50.

Table II-5. California recreational ocean salmon catch and effort for the years 1971-82 and 1971-75 average.

Year	Effort (Angler Trips)	Catch (numbers of fish) Chinook	Coho	Total	Fish/ Angler Trip
1971	275,000	188,300	67,400	255,700	0.93
1972	234,500	200,500	44,600	245,100	1.04
1973	245,800	198,000	31,600	229,600	0.93
1974	255,800	157,500	76,600	234,100	0.92
1975	173,400	103,700	21,200	124,900	0.72
1971-75 Average	241,500	169,600	48,300	217,900	0.90
1976	189,700	81,000	57,900	138,900	0.73
1977[a/]	215,000	127,400	26,800	154,200	0.72
1978[a/]	176,100	83,900	44,300	128,200	0.73
1979[a/]	175,000	122,900	15,800	138,700	0.79
1980[a/]	145,300	86,400	20,900	107,300	0.75
1981[a/]	127,900	83,700	9,700	93,400	0.73
1982[a/]	162,800	139,400	24,500	163,900	1.01

a/ Preliminary.

Table II-6. Summary of California recreational ocean salmon effort and catch (numbers of fish) by area, for the years 1976-82 and 1971-75 average.[a/]

Year	Area of Landing: North Coast: Crescent City	Eureka	Fort Bragg	Subtotal	South Coast: San Francisco: Charter	Skiff	Total	Monterey	Subtotal	Total
EFFORT										
(Angler Trips)										
1971-75 Average	18,900	37,700	19,500	76,100	89,100	47,500	136,600	28,800	165,400	241,500
1979[b/]	12,600	19,400	10,700	42,700	82,600	21,000	122,300	9,900	132,300	175,000
1980[b/]	19,200	23,100	6,400	48,700	65,000	21,800	86,800	6,800	96,600	145,300
1981[b/]	17,800	16,700	10,600	45,000	61,100	16,200	77,300	5,600	82,900	127,900
1982[b/]	22,900	21,800	9,000	53,800	73,800	27,500	101,300	7,700	109,000	162,800
CATCH										
Chinook										
1971-75 Average	2,200	9,900	3,700	15,800	100,900	40,000	140,900	12,900	153,800	169,600
1976	3,000	7,100	2,300	12,400	47,500	16,300	63,800	4,800	68,600	81,000
1977[b/]	7,400	13,300	5,900	26,600	75,300	21,500	96,800	4,000	100,800	127,400
1978[b/]	2,200	2,500	2,800	7,500	41,500	24,800	66,300	10,100	76,300	83,900
1979[b/]	4,600	3,700	5,800	14,000	81,600	21,300	102,900	5,900	108,800	122,900
1980[b/]	2,800	4,000	1,200	8,000	63,600	11,800	75,400	3,100	78,500	86,400
1981[b/]	4,500	4,800	2,000	11,300	59,600	9,800	69,400	3,000	72,400	83,700
1982[b/]	6,400	10,600	3,800	20,900	93,100	21,500	114,600	3,900	118,500	139,400
Coho										
1971-75 Average	6,900	22,200	9,000	38,100	6,800	2,000	8,800	1,500	10,200	48,300
1976	16,900	19,800	7,300	44,000	10,700	2,600	13,300	600	13,900	57,900
1977[b/]	5,300	5,900	700	11,900	14,700	200	14,900	0	14,900	26,800
1978[b/]	19,800	19,600	2,100	41,400	1,800	1,000	2,800	c/	2,900	44,300
1979[b/]	5,000	8,600	1,100	14,600	1,000	200	1,200	c/	1,200	15,800
1980[b/]	7,400	12,300	1,200	20,800	200	100	300	c/	100	20,900
1981[b/]	3,100	5,500	600	9,200	200	300	500	0	500	9,700
1982[b/]	7,700	13,700	1,100	22,500	1,600	400	2,000		2,000	24,500

a/ Charterboat catches have been included with skiff catches in all areas except San Francisco.
b/ Preliminary.
c/ Under 50.

Table II-7. California ocean recreational chinook and coho landings in numbers of salmon by port of landings and month for 1978-82, with average of 1971-75.[a/]

		February	March	April	May	June	July	August	September	October	November	Season
CHINOOK												
Crescent City												
1971-75 Average	Monthly	0	0	0	b/	400	1,100	600	100	0	0	
	Cumulative	0	0	0	b/	400	1,500	2,100	2,200	2,200	2,200	2,200
1978	Monthly	0	0	0	0	500	800	900	0	0	0	
	Cumulative	0	0	0	0	500	1,300	2,200	2,200	2,200	2,200	2,200
1979	Monthly	0	0	0	0	400	1,400	2,800	0	0	0	
	Cumulative	0	0	0	0	400	1,800	4,600	4,600	4,600	4,600	4,600
1980	Monthly	0	0	0	0	1,100	800	700	0	0	0	
	Cumulative	0	0	0	0	1,100	1,900	2,600	2,600	2,600	2,600	2,600
1981	Monthly	0	0	0	0	600	1,400	2,500	0	0	0	
	Cumulative	0	0	0	0	600	2,000	4,500	4,500	4,500	4,500	4,500
1982	Monthly	0	0	0	0	600	2,500	3,200	200	0	0	
	Cumulative	0	0	0	0	600	3,100	6,300	6,500	0	0	6,500
Eureka												
1971-75 Average	Monthly	0	0	b/	100	2,600	5,000	1,900	300	b/	0	
	Cumulative	0	0	b/	100	2,700	7,700	9,600	9,900	9,900	9,900	9,900
1978	Monthly	0	0	0	0	800	1,200	500	0	0	0	
	Cumulative	0	0	0	0	800	2,000	2,500	2,500	2,500	2,500	2,500
1979	Monthly	0	0	0	0	700	2,000	1,000	0	0	0	
	Cumulative	0	0	0	0	700	2,700	3,700	3,700	3,700	3,700	3,700
1980	Monthly	0	0	0	0	800	2,600	600	0	0	0	
	Cumulative	0	0	0	0	800	3,400	4,000	4,000	4,000	4,000	4,000
1981	Monthly	0	0	0	0	300	2,500	2,000	0	0	0	
	Cumulative	0	0	0	0	300	2,800	4,800	4,800	4,800	4,800	4,800
1982	Monthly				0	3,800	6,300	500	b/	0	0	
	Cumulative				0	3,800	10,100	10,600	10,600	10,600	10,600	10,600
Fort Bragg												
1971-75 Average	Monthly	0	b/	b/	100	700	2,100	800	b/	b/	0	
	Cumulative	0	b/	b/	100	800	2,900	3,700	3,700	3,700	3,700	3,700
1978	Monthly	0	0	0	0	700	1,500	600	0	0	0	
	Cumulative	0	0	0	0	700	2,200	2,800	2,800	2,800	2,800	2,800
1979	Monthly	0	0	0	0	300	4,200	1,300	0	0	0	
	Cumulative	0	0	0	0	300	4,500	5,800	5,800	5,800	5,800	5,800
1980	Monthly	0	0	0	0	300	800	b/	0	0	0	
	Cumulative	0	0	0	0	300	1,100	1,100	1,100	1,100	1,100	1,100
1981	Monthly	0	0	0	0	200	1,300	500	0	0	0	
	Cumulative	0	0	0	0	200	1,500	2,000	2,000	2,000	2,000	2,000
1982	Monthly					700	2,600	500	b/	0	0	
	Cumulative					700	3,300	3,800	3,800	3,800	3,800	3,800
San Francisco												
1971-75 Average	Monthly	16,000	24,600	15,100	9,300	11,600	20,600	21,200	12,100	7,600	2,800	
	Cumulative	16,000	40,600	55,700	65,000	76,600	97,200	118,400	130,500	138,100	140,900	140,900
1978	Monthly	9,800	8,700	2,900	2,800	6,200	11,300	7,100	6,000	7,700	3,800	
	Cumulative	9,800	18,500	21,400	24,200	30,400	41,700	48,800	54,800	62,500	66,300	66,300
1979	Monthly	6,800	13,800	8,500	5,100	14,700	22,300	11,100	13,300	6,900	--	
	Cumulative	6,800	20,600	29,100	34,200	48,900	71,200	82,300	95,600	102,500	--	102,500
1980	Monthly	4,200	11,600	5,500	5,500	15,100	14,700	7,400	5,100	4,000	00	
	Cumulative	4,200	15,800	21,300	26,800	41,900	56,600	64,000	69,100	73,100	00	73,100
1981	Monthly	2,500	2,200	5,300	5,500	10,200	16,600	12,000	8,300	5,100	1,700	
	Cumulative	2,500	4,700	10,000	15,500	25,700	42,300	54,300	62,600	67,700	69,400	69,400
1982	Monthly	10,200	12,200	3,300	7,200	7,500	20,300	28,500	15,400	15,700	4,200	
	Cumulative	10,200	22,400	25,700	32,900	40,400	60,700	89,200	104,600	120,300	124,500	124,500
Monterey												
1971-75 Average	Monthly	1,300	1,700	1,500	1,200	1,000	3,000	900	500	1,300	600	
	Cumulative	1,300	3,000	4,500	5,700	6,700	9,700	10,600	11,100	12,400	13,000	13,000
1978	Monthly	4,900	3,200	500	200	700	400	b/	b/	b/	b/	
	Cumulative	4,900	8,100	8,600	8,800	9,500	9,900	9,900	9,900	10,000	10,000	10,000
1979	Monthly	1,000	1,500	3,000	100	100	100	100	b/	0	0	
	Cumulative	1,000	2,500	5,500	5,600	5,700	5,800	5,900	5,900	5,900	5,900	5,900
1980	Monthly	500	500	600	0	900	600	b/	b/	0	0	
	Cumulative	500	1,000	1,600	1,600	2,500	3,100	3,100	3,100	3,100	3,100	3,100
1981	Monthly	0	400	1,700	b/	b/	500	200	0	b/	200	
	Cumulative	0	400	2,100	2,100	2,100	2,600	2,800	2,800	2,800	3,000	3,000
1982	Monthly	700	600	1,300	200	100	500	400	100	b/	0	
	Cumulative	700	1,300	2,600	2,800	2,900	3,400	3,800	3,900	3,900	3,900	3,900

Table II-7 (continued)

		February	March	April	May	June	July	August	September	October	November	Season
COHO												
Crescent City												
1971-75 Average	Monthly	0	b/	0	0	500	4,800	1,500	100	0	0	
	Cumulative	0	b/	b/	b/	500	5,300	6,800	6,900	0	0	6,900
1978	Monthly	0	0	0	0	9,400	8,800	1,600	b/	0	0	
	Cumulative	0	0	0	0	9,400	18,200	19,800	19,800	19,800	19,800	19,800
1979	Monthly	0	0	0	0	700	2,800	1,300	0	0	0	
	Cumulative	0	0	0	0	700	3,500	4,800	4,800	4,800	4,800	4,800
1980	Monthly	0	0	0	0	1,200	4,700	1,100	0	0	0	0
	Cumulative	0	0	0	0	1,200	5,900	7,000	7,000	7,000	7,000	7,000
1981	Monthly	0	0	0	0	300	1,300	1,400	0	0	0	
	Cumulative	0	0	0	0	300	1,600	3,000	3,000	3,000	3,000	3,000
1982	Monthly	0	0	0	0	2,300	3,700	1,600	0	0	0	
	Cumulative	0	0	0	0	2,300	6,000	7,600	7,600	7,600	7,600	7,600
Eureka												
1971-75 Average	Monthly	0	b/	b/	b/	4,000	13,500	4,100	500	b/	0	
	Cumulative	0	b/	b/	100	4,100	17,600	21,700	22,200	22,200	22,200	22,200
1978	Monthly	0	0	0	0	8,200	9,900	1,400	b/	0	0	
	Cumulative	0	0	0	0	8,200	18,100	19,500	19,500	19,500	19,500	19,500
1979	Monthly	0	0	0	0	2,100	5,200	1,200	0	0	0	
	Cumulative	0	0	0	0	2,100	7,300	8,500	8,500	8,500	8,500	8,500
1980	Monthly	0	0	0	0	2,200	9,300	800	0	0	0	
	Cumulative	0	0	0	0	2,200	11,500	12,300	12,300	12,300	12,300	12,300
1981	Monthly	0	0	0	0	400	3,100	1,900	0	0	0	
	Cumulative	0	0	0	0	400	3,500	5,400	5,400	5,400	5,400	5,400
1982	Monthly	0	0	0	0	6,400	5,900	1,400	0	0	0	
	Cumulative	0	0	0	0	6,400	12,300	13,700	13,700	13,700	13,700	13,700
Fort Bragg												
1971-75 Average	Monthly	0	b/	b/	200	1,200	5,200	2,300	100	b/	0	
	Cumulative	0	b/	b/	200	1,400	6,600	8,900	9,000	9,000	9,000	9,000
1978	Monthly	0	0	0	0	1,100	900	100	0	0	0	
	Cumulative	0	0	0	0	1,100	2,000	2,100	2,100	2,100	2,100	2,100
1979	Monthly	0	0	0	0	400	500	100	0	0	0	
	Cumulative	0	0	0	0	400	900	1,000	1,000	1,000	1,000	1,000
1980	Monthly	0	0	0	0	300	800	100	0	0	0	
	Cumulative	0	0	0	0	300	1,100	1,200	1,200	1,200	1,200	1,200
1981	Monthly	0	0	0	0	0	400	200	0	0	0	
	Cumulative	0	0	0	0	0	400	600	600	600	600	600
1982	Monthly	0	0	0	0	200	700	200	0	0	0	
	Cumulative	0	0	0	0	200	900	1,100	1,100	1,100	1,100	1,100
San Francisco												
1971-75 Average	Monthly	b/	100	1,200	3,100	2,400	1,200	700	b/	b/	b/	
	Cumulative	b/	100	1,300	4,400	6,800	8,000	8,700	8,700	8,700	8,700	8,700
1978	Monthly	0	0	0	0	1,100	1,500	200	b/	0	0	
	Cumulative	0	0	0	0	1,100	2,600	2,800	2,800	2,800	2,800	2,800
1979	Monthly	b/	b/	b/	100	400	400	b/	b/	0	0	
	Cumulative	b/	b/	100	200	600	1,000	1,000	1,000	1,000	1,000	1,000
1980	Monthly	0	0	b/	b/	200	300	b/	0	b/	--	
	Cumulative	0	0	b/	b/	200	300	300	300	300	--	300
1981	Monthly	0	b/	b/	b/	100	100	100	b/	b/	0	
	Cumulative	0	b/	b/	100	200	300	400	500	500	500	500
1982	Monthly	0	0	0	400	1,200	300	100	b/	0	0	
	Cumulative	0	0	0	400	1,600	1,900	2,000	2,000	2,000	2,000	2,000
Monterey												
1971-75 Average	Monthly	0	b/	b/	600	200	0	0	0	0	0	
	Cumulative	0	b/	100	700	900	900	900	900	900	900	900
1978	Monthly	0	0	0	0	0	b/	b/	0	0	0	
	Cumulative	0	0	0	0	0	b/	b/	b/	b/	b/	b/(35)
1979	Monthly	0	0	0	0	b/	b/	0	0	0	0	
	Cumulative	0	0	0	0	b/	b/	b/	b/	b/	b/	b/(9)
1980	Monthly	0	0	0	0	b/	0	0	0	0	0	
	Cumulative	0	0	0	0	b/	b/	b/	b/	b/	b/	b/(1)
1981	Monthly	0	0	0	0	0	0	0	0	0	0	
	Cumulative	0	0	0	0	0	0	0	0	0	0	0
1982	Monthly	0	0	0	b/	b/	b/	b/	0	0	0	
	Cumulative	0	0	0	b/	b/	b/	b/	b/	b/	b/	b/

a/ 1978-82 data are preliminary.
b/ Under 50.

OREGON

Troll Fishery

Catch and effort data for the 1982 Oregon troll salmon fishery are preliminary. Poundages, area of catch and days fished are obtained directly from commercial fish receiving tickets. Pounds landed are converted to numbers of fish utilizing average weight information. Catch and effort estimates for 1979-82 are reported by catch area.

1982 Regulations - In the area north of Cape Falcon to Leadbetter Point, Washington, commercial troll fishing was open for all salmon except coho from May 1-31. This area was open for all salmon on July 1 and closed July 8 when it was projected that the fishery had reached its preseason harvest quota of 89,000 coho. Minimum size limits for this area were 28-inches for chinook and 16-inches for coho.

From Cape Falcon to the Oregon/California border, fishing was open for all salmon except coho from May 1-31. Fishing with special gear restrictions (whole bait and 5-inch minimum plugs) was allowed for all salmon except coho June 1-15 from Cape Falcon to Cape Blanco and June 1-8 from Cape Blanco to the Oregon/California border. South of Cape Falcon, fishing was open for all salmon on July 1 and closed on July 12 when it was determined that the fishery had exceeded its quota of 488,000 coho. Fishing was open for all salmon except coho from July 12-September 5 using whole bait and 5-inch minimum plugs and from September 6-October 31 using barbless hooks. Minimum size limits off Oregon south of Cape Falcon were 26-inches for chinook and 16-inches for coho.

Effort - Since 1979, Oregon's troll effort has been estimated in boat days fished. Cumulative effort for the troll fishery totaled 33,900 boat days fished in 1982, compared with 45,200 in 1981 and 44,600 for the 1979-81 average (Table II-8). The total effort in 1982 was 25% below 1981, 15% below 1980, and 24% below the 1979-81 average. Reduced effort in 1982 was the result of the short all-species season; however, effort during the limited time that the all-species season was open was very high.

For Oregon south of Cape Falcon, an average of 1,081 boat days of effort per day occurred during the 1982 all-species salmon season (Table II-9). This was 54% higher than the 1979-81 average daily effort (703) for comparable periods at the start of the all-species season. For the entire Columbia River area, including both Oregon and Washington, daily vessel effort during the 1982 all-species season was 242 boat days of effort per day. This was 62% higher than the 1979-81 average daily effort (149). Higher effort levels in 1982 are probably a result of favorable ocean conditions, good fishing, effort shifts from Washington areas north of Leadbetter Point which did not open until July 15, and all fishing vessels being forced to deliver within twelve hours following the season closure.

Effort in the Brookings and Coos Bay areas was similar to previous years, while effort in the areas to the north dropped dramatically. The Newport and Coos Bay areas combined accounted for 57% of Oregon's total effort in 1982, similar to 1979-81 (Table II-10).

Table II-8. Oregon commercial troll salmon effort and catch, 1971-1982[a/].

Year	Effort (boat days fished)	Chinook Number	Chinook Lbs. (round)	Coho Number	Coho Lbs. (round)	Pink Number	Pink Lbs. (round)
1971	-	102,900	1,150,800	1,490,100	10,079,900	2,000	10,400
1972	-	127,300	1,499,300	824,600	5,584,800	<100	100
1973	-	363,300	3,980,500	795,500	5,907,600	3,200	16,400
1974	-	224,100	2,634,000	1,137,200	8,315,500	<100	200
1975	-	224,700	2,970,800	657,400	4,700,700	200	1,000
1971-75 Average	-	208,500	2,447,100	981,000	6,917,700	1,800[b/]	9,300[b/]
1976	-	184,300	2,209,800	1,827,000	10,420,300	0	0
1977	-	340,000	3,984,700	446,100	3,036,900	88,000	455,600
1978	-	191,500	2,177,700	611,600	3,195,800	<100	300
1979	48,800	245,500	2,967,000	714,600	5,274,200	20,500	122,300
1980	39,900	209,400	2,497,200	383,300	2,518,700	300	1,800
1981[c/]	45,200	160,400	1,809,400	620,300	3,823,000	60,200	372,000
1982[c/]	33,900	232,800	2,703,100	521,900	3,113,800	<100	<100

a/ Includes catches made off California, Washington, and Alaska and landed in Oregon.
b/ Odd-year average.
c/ Preliminary.

Table II-9. Comparison of daily salmon fishing effort during the 1982 all-species troll season with comparable time periods in 1979-81[a/].

	1979	1980	1981	1982
	Number of Boat Days/Days			
Columbia River Area[b/]	150	114	182	242
Oregon South of Cape Falcon	797	585	727	1,081

a/ 1979 daily effort from July 1-8. 1980 daily effort from July 15-27. 1981 daily effort from July 1-12. 1982 daily effort from July 1-8 for Columbia River area and July 1-12 for Oregon south of Cape Falcon.

b/ Includes both Washington and Oregon effort from Leadbetter Point, Washington, to Cape Falcon, Oregon.

Table II-10. Summary of Oregon commercial troll effort and catch (numbers of fish) by area of catch, 1979-1982.

Year	Area of Catch: Columbia River	Tillamook	Newport	Coos Bay	Brookings	Oregon Subtotal	Alaska	Washington	California	Total
EFFORT (Boat Days)										
1979	2,400	6,300	12,800	16,800	9,900	48,200	0	600	100	48,800
1980	1,700	6,000	10,700	12,400	8,300	39,100	50	700	30	39,900
1981[a/]	2,500	8,600	11,000	13,400	9,300	44,800	0	200	100	45,200
1982[a/]	800	3,600	5,800	13,600	8,900	32,700	0	700	400	33,900
CATCH										
Chinook										
1979	5,900	5,000	38,600	68,700	123,800	242,000	0	2,600	900	245,500
1980	5,600	7,800	48,700	74,800	68,400	205,300	300	2,900	900	209,400
1981[a/]	8,400	12,200	27,100	24,400	86,000	158,200	0	1,000	1,300	160,400
1982[a/]	7,300	9,000	27,600	109,400	69,500	222,700	0	7,000	3,100	232,800
Coho										
1979	48,700	77,900	211,800	263,100	101,200	702,700	0	11,300	600	714,600
1980	23,500	80,600	137,300	99,200	33,500	374,200	1,800	7,200	40	383,300
1981[a/]	41,900	160,400	192,400	161,400	53,500	609,600	0	10,400	300	620,300
1982[a/b/]	24,100	114,700	117,800	227,700	22,200	506,600	0	14,100	1,200	521,900

a/ Preliminary.
b/ Landings south of Cape Falcon not adjusted for the 14,000 coho estimated caught to the north as discussed in the OPI analysis (page 4-III).

Effort during the May season was 30% below 1981 and 10% above the 1980 level (Table II-11). Of the total effort expended in 1982, 72% occurred during the months of July and August, with the majority occurring during the all-species season in early July. Effort in August was well below recent years due to the early closure of the all-species season.

Chinook Catch - The 1982 troll chinook catch was above both 1981 and the 1971-75 average. A total of 232,800 chinook (2.7 million pounds round weight) was landed in 1982, compared with 160,400 chinook in 1981, and 208,500 for the 1971-75 average (Table II-8). The 1982 catch was 45% above 1981 and 12% above the 1971-75 average.

Approximately 90% of the chinook landed in Oregon were caught from the Newport area south, similar to past years (Table II-10). The Coos Bay area accounted for 47% of the Oregon chinook catch, a higher proportion than in past years (15% in 1981 and 36% in 1980). The Coos Bay area catch was 348% above 1981 and 46% above 1980. Catches in other areas were similar to or below recent years.

The May fishery landed 23,000 chinook (10% of the season total), 18% and 12% lower than in 1981 and 1980, respectively. The 1982 troll chinook catch peaked in July when 54% of the total catch was landed, while August catches were down (Table II-11). September and October chinook catches were below recent year averages, accounting for 9% of the season total. During the chinook-only fishery from July 13-September 5 in areas south of Cape Falcon, an estimated 98,100 chinook or 43% of the state-wide season total were caught.

Coho Catch - The 1982 troll coho catch totaled 521,900 fish (3.1 million pounds round weight), compared with 620,200 in 1981 and 981,000 for the 1971-75 average. The 1982 catch was the third lowest since 1971 (Table II-8). The 1982 catch was 16% below 1981 and 47% below the 1971-75 average.

Approximately 91% of the coho caught off Oregon were taken in the central coastal areas (Tillamook, Newport, and Coos Bay), similar to 1979-81 (Table II-10). A larger percentage of the 1982 catch was made in the Coos Bay area (45%) than in the three previous years (26 to 37%). The Newport area contributed a lower proportion of the total coho catch than in previous years. This shift in central coastal catch from Newport to Coos Bay was probably due to the somewhat more southerly concentration of coho during the early July season.

The troll coho catch was concentrated into 8 days north of Cape Falcon and 12 days south of Cape Falcon during early July. Catches during this period were extremely high due to favorable weather conditions, high effort, and high concentrations of coho off the Oregon coast.

During the 1982 Oregon ocean troll salmon season south of Cape Falcon, a chinook-only fishery was allowed from noon, July 12 through September 5 with gear restricted to whole bait and 5-inch minimum length plugs. Hook and release coho mortality sustained during this fishery was estimated to be 24,300 (Table II-12). The estimate of coho mortality was developed by Oregon Department of Fish and Wildlife (ODFW) assuming mortality on released coho to be 30%, and catch to be 75% of the catch per day of effort in comparable areas and time periods from 1979-81 when the coho season was open, and no gear

Table II-11. Oregon commercial troll effort and landings (numbers of fish) of coho and chinook by month, 1971-75 average and 1978-82[a/].

		April	May	June	July	August	September	October	November	Season Total
EFFORT (Boat Days)										
1971-75 Average		NA	NA	NA	NA	NA	NA	NA	NA	NA
1979	Monthly	-	1,400	< 100[c/]	21,500	21,700	1,300	2,000	800	
	Cumulative	-	1,400	1,500	23,000	44,700	46,000	48,000	48,800	48,800
1980	Monthly	-	2,100	3,700[d/]	12,100	14,600	4,600	2,300	500	
	Cumulative	-	2,100	5,800	17,900	32,500	37,100	39,400	39,900	39,900
1981	Monthly	-	3,300[e/]	-	21,300	16,700	1,600	1,900	500	
Prelim.	Cumulative	-	3,300	3,300	24,600	41,300	42,800	44,700	45,200	45,200
1982	Monthly	-	2,300	2,100	18,800	5,600	2,800	1,500	600	
Prelim.	Cumulative		2,300	4,500	23,300	29,000	31,800	33,300	33,900	33,900
CHINOOK										
1971-75	Monthly	500	8,300	27,500	56,600	69,700	31,400	13,700	1,300[b/]	
Average	Cumulative	500	8,900	36,400	93,000	162,800	194,200	207,900	209,200	209,200
1978	Monthly	-	3,200	40,600	63,100	46,900	25,000	9,300	3,500	
	Cumulative	-	3,200	43,800	106,900	153,800	178,800	188,100	191,500	191,500
1979	Monthly	-	11,000	200[c/]	73,600	119,500	13,200	25,200	2,600	
	Cumulative	-	11,000	11,300	84,900	204,400	217,700	242,900	245,500	245,500
1980	Monthly	-	25,800	29,700[d/]	47,700	64,000	25,200	16,000	1,000	
	Cumulative	-	25,800	55,400	103,200	167,200	192,300	208,400	209,400	209,400
1981	Monthly	-	28,600[e/]	-	34,900	65,700	16,900	13,200	1,200	
Prelim.	Cumulative	-	28,600	28,600	63,500	129,200	146,100	159,200	160,400	160,400
1982	Monthly	0	23,000	14,900	125,600	46,100	15,000	6,900	1,300	
Prelim.	Cumulative	0	23,000	37,900	163,500	209,600	224,600	231,400	232,800	232,800
COHO										
1971-75	Monthly	-	-	227,800	414,400	305,800	29,700	3,300	-	
Average	Cumulative	-	-	227,800	642,200	948,000	977,700	981,000	-	981,000
1978	Monthly	-	-	279,600	227,200	92,800	10,400	1,600	-	
	Cumulative	-	-	279,600	506,800	599,700	610,000	611,600	-	611,600
1979	Monthly	-	-	400[c/]	534,000	178,700	1,600	-	-	
	Cumulative	-	-	400	534,400	713,100	714,600	-	-	714,600
1980	Monthly	-	-	-	228,700	137,500	17,100	-	-	
	Cumulative	-	-	-	228,700	366,200	383,300	-	-	383,300
1981	Monthly	-	-	-	350,300	270,000	-	-	-	
Prelim.	Cumulative	-	-	-	350,300	620,300	-	-	-	620,300
1982	Monthly	-	-	-	521,900	-	-	-	-	
Prelim.	Cumulative	-	-	-	521,900	-	-	-	-	521,900

a/ Statistics from 1971-78 are reported by calendar months; monthly totals from 1979-82 are the sum of statistical weeks with closest fit to calendar months. Includes catches made off California, Washington, and Alaska and landed in Oregon.
b/ Late season at mouth of Elk and Chetco Rivers only (initiated in 1974). Average for November includes only 1974-75, thus season total does not agree with the 1971-75 average in Table 1 (II-7).
c/ Caught off California and landed in Oregon.
d/ Totals for June 1980 include landings made through July 6.
e/ Totals for May 1981 include landings made through June 7.

Table II-12. ODFW estimated coho mortality, estimated chinook catch and ratio of legal chinook to coho mortalities during the all-salmon-except-coho troll fishery off Oregon south of Cape Falcon from July 12 to September 5, 1982 (numbers of fish).

Time Period	Management Area				Total
	Tillamook	Newport	Coos Bay	Brookings	
July 12-25 coho					
mortality (estimated)	669	1,035	3,573	1,647	6,844
legal chinook catch	334	2,173	12,150	7,245	21,902
legal chinook/coho mort.	0.5	2.1	3.4	4.4	3.2
July 26-August 15 coho					
mortality (estimated)	958	1,853	6,092	5,650	14,533
legal chinook catch	1,150	2,038	24,366	33,897	61,451
legal chinook/coho mort.	1.2	1.1	4.0	6.0	4.2
Aug. 16-Sept. 5 coho					
mortality (estimated)	199	236	1,210	1,252	2,885
legal chinook catch	159	495	5,929	8,140	14,723
legal chinook/coho mort.	0.8	2.1	4.9	6.5	5.1
Total coho					
mortality (estimated)	1,826	3,137	10,883	8,497	24,329
legal chinook catch	1,643	4,706	42,445	49,282	98,076
legal chinook/coho mort.	0.9	1.5	3.9	5.8	4.0

restrictions were imposed. Estimates of coho mortality were below preseason estimates (Appendix C, Table 4 in 1982 Amendment) because troll effort from July 12 through September 5, 1982, was only 36% as high as comparable time periods from 1979-81 when the all-species season was open.

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. 10 major ports were sampled in 1982, representing the total catch and effort of the ocean salmon recreational fishery for Oregon.

1982 Regulations - North of Cape Falcon, recreational salmon fishing for all-species opened June 12. From 3-200 miles offshore, the season closed on July 25 when the fishery was expected to reach a preseason harvest quota of 100,000 coho. Inside 3 miles, the season continued through August 1.

State waters from Cape Falcon to Cape Blanco were open to fishing for all salmon except coho from May 29-June 11 using barbless hooks. Fishing for all species opened on June 12 from Cape Falcon to Cape Blanco and on May 29 south of Cape Blanco. From 3-200 miles offshore, the all-species season closed July 21 when the fishery was expected to reach a preseason harvest quota of 114,000 coho. Inside 3 miles, fishing closed August 1. South of Cape Blanco, fishing continued for all salmon except coho through October 31.

A 2-fish daily bag limit was in effect for the 1982 season. From July 26-August 1, recreational fishermen in state waters north of Cape Falcon were restricted to one coho (within the 2-fish bag limit) and barbless hooks. Minimum size north of Cape Falcon was 16-inches for coho and 24-inches for chinook. South of Cape Falcon, no minimum size regulation was in effect; fishermen were required to keep the first 2 salmon caught.

In addition, "inside" Columbia River and Oregon coastal river fisheries were open after the ocean closures and attracted normally "ocean based" effort in the lower river estuary near the river mouths.

In 1982, the state of Oregon attempted to implement a May 29-June 11 chinook-only recreational fishery inside the FCZ in the vicinity of the Columbia River mouth. This fishery was judged to be inconsistent with the regulatory regime recommended by the Council, and the U.S. Department of Commerce preempted Oregon regulations on the basis of concerns for chinook and coho shaker mortalities.

Effort - Oregon recreational effort in 1982 was substantially below levels of all recent years, totaling 249,700 angler trips compared with 346,700 in 1981, and the 1971-75 average of 345,800 angler trips (Table II-13). Effort in 1982 was 28% below both the 1981 level and the 1971-75 average. Reduced ocean effort was due to the late opening and August 1 closure of the recreational salmon fishery.

All ports experienced substantial reductions in effort except the Brookings area which maintained levels similar to recent years due to continued chinook and bottomfish fishing through October. The Columbia River area effort comprised 11% and the Newport and Coos Bay areas combined accounted for 49% of the effort state-wide (Table II-14).

Table II-13. Recreational ocean salmon effort and catch off Oregon, 1971-82.

Year	Effort (Angler Trips)	Catch (numbers of fish) Chinook	Coho	Pinks	Total	Fish/ Angler
1971	303,700	29,600	311,700		341,300	1.12
1972	331,700	44,100	248,400		292,500	0.88
1973	350,400	61,000	232,100	2,000	295,100	0.84
1974	335,800	36,700	314,500		351,200	1.05
1975	407,500	75,700	252,200	1,200	329,100	0.81
1971-75 Average	345,800	49,400	271,800	1,600[b/]	321,800	0.93
1976	538,400	79,300	501,300		580,600	1.08
1977	404,500	61,400	195,300	4,000	260,700	0.64
1978	403,700	22,800	259,800		282,600	0.70
1979	341,800	20,900	180,800	600	202,300	0.59
1980	362,000	19,000	325,800		344,900	0.95
1981	346,700	28,800	199,800	1,600	230,200	0.66
1982[a/]	249,700	38,700	175,100		213,800	0.86

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

Table II-14. Summary of Oregon recreational ocean salmon effort and catch (numbers of fish) data by area, 1974-75 average and 1976-82.

Year	Area[a/] Columbia River	Tillamook	Newport	Coos Bay	Brookings	Total
EFFORT						
(Angler Trips)						
1974-75 Average	75,900	40,900	91,300	104,300	59,200	371,700
1978	63,400	31,700	115,600	104,400	88,600	403,700
1979	43,400	36,300	88,300	97,700	76,000	341,800
1980	46,300	52,600	98,400	99,300	65,300	362,000
1981	44,800	45,300	94,100	87,200	75,300	346,700
1982[b/]	27,300	28,600	60,500	60,700	72,600	249,700
CATCH						
Chinook						
1974-75 Average	32,600	2,000	4,300	6,800	10,600	56,200
1976	44,600	2,300	4,600	14,600	13,200	79,300
1977	22,600	1,500	2,600	22,700	11,800	61,400
1978	7,900	800	2,100	4,800	7,300	22,800
1979	7,500	1,000	1,400	4,500	6,400	20,900
1980	5,500	1,600	1,800	5,300	4,800	19,000
1981	11,500	1,900	2,400	4,500	8,500	28,800
1982[b/]	8,200	1,400	3,500	10,100	15,500	38,700
Coho						
1974-75 Average	70,700	27,200	65,100	90,100	30,200	283,400
1976	116,700	50,000	118,100	164,800	51,800	501,300
1977	55,300	15,600	34,000	76,300	14,000	195,300
1978	60,200	8,500	61,200	82,800	47,100	259,800
1979	38,000	9,400	36,300	79,000	18,200	180,800
1980	55,600	28,900	72,400	135,900	33,000	325,800
1981	54,300	17,700	61,900	57,600	8,300	199,800
1982[b/]	35,500	23,100	44,000	55,600	16,900	175,100

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

b/ Preliminary.

Recreational effort was highly concentrated in July due to favorable weather conditions, high catch success and an impending season closure. A total of 184,000 angler trips occurred in July 1982 compared with 123,600 and 147,100 angler trips for July in 1981 and 1980, respectively (Table II-15).

Charterboat fishing effort in 1982 comprised 25% of the total effort, similar to 1981 but below the 1980 level of 28% and the 1973-79 average of 31%. State-wide, the 1982 charterboat effort estimate was 62,400 angler trips, and the Columbia River total was 12,300 (45% of Oregon's Columbia River effort). Charterboat effort in 1982 was 23% lower than 1981, and 32% lower than in 1980 (Table II-16).

Chinook Catch - Recreational catches of chinook salmon in 1982 were well above 1981 catch levels, but below the 1971-75 average. The 1982 catch was the largest observed since 1977. The recreational catch totaled 38,700 chinook in 1982, compared with 28,800 in 1981, and the 1971-75 average catch of 49,400 chinook (Table II-13).

Approximately 66% of Oregon's recreational chinook catch was landed in the Brookings and Coos Bay areas, and 21% was landed in the Columbia River area. Chinook catches in the Brookings and Coos Bay areas were more than 50% greater than levels of the past four years (Table II-14).

Approximately 82% of the total chinook catch occurred during July, when effort was heavily concentrated off the Oregon coast (Table II-15). The late chinook fishery (August 2-October 31) south of Cape Blanco accounted for a catch of approximately 2,000 chinook.

Less than 100 chinook were caught and a similar number of coho were released in the special May 29-June 11 chinook-only fishery in state waters between Cape Falcon and Cape Blanco. The 1979-81 average chinook catch for the same time period and area is 800 fish. About 800 salmon angler trips were made, compared to an average 7,400 trips for 1979-81 during this time period.

Coho Catch - Recreational landings of coho salmon in 1982 were well below all recent years due to the small quota and the August 1 season closure. The total 1982 catch of 175,100 coho was 12% below 1981 and 36% below the 1971-75 average (Table II-13).

The Newport and Coos Bay areas accounted for 57% of Oregon's total coho catch and the Columbia River area accounted for 20% of the total (Table II-14). In most areas, coho catches were considerably below recent year averages, with the exception being the Tillamook area which showed a moderate catch increase in comparison with recent years.

Coho catches were extremely high during July with the month accounting for 86% of the season's total catch (Table II-15). The July catches exceeded all recent years except 1980 and also exceeded the 1974-75 average.

Oregon state waters north of Cape Falcon remained open for recreational fishing during July 26 to August 1, following closure of the FCZ on July 25. An estimated 3,900 coho and 1,300 chinook were landed in this time period and area. Oregon state waters south of Cape Falcon remained open from July 22 to

Table II-15. Oregon ocean salmon recreational effort and catch (numbers of fish) by month, 1974-75 average and 1978-82.

		April[a/]	May	June	July	August	September	October	November	Season
EFFORT (Angler Trips)										
1974-75[b/] Average	Monthly	1,800	9,800	39,300	124,700	129,800	61,300	5,100	-	
	Cumulative	1,800	11,500	50,900	175,600	305,300	366,600	371,700	-	371,700
1978	Monthly	-	12,300	78,700	144,500	115,900	37,600	13,300	1,500	
	Cumulative	-	12,300	90,900	235,500	351,300	388,900	402,200	403,700	403,700
1979	Monthly	-	15,300	53,400	112,700	143,200	11,300	4,800	1,200	
	Cumulative	-	15,300	68,700	181,300	324,500	335,800	340,600	341,800	341,800
1980	Monthly	-	11,000	85,500	147,100	92,400	22,700	2,900	400	
	Cumulative	-	11,000	96,500	243,600	336,000	358,700	361,600	362,000	362,000
1981	Monthly	-	19,400	51,600	123,600	117,400	34,700	-	-	
	Cumulative	-	19,400	71,000	194,600	312,000	346,700	-	-	346,700
1982 Preliminary	Monthly	-	-	43,500	184,000	13,800	5,700	2,600	-	
	Cumulative	-	-	43,500	227,500	241,300	247,000	249,700	-	249,700
CHINOOK										
1974-75[b/] Average	Monthly	200	900	4,800	19,700	19,700	9,200	1,800	-	
	Cumulative	200	1,100	5,900	25,500	45,300	54,500	56,200	-	56,200
1978	Monthly	100	900	4,700	5,000	9,600	1,600	900	100	
	Cumulative	100	1,000	5,700	10,700	20,200	21,900	22,800	22,800	22,800
1979	Monthly	-	800	4,700	5,100	9,400	200	600	100	
	Cumulative	-	800	5,600	10,700	20,000	20,200	20,800	20,900	20,900
1980	Monthly	-	300	4,700	6,900	5,400	1,300	300	100	
	Cumulative	-	300	5,000	11,900	17,300	18,600	19,000	19,000	19,000
1981	Monthly	-	700	3,100	10,300	12,500	2,200	-	-	
	Cumulative	-	700	3,800	14,200	26,600	28,800	-	-	28,800
1982 Preliminary	Monthly	-	-	4,700	31,900	1,600	200	200	-	
	Cumulative	-	-	4,700	36,700	38,300	38,500	38,700	-	38,700
COHO										
1974-75[b/] Average	Monthly	800	5,800	36,500	102,500	103,000	33,900	900	-	
	Cumulative	800	6,600	43,100	145,600	248,600	282,500	283,400	-	283,400
1978	Monthly	200	5,100	101,500	71,400	67,800	13,200	500	-	
	Cumulative	200	5,300	106,900	178,300	246,100	259,300	259,800	-	259,800
1979	Monthly	-	5,400	35,800	73,800	64,200	1,600	-	-	
	Cumulative	-	5,400	41,200	115,000	179,200	180,800	-	-	180,800
1980	Monthly	-	6,000	114,200	156,100	45,100	4,400	-	-	
	Cumulative	-	6,000	120,200	276,300	321,400	325,800	-	-	325,800
1981	Monthly	-	9,200	26,300	70,800	80,600	12,900	-	-	
	Cumulative	-	9,200	35,500	106,300	186,900	199,800	-	-	199,800
1982 Preliminary	Monthly	-	-	24,200	151,000	-	-	-	-	
	Cumulative	-	-	24,200	175,100	-	-	-	-	175,100

a/ April value includes any early season catches.
b/ Only 1974 and 1975 of 1971-75 period are available on a monthly basis.

NOTE: After 1978, monthly totals are the sum of statistical weeks' estimates with closest fit to calendar month.

Table II-16. Oregon ocean recreational catch (numbers of fish) and effort (angler trips) by boat type, 1979-82.[a/]

	Angler Trips		Chinook Catch		Coho Catch	
Year	Charter	Pleasure	Charter	Pleasure	Charter	Pleasure
1979	89,800	212,000	5,400	13,300	59,800	101,800
1980	91,600	236,900	51,100	11,900	98,300	207,500
1981	80,900	265,800	6,600	22,200	64,500	135,300
1982[b/]	62,400	209,200	8,200	30,400	48,500	126,700
1979-82 Average[b/]	81,200	231,000	6,300	19,500	67,800	142,800

a/ Includes surveyed ports only. For 1979-80 this includes: Garibaldi, Depoe Bay, Newport, Winchester Bay, Coos Bay, Gold Beach, and Brookings. In 1981-82, Pacific City and Florence were also surveyed.
b/ Preliminary.

August 1 after the FCZ was closed July 21. This fishery harvested an estimated 39,700 coho and 10,900 chinook. The catch during this period represented the highest weekly recreational harvest for the 1982 season. High catches during the state-waters-only fishery probably resulted from good ocean conditions, coho concentrated near shore, and higher effort due to the impending closure of all ocean recreational salmon fishing off Oregon.

The inside fisheries in the lower Columbia River and lower coastal rivers, which occurred after the ocean fishery closed, harvested 10,800 and 2,100 coho, respectively, through September 5. The Columbia River catch figure includes landings at Ilwaco.

WASHINGTON

Troll Fishery

Preliminary catch statistics are presented for the 1982 commercial troll salmon fishery as reported on Washington Department of Fisheries' fish receiving tickets. Total troll fishery catches and effort are listed in Table II-17, including all treaty Indian and non-Indian troll-caught salmon regardless of catch area. Monthly catch and effort data for Washington coastal catch areas are presented in Table II-18.

1982 Regulations - The 1982 non-Indian commercial troll season included a May chinook-only fishery. The all-species season off the Columbia River mouth began July 1 and subsequently closed July 8 when the fishery was projected to have reached its preseason quota of 89,000 coho.

The non-Indian all-species season north of Leadbetter opened on July 15. The season closed on July 30 when the fishery was projected to reach its quota of 204,000 coho. Additional non-Indian troll fishing occurred inside the Strait of Juan de Fuca after the ocean closure, coincidental with IPSFC weekday purse seine openings. Size limits in 1982 were 28-inches for chinook and 16-inches for coho. A summary of non-Indian troll seasons since 1971 is provided in Table II-19.

The treaty Indian troll fishery for the Quinault and Quileute tribes extended from May 1 to September 7. The Makah ocean treaty troll fishery began May 1 and ended October 31. In addition, the Makah fishery operated year-around in the Strait of Juan de Fuca. Quinault and Quileute tribal size limits were 26-inches for chinook and 16-inches for coho. Size limits for the Makah troll fishery were 24-inches for chinook and 16-inches for coho.

Effort - The number of troll boat-days fished off Washington in 1982 totaled 19,200 which was 31% and 29% less than 1981 and 1980 levels, respectively (Table II-18). Effort was reduced in all coastal fishing areas (Table II-20).

During the May chinook fishery, troll effort was 5,200 boat-days, similar to 1981 and 13% greater than 1980. For the remainder of the season, total effort was 40% and 39% less than in 1981 and 1980, respectively, due to early non-Indian fishery closures in response to low allowable coho harvest levels (Table II-18) (Figure II-1).

The all-species season off Oregon closed July 12 and a number of southern trollers began fishing off Washington on July 15. The troll effort from Oregon boats in the fishery north of Leadbetter Point was at least 600 boat days as tabulated from subsequent landings in Oregon.

Chinook - Troll landings of chinook salmon from Washington coastal areas were 157,600 in 1982, representing the largest catch since 1977 and respective increases of 39% and 23% compared to 1981 and 1980. The 1982 harvest was 42% less than the 1971-1975 average (Table II-18). Chinook landings from each area except Quillayute increased in 1982, ranging from 33% (Cape Flattery) to 66% (Columbia River), compared to 1981.

Table II-17. Washington commercial troll landings, 1971-82[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	4,298,000	774,300	5,080,400	77,300	427,800
1971-75 Average	53,900[c/]	279,900	3,692,900	870,800	5,524,700	51,100[d/]	276,700[d/]
1976	60,700	361,400	4,372,800	1,384,800	7,166,200	1,500	6,700
1977	57,300	267,500	3,259,400	716,200	4,270,500	288,300	1,591,800
1978	43,500	166,200	2,384,500	609,800	3,222,500	3,500	15,400
1979[b/]	42,800	148,100	1,939,600	665,600	4,206,100	560,700	2,914,600
1980[b/]	27,000	132,700	1,765,400	385,900	2,221,100	1,200	9,200
1981[b/]	28,500	117,000	1,402,600	400,700	2,025,200	233,600	1,050,700
1982[b/]	19,500	159,700	1,785,000	380,500	2,197,500	200	900

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-18. Washington coastal commercial troll effort, and numbers of chinook, coho and pink caught by month, 1971-75 average and 1978-1982[a/].

		April[b/]	May	June	July	August	September	October	Total
EFFORT (Days fished)									
1973-75 Average	Monthly	1,800	3,700	6,700	16,800	13,700	8,000	2,700	
	Cumulative	1,800	5,500	12,200	29,000	42,700	50,700	53,400	53,400
1978	Monthly	800	3,000	3,100	14,800	10,800	6,900	2,000	
	Cumulative	800	3,800	6,900	21,700	32,500	39,400	41,400	41,400
1979[c/]	Monthly	1,000	4,200	200	15,100	20,800	200	100	
	Cumulative	1,000	5,200	5,400	20,500	41,300	41,500	41,600	41,600
1980[c/]	Monthly	900	4,600	200	9,200	11,500	500	<100	
	Cumulative	900	5,500	5,700	14,900	26,400	26,900	26,900	26,900
1981[c/]	Monthly	1,000	5,200	200	10,500	10,600	400	<100	
	Cumulative	1,000	6,200	6,400	16,900	27,500	27,900	27,900	27,900
1982[c/]	Monthly	1,000	5,200	200	11,500	600	600	100	
	Cumulative	1,000	6,200	6,400	17,900	18,500	19,100	19,200	19,200
CHINOOK									
1971-75 Average	Monthly	20,500	48,100	58,100	77,400	37,800	21,900	8,600	
	Cumulative	20,500	68,600	126,700	204,100	241,900	263,800	272,400	272,400
1978	Monthly	9,000	25,500	23,600	49,600	26,700	8,200	2,900	
	Cumulative	9,000	34,500	58,100	107,700	134,400	142,600	145,500	145,500
1979[c/]	Monthly	13,600	40,700	1,000	36,800	39,100	800	500	
	Cumulative	13,600	54,300	55,300	92,100	131,200	132,000	132,500	132,500
1980[c/]	Monthly	11,300	44,900	800	44,900	25,500	500	300	
	Cumulative	11,300	56,200	57,000	101,900	127,400	127,900	128,200	128,200
1981[c/]	Monthly	14,000	49,200	2,600	28,200	19,100	300	100	
	Cumulative	14,000	63,200	65,800	94,000	113,100	113,400	113,500	113,500
1982[c/]	Monthly	16,400	67,300	2,200	66,500	2,000	2,600	600	
	Cumulative	16,400	83,700	85,900	152,400	154,400	157,000	157,600	157,600
COHO									
1971-75 Average	Monthly	-	-	162,900	339,200	232,600	98,000	22,900	
	Cumulative	-	-	162,900	502,100	734,700	832,700	855,600	855,600
1978	Monthly	1,800	100	1,600	316,200	112,700	112,900	9,500	
	Cumulative	1,800	1,900	3,500	319,700	432,400	545,300	554,800	554,800
1979[c/]	Monthly	200	1,200	5,400	366,000	263,100	4,300	-	
	Cumulative	200	1,400	6,800	372,800	635,900	640,200	-	640,200
1980[c/]	Monthly	100	2,100	22,900	205,000	138,500	5,400	-	
	Cumulative	100	2,200	25,100	230,100	368,600	374,000	-	374,000
1981[c/]	Monthly	100	1,200	6,800	228,100	130,300	14,200	700	
	Cumulative	100	1,300	8,100	236,200	366,500	380,700	381,400	381,400
1982[c/]	Monthly	<100	1,000	14,700	247,200	52,700	45,300	100	
	Cumulative	<100	1,000	15,700	262,900	315,600	360,900	361,000	361,000
PINK									
1971-75 Odd-year Ave.	Monthly	-	200	3,600	27,200	16,800	2,300	-	
	Cumulative	-	200	3,800	31,000	47,800	50,100	-	50,100
1977	Monthly	-	1,200	1,300	102,900	166,200	9,100	100	
	Cumulative	-	1,200	2,500	105,400	271,600	280,700	280,800	280,800
1979[c/]	Monthly	-	100	2,200	93,600	459,700	600	600	
	Cumulative	-	100	2,300	95,900	555,600	556,200	556,800	556,800
1981[c/]	Monthly	-	800	100	67,800	163,200	700	-	
	Cumulative	-	800	900	68,700	231,900	232,600	-	232,600

a/ Excluding Washington landings from California, Oregon and Alaska catch areas. Includes Indian troll catch and effort for all years.
b/ Includes November through April Strait of Juan de Fuca Indian troll catch.
c/ Preliminary.

Table II-19. Washington commercial non-Indian troll salmon regulations[a/] for 1971-1982.

Year	Season: Early (non-coho)	Season: Late (all species)	Days: Early	Days: Late	Size: Chinook	Size: Coho[b/]
1971-75	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"
1981	5/1-5/31	7/15-8/21[g/]	31	38	28"	16"
1982[f/]	5/1-5/31	7/15-7/30 north	31	16	28"	16"
		7/1-7/8 south	31	8	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/ Season closures differing north and south of Leadbetter Point.

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

Table II-20. Summary of Washington troll[a/] effort and catch (number of fish) by coastal catch area, 1976-82, 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[b/]	12,200	8,600	13,200	7,700	41,700
1980[b/]	7,100	5,500	9,400	4,900	26,900
1981[b/]	8,800	4,400	10,200	4,500	27,900
1982[b/]	6,300	2,100	8,400	2,300	19,100
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[b/]	35,500	29,200	58,100	9,600	132,400
1980[b/]	35,000	29,400	52,600	10,700	128,200
1981[b/]	36,200	17,000	48,700	11,600	113,500
1982[b/]	48,200	14,900	75,200	19,300	157,600
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[b/]	150,200	162,000	215,500	112,500	640,200
1980[b/]	88,600	122,900	107,200	55,300	374,000
1981[b/]	112,000	67,600	124,800	76,000	381,400
1982[b/]	195,600	70,500	50,900	44,100	361,100
Pink					
1971-75 Odd-year Ave.	15,600	30,000	4,400	100	50,100
1977	158,500	93,100	25,200	4,000	280,800
1979[b/]	325,500	198,700	29,300	3,300	556,800
1981[b/]	155,200	54,600	20,100	2,700	232,600

a/ Includes Indian troll catch and effort, excluding Washington landings from California, Oregon, and Alaska catch areas.
b/ Preliminary.

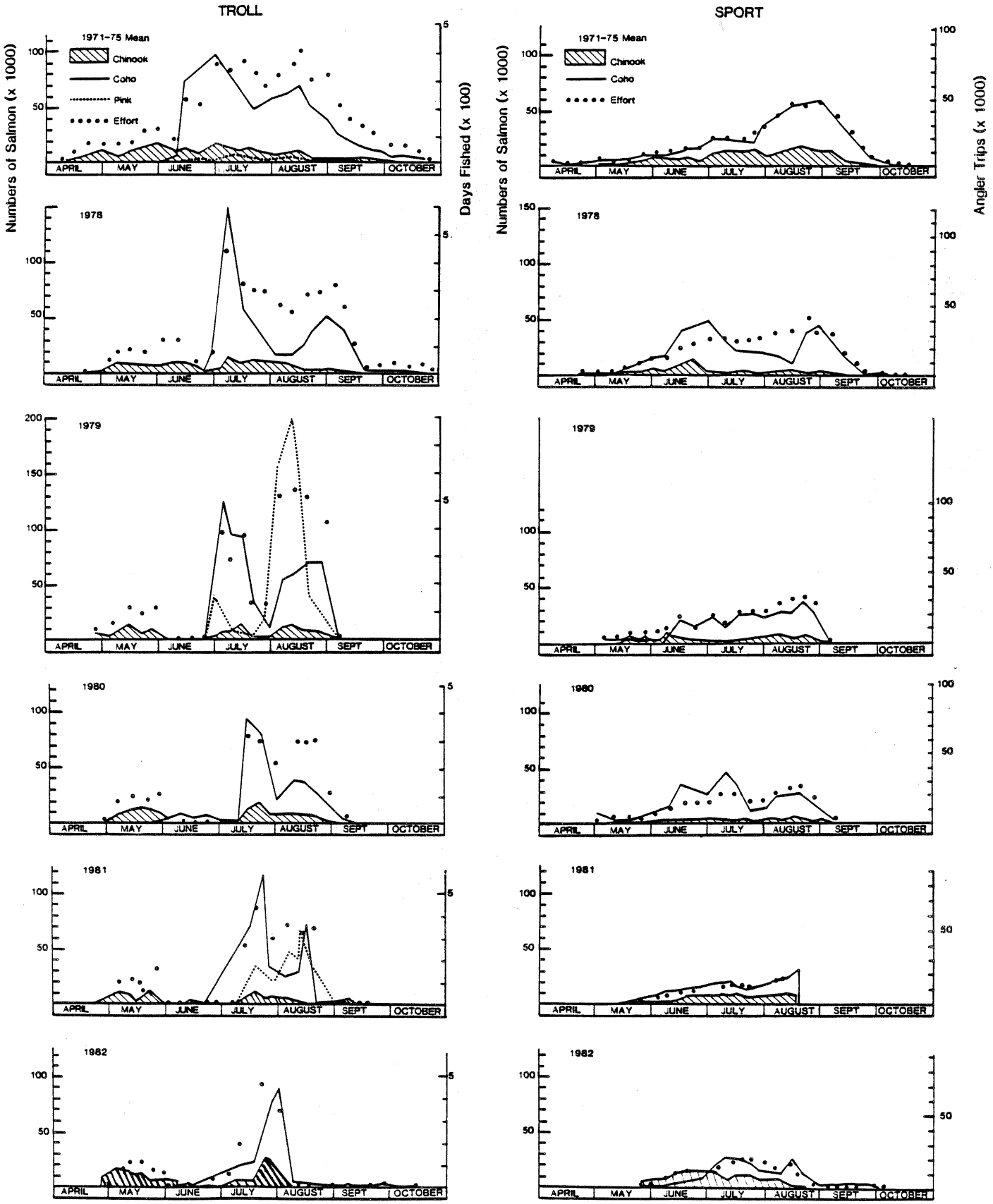

Figure II-1. Weekly Washington coastal troll and sport salmon catches and effort, 1971-75, 1977, 1978, and preliminary 1979-1982.

Total 1982 troll chinook landings during the May fishery were 67,300 which were 37% and 50% greater than 1981 and 1980 levels, respectively. Chinook landings for the remainder of the season were greater than respective levels in 1981 and 1980 by 47% and 3%.

Treaty troll chinook harvest in 1982 was 35,600, which was 53% and 147% greater than in 1981 and 1980, respectively. Ocean landings represented 46% of the treaty Indian chinook harvest in 1982 compared to approximately 30% in 1981 and 1980 (Table II-21). The Straits fishery is primarily a winter chinook fishery. The 1982 harvest was 19% greater than 1981.

Non-Indian troll chinook harvest totaled 122,000 in 1982 which was 34% and 7% greater than 1981 and 1980 levels, respectively (Table II-21).

Coho - Troll landings of coho in 1982 from Washington coastal areas were 361,000, which was 5% and 3% less than 1981 and 1980, respectively (Table II-18). By area, respective landings from Cape Flattery and Quillayute increased by 75% and 4% compared to 1981 while Grays Harbor and Columbia River area coho harvests decreased by 59% and 42% from 1981, respectively (Table II-20). Part of the large increase in coho harvest off Cape Flattery was due to expansion of the treaty Indian troll fishery in this area. The availability of coho off the northern Washington coast was also quite high in 1982. On the contrary, availability of coho off Grays Harbor was extremely low in 1982, evidenced by record low coho-per-day boat landings observed during the season. The troll fleet also targeted on chinook to a greater extent in 1982 compared to previous years, in response to low coho quotas and high availability of chinook.

Treaty Indian troll coho harvest totaled 122,300 in 1982 or approximately four times 1981 and 1980 levels (Table II-21). June and September treaty landings accounted for 49% of the 1982 treaty total, and represented the largest total coho harvest during these months since 1978.

Non-Indian troll landings of coho were 238,700 in 1982 or approximately 30% less than 1981 and 1980 levels (Table II-21). The 1982 harvest was concentrated during the approximate one-week and two-week July all-species seasons off the Columbia River and north of Leadbetter Point, respectively.

Recreational Fishery

Recreational catch and effort statistics are presented in Tables II-22 and II-23 on an annual and monthly basis, respectively, for the Washington coast. These preliminary data are based upon extensive in-season creel census surveys, while final catch statistics are derived from post-season punch card reports published annually by the Washington Department of Fisheries.

1982 Regulations - Regulations for the Washington ocean recreational salmon fishery since 1971 are tabulated in Table II-24. The season north of Leadbetter Point opened on May 29 and continued through June 11 for chinook only. The all-species seasons for the entire coast began June 12. Size limits were 24-inches for chinook and 16-inches for coho.

The recreational fishery off the Columbia River mouth was closed on July 25 by WDF and NMFS when the adjusted quota of 94,000 coho was projected to be

Table II-21. Troll catch (numbers of fish) of chinook, coho, and pink salmon by treaty Indian and all others from Washington catch areas, 1972-1982.

	Chinook				Coho				Pink			
	Treaty Indian			All	Treaty Indian			All	Treaty Indian			All
Year	Ocean	Strait[a/]	Total	Others[d/]	Ocean	Strait[a/]	Total	Others[d/]	Ocean	Strait[a/]	Total	Others[d/]
1972	4,600	6,200	10,800	180,600	9,000	b/	9,000	542,800	b/	b/	b/	400
1973	5,300	6,200	11,500	301,900	10,600	200	10,800	683,100	1,400	b/	1,400	53,800
1974	8,300	3,500	11,800	336,100	17,700	b/	17,700	1,001,600	b/	b/	b/	1,000
1975	9,300	3,100	12,400	251,300	6,200	800	7,000	753,900	800	100	900	75,300
1976	7,400	11,000	18,400	335,200	7,600	200	7,800	1,347,300	b/	b/	b/	1,300
1977	3,900	9,800	13,700	217,900	6,100	1,100	7,200	656,600	4,300	600	4,900	275,900
1978	2,600	13,300	15,900	129,600	4,400	3,600	8,000	546,700	b/	b/	b/	1,100
1979[c/]	1,100	8,200	9,300	123,100	7,400	3,100	10,500	629,800	5,000	1,600	6,600	551,400
1980[c/]	4,300	10,100	14,400	113,800	31,700	800	32,500	341,600	100	0	100	300
1981[c/]	7,200	16,100	23,300	91,300	28,600	2,300	30,900	350,500	3,400	800	4,200	228,900
1982[c/]	16,500	19,100	35,600	122,000	116,800	5,500	122,300	238,700	0	0	0	900

a/ Strait of Juan de Fuca.
b/ Less than 50 fish.
c/ Preliminary.
d/ All troll harvest by other than treaty Indians.

Table II-22. Washington ocean recreational salmon fishery catch (number of fish) and effort statistics, 1971-82.

Year	Effort (Angler trips)	Catch				Fish/ Angler Trip
		Chinook	Coho	Pinks	Total	
1971	443,300	160,000	747,300	9,000	916,300	2.07
1972	490,500	212,300	541,800		754,100	1.54
1973	479,700	203,800	471,700	7,900	683,400	1.42
1974	464,900	214,600	595,300		809,900	1.74
1975	535,900	261,600	481,100	13,500	786,200	1.41
1971-75 Average	493,500[a/]	210,400	567,400	10,100[b/]	787,900	1.60
1976	538,100	170,700	942,800		1,113,500	2.07
1977	530,000	175,000	490,200	29,300	694,500	1.31
1978	482,800	96,400	469,800		566,200	1.17
1979[c/]	310,700	76,900	290,300	17,600	384,800	1.24
1980[c/]	280,100	53,600	361,500		415,100	1.48
1981[c/]	234,700	84,400	237,600	10,200	332,200	1.42
1982[c/d/]	206,500	106,100	193,400		299,500	1.45

a/ 1973-75 effort average.
b/ 1971-75 odd-year pink average.
c/ Preliminary.
d/ Includes Washington-based effort and catch from Oregon state waters (July 26-August 1) and Strait of Juan de Fuca after WDF and NMFS ocean closures.

Table II-23. Washington ocean sport salmon angler trips, and numbers of chinook, coho and pink caught, by month, 1971-75 mean and 1978-1982.

		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
1981[a/]	Monthly	100	10,700	38,000	86,000	92,400	7,500	-	
	Cumulative	100	10,800	48,800	134,800	227,200	234,700	-	234,700
1982[a/b/]	Monthly	-	2,400	41,600	107,900	48,800	5,800	<100	
	Cumulative	-	2,400	44,000	151,900	200,700	206,500	206,500	206,500
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
1981[a/]	Monthly	>100	2,600	12,000	36,700	31,900	1,200	-	
	Cumulative		2,600	14,600	51,300	83,200	84,400	-	84,400
1982[a/b/]	Monthly	-	800	41,900	50,700	12,600	200	<100	
	Cumulative	-	800	42,700	93,400	106,000	106,200	106,200	106,200
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
1981[a/]	Monthly	<100	8,300	47,500	84,800	86,800	10,200	-	
	Cumulative		8,300	55,800	140,600	227,400	237,600	-	237,600
1982[a/b/]	Monthly	-	<100	20,600	112,700	54,300	5,800	<100	
	Cumulative	-	<100	20,600	133,300	187,600	193,400	193,400	193,400
PINK									
1971-75	Monthly	-	<100	800	2,700	5,800	800	-	
Odd-year Average	Cumulative	-		800	3,500	9,300	10,100	-	10,100
1977	Monthly	-	300	1,700	14,600	12,600	100	-	
	Cumulative	-	300	2,000	16,600	29,200	29,300	-	29,300
1979[a/]	Monthly	-	<100	1,100	3,900	12,200	400	-	
	Cumulative	-		1,100	5,000	17,200	17,600	-	17,600
1981[a/]	Monthly	-	<100	200	2,700	6,900	400	-	
	Cumulative	-		200	2,900	9,800	10,200	-	10,200

a/ Preliminary.

b/ Includes Washington-based effort and catch from Oregon state waters (July 26-August 1) and Strait of Juan de Fuca after WDF and NMFS ocean closures.

Table II-24. Washington ocean sport salmon regulations,[a/] 1971-1982.

Year	Season	Days	Bag	Size	
				Chinook	Coho
1971-73	4/15-10/31	200	3	20"	20"
1974	4/13-10/31	202	3	20"	20"
1975	4/12-10/31	203	3	20"	20"
1976	5/1-10/31	184	3	24"	16"
1977	4/30-10/9	163	3	24"	16"
1978	4/29-10/31	186	3	24"	16"
1979	5/12-9/3	115	2+1[b/]	24"	16"
1980	5/10-8/25 north[c/]	108	3/2[c/]	24"	16"
	5/10-9/1 south[c/]	115	3/2[c/]	24"	16"
1981	5/23-8/26	96	2+1[d/]	24"	20"
1982[e/]	5/29-6/11 (chinook only);				
	6/12-8/19 north	83	2	24"	16"
	6/12-7/25 south	44			

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

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

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

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

e/ Seasons differing north and south of Leadbetter Point; some Ilwaco and Chinook based effort continued through August 1 inside Oregon state waters and from August 16 through September 30 inside Buoy 10 to the Megler-Astoria Bridge. The August 25-September 30 period was restricted to coho only, with barbless hooks required after August 31. The easterly portion of Neah Bay (inside Koitlah Point) remained open after August 19.

reached. Oregon coastal waters inside 3 miles remained open until August 1 under jurisdiction of the Oregon Fish and Wildlife Commission. Some Washington based fishermen continued to fish off Oregon during this opening. In addition, an inside Columbia River recreational fishery was open from August 16 through September 30 which attracted normally "ocean-based" effort. This fishery below the Megler-Astoria Bridge was restricted to coho only on August 25, with barbless hooks required after August 31. Size and bag limits reverted to river regulations in October.

The recreational fishery north of Leadbetter Point was closed on August 19 when the quota of 115,000 coho was projected to be reached. Neah Bay waters east of Kootlah Point (approximately 5 miles inside the Bonella-Tatoosh line) remained open under WDF jurisdiction in contravention of ocean management intent in offshore state and FCZ waters.

Effort - Total days fished (angler trips) for the 1982 season amounted to 206,500, a record low for recent years and continuing a declining trend in response to reduced allowable coho harvest and corresponding short season length. This effort level represented a 12% and 26% decrease from 1981 and 1980, respectively (Table II-22).

By area, recreational effort increased at Neah Bay (26%) and LaPush (429%) compared to 1981. Coho success rates were quite high throughout the season at Neah Bay. The 1981 LaPush season did not begin until August due to local problems at that port. Recreational effort in 1982 decreased 43% at Ilwaco compared to 1981 but only 3% at Westport (Table II-25). The relatively stable effort at Westport was due in large amount to high chinook success rates throughout June and July.

While total 1982 recreational effort was reduced from previous years, June and July effort was greater than in 1981 by 9% and 25%, respectively. The 1982 July effort, however, was comparable to 1979 and 1980 levels (Table II-23). Good angling success was at least partially responsible for this increase.

Chinook - Estimated 1982 recreational chinook landings of 106,100 were 26% and 98% greater than 1981 and 1980, respectively, and represent the highest recreational chinook harvest since 1977. The 1982 harvest was 50% less than the 1971-1975 average (Table II-22). Almost all the 1982 chinook harvest increase, compared to 1981, was taken from Westport where chinook angling success was high throughout June and July and boats targeted primarily on this species (Table II-25). In addition, 1982 June and July harvest increases compensated for May and August reductions from previous years (Table II-23).

Coho - Total 1982 recreational landings of coho were 193,400 which were 19% and 47% less than 1981 and 1980 levels, respectively (Table II-22). This record low coho harvest in 1982 is primarily due to continued reductions in allowable coho harvest off the Washington coast. Coho harvests in 1982 increased at Neah Bay and LaPush compared to 1981 and decreased at Westport and Ilwaco due to factors already discussed (Table II-25). Monthly 1982 coho harvests were reduced compared to 1981, except during July.

Fisheries continued inside the Columbia River mouth (Buoy 10 to Megler-Astoria Bridge) from August 16 through September and at Neah Bay inside the Strait of Juan de Fuca (Koitlah Point to Sekiu River). Recreational coho harvests were

Table II-25. Summarized Washington recreational ocean sport angler effort and catch (numbers of fish) by area, 1971-75 average and 1976-82.

Year	Area				
	Neah Bay	La Push	Westport	Ilwaco	Total
(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
1981[a/]	28,500	1,400	117,100	87,800	234,700
1982[a/b/]	35,800	7,400	113,200	50,100[c/]	206,500
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
1981[a/]	3,100	100	57,400	23,800	84,400
1982[a/b/]	3,100	1,000	83,100	18,900[c/]	106,100
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
1981[a/]	25,700	1,300	92,000	118,500	237,600
1982[a/b/]	39,400	8,800	74,800	70,400[c/]	193,400
Pink					
1971-75 Odd-Year Average	5,200	2,600	2,100	200	10,100
1977	10,500	3,000	14,300	1,500	29,300
1979[a/]	11,500	1,800	4,000	300	17,600
1981[a/]	7,800	300	1,700	400	10,200

a/ Preliminary.

b/ Includes Washington-based effort and catch from Oregon state waters (July 26-August 1) and Strait of Juan de Fuca after WDF and NMFS ocean closures.

c/ Includes 1,400 angler trips north of Leadbetter Point after August 1; 400 chinook caught north of Leadbetter Point after August 1; 1,600 coho caught north of Leadbetter Point after August 1; and 5,900 coho taken in Oregon state waters July 26-August 1.

12,500 at the Columbia River mouth and 8,900 at Neah Bay. The Columbia River estuary catch through September 5 was 6,500 coho. The late Columbia River estuary harvest is not included in ocean totals.

Early Season Chinook-Only Fishery - The two-week recreational chinook-only fishery which occurred north of Leadbetter Point in 1982 represents the first selective recreational salmon fishery which has occurred off the Washington coast. The season was adopted as a means to maintain recreational effort in the face of severe allowable coho harvest reductions.

No specific data was available prior to the season to evaluate potential coho impacts during a recreational chinook-only fishery. The SPDT estimated that 2,500 coho would be killed during the May 29-June 11 fishery north of Leadbetter Point.

WDF monitored this fishery as an experiment. In addition to normal, dockside sampling interviews, coho shaker information was obtained through WDF onboard observers and charter logbooks. Coho/chinook species composition data collected by the three methods was quite comparable.

An estimated 2,400 coho were hooked and released during the two-week fishery representing a coho mortality estimate of 700 assuming a 30% mortality rate. Specific methods and estimation techniques are thoroughly discussed in a WDF Progress Report in print.

While the impact of the 1982 chinook-only fishery was relatively small, the unusual circumstances existing in 1982 would preclude using the fishery performance in estimating potential impacts of future fisheries. First, chinook availability in 1982 was unusually high off Westport. Second, the availability of coho off Grays Harbor was unusually low. Record low coho per troll day fished (day-boats) occurred in 1982 and reflected general absence of coho in the area until early August.

Size and Age Data

Chinook - Chinook salmon age composition data are presented in Tables II-26 and II-27. These data are not yet available for 1982 which was the sixth season since the minimum size regulation changed from 26- to 28-inches (total length) in the troll fishery, and the fifth year since a 24-inch regulation was implemented in the ocean recreational fishery (previously 20-inches).

Coho - Monthly troll-caught coho average weights for all coastal areas combined are listed in Table II-28. Specific comparisons are difficult due to recent changes in the all-species season but the season average of 5.1 pounds is the lowest in recent years.

Table II-26. Age composition of chinook salmon caught in Washington commercial troll fishery, 1971-75 mean and 1976-81.[a/]

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

a/ For the four Washington coastal catch areas only (plus area 4-B). Excludes November-April landings.
b/ Preliminary.
c/ Total length.
d/ Only partial compliance in 1977.

Table II-27. Age composition of chinook salmon caught in Washington ocean recreational fishery, 1971-75 mean and 1976-81.

	Age	1971-75 mean	1976	1977	1978	1979[a/]	1980[a/]	1981[a/]
Catch	2	70,618	11,030	5,810	3,471	6,755	5,831	31,823
	3	103,510	127,125	128,790	63,532	57,457	35,008	41,267
	4	32,491	27,515	36,198	27,861	11,305	11,636	10,486
	5	3,688	3,845	3,895	1,542	1,319	1,094	824
	6	136	275	84	-	-	6	-
Total		210,443	169,790	174,777	96,406	76,836	53,575	84,400
Percent	2	33.6	6.5	3.3	3.6	8.8	10.9	37.7
	3	49.2	74.8	73.8	65.9	74.8	65.4	48.9
	4	15.4	16.2	20.7	28.9	14.7	21.7	12.4
	5	1.7	2.3	2.2	1.6	1.7	2.0	1.0
	6	<.1	0.2	-	-	0.1	-	-
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Minimum size regulation[b/]		20"	24"	24"	24"	24"	24"	24"

a/ Preliminary.
b/ Total length.

Table II-28. Monthly Washington commercial troll coho salmon average round weights, 1971-1981.

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

a/ Preliminary.
b/ Treaty Indian fishery.
c/ Gear study at mouth of Columbia River.

REVIEW OF SOME OF THE SOCIOECONOMIC CONDITIONS IN THE 1982 OCEAN SALMON FISHERIES

Spawning escapements and other biological fishery conditions are a result of regulations, environment, and other factors. In the same way, social and economic conditions result from a combination of factors including the general state of the economy, decisions in other sectors of the government and private industry, Council regulations and other factors. An understanding of socio-economic conditions in the fisheries in 1982 is important in the design of a salmon management regime for 1983.

The following is a brief review of available socioeconomic indicators in the 1982 ocean salmon fisheries; a more thorough discussion can be found in Chapter V.

° Number of vessels in the troll salmon fleets in 1982:

(a) California: 4,158 licensed vessels landing salmon (Table V-6).

(b) Oregon: 3,259 licensed vessels landing salmon, although approximately 3,641 are qualified to fish salmon under the state license moratorium (see Table V-7.)

(c) Washington: not currently available for 1982. In 1981, Washington's fleet was composed of 2,601 vessels -- this number includes trollers with vessel delivery permits.

° As noted earlier in this chapter, 1982 California angler effort was up 27% from 1981 (still 33% less than the 1971-75 average). Oregon angler effort was 28% below the 1981 level. This reduced ocean effort was due to the late opening and August 1 closure of the recreational salmon fishery. Washington angler effort was also the lowest in recent years (12% below 1981).

° Membership in the Golden Gate Sportfishers (San Francisco's charterboat association) numbered 60 in both 1981 and 1982 compared to 132 ten years ago. This group includes the vast majority of the professional salmon charterboat fleet in California.

The Oregon charterboat fleet numbered 253 in 1982 compared to 248 in 1981 and 1980. This increase in growth can be partially attributed to the increase in the number of Washington state residents holding Oregon charterboat licenses (2 in 1980, 34 in 1981, and 40 in 1982).

The Washington charterboat fleet numbered 478 licensed vessels in 1982.

° The 1982 commercial ex-vessel salmon average prices and values were not available for Washington, but for California and Oregon, they were as follows:

California: The total value of salmon landings in California ($9.5 million) increased in 1982 by 36% (30% when deflated to 1972 levels) over the 1981 total value figure. The average price per pound for California chinook of $2.55/lb. ($1.24/lb., deflated) represented an increase in

nominal terms but actually converts to a slight decrease in real terms from 1981 levels of $2.45/lb. ($1.25/lb., deflated). The average price per pound for California coho of $1.36/lb. ($.66/lb., deflated) decreased compared to the 1981 level of $1.96/lb. ($.99/lb., deflated) (Table V-3).

Oregon: The total value of 1982 salmon landings in Oregon was $9.6 million. This represents a 1% increase over 1981 levels in nominal terms; however, in real terms, this converts to a 4% decrease in value. The average price per pound for chinook of $2.59/lb., ($1.26/lb., deflated) decreased from the 1981 level of $2.57/lb. ($1.31/lb., deflated). The average price per pound for Oregon coho of $1.40/lb. ($.68/lb., deflated) fell by 16% since 1981 levels of $1.66/lb. (.88/lb., deflated) (Table V-4).

° During the first six months of 1982, Norway sold $1.8 million worth of fresh and frozen salmon to the U.S. During the same period in 1981, only $10,000 worth of salmon was purchased for the entire year.

° Albacore serves as an additional fishery, and in some cases the primary fishery for many trollers. During the 1982 season, markets for albacore along the Western Coast were more scarce than in the past, and in addition, ex-vessel prices plummeted. In July of 1981, a price of $1,425/ ton of albacore was agreed upon; this represented a 20% decrease from the 1980 price of $1,800/ton. The 1982 fall season saw further price reductions. The price decreases have been attributed to a worldwide oversupply of albacore coupled with the presence of lower priced foreign-caught fish from the Philippines, Japan, Korea, Thailand, Taiwan, and South Africa. The existence of these problems in the albacore fishery may shed some light on the increased effort experienced in the California salmon fishery. Amid uncertainty in the albacore fishery, fishermen may have opted to continue to fish for salmon.

° Dungeness crab is also fished by many northern California, Oregon, and Washington salmon trollers. Crab abundance during the 1982 fishing season was low. The potential for poor crab fishing may have increased many fishermen's dependence on salmon and thereby increased salmon fishing effort in 1982.

° Sea surface temperatures affect the distribution concentration and "catchability" of salmon and, therefore, influence the level of harvest and fishing effort. Charts showing sea surface temperature patterns are on file as background material at the Council office in Portland, Oregon.

° Ports located in management areas which were closed earlier than had been expected, due to the rapid attainment of the coho quota in 1982, suffered economic hardship. Ports such as Grays Harbor, Ilwaco, Newport, Winchester Bay, and Coos Bay reported high vacancy rates in their marinas and a significant drop in tourism once the season was terminated. Newport, for example, reported moorage vacancies for the first time this year with revenues down by $100,000 and tourism in general down by 20%. Ilwaco reported vacancy rates at 50% along with a 37% drop in the number of charters operating out of its port, from 145 in 1980 to 91 in 1982, a 37% decrease. Additional information can be found in Chapter V.

° Diesel fuel prices in 1982 for marine vessels fell 7% from 1981 (see additional data in Chapter V, Table V-24 and Figure V-2). Should such decreases continue in future years, a change in commercial and recreational fleet behavior may become apparent.

SUMMARY OF OCEAN FISHERIES

The harvest by the 1982 ocean salmon fisheries of California, Oregon, and Washington amounted to 1,157,000 chinook and 992,000 coho by commercial trollers and 284,000 chinook and 392,000 coho by the recreational fleet. The chinook commercial harvest was 10% above the 1971-75 average. The commercial coho catch was 45% of the 1971-1975 average. The coast-wide recreational chinook and coho catches were 66% and 44% of their 1971-1975 averages, respectively.

Details are illustrated in Figures II-1 and II-2, and summary data are provided in Table II-29, II-30, and II-31. These tables also contain catches by Canadian and Southeast Alaska ocean troll fisheries for reference. A comparison of preliminary 1982 catches to catches in 1981 and the 1971-75 average is presented in Table II-32. Canadian ocean troll sockeye harvest for 1971-1982 is furnished in Table II-33. The salmon fishing seasons for 1982 are summarized in Table II-34, and past seasons are summarized in Tables II-35 and II-36.

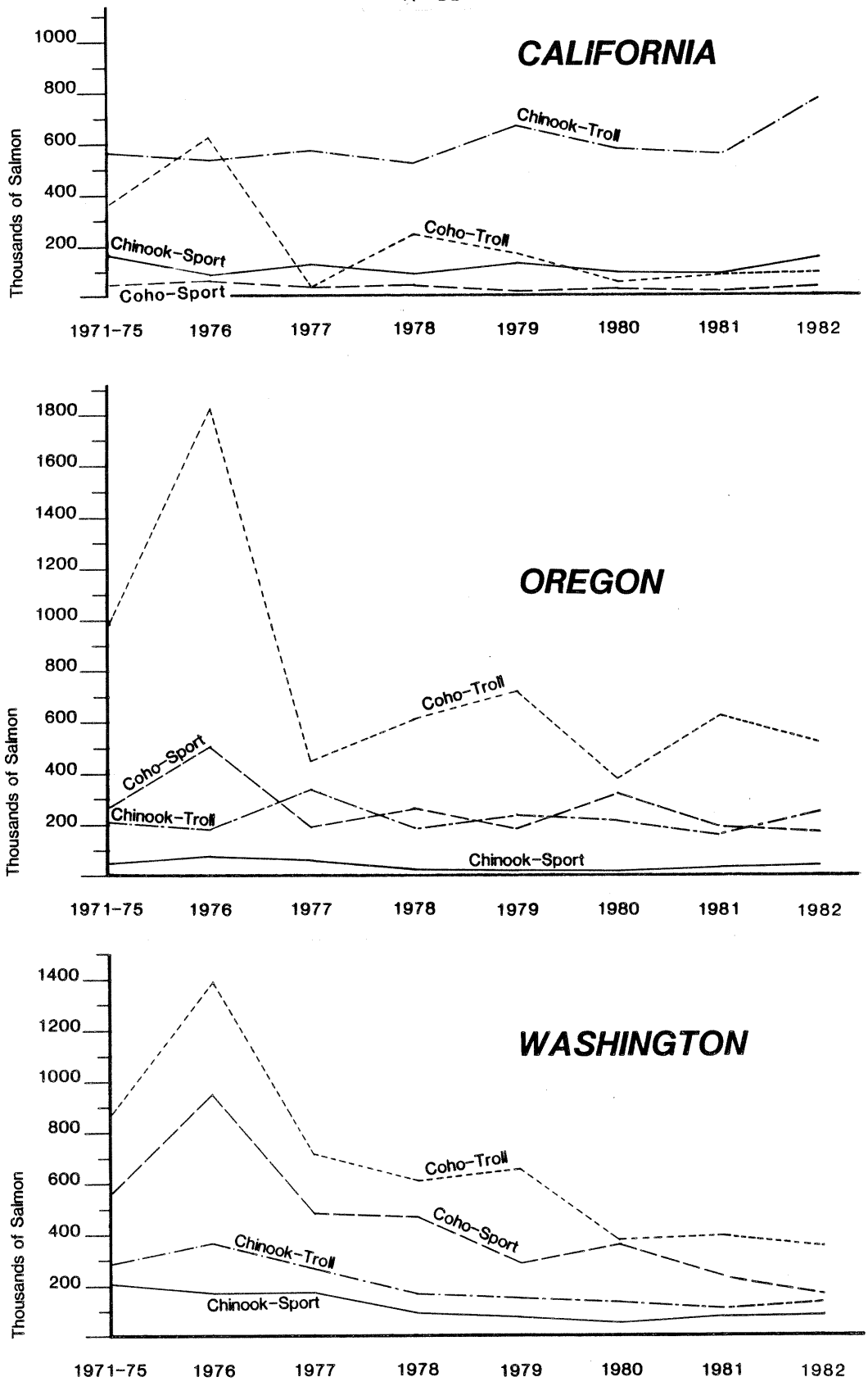

FIGURE II-2. Summary of ocean salmon landings of California, Oregon, and Washington, 1976-82 and 1971-75 average, showing trends by species and type of fishery.

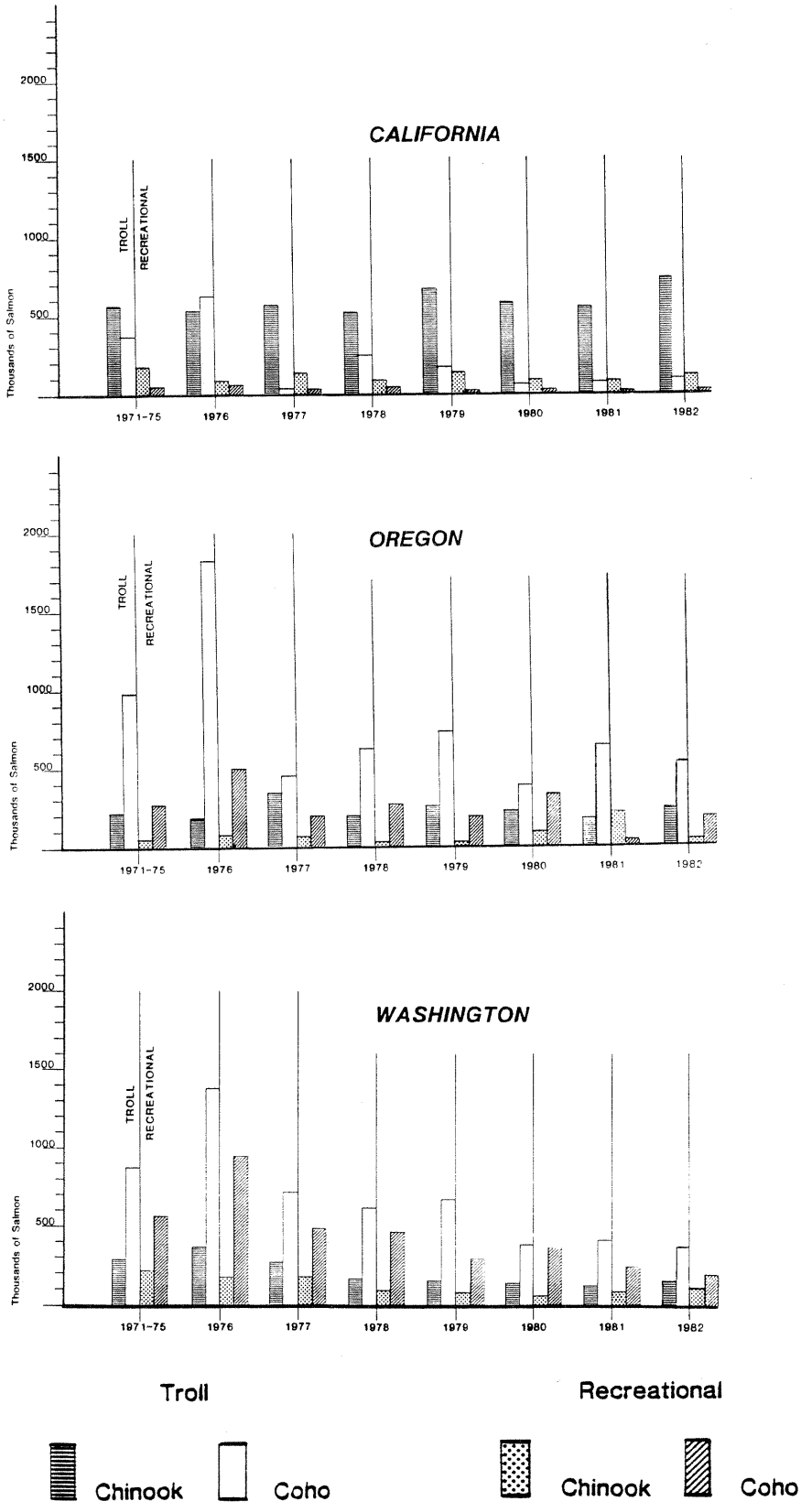

Figure II-3. Summary of ocean salmon landings of California, Oregon, and Washington, 1976-82 with 1971-75 average.

Table II-29. Commercial troll and ocean sport chinook catches (thousand fish), 1971-1982.

Year	California			Oregon[b/]			Washington[c/]			PFMC Area			Canadian	Southeast Alaska	Grand
	Troll	Sport	State Total	Troll	Sport	State Total	Troll	Sport	State Total	Troll	Sport	Total	Troll	Troll	Total
1971	434	188	622	103	30	133	252	160	412	789	378	1,167	1,270	334	2,771
1972	492	200	692	127	44	171	203	212	415	822	456	1,278	1,222	242	2,742
1973	817	198	1,015	363	61	424	317	204	521	1,497	463	1,960	1,091	308	3,359
1974	492	157	649	224	37	261	353	215	568	1,069	409	1,478	1,178	322	2,978
1975	579	104	683	225	76	301	274	262	536	1,078	442	1,520	1,103	287	2,910
1971-75 Average	563	170	733	209	49	258	280	210	490	1,052	429	1,481	1,173	299	2,953
1976	540	81	621	184	79	263	361	171	532	1,085	331	1,416	1,249	231	2,896
1977[a/]	563	127	690	340	61	401	268	175	443	1,171	363	1,534	1,112	272	2,918
1978[a/]	519	84	603	192	23	215	166	96	262	877	203	1,080	1,033	376	2,489
1979[a/]	659	123	782	245	21	266	148	77	225	1,052	221	1,273	997	338	2,608
1980[a/]	575	86	661	209	19	228	133	54	187	917	159	1,076	1,002	300	2,378
1981[a/]	549	84	633	160	29	189	117	84	201	826	197	1,023	876	248	2,147
1982[a/]	764	139	903	233	39	272	160	106	266	1,157	284	1,441	1,078	242	2,761

a/ Preliminary from 1977 for California; from 1979 for Washington, and from 1981 for Oregon.
b/ Includes catches from California, Washington, and Alaska landed in Oregon.
c/ Includes catches from California, Oregon, and Alaska landed in Washington.

Table II-30. Commercial troll and ocean sport coho catches (thousand fish), 1971-1982.

Year	California			Oregon[b/]			Washington[c/]			PFMC Area			Southeast Canadian	Southeast Alaska	Grand
	Troll	Sport	State Total	Troll	Sport	State Total	Troll	Sport	State Total	Troll	Sport	Total	Troll	Troll	Total
1971	442	67	509	1,490	312	1,802	1,264	747	2,011	3,196	1,126	4,322	3,457	392	8,171
1972	158	45	203	825	248	1,073	575	542	1,117	1,558	835	2,393	2,369	791	5,553
1973	348	32	380	796	232	1,028	702	472	1,174	1,846	736	2,582	2,483	540	5,605
1974	656	77	733	1,137	314	1,451	1,038	595	1,633	2,831	986	3,817	2,700	846	7,363
1975	204	21	225	657	252	909	774	481	1,255	1,635	754	2,389	1,404	214	4,007
1971-75 Average	362	48	410	981	272	1,253	871	567	1,438	2,214	887	3,101	2,482	557	6,140
1976	622	58	680	1,821	501	2,328	1,385	943	2,328	3,834	1,502	5,336	2,876	525	8,737
1977[a/]	35	27	62	446	195	641	716	490	1,206	1,197	712	1,909	2,248	507	4,664
1978[a/]	238	44	282	612	260	872	610	470	1,080	1,460	774	2,234	2,570	1,101	5,905
1979[a/]	164	16	180	715	181	896	666	290	956	1,545	487	2,032	2,906	918	5,856
1980[a/]	50	21	71	383	326	709	386	362	748	820	709	1,529	2,696	707	4,932
1981[a/]	78	10	88	620	200	820	401	238	639	1,099	448	1,547	1,924	862	4,333
1982[a/]	90	24	114	522	175	697	380	193	573	992	392	1,384	NA	1,343	NA

a/ Preliminary from 1977 for California; from 1979 for Washington, and from 1981 for Oregon.
b/ Includes catches from Alaska, Washington, and California landed in Oregon.
c/ Includes catches from Alaska, Oregon, and California landed in Washington.

Table II-31. Commercial troll and ocean sport pink salmon catches (thousand fish), 1971-1982.

Year	California	Oregon			Washington			PFMC Area			Canada	S.E. Alaska	Grand
	Troll	Troll	Sport	Total	Troll	Sport	Total	Troll	Sport	Total	Troll	Troll	Total
1971	1	2	NA	NA	21	9	30	24	NA	NA	1,284	105	NA
1972	T	T	T	T	4	T	4	T	T	T	1,033	167	1,200
1973	19	3	2	5	55	8	63	77	10	87	1,232	135	1,454
1974	T	T	T	T	1	T	1	1	T	T	609	265	874
1975	3	T	1	1	77	14	91	80	15	95	1,288	77	1,460
1971-75 Average[a/]	8	2	NA	NA	51	10	61	61	NA	NA	1,089	150	NA
1976	T	T	T	T	2	T	2	2	T	2	781	194	977
1977	1	88	4	92	288	29	318	377	33	410	2,677	281	3,368
1978	NA	T	T	T	4	T	4	NA	T	NA	428	618	NA
1979	T	21	1	21	561	18	578	582	19	599	4,036	629	5,264
1980	T	T	T	T	1	T	1	1	T	1	1,295	268	1,564
1981[b/]	7	60	2	62	234	10	244	301	12	306	4,150	579	5,035
1982[b/]	T	T	T	T	T	T	T	1	T	1	NA	534	NA

a/ Odd year average for California, Oregon, Washington, and PFMC.
b/ Preliminary.
T Less than 500 fish.

Table II-32. Comparison of preliminary 1982 catches to catches in 1981 and the 1971-75 average.

State	Chinook						Coho					
	Commercial Troll		Ocean Sport		Total		Commercial Troll		Ocean Sport		Total	
	1981	1971-75 Average	1981	1971-75 Average	1981	1971-75 Average	1981	1971-75 Average	1981	1971-75 Average	1981	1971-75 Average
California	139%	136%	165%	82%	139%	136%	115%	25%	140%	50%	130%	28%
Oregon	146%	111%	134%	80%	144%	105%	84%	53%	88%	64%	85%	56%
Washington	137%	57%	126%	50%	132%	54%	95%	44%	81%	34%	90%	40%
PFMC Area Total	140%	110%	144%	66%	141%	97%	90%	45%	88%	44%	89%	45%

Table II-33. Canadian ocean troll sockeye harvest (thousand fish), 1971-1982.

Year	Catch
1971	635
1972	42
1973	165
1974	904
1975	106
1971-75 Average	370
1976	87
1977	126
1978	1,073
1979	431
1980	52
1981[a/]	127
1982[a/]	2,500

a/ Preliminary.

Table II-34. Summary of salmon fishing seasons, 1982 (dates inclusive).

Area	FCZ Sport	FCZ Commercial	STATE WATERS Sport	STATE WATERS Commercial
North of Leadbetter Pt.				
All salmon except coho	5/29-6/11	5/1-5/31	5/29-6/11	5/1-5/31
All salmon	6/12-8/19	7/15-7/30	6/12-8/19	7/15-7/30
Size Limit - Chinook	24"	28"	24"	28"
Coho	16"	16"	16"	16"
Bag Limit	2	--	2	--
Cape Falcon to Leadbetter Pt.				
All salmon except coho	--	5/1-5/31	--	5/1-5/31
All salmon	6/12-7/25	7/1-7/8	6/12-8/1[aa]	7/1-7/8
Size Limit - Chinook	24"	28"	24"	28"
Coho	16"	16"	16"	16"
Bag Limit	2	--	2[bb]	--
Cape Blanco to Cape Falcon				
All salmon except coho	-- --	5/1-6/15[a] 7/12-10/31[c]	5/29-6/11[b] --	5/1-6/15[a] 7/12-10/31[c]
All salmon	6/12-7/21	7/1-7/12[d]	6/12-8/1	7/1-7/12[d]
Size Limit - Chinook	none	26"	none	26"
Coho	none	16"	none	16"
Bag Limit	2[f]	--	2[f]	--
OR/CA Border to Cape Blanco				
All salmon except coho	-- 7/21-10/31	5/1-6/8[a] 7/12-10/31[c]	-- 8/2-10/31[e]	5/1-6/8[a] 7/12-10/31[c]
All salmon	5/29-7/21	7/1-7/12[d]	5/29-8/1	7/1-7/12[d]
Size Limit - Chinook	none	26"	none	26"
Coho	none	16"	none	16"
Bag Limit	2[f]	--	2[f]	--
California				
All salmon except coho	--	5/1-5/15	--	4/22-5/15[g]
All salmon	2/13-11/14	5/16-6/15[h] 7/1-9/30	2/13-11/14	5/16-6/15[h] 7/1-9/30
Size limit - Chinook	22"[i]	26"	22"[i]	26"
Coho	22"[i]	22"	22"[i]	22"
Bag limit	2	--	2	--

aa/ Barbless hooks from 7/26-8/1.
bb/ Only one of which could be a coho from 7/26-8/1.
a/ Whole bait and 5-inch minimum plugs 6/1-6/15 Cape Falcon to Cape Blanco, 6/1-6/8 Cape Blanco to Oregon/California border.
b/ Barbless hooks only.
c/ Whole bait and 5-inch minimum plugs 7/12-9/5, barbless hooks 9/6-10/31.
d/ Season closed noon.
e/ Special chinook-only fisheries at the mouths of the Elk and Chetco rivers continued through 11/30.
f/ First two salmon.
g/ Open south of Point Arena only for period 4/22-4/30.
h/ Area north of Point Arena closed on 6/8.
i/ Allowance for one fish to be less than 22-inches but not less than 20-inches.

Table II-35. Actual "other than treaty Indian" troll seasons[a/] and size limits, 1977-82.

Area	SEASON		NO. OF DAYS			SIZE LIMIT	
	All except Coho	All Salmon	All except Coho	All Salmon	Total	Chinook	Coho
1977							
No. of Pt. Grenville	May 1-June 14	July 1-Sept. 15	45	77	122	28[c/]	16
Pt. Grenville to Tillamook Head	May 1-June 14	July 1-Oct. 9[b/]	45	101	146	28[c/]	16
Tillamook Head to OR/CA Border	May 1-June 14	June 15-Oct. 31	45	139	184	26	16
California	Apr. 15-May 14	May 15-Sept. 30	30	139	169	26	22
1978							
No. of Pt. Grenville	May 1-June 14	July 1-Sept. 15	45	77	122	28	16
Pt. Grenville to Cape Falcon	May 1-June 14	July 1-Oct. 31	45	123	168	28	16
Cape Falcon to OR/CA Border	May 1-June 14	June 15-Oct. 31	45	139	184	26	16
California	Apr. 15-May 14	May 15-Sept. 30	30	139	169	26	22
1979							
No. of Cape Falcon	May 1-31	July 1-24; Aug. 4-31[d/]	31	52	83	28	16
Cape Falcon to OR/CA Border	May 1-31; Sept. 4-Oct. 31	July 1-Sept. 3[e/]	89	65	154	26	16
California	May 1-23	May 24-June 15; July 1-Sept. 30	23	115	138	26	22
1980							
No. of Leadbetter Pt.	May 1-31	July 15-Aug. 25	31	42	73	28	16
Leadbetter Pt. to Cape Falcon	May 1-31	July 15-Sept. 8	31	56	87	28	16
Cape Falcon to Cape Blanco	May 1-31; June 16-30; Sept. 9-Oct. 31	July 15-Sept. 8	99	56	155	26	16
Cape Blanco to OR/CA Border	May 1-31; Sept. 9-Oct. 31	July 15-Sept. 8	84	56	140	26	16
OR/CA Border to Cape Vizcaino	May 1-15	May 16-31; July 16-Sept. 30[j/]	15	102	117	26	22
South of Cape Vizcaino	May 1-15	May 16-31; July 1-Sept. 30	15	108	123	26	22
1981							
No. of Cape Falcon	May 1-31	July 15-Aug. 21[f/]	31	38	69	28	16
Cape Falcon to OR/CA Border	May 1-31; Aug. 22-Sept. 8[h/]; Sept. 9-Oct. 31	July 1-Aug. 21[g/]	99	55	154	26	16
California	May 1-15	May 16-31[i/]; July 1-Sept. 30	15	138	153	26	22
1982							
No. of Leadbetter	May 1-31	July 15-30	31	16	47	28	16
Leadbetter Pt. to Cape Falcon	May 1-31	July 1-8	31	8	39	28	16
Cape Falcon to Cape Blanco	May 1-June 15; July 13-Oct. 31	July 1-12	157	12	179	26	16
Cape Blanco to OR/CA Border	May 1-June 8 July 13-Oct. 31	July 1-12	150	12	162	26	16
OR/CA Border to Pt. Arena	May 1-15	May 16-June 8; July 1-Sept. 30	15	116	131	26	22
So. of Pt. Arena	April 22-May 15[k/]	May 16-June 15; July 1-Sept. 30	24	123	147	26	22

a/ Dates inclusive, including state water fisheries.
b/ Closed on October 9 in Washington waters. FCZ and Oregon waters closed on October 31.
c/ Received only partial compliance in 1977.
d/ Closed early in response to a court order to meet Columbia fall chinook treaty obligations.
e/ Closed in Oregon waters on September 3 for coho. FCZ closed on September 15.
f/ A special lottery-selected, 10-boat only, experimental troll fishery occurred off the Columbia River mouth out to 12 miles for coho only from September 20 to October 9.
g/ State waters remained open until August 24.
h/ From August 25 in state waters. For the area from Cape Falcon to Cape Sebastian only using whole bait or five-inch or larger plugs.
i/ State waters remained open from June 1-June 30.
j/ State waters remained open July 4-12.
k/ State waters only April 22-30.

Table II-36. Actual ocean sport salmon seasons,[a/] size limits and bag limits, 1977-82.

Year	Area	Season	Days	Bag Limit	Size Limit (inches) Chinook	Coho
1977	No. of Tillamook Head	Apr. 30-Oct. 9[b/]	163	3	24	16
	Tillamook Head to OR/CA Border	Apr. 30-Oct. 31	185	3	- No limits -	
	OR/CA Border to Tomales Pt.	All year	365	3	22[c/]	22[c/]
	So. of Tomales Pt.	Feb. 12-Nov. 13	275	3	22[c/]	22[c/]
1978	No. of Cape Falcon	Apr. 29-Oct. 31	186	3	24	16
	Cape Falcon to OR/CA Border	Apr. 29-Oct. 31	186	3	22	16
	OR/CA Border to Tomales Pt.	All year	365	3	22[c/]	22[c/]
	So. of Tomales Pt.	Feb. 18-Nov. 12	268	3	22[c/]	22[c/]
1979	No. of Cape Falcon	May 12-Sept. 3[d/]	115	2+1[e/]	24	16
	Cape Falcon to OR/CA Border	May 12-Sept. 16	128	2	22	16
	California	Feb. 17-Oct. 14	240	2	22[c/]	22[c/]
1980	No. of Leadbetter Pt.	May 10-Aug. 25	108	3/2[g/]	24	16
	Leadbetter Pt. to Cape Falcon	May 10-Sept. 1[f/]	115	3/2[g/]	24	16
	Cape Falcon to OR/CA Border	May 10-Sept. 1[f/]; Sept. 2-Oct. 31 (except coho)	155	3/2[g/]	22	16
	California	Feb. 16-Oct. 13	241	2	22[c/]	22[c/]
1981	Washington	May 23-Aug. 26	96	2[i/]	24	20
	Cape Falcon to WA Border	May 23-Aug. 26[h/]	108	2	24	16
	Cape Falcon to OR/CA Border	May 15-Aug. 27[j/];	129	2[l/]	22	16
		Sept. 21-Oct. 31[k/] (except coho)	41	2	22	-
	California	Feb. 14-Nov. 15[m/]	273	2	22[c/]	22[c/]
1982	No. of Leadbetter Pt.	May 29-Aug. 11[n/]	83	2	24	16
	Leadbetter Pt. to Cape Falcon	June 12-Aug. 1[o/]	51	2[p/]	24	16
	Cape Falcon to Cape Blanco	May 29-Aug. 12[/r/]	65	2	None	None
	Cape Blanco to OR/CA Border	May 29-Aug. 12[r/]	65	2	None	None
	California	Feb. 13-Nov. 14	275	2	22[c/]	22[c/]

a/ Dates inclusive.
b/ Emergency closure in Washington waters on October 9. FCZ and Oregon waters open through October 31.
c/ Allowance for one fish between 20-22 inches.
d/ Closed on September 3 in Washington waters to protect wild coho. FCZ and Oregon waters closed on September 16, except closed for coho in Oregon waters south of Falcon on September 3.
e/ Two chinook/coho plus one other species.
f/ In Oregon waters, all-salmon season extended through September 14.
g/ Reduced to 2-fish on July 16.
h/ Season remained open through September 7 in Oregon state waters north of Cape Falcon.
i/ Restricted to only two chinook/coho with a third salmon of other species allowed north of the Queets River.
j/ Season remained open through September 20 in Oregon state waters.
k/ For chinook-only in the area from Cape Blanco to Oregon/California border.
l/ Increased to 3 on August 14.
m/ Closed November 13 in state waters.
n/ All salmon except coho from May 29-June 11.
o/ Inside 3 miles in Oregon only during July 25-August 1.
p/ Only one coho in bag from July 26-August 1.
q/ All salmon except coho inside 3 miles from May 29-June 11.
r/ Inside 3 miles in Oregon only during July 22-August 1.

INSIDE FISHERIES

Klamath River

Since 1980, the U.S. Fish and Wildlife Service (FWS) has conducted an intense harvest monitoring program on the Klamath River to estimate Indian catch. Methodology for making their annual harvest estimates were outlined in the Fish and Wildlife Service 1980 and 1981 Klamath River annual reports, with estimates based primarily on effort and catch per unit of effort data collected throughout the season. The team has reviewed the past data and the methodology used by FWS to make their estimates of Indian harvest. The team feels that the Indian catch estimates developed by FWS are the best available and that the methodology used provides estimates of total net harvest regardless of disposition of the catch.

In 1982, the Department of Interior enacted regulations to limit the Klamath River Indian harvest of adult fall chinook to a maximum of 30,000 fish. According to those regulations, the Klamath River Indian fishery was to be restricted to ceremonial and subsistence purposes.

The Klamath River Indian net harvest in 1982 has been estimated by the U.S. Fish and Wildlife Service to be 14,500 adult fall chinook (Table II-37). This is 44% of the 1981 harvest (33,000 adults) and is 70% of the 1977-1981 average (20,800). The main reason for the reduced catch in 1982 was the imposition of more restrictive regulations including daytime closures of in-river net fisheries and higher river flows than in 1981.

Columbia River
(Oregon and Washington)

For management purposes, the various Columbia River salmon runs are separated by seasons which reflect run timing through the fishing zones, both above and below Bonneville Dam. Tables II-38 and II-39 contain in-river returns since 1971 for major Columbia River salmon runs.

Winter Season (January-March) - Fisheries in the winter season below Bonneville Dam are designed primarily to harvest the early arriving segments of spring chinook salmon runs destined for several lower river tributaries, with the Willamette River run comprising the dominant stock in abundance. The 1982 runs to the Willamette and Cowlitz Rivers totaled 99,300 fish. In 1982, 8 days were allowed in the all-citizen commercial fishery downstream from the mouth of the Willamette River, during which 5,100 spring chinook were landed. The low catch, about half the target level, was primarily a function of adverse weather and river conditions. The lower river recreational harvest during the winter season was an estimated 2,800 fish, primarily of lower river stock origin.

The 1982 treaty Indian winter season above Bonneville Dam was allowed for 49 days, and 40 chinook and 4,100 steelhead were landed.

Table II-40 lists 1971-1982 winter season catches of spring chinook during February-March above and below Bonneville Dam.

Table II-37. U.S. Fish and Wildlife Service estimates of Hoopa Valley Reservation Indian gillnet harvest, 1977-82.

		Chinook Salmon (numbers of fish)					
		Spring Race			Fall Race		
Year	Area	Jack	Adult	Total	Jack	Adult	Total
1977	Total			a/	2,700	27,300	30,000[b/]
1978	Total			a/	1,800	18,200	20,000[c/]
1979	Total			a/	1,350	13,650	15,000[d/]
1980[e/]	Estuary	--	--		495	9,605	10,100
	K. Glen-Pecwan	--	--		151	849	1,000
	Pecwan-Weitchpec	--	--		121	679	800
	Trinity	--	--		220	880	1,100
	Total	20	980	1,000	987	12,013	13,000
1981[f/]	Estuary	21	1,320	1,341	912	23,097	24,009
	Resighinni	0	16	16	338	4,293	4,631
	Upper Klamath	19	381	400	766	4,112	4,878
	Trinity	17	1,090	1,107	449	1,531	1,980
	Total	57	2,807	2,864	2,465	33,033	35,498
1982[g/]	Estuary	3	172	175	290	4,547	4,837
	Resighinni	11	789	800	368	3,551	3,919
	Upper Klamath	21	1,479	1,500	827	4,873	5,700
	Trinity	10	715	725	314	1,511	1,825
	Total	45	3,155	3,200	1,799	14,482	16,281

a/ No estimate available.

b/ From the 1980 Annual Report. Based upon commercial sales receipts and assuming additional subsistence harvest. The jack portion of the 1977 harvest was estimated by averaging the 1981 and 1982 jack contribution to total harvest (approximately 9.0 percent) and applying that to the 1977 total.

c/ From the 1980 Annual Report. Revised downward from 25,000 previously estimated and based upon harvest monitoring activities through 8/28/78 and on limited information regarding remainder of season. The jack portion of the 1978 harvest was estimated by averaging the 1981 and 1982 jack contribution to total harvest (approximately 9.0 percent) and applying that to the 1978 total.

d/ From the 1980 Annual Report. Revised downward from 20,000 previously estimated and based on aerial net counts and catch per net night values derived through numerous contacts with net fishermen. The jack portion of the 1979 harvest was estimated by averaging the 1981 and 1982 jack contribution to total harvest (approximately 9.0 percent) and applying that to the 1979 total.

e/ Estimation methods described in 1980 Annual Report. No estimates for coho jacks are available at this time.

f/ Estimation methods described in 1981 Annual Report. No estimates for coho jack are available at this time.

g/ Estimation methods similar to those discussed in the 1981 Annual Report. Preliminary data are subject to change. No estimates for coho are available at this time.

Table II-38. Estimates of in-river run size of Columbia River adult salmon and steelhead destined to migrate above Bonneville Dam (in numbers of fish), 1971-1982.

Year	Spring Chinook	Summer Chinook[a/]	Sockeye[a/]	Fall Chinook	Coho[a/]	Steelhead
1971	146,500	66,300	150,500	244,800	53,800	224,600
1972	269,500	63,600	123,300	188,600	34,200	225,600
1973	223,800	35,300	61,300	249,300	25,800	187,800
1974	99,800	39,000	43,900	176,900	31,600	144,800
1975	97,900	33,000	58,200	311,600	32,800	84,100
1971-75 Average	167,500	47,400	87,400	234,200	35,600	173,500
1976	63,900	43,800	43,700	260,400	35,500	122,400
1977	138,400	34,100	99,800	199,000	9,300	196,100
1978	127,000	39,700	18,400	183,800	30,200	105,000
1979	48,600	27,700	52,600	172,400	29,600	114,200
1980[b/]	53,100[c/]	27,000	58,900	174,900[c/]	13,000	129,800
1981[b/]	63,600[c/]	22,400	56,000	158,000[c/]	21,900	163,000
1982[b/]	71,000[c/]	20,100	50,200	198,100[c/]	55,500	161,800

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

Table II-39. Estimates of in-river run size of Columbia River spring chinook salmon (including jacks) destined for areas below Bonneville Dam (in numbers of fish), 1971-1982.

Year	In-River Run Size		
	Willamette River	Cowlitz	Total
1971	67,400	11,000	78,400
1972	47,100	9,300	56,400
1973	54,500	13,800	68,300
1974	71,800	27,800	99,600
1975	32,700	45,200	77,900
1971-75 Average	54,700	21,400	76,100
1976	40,700	53,400	94,200
1977	58,100	36,600	94,800
1978	71,400	35,700	106,600
1979[a/]	44,600	19,500	64,100
1980[a/]	42,500	32,300	74,800
1981[a/]	48,600	38,700	87,300
1982[a/]	72,000	27,300	99,300

a/ Preliminary.

Table II-40. Mainstem Columbia River winter season spring chinook landings (adults and jacks), 1971-82.[a/]

Year	Non-Treaty Commercial		Sport	Treaty Indian Commercial	
	Numbers	Pounds	Numbers	Numbers	Pounds
1971	13,400	278,000	6,500	0	0
1972	15,800	331,000	200	0	0
1973	17,200	337,500	7,400	100	1,600
1974	13,300	277,000	2,200	c/	700
1975	9,100	184,800	2,400	c/	300
1971-75 Average	13,800	281,700	3,700	c/	600
1976	4,700	96,100	3,200	400	7,200
1977	6,800	132,500	3,100	2,800	41,800
1978	13,500	264,700	5,000	2,600	55,400
1979	5,500	111,800	1,700	500	10,800
1980[b/]	400	7,500	800	c/	400
1981[b/]	7,300	139,700	3,700	1,600	23,900
1982[b/]	5,100	104,000	2,800	c/	700

a/ Includes both upper- and lower-river origin spring chinook.
b/ Preliminary.
c/ Less than 50.

Spring Season (April-May) - Fisheries in spring seasons above and below Bonneville are designed primarily to harvest spring chinook of upriver destination. The 1982 spring chinook run to the Columbia River above Bonneville of 71,100 showed some improvement over the poor returns experienced in 1979-81, although it was still significantly below the escapement objective of 100,000-120,000 adult fish as defined in the Columbia River Management Plan. The run was not of sufficient size to allow any targeted harvest, and commercial and recreational seasons were eliminated during April and May. In addition, significant steelhead sport fisheries in the mainstem Columbia River were also curtailed due to the impact from the incidental catch and handling of spring chinook which would unavoidably occur.

Table II-41 lists historic spring season harvests since 1971 (excluding ceremonial and subsistence harvest by treaty Indians). The landings in these are comprised of mixed upriver and lower river origin stocks, but are considered to be primarily of upriver origin. As set forth in the Columbia River Management Plan, the ceremonial and subsistence catch by treaty Indians in 1982 was limited to a maximum of 2,000 fish due to low run size.

Summer Season (June-July) - No targeted fisheries were allowed on summer migrating salmon runs, either chinook or sockeye, in 1982. The 1982 summer chinook run was 20,100 adults, a new record low (Table II-38). The 1982 sockeye run was 50,200 fish (Table II-38). In accordance with the Columbia River Management Plan, the treaty Indian ceremonial and subsistence catches were limited to 2,000 summer chinook and 2,000 sockeye salmon.

Fall Season (August-November)

Chinook - The 1982 upriver adult fall chinook run totaled approximately 198,100 adult fish. The upriver bright stock component of this upriver fall chinook run was about 73,900 adult fish, compared to the record low of 63,900 which occurred in 1981. About 5,000 additional upriver brights in egg bank programs at lower river hatcheries passed Bonneville Dam in 1982. The Bonneville Pool hatchery component of the upriver fall chinook run was 119,200 adult fish, about 15% above the in-river preseason forecast and the largest run since 1976.

The run of lower river hatchery stock fall chinook was 131,000 in 1982, very close to the preseason forecast of 132,200. The return of the lower river wild stock was 17,900, about 16% less than the in-river preseason forecast.

As was the case in 1980 and 1981, the main objective of the 1982 fall chinook management was to achieve the upriver bright stock escapement goal of 40,000 adults passing McNary Dam. Because the small size of the expected return would not permit attainment of this goal with no in-river fishing, a more realistic goal was to reverse the recent year downward trend in escapement, and make significant improvement over the record low escapement of 21,100 adult fish. Other objectives of in-river management were to attain the treaty tribe share allocation dictated by the Columbia River Management Plan and to maximize harvests of healthy hatchery stocks consistent with the other management constraints. To attain these objectives, the joint Washington-Oregon technical staffs recommended all in-river fisheries be severely restricted to only those areas and times that hatchery stocks predominated. Fisheries were further restricted to limit the harvest to no more than 10% of the upriver

Table II-41. Columbia River spring season chinook landings (jacks and adults), 1971-1982.[a/]

Year	Non-Treaty Commercial		Sport	Treaty Indian Commercial	
	Numbers	Pounds	Numbers	Numbers	Pounds
1971	22,600	363,300	19,900	12,700	162,500
1972	69,900	1,076,500	24,400	42,800	637,900
1973	60,500	928,500	30,300	34,100	532,300
1974	8,400	135,100	14,000	17,500	270,100
1975	0	0	0	0	0
1971-75 Average	32,300	500,700	17,700	21,400	320,600
1976	0	0	0	0	0
1977	9,300	123,800	14,800	14,300	192,800
1978	0	0	100	0	0
1979	0	0	0	0	0
1980[b/]	0	0	0	0	0
1981[b/]	0	0	0	0	0
1982[b/]	0	0	0	0	0

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

bright run, measured in terms of McNary Dam passage (escapement) if no harvest occurred. In addition, fisheries were scheduled to achieve a treaty Indian fishery catch 9,200 in excess of a 60% share of in-river harvest to accommodate a court-defined deficit.

Because the restrictive fishery recommendations adopted by the Columbia River Compact for the treaty Indians did not include open periods in "all usual and accustomed grounds and stations" and other reasons, the treaty tribes brought suit in U.S. District Court to change the adopted season. The U.S. District enjoined the states of Washington and Oregon from allowing any (commercial or sport) non-Indian fishing for adult chinook in the mainstem Columbia River in September and allowed 2 days for treaty Indians in the entire 3-pool treaty Indian fishing area plus 4 days in the Bonneville Pool below the Hood River Bridge.

In addition to the court-ordered season, the Columbia River Compact subsequently allowed 2 days in the entire Bonneville Pool and 2 days in the Spring Creek Hatchery terminal area. About 54,100 fall chinook (53,900 adults) were landed commercially during the treaty Indian fishery (Table II-42). Ceremonial and subsistence catches are not included in Table II-42.

The all-citizen fishery below Bonneville Dam consisted of 12 hours on August 30-31, with the area restricted to the Columbia River estuary. About 73,900 fall chinook were landed during this fishery (Table II-43).

The in-river mainstem recreational fishery was closed to chinook retention below the Megler-Astoria Bridge by state action on August 25; the entire river recreational fishery was closed to chinook retention by U.S. District Court injunction on August 31. The recreational fishery caught about 800 chinook during open periods.

Table II-43 shows the 1982 in-river harvest of fall chinook stocks by fishery.

Coho - The all-citizen commercial coho fishery below Bonneville Dam opened on October 4 and closed November 12, consisting of 27 fishing days. About 180,200 coho were harvested during this fishery, a record high for that particular time period. A treaty Indian commercial fishery was allowed in a portion of the Bonneville Pool and in the lower Klickitat River for 4 days, November 1-5; about 900 coho, 200 chinook, and 200 steelhead were landed.

Table II-44 shows the 1982 in-river harvest of lower river fall chinook and coho.

Table II-42. Columbia River commercial landings of upriver destined fall chinook (including jacks), 1971-82.

	Non-Treaty		Treaty Indians	
Year	Numbers	Pounds	Numbers	Pounds
1971	93,800	2,044,700	56,500	939,600
1972	96,300	2,177,500	42,900	634,500
1973	105,400	2,350,900	67,900	1,148,300
1974	52,200	1,225,600	54,900	980,100
1975	95,900	2,257,800	140,600	2,665,600
1971-75 Average	88,700	2,011,300	72,600	1,276,400
1976	33,400	746,300	135,000	2,555,000
1977	69,200	1,509,600	55,200	941,800
1978	39,700	939,400	62,200	1,185,200
1979	28,400	636,300	62,400	1,182,300
1980[a/]	38,200[b/]	825,000	35,500	650,200
1981[a/]	6,500[b/]	110,500	53,000	915,300
1982[a/]	41,500[b/]	NA	54,100	1,062,300

a/ Preliminary.
b/ Estimated catches of upriver fish in fisheries below Bonneville based on mark recoveries.

Table II-43. Columbia River in-river harvest of individual fall chinook stocks (adults and jacks) in 1982[a/].

Fishery	Upriver Bright	Bonneville Pool Hatchery	Upriver Total	Lower River Natural and Hatchery	Total
Lower River (Non-Treaty)					
Mainstem Chinook Season	1,700	37,600	39,300	34,600	73,900
Tributary Terminal Gillnet Fisheries	0	0	0	7,100	7,100
Mainstem Coho Season	600	100	700	3,500	4,200
Mainstem Sport	300	200	500	300	800
Total Lower River Catch	2,600	37,900	40,500	45,500	86,000
Upper River					
Treaty Indian Above Bonneville	3,800	50,300	54,100	0	54,100
Total River Catch	6,400	88,200	94,600	45,500	140,100

a/ Preliminary.

Table II-44. Columbia River commercial landings of lower river fall chinook and coho (adults and jacks), 1971-82.

Year	Chinook		Coho[a/]	
	Numbers	Pounds	Numbers	Pounds
1971	122,100	2,027,300	264,300	2,191,500
1972	43,400	715,400	131,300	1,177,500
1973	165,300	3,201,400	183,700	1,823,200
1974	44,700	748,500	261,000	2,391,000
1975	77,400	1,478,100	156,600	1,530,800
1971-75 Average	90,600	1,634,100	199,400	1,822,800
1976	114,900	2,174,200	168,400	1,298,400
1977	97,900	1,721,700	39,000	308,900
1978	70,300	1,213,900	132,700	1,074,100
1979	74,200	1,283,700	127,600	1,065,700
1980[b/]	78,400[c/]	NA	149,800	NA
1981[b/]	27,600[c/]	NA	59,000	NA
1982[b/]	45,500[c/]	NA	197,600	NA

a/ Includes August landings and terminal fishery catches below Bonneville Dam when occurring.
b/ Preliminary.
c/ Estimate of lower river stocks caught in all fisheries below Bonneville Dam, August-October, based on CWT recoveries.

WASHINGTON COASTAL AREA

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

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

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

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

Willapa Bay

Chinook - The summer season for sturgeon and non-local chinook started July 6 and continued through August 20. The 1982 summer season was very poor with only 2,100 chinook taken. This compares to a 1971-1975 average of 8,800 and a recent 5-year (1977-1981) average of 9,500 (Table II-45).

Fishing for local stocks started September 12. This was 3 weeks later than normal, to protect local fall chinook stocks which were needed to meet hatchery escapement goals. Preliminary catch estimates are 7,200 chinook taken incidentally in target coho and chum fisheries. Chinook catches were down from the 1971-1975 average and were 66.1% of the most recent 5-year average (10,900). This was primarily a result of the terminal fishery cutbacks.

Coho - The 1982 catch of 66,500 coho was 5.1 times the 1971-1975 average and 3.5 times the most recent 5-year average (19,200). This is the second best gillnet catch of coho in Willapa Bay since 1921. The excellent run was primarily the result of the first returns of the large releases from the new Naselle Salmon Hatchery.

Chum - The 1982 chum harvest was 69,000 fish. Despite preseason predictions of no available harvest, the chum run returning to Willapa Bay was excellent in 1982. The catch was 2.1 times the 1971-1975 average and was 3.9 times the most recent 5-year average (17,500). The exact reasons for the good run are unclear, but most likely are related to favorable ocean survival conditions for the 4-year-old returns from the 1978 brood.

Table II-45. Willapa Bay chinook, coho, and chum catches in numbers of fish by gillnet gear, 1971-1982.

	Early Season[a/]	Regular Fall Season		
Year	Chinook	Chinook	Coho	Chum
1971	2,100	7,800	14,500	17,100
1972	2,400	8,600	10,800	56,400
1973	27,900	12,600	16,700	35,400
1974	5,000	8,700	15,800	35,500
1975	6,800	8,600	7,400	23,500
1971-1975 Average	8,800	9,300	13,000	33,600
1976	15,700	13,300	9,000	33,100
1977	21,900	9,400	3,100	8,100
1978	3,800	7,600	7,000	28,400
1979	5,200	12,700	31,100	1,200
1980	11,800	12,500	25,000	30,300
1981	4,600	12,300	30,000	19,300
1982[b/]	2,100	7,200	66,500	69,000

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

Grays Harbor

Chinook - The summer gillnet season for sturgeon and non-local chinook started July 6 and ran through August 15. Catches were low in 1982 with only 600 fish for the non-treaty fishery. This compares with an average total catch of 1,800 for 1971-75 and a recent 5-year average of 3,700 (Table II-46).

Similar to Willapa Bay, preseason predictions for local chinook showed no harvestable surpluses so no directed fisheries for local chinook by either sport or commercial fishermen were allowed. A total of nearly 7,700 chinook (4,600 treaty, 3,100 non-treaty) were taken incidental to the directed coho and chum fisheries. The 1982 catches can be compared with the historical catches given in Table II-46. The non-treaty catches of chinook are well below the 1971-1975 average, but more than twice the most recent 5-year average (1,400). The favorable comparison with the recent average is primarily due to the good coho run and the higher incidental catches of chinook during the longer all-species fishery. The treaty catch was well above the 1971-1975 average and 1.4 times the recent 5-year average (3,200).

Coho - The fishery for coho began on October 1 for the treaty fishery and on October 3 for the non-treaty fishery. The combined coho catch was 43,400 (26,000 treaty, 17,400 non-treaty), just short of the 1971-1975 average and 2.9 times the recent 5-year average (14,800). The non-treaty catch was well below the 1971-1975 average while the treaty catch was much higher.

Chum - Management primarily for chum began around October 20 with both fisheries ending by November 2. Like Willapa Bay, the size of the chum run was above the preseason forecast. Preseason predictions showed no harvestable surplus but in-season information allowed a fishery that finally totaled 58,100 (24,500 treaty, 33,600 non-treaty). This is well above both the 1971-1975 average and the most recent 5-year average (12,100) and is the largest catch since 1959. This appears to have resulted from exceptional ocean survival of the 4-year-old component of the 1978 brood.

Chehalis River (Grays Harbor Tributary) - A non-treaty Indian gillnet fishery is conducted by the Chehalis Tribe on their reservation near Oakville. Spring/summer chinook fishing was restricted again in 1982 and only a limited fishery took place. A total of 50 fish were caught. Fishing on fall stocks began October 8 and continued until November 2. Catches were 700 fall chinook, 6,000 coho, and 500 chum. The spring/summer chinook catch was 10% of the 1971-1975 average and 9% of the most recent 5-year average (580) (Table II-47). Fall chinook catches were also low, only 64% of the recent 5-year average (1,100). Coho catches were excellent being over twice the 1971-1975 average and 1.8 times the most recent 5-year landings (3,300). Chum catches were about the 1971-1975 average, but well below the recent 5-year average (1,200).

Table II-46. Grays Harbor treaty Indian and non-treaty salmon commercial catches (in numbers of fish) by gillnet gear, 1971-82 (does not include Chehalis Indian catch).

	Early Season	Fall Season								
		Fall Chinook			Coho			Chum		
Year	Chinook[a/]	Non-Treaty	Treaty Indian	Total	Non-Treaty	Treaty Indian	Total	Non-Treaty	Treaty Indian	Total
1971	400	8,900	0	8,900	58,700	0	58,700	12,500	0	12,500
1972	400	10,100	0	10,100	46,600	0	46,600	46,300	0	46,300
1973	6,100	10,500	0	10,500	40,200	0	40,200	34,300	0	34,300
1974	1,700	7,900	100	8,000	49,500	100	49,600	28,800	0	28,800
1975	400	7,000	1,800	7,800	21,000	3,100	24,100	10,000	2,800	12,800
1971-75 Average	1,800	8,900	200	9,100	43,200	600	43,800	26,400	600	27,000
1976	5,300	2,900	3,100	6,000	13,800	14,700	28,500	12,800	10,200	23,000
1977	13,500	1,800	4,000	5,800	1,500	2,600	4,100	600	1,000	1,600
1978	900	700	2,700	3,400	900	4,300	5,200	7,600	7,900	15,500
1979[b/]	900	0	100	100	0	3,300	3,300	0	<100	<100
1980[b/]	1,500	3,700	5,700	9,400	10,000	23,800	33,800	8,800	14,900	23,700
1981[b/]	1,600[c/]	600	3,500	4,100	3,000	24,800	27,800	10,300	8,600	18,900
1982[b/]	600	3,100	4,600	7,700	17,400	26,000	43,400	33,600	24,500	58,100

a/ Prior to August 16. Represents non-local stocks.
b/ Preliminary.
c/ Includes 1,450 non-treaty and 150 treaty Indian chinook.

Table II-47. Chehalis Indian Reservation catch (numbers of fish), 1971-1982.

Year	Spring/Summer Chinook	Fall Chinook	Coho	Chum
1971	600	500	3,600	500
1972	900	1,700	1,600	600
1973	800	2,200	3,300	800
1974	300	500	4,700	500
1975	100	600	900	400
1971-75 Average	500	1,100	2,800	500
1976	400	400	4,000	700
1977	900	1,300	1,500	700
1978	600	1,100	1,800	1,700
1979[a/]	800	1,400	6,000	200
1980[a/]	300	800	4,200	1,900
1981[a/]	300	700	3,200	1,600
1982[a/]	50	700	6,000	500

a/ Preliminary.

NORTH COASTAL FISHERIES

Quinault River

In-river treaty Indian catches for all species are summarized in Table II-48.

Sockeye - The treaty Indian gillnet fishery harvested 15,300 sockeye in the Quinault River in 1982. The fishery took small numbers of sockeye in February and early March, incidental to a steelhead fishery. Sockeye predominated in the catch from mid-March through early June, while the fishery operated from three to five days per week. Some sport harvest of this stock occurred in Lake Quinault.

Spring/Summer Chinook - A small run of naturally spawning spring/summer chinook enters the Quinault River from April through August. However, the August catch is primarily early running fall chinook of hatchery origin. The catch of spring/summer chinook was 150, taken primarily in June and July. River sport harvest of this stock was negligible.

Coho, Fall Chinook, and Chum - Quinault coho, fall chinook and chum stocks are managed principally for hatchery production while providing seeding via escapement or fry releases to adequately utilize the natural environment. The treaty Indian gillnet fishery harvested 11,000 coho, 5,500 fall chinook, and 7,400 chum from August through November 22, 1982.

Queets River

In-river treaty Indian catches for all species are summarized in Table II-49.

Spring/Summer Chinook - Natural spring/summer chinook predominate the river return from May through August. A three-day per week evaluation fishery commenced May 30 and concluded June 23. Run size estimate from this fishery was 1,340. Treaty Indian gillnet catch was 500 for the season, while the non-Indian River sport catch was estimated at 75, predominantly jacks.

Coho - An early fishery directed at hatchery coho was conducted during September. The hatchery return to the river was close to the preseason forecast. An evaluation fishery to assess natural coho and chinook run sizes commenced on September 26, at five days per week for two weeks. This fishery was terminated after the first week by the Quinault tribe, because of concern about the apparent low run size of natural coho as indicated by first week catches, and the potential of this low run size to restrict the catch of harvestable fall chinook later in the season. Post season analysis indicated that abnormally late terminal run timing led to an underestimate of returning run strength. Indian gillnet catch was 1,600, including hatchery and natural coho. River sport catch was estimated at 200, predominantly jacks.

Fall Chinook - The fall chinook run was managed on the basis of a preseason prediction of 6,600, due to termination of the evaluation fishery. The season catch was 2,300 for the treaty Indian gillnet fishery and estimated at 300 for the river sport fishery.

Chum - A small run of hatchery and natural chum yielded a season catch of less than 100, by the treaty Indian gillnet fishery. No river sport catch was expected on this stock.

Table II-48. Treaty Indian gillnet catch in numbers of salmon in the Quinault River, 1971-82[a/].

Year	Spring Chinook[b/]	Fall Chinook[b/]	Coho	Chum	Sockeye
1971	NA	2,100	11,800	900	9,700
1972	NA	2,900	13,000	2,300	16,200
1973	300	1,600	9,300	1,200	12,400
1974	200	2,500	14,800	3,800	25,600
1975	100	1,600	4,700	1,800	73,800
1971-75 Average	NA	2,100	10,700	2,000	27,500
1976	100	3,200	5,600	7,400	14,800
1977	100	6,000	1,900	3,600	30,500
1978	300	6,900	6,900	13,700	21,000
1979	300	6,500	17,800	3,200	4,700
1980	300	4,400	12,400	11,900	16,800
1981	200	5,300	10,200	4,500	21,700
1982	150	5,500	11,000	7,400	15,300

a/ 1971-72 data from catch records of Washington Department of Fisheries. 1973-82 data from Quinault Indian Tribe.

b/ Preliminary, under review.

Table II-49. Treaty Indian gillnet catch in numbers of salmon in Queets River, 1971-82.[a/]

Year	Spring/Summer Chinook	Fall Chinook	Coho	Chum
1971	1,100	2,300	6,000	<50
1972	1,200	2,500	5,100	100
1973	500	3,600	9,000	100
1974	400	3,100	12,000	200
1975	400	2,200	3,200	300
1971-75 Average	700	2,100	7,000	100
1976	200	1,300	2,900	100
1977	400	2,000	1,000	300
1978	200	900	2,400	100
1979	500	900	2,700	100
1980	100	2,600	3,200	500
1981	300	3,800	4,200	200
1982[b/]	500	2,300	1,600	<100

a/ 1974 to 1982 agreed upon by both Quinault Tribe and WDF.
b/ Preliminary.

Hoh River

In-river treaty catches for all species are summarized in Table II-50.

Spring/Summer Chinook - The Hoh tribe commenced a three-day per week, three-week evaluation fishery on May 30. The in-season estimator projected a run size of 2,000. Additional harvest beyond the evaluation period was taken by the treaty Indian gillnet fishery during July and August, yielding a total catch of 600 for the season. The estimated catch for the river sport fishery was 200, primarily jacks.

Coho - The management period for fall salmon commenced September 1. The Hoh tribe conducted an early fishery targeted at hatchery coho during September. The evaluation fishery commenced on September 27 for three weeks at three days per week. At the termination of the evaluation fishery, a technical review showed that the tribe had taken their allocation of coho. Run size was estimated to be 5,000. Season catch by the treaty Indian gillnet fishery was 2,100. The river sport catch was estimated at less than 50, consisting primarily of jacks.

Fall Chinook - The preseason run size estimate of 3,400 was used for calculating harvestable numbers because of poor performance by past in-season estimators for this stock. The season catch by the treaty Indian gillnet fishery was 1,200. The river sport catch estimate was 300.

Chum - Small numbers of chum were taken incidental to fisheries targeted toward other species. Season catch was less than 100.

Quillayute River

In-river treaty catches for all species are summarized in Table II-51.

Spring/Summer Chinook - The spring running portion of this stock is managed for hatchery production while the summer running portion is managed on the basis of natural production. A spring chinook evaluation fishery was conducted by the Quileute Indian gillnet fishery, commencing May 3 and continuing through June 25. The Indian gillnet fishery was also used to assess run size of summer chinook during a three week period in late June and early July. The combined run size of spring and summer chinook was 3,900. Season catch for the treaty Indian gillnet fishery was 1,700, with an estimate of 500 for the river sport fishery.

Summer Coho - Summer coho are managed for hatchery production. The Quileute tribe commenced a five-day per week fishery on August 8, continuing through September 20. The run size estimate derived from the post-season rack counts, escapement, and catch was 16,400. The treaty Indian gillnet catch was 12,400 (tribal estimate 12,100). The river sport catch was estimated at 500.

Fall Coho - The management period for fall coho began on September 21. The Quileute Indian gillnet fishery conducted an evaluation of run size beginning September 26, continuing for two weeks at 5 days per week. The in-season run size estimate was 16,200. Treaty Indian gillnet catch was 4,800 (tribal estimate 5,100), and river sport catch was estimated at 400, predominantly jacks.

Table II-50. Treaty Indian gillnet catch in numbers of salmon in the Hoh River, 1971-1982.

Year	Spring/Summer Chinook	Fall Chinook	Coho
1971	1,500	1,100	5,200
1972	1,400	700	2,900
1973	700	2,200	6,800
1974	600	900	5,800
1975	500	800	2,400
1971-75 Average	900	1,100	4,600
1976	500	500	1,900
1977	900	1,600	1,000
1978	1,000	800	2,900
1979	800	500	3,200
1980	200	500[a/]	1,400
1981	500	800	2,100
1982	600	1,200	2,100

a/ Includes 110 fish taken as brood stock.

Table II-51. Treaty Indian gillnet catch in numbers of salmon in the Quillayute River, 1971-1982.

Year	Chinook		Coho	
	Spring/Summer	Fall	Summer	Fall
1971	400	2,900	800	5,600
1972	800	3,500	800	7,000
1973	300	5,000	1,100	42,800
1974	100	3,800	1,600	28,000
1975	2,300	2,300	700	7,400
1971-75 Average	800	3,500	1,000	18,200
1976	2,500	2,200	1,300	7,400
1977	2,600	5,300	1,400	2,700
1978	3,200	1,400	300	4,500
1979	2,500	2,600	11,200	6,600
1980	1,000	1,400	13,600	5,500
1981	1,000	1,300	2,400	3,700
1982[a/]	1,700	2,700	12,400	4,800

a/ Preliminary. The Quileute Tribal estimates of catch for summer and fall coho are 12,100 and 5,100, respectively.

Fall Chinook - The management period for fall chinook commenced September 1. Fall chinook were taken in conjunction with summer coho during most of September. Run size was estimated by a two-week gillnet evaluation fishery by the Quileute Indian tribe, beginning September 26. After the evaluation fishery, additional gillnet fishing using large mesh gear was allowed, to harvest chinook surplus to escapement needs and river sport catch. Season catch by the treaty gillnet fishery was 2,700 chinook. River sport catch was estimated at 600, primarily jacks.

A summary of 1982 coastal net catches compared to 1981 and the 1971-75 average catches is presented in Table II-52.

PUGET SOUND

Commercial Fishery - The 1982 catches were larger than the 1971-75 averages for all species. The data in Table II-53 are strictly Puget Sound net catches and do not reflect treaty allocations. Puget Sound origin salmon generally are not subject to large catches in the Washington ocean fisheries except for coho. The 1982 Puget Sound net catch of 1,129,400 coho was the second highest since 1971. A dispute concerning a treaty non-Indian chum evaluation fishery in Skagit Bay was again brought before the Fisheries Advisory Board in October. The Skagit tribes requested that the evaluation fishery be delayed to protect coho and expressed their concern that the incidental harvest of large numbers of coho present in Skagit Bay would further aggravate an allocation imbalance of several thousand coho in favor of non-treaty fisheries. The Fisheries Advisory Board permitted the evaluation fishery to proceed in order to obtain information necessary for chum management, but determined that purse seine gear would not be permitted to participate. A detailed catch analysis of all Puget Sound management units on a species-by-species basis will be provided at a later date.

Recreational - In-season Puget Sound marine sport fishery estimates are not available for 1982. Historical data are listed in Table II-54.

SUMMARY OF INSIDE FISHERIES

Data on the inside commercial salmon harvests presented in this report are summarized in Table II-55.

Table II-52. Summary of estimated 1982 Washington coastal net catch as compared to 1981 catch and 1971-75 average catch (numbers of fish).

Region	Race	Catch (numbers of fish) 1982[a/]	1981[a/]	1971-75 Average
Willapa Bay	Non-local chinook	2,100	4,600	8,800
	Local fall chinook	7,200	12,300	9,300
	Coho	66,500	30,000	13,300
	Chum	69,000	19,300	33,600
Grays Harbor[b/]	Non-local chinook	600	1,600	1,800
	Local fall chinook	7,700	4,100	9,100
	Coho	43,400	27,800	43,800
	Chum	58,100	18,900	27,000
Quinault River	Spring/summer chinook	150	200	
	Fall chinook	5,500	5,300	2,100
	Coho	11,000	10,200	10,700
	Chum	7,400	4,500	2,000
	Sockeye	15,300	21,700	27,500
Queets River	Spring/summer chinook	500	300	700
	Fall chinook	2,300	3,800	2,100
	Coho	1,600	4,300	7,000
	Chum	<100	200	100
Hoh River	Spring/summer chinook	600	500	900
	Fall chinook	1,200	800	1,100
	Coho	2,100	2,100	4,600
Quillayute River	Spring/summer chinook	1,700	1,000	800
	Summer coho	12,400[c/]	2,400	1,000
	Fall chinook	2,700	1,300	3,500
	Fall coho	4,800[c/]	3,700	18,200
	Sockeye	---	200	NA
Chehalis Reservation	Spring/summer chinook	50	300	500
	Fall chinook	700	700	1,100
	Coho	6,000	3,200	2,800
	Chum	500	1,600	500

a/ Preliminary.
b/ Does not include Chehalis Indian catch.
c/ Estimates provided by the Quileute Tribe for summer and fall coho are 12,100 and 5,100, respectively.

Table II-53. Puget Sound commercial net fishery salmon catches (numbers of fish), 1971-1982.[a/]

Year		SPECIES				
		Chinook	Coho	Pink	Chum	Sockeye
1971	Treaty non-Indian	130,700	435,200	2,355,600	123,800	3,040,400
	Treaty Indian	29,200	118,500	122,900	27,500	22,400
	Total	159,900	553,700	2,478,500	151,300	3,062,800
1972	Treaty non-Indian	83,900	453,700	100	736,300	1,128,100
	Treaty Indian	33,800	97,100	<100	51,900	16,500
	Total	117,700	550,800	100	788,200	1,144,600
1973	Treaty non-Indian	94,100	684,300	2,247,200	462,400	2,616,200
	Treaty Indian	42,300	117,500	116,100	72,700	58,800
	Total	136,400	801,800	2,363,300	535,100	2,675,000
1974	Treaty non-Indian	80,200	494,400	200	229,800	2,452,100
	Treaty Indian	64,500	379,000	<100	166,300	33,200
	Total	144,700	873,400	200	396,100	2,485,300
1975	Treaty non-Indian	130,400	550,300	1,226,000	103,100	1,558,300
	Treaty Indian	100,000	411,300	104,200	72,500	58,300
	Total	230,400	961,600	1,330,200	175,600	1,616,600
1971-75	Treaty non-Indian	103,900	523,600	1,942,900[b/]	331,100	2,159,000
Average	Treaty Indian	54,000	224,700	114,400[b/]	78,200	37,800
	Total	157,900	748,300	2,057,300[b/]	409,300	2,196,800
1976	Treaty non-Indian	91,100	376,400	100	478,700	1,223,000
	Treaty Indian	123,000	290,300	<100	279,200	95,500
	Total	214,100	666,700	100	757,900	1,318,500
1977	Treaty non-Indian	136,200	555,600	1,858,800	279,800	1,473,500
	Treaty Indian	108,500	447,500	175,200	176,300	365,700
	Total	244,700	1,003,100	2,034,000	456,100	1,839,200
1978	Treaty non-Indian	121,100	383,300	200	751,700	1,137,600
	Treaty Indian	128,000	435,100	<100	484,500	235,200
	Total	249,100	818,430	300	1,236,200	1,372,800
1979	Treaty non-Indian	78,500	276,500	3,393,300	21,900	1,372,700
	Treaty Indian	114,200	481,400	753,600	84,000	424,300
	Total	192,700	757,900	4,146,900	105,900	1,797,000
1980	Treaty non-Indian	90,400	475,300	200	508,100	271,400
	Treaty Indian	156,700	788,000	200	450,400	268,100
	Total	247,100	1,263,300	400	958,500	539,500
1981	Treaty non-Indian	76,700	276,500	2,725,900	222,700	755,800
	Treaty Indian	137,600	467,300	1,172,700	274,200	549,100
	Total	214,300	743,800	3,898,600	496,900	1,304,900
1982[c/]	Treaty non-Indian	86,700	394,300	0	534,600	1,476,500
	Treaty Indian	122,700	735,100	100	438,200	1,386,100
	Total	209,400	1,129,400	100	972,800	2,862,600

a/ Data do not reflect treaty allocations. Includes U.S. and Canadian-origin salmon.
b/ Odd-year average.
c/ Preliminary data.

Table II-54. Summary of Puget Sound Marine recreational salmon catches (numbers of fish),[a/] 1971-1982.

Year	Species	
	Chinook	Coho
1971	153,400	98,400
1972	189,100	74,100
1973	196,300	61,600
1974	255,400	163,600
1975	334,000	198,800
1971-75 Average	225,600	119,300
1976	307,200	223,900
1977	196,100	177,300
1978	228,700	223,600
1979	285,700	258,200
1980	244,000	118,700
1981	176,900	196,200
1982	NA	NA

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

Table II-55. Summary of commercial net catch of salmon from inside fisheries of Washington and the Columbia River, 1971-1982 (in thousands of fish).

Year	Washington Coast				Puget Sound				
	Chinook	Coho	Chum	Sockeye	Chinook	Coho	Chum	Sockeye	Pink
1971	31	106	31	10	160	554	151	3,063	2,478
1972	35	88	106	16	118	551	788	1,145	a/
1973	74	129	72	12	136	802	535	2,675	2,363
1974	36	132	69	26	145	873	396	2,485	a/
1975	35	51	39	74	230	962	176	1,617	1,330
1971-75 Average	42	102	63	28	158	748	409	2,197	2,057[b/]
1976	52	61	64	15	214	667	758	1,319	a/
1977	72	17	14	30	245	1,003	456	1,839	2,034
1978[c/]	32	31	59	21	249	819	1,235	1,373	a/
1979[c/]	36	82	5	5	193	758	106	1,797	4,147
1980[c/]	48	100	68	17	247	1,263	958	540	a/
1981[c/]	37	102	44	22	214	744	497	1,305	3,899
1982[c/]	33	147	135	15	209	1,129	973	2,863	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	273	-	-	372	1,278	465	2,511	a/
1975	323	162	-	-	588	1,175	215	1,691	1,330
1971-75 Average	324	209	-	-	524	1,059	472	2,225	2,057[b/]
1976	288	172	-	-	554	900	822	1,334	a/
1977	256	40	-	-	573	1,060	470	1,869	2,034
1978[c/]	188	136	-	-	469	987	1,294	1,394	a/
1979[c/]	171	132	-	-	400	972	111	1,802	4,147
1980[c/]	152	150	-	-	447	1,513	1,026	557	a/
1981[c/]	96	59	-	-	347	901	541	1,323	3,899
1982[c/]	146	198			388	1,475	1,108	2,878	a/

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

III. EVALUATION OF 1982 MANAGEMENT

INTRODUCTION

Before regulations were proposed for the 1983 ocean salmon fisheries, it was desirable to analyze the performance of the regulatory controls in effect during the 1982 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 evaluation is somewhat limited at this time due to the incomplete and preliminary nature of much of the data necessary for analysis. As additional data become available and preliminary data are confirmed, updated reports will be provided to the Council.

ASSESSMENT OF COHO QUOTAS

North of Leadbetter Point

Troll Fishery

The all-species troll season north of Leadbetter Point opened July 15 with a quota of 204,000 coho. For the entire season, coho catch success was the lowest of recent record off Grays Harbor, which contrasted with good success off Quillayute and Cape Flattery. WDF monitored daily landings via fish ticket statistics collected from major fish dealers buying troll salmon. WDF's assessment of the fishery on July 29 projected that, as of noon July 30, troll coho landings would be 150,000 with an estimated 55,000 coho to be landed by trip boats after a closure. The estimate of 55,000 represented the catch potential of 200 trip boats averaging 5.5 days and 50 coho/day. WDF and NMFS subsequently implemented a noon, July 30 closure.

The troll quota was projected to be reached as of the closure date. While WDF manages area 4B (Bonilla-Tatoosh to Sekiu River) as an extension of the ocean until early September, when Puget Sound coho stocks predominate, this area was not immediately closed to troll landings during weekday IPSFC purse seine openings because historically troll coho catches have been insignificant in this area. Fish ticket counts on August 5 indicated that actual troll landings through July 30 for the area north of Leadbetter Point would be approximately 190,000, 15,000 coho less than projected. Therefore, WDF continued to allow area 4B troll landings since the preseason allowable impacts on Washington coastal coho, as defined by the 204,000 coho quota for the area, had not been realized. Present landing counts indicate that 193,800 coho were caught through July 30 while an additional 14,000 have been landed from

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

area 4B. Total 1982 non-Indian troll coho landings north of Leadbetter Point were 207,900 (Table III-1).

Recreational Fishery

The all-species season began on June 12. The coho quota was 115,000. The recreational fishery in this area, especially off Westport, targeted on chinook to a large extent until mid-August when coho catches accelerated rapidly. On August 17 WDF projected the recreational fishery would reach the coho quota on August 19. Closures were initially planned by NMFS and WDF for statistical areas 1-4. These areas are the basis of all historical catch records and management analysis in PFMC management plans. WDF subsequently retained an opening in the easterly portion of area 4 (Koitlah Point to Sekiu River) in contravention of management intent in the FCZ. Recreational coho landings through August 19 were 115,800. An additional 8,900 area 4 coho were taken by recreational fisheries inside the Strait of Juan de Fuca from August 20 through October 3 for a total of 124,700 coho north of Leadbetter, or 9,700 fish (8% in excess of the quota) (Table III-1).

North of Cape Falcon Summary

Preseason 1982 non-Indian coho quotas north of Cape Falcon totaled 508,000 fish. Actual landings from this area, including in-season adjustments for coho shaker mortality, were 523,800, or 15,800 fish (3%) in excess of the quota. A summary of coho harvest by area and gear is provided in Table III-1.

An estimated 1,800 fewer coho shakers than anticipated were taken in the May 29-June 11 recreational chinook-only fishery north of Leadbetter Point. In addition, some unexpected coho shaker loss occurred in the Columbia River recreational fishery from July 26 through August 1 when Oregon changed the bag limit to 2-fish, only one of which could be a coho.

Oregon Production Index Area

Preseason quotas were set for coho salmon within two subareas of the Oregon Production Index (OPI) area. These two subareas were: (1) the Columbia River area from Leadbetter Point to Cape Falcon, and (2) the areas south of Cape Falcon, including California. The quotas were based on a preseason allowable catch in the entire OPI area (south of Leadbetter Point) of 791,000 and a harvest distribution of 189,000 in the Columbia River area and 602,000 south of Cape Falcon. These harvest levels were designed to provide for escapement from ocean fisheries of 300,000 coho to the OPI index areas while achieving an escapement of 172,000 natural coho to Oregon coastal streams.

Columbia River Area

A preseason quota of 189,000 was established for the Columbia River area in 1982. The total catch was allocated to recreational and troll fisheries on a 53:47 basis with 100,000 allocated to the recreational fishery and 89,000 to the troll fishery. In-season closures were implemented for both fisheries. The recreational fishery was closed on July 25 by WDF and NMFS; however, Oregon coastal waters inside 3 miles remained open until August 1 under jurisdiction of the Oregon Fish and Wildlife Commission. The all-species troll season began July 1 and closed July 8 when the fishery was projected to have reached its preseason quota.

Table III-1. Preliminary assessment of 1982 coho quotas north of Cape Falcon, Oregon.

Area	Fishery	Preseason Quota	1982 Season Shaker	1982 Season Harvest	Difference of 1982 Season from Preseason Number	Difference of 1982 Season from Preseason Percent
Columbia River	Troll	89,000	5,000[a/]	82,000[c/]	-2,000	-2
	Rec.	100,000	b/	104,200[d/]	+4,200	+4
	Total	189,000	5,000	186,200	+2,200	+1
North of Leadbetter	Troll	204,000	NA	207,900[e/]	+3,900	+2
	Rec.	115,000	NA	124,700[f/]	+9,700	+8
	Total	319,000	NA	332,600	+13,600	+4
TOTAL North of Cape Falcon	Troll	293,000	5,000	289,900	+1,900	+1
	Rec.	215,000	b/	228,900	+13,900	+6
	Total	508,000	5,000	518,800	+15,800	+3

a/ Computed shaker loss from hook and release of sub 22-inch fish not landed.
b/ Unexpected coho shaker mortality not quantified for July 27-August 1 when Oregon adjusted a 1+1 bag limit in its state waters.
c/ Includes 68,000 coho from tickets and an estimated 14,000 catch transferred south of Cape Falcon after July 8 closure.
d/ Includes 94,400 coho through July 25 plus 9,800 coho landed from Oregon state waters, July 26-August 1.
e/ Includes 14,000 coho landed from area 4b (Bonilla-Tatoosh Line to Sekiu River).
f/ Includes 8,900 coho landed from east of Koitlah Point to Sekiu River after August 19 ocean closure.

The final catches in the Columbia River area totaled 191,200 coho, or 87,000 troll (46%) and 104,200 recreational (54%) (Table III-2). The troll fishery was 2,000 (2%) under its quota while the recreational fishery was 4,200 (4%) over its quota. Estimated 1982 total catches were 2,200 (1%) higher than the preseason quota.

The reported troll catches in the Columbia River area were 68,000 coho with 24,000 reported by Oregon and 44,000 by WDF (excluding treaty Indian catches of 132 coho). Two factors were operating in 1982 which caused the reported catch of coho in the area to be low. These factors were: (1) transport of fish south of Cape Falcon after the July 8 closure, and (2) buyer practices which resulted in a "shaker" loss of coho due to the low price paid for small coho (<22-inches) and subsequent hook and release of these fish. It was estimated that an additional 14,000 coho were caught in the Columbia River area but transported south of Cape Falcon after the closure and incorrectly reported as to catch area. Catch records were adjusted accordingly in Table III-2. The hook and release mortality associated with the low price for small coho was estimated to be 5,000 fish which were added to the catch estimates. It is necessary to add the estimated loss from hooking mortality to the actual reported catches since preseason quotas would have been adjusted accordingly to compensate for this loss if this information had been known at that time.

South of Cape Falcon

A preseason harvest quota of 602,000 coho was established in 1982 for the area south of Cape Falcon (Table III-2). The total catch was allocated to ocean troll and recreational fisheries on a 81:19 basis with 488,000 allocated to the troll fishery and 114,000 to the recreational fishery. As in the Columbia River area, in-season closures were implemented for both fisheries. The NMFS closed the recreational fishery in the FCZ between Cape Falcon and Cape Blanco on July 21, but the Oregon Fish and Wildlife Commission kept state waters open through August 1. The all-species troll season began July 1 and closed July 12 when the fishery was projected to have exceeded its preseason quota.

The actual 1982 catches south of Cape Falcon totaled 766,200 which was 164,200 fish or 27% above the preseason quota. The distribution of the catch between fisheries was 602,100 (79%) for the troll fishery and 164,100 (21%) for the recreational fishery. Troll catches south of Cape Falcon include an estimated hooking mortality of 24,300 coho during the July 13 to September 5 chinook fishery south of Cape Falcon. The troll fishery was 114,100 (23%) over its quota and the recreational fishery was 50,100 (44%) over its quota.

Combined OPI Areas

The 1982 harvest, including hooking mortalities for the entire OPI area, totaled 957,400 coho which was 166,400 fish or 21% above the preseason level of allowable catch. Of the entire OPI catch of 957,400 coho, 191,200 (20%) were taken in the Columbia River area and 766,200 (80%) were caught south of Cape Falcon. This represents a higher proportion of harvest south of Cape Falcon than was desired. The preseason proportions were 24% and 76% for north and south of Cape Falcon, respectively. The data for the analysis of stock specific impacts of actual 1982 fishing patterns is not yet available.

Table III-2. Preliminary assessment of 1982 coho ocean harvest in comparison to preseason quotas for areas within the Oregon Production Index.

Area	Fishery	1982 Harvest	Preseason Quota	Difference of 1982 Harvest from Preseason Quota	
				Number	Percent
Columbia River (Leadbetter Pt. to Cape Falcon)	Troll	87,000[a/]	89,000	-2,000	-2
	Rec.	104,200	100,000	+4,200	+4
	Total	191,200	189,000	+2,200	+1
South of Cape Falcon	Troll	602,100[b/]	488,000	+114,100	+23
	Rec.	164,100	114,000	+50,100	+44
	Total	766,200	602,000	+164,200	+27
Total OPI	Troll	689,100	577,000	+112,100	+19
	Rec.	268,300	214,000	+54,300	+25
	Total	957,400	791,000	+166,400	+21

a/ Includes an estimated 5,000 hooking mortality during the all-species season plus an estimated 14,000 fish landed south of Cape Falcon after the July 8 closure.

b/ Includes 18,300 fish caught off Oregon and landed in Washington and an estimated hooking mortality of 24,300 during the July 13 to September 5 chinook fishery south of Cape Falcon. The 14,000 fish from the Columbia River area have been deducted.

ANALYSIS OF OREGON PRODUCTION INDEX (OPI)

The 1982 ocean salmon regulations were set, in part, to provide added protection to depressed stocks of coho in the OPI area. The preseason ocean escapement objective was 300,000 adults to the index area (primarily hatchery) while achieving an interim coastal wild stock goal of 172,000 adults.

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

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

OPI Area Catch

An estimated 970,500 coho were harvested by the fisheries in the OPI area from Leadbetter Point, Washington south through California (Table III-3). This total includes catches of 188,200 for the Columbia River area, 668,000 for Oregon south of Cape Falcon, and 114,300 for California. The catches include troll fishery hooking mortalities and river mouth recreational catches after ocean fisheries closed.

The troll fishery harvested 689,300 coho compared with 281,200 coho for the recreational fishery.

1982 OPI Abundance

The number of adult coho comprising the OPI in 1982 totaled 1,411,800 (Table III-4). This total includes an ocean catch of 970,500, a Columbia River run size of 409,200, and an estimated 32,100 coho returning to Oregon coastal areas, primarily from hatchery production. The 1982 OPI abundance is only slightly improved over the low levels experienced in 1980 and 1981.

New production sources, such as private hatcheries, are included in the OPI ocean catches but have not been a part of the historic data base from which the index was developed. The OPI stock size, therefore, needs to be adjusted to account for the private hatchery catch component as was done the past three years. Estimates of the contribution of private hatchery fish to the ocean catch for 1982 were made from ocean recoveries of coded wire tags expanded by the marked/unmarked ratio of fish returning to private hatchery facilities.

Table III-3. Preliminary estimated harvest in numbers of coho salmon in the Oregon Production Index area in 1982.

Area	Fishery		Total
	Recreational	Troll	
Columbia River area	115,000[a/]	87,200[c/]	202,200
Oregon coast (S. of Cape Falcon)	141,700[b/]	512,300[d/]	654,000
California coast	24,500	89,800	114,300
TOTAL	281,200	689,300	970,500

a/ Includes lower Columbia River estuary catch of 10,800 from August 15 through September 5.

b/ Includes lower estuary catches of 2,100 in areas south of Cape Falcon from August 2 through September 5.

c/ Includes an estimated hooking mortality of 5,000 during the all-species season plus an estimated 14,000 fish landed south of Cape Falcon after the July 8 closure and an Indian troll catch of about 200 fish.

d/ Includes 18,300 fish caught off Oregon and landed in Washington and an estimated hooking mortality of 24,300 during the July 13 through September 5 chinook fishery south of Cape Falcon. The 14,000 fish from the Columbia area have been deducted.

Table III-4. Oregon production index of adult coho (thousands of fish), 1972-1982.

Adult Production Year	Adult Production Index Areas[a/]				OPI Total	Est. Private Hatchery Catch	Adjusted OPI[c/]
	Ocean			Oregon			
	Troll	Sport	Columbia	Coast[b/]			
1972	1,214.9	533.6	266.8	26.6	2,041.9	-	-
1973	1,257.4	422.1	282.9	35.9	1,998.3	-	-
1974	1,995.3	636.8	446.9	47.1	3,126.1	-	-
1975	1,027.8	441.6	280.7	8.3	1,758.4	-	-
1976	2,796.3	931.1	323.5	59.0	4,109.9	-	-
1977[d/]	622.6	405.1	86.4	13.0	1,127.1	-	-
1978[d/]	974.2	502.9	296.0	10.6	1,783.7	-	-
1979[d/]	986.0	318.9	260.1	40.5	1,605.5	63.0	1,542.0
1980[d/]	482.6	501.2	284.2	39.6	1,307.6	53.6	1,254.0
1981[d/]	783.3	328.0	159.1	35.2	1,305.6	142.0	1,163.6
1982[d/]	689.3	281.2	409.2	32.1	1,411.8	122.1[e/]	1,289.7

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

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

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

d/ Data are preliminary; 1980 and 1981 statistics have been updated.

e/ Based on ocean recoveries of coded wire tags corrected for marked/unmarked ratio of fish returning to private hatchery facilities.

Based on the CWT analysis, it was estimated that private hatcheries contributed 122,100 fish to the total 1982 OPI ocean catch, a contribution of 13%, compared to a preseason estimate of 193,300 or 24%. The contribution consisted of 110,100 fish south of Cape Falcon and 12,000 in the Columbia River area. Subtracting the estimated private hatchery catch contribution from the OPI stock size provides an adjusted OPI total of 1,289,700 in 1982 (Table III-4).

Assessment

A preseason estimate of the 1982 coho stock size in the OPI area was developed using the OPI abundance predictor (jack index) and an independent estimate of the private hatchery contribution. The number of three-year-old adult coho in the OPI area can be predicted by the number of two-year-old jack coho returning to selected facilities in 1981. The assumption is made that three-year-old fish will return in proportion to as two-year-old fish. The predictor compares the number of coho jacks returning to selected hatcheries and dams with the catches and returns of adults making up the OPI, as previously described. New production sources, such as private hatcheries, are not 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 was necessary to make a separate estimate of the private origin fish contributing to the ocean catch in the OPI area using the 1980-81 survival rate and expected catch-to-escapement ratio. Production of coho from private hatcheries was estimated independently and added to the OPI stock predictor to determine the total number of coho contributing to the OPI area.

The OPI abundance predictor was modified for application in 1982 by the addition of 1981 data to the jack versus adult relationship bringing to eight the number of data points in the relationship. Table III-5 and Figure III-1 show the data and regression calculation which made up the 1982 abundance predictor. It should be noted that due to the data adjustments and the addition of 1981 data to the jack versus adult relationship, the data base in the 1982 relationship varies slightly from that utilized in prior years.

Jack returns to index areas during the fall of 1981 were the lowest recorded since 1965. A total of 42,900 jacks returned to Columbia River and coastal index areas in 1981 (Table III-5) and this was below the range of the predictive data base. Based on the relationship of jacks to adults (Figure III-1), the total adult production for the OPI area in 1982 was expected to be 897,500. It was estimated that private hatcheries would add an additional 193,300 coho to the catch in the OPI area. This brought the total 1982 preseason estimate of coho contributing to the OPI area to 1,090,800 (Table III-6).

The predicted OPI area stock size in 1982 of 1,090,800 coho was 321,000 (23%) below the 1982 observed stock size of 1,411,800. Excluding private hatchery catch, the 1982 OPI abundance prediction of 897,500 was 392,200 or 30% below the observed stock size of 1,289,700 (Table III-6).

It is possible to assess the "apparent" exploitation rate of coho in the OPI area by comparing the 1982 harvest with the total OPI stock size. The coho harvest in the OPI area was 848,400 in relation to the total stock size of 1,289,700 (adjusted to exclude fish of private hatchery origin). The 1982

Table III-5. Relationship of Columbia River and Oregon coastal coho jack index to the Oregon Production Index for coho adults in thousands of fish, 1972-82.

Year of Adult Production	Jacks[a/] of Previous Year			Adult Production Index[b/]	
	Columbia	Coastal[c/]	Total	Expected[d/]	Observed
1972[e/]	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	3,331.2	3,126.1
1975	72.8	4.0	76.8	1,672.9	1,758.4
1976	144.0	32.7	176.7	3,958.0	4,109.9
1977[f/]	46.1	10.7	56.8	1,215.4	1,127.1
1978[e/f/]	98.5	5.1	103.6	-	1,783.7
1979[f/]	63.4	11.7	75.1	1,634.0	1,542.5[g/]
1980[f/]	51.1	5.8	56.9	1,217.7	1,254.1[g/]
1981[f/]	40.3	10.9	51.2	1,087.3	1,163.4[g/]
1982[f/]	34.8	8.1	42.9	897.5	1,289.7[g/]

a/ Components of jacks are ODFW and WDF hatcheries below Bonneville, Bonneville and Williamette 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 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 in the same proportion.

d/ Expected adult production index values are recalculated annually based upon addition of an additional year's data.

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

f/ Data are preliminary and the observed OPI value for 1980 and 1981 has not been updated, since this was the figure used in computing the 1982 OPI prediction.

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

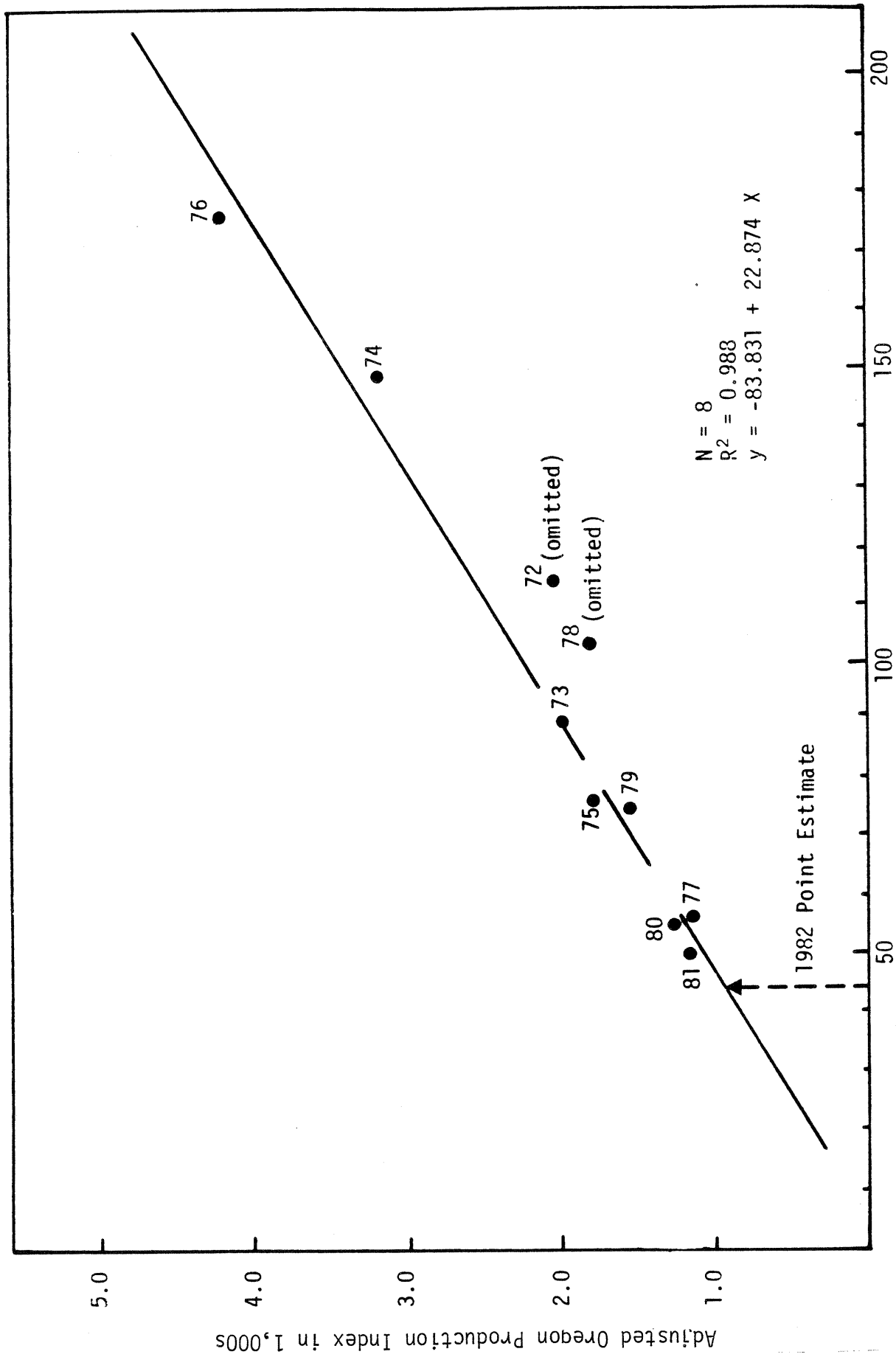

Figure III.1. Relationship between Columbia River and coastal jack index and the coho adult production index, 1972-81 and 1982 prediction. (Data points for 1972 and 1978 were omitted from the regression.)

Table III-6. Comparison of the preseason estimate and actual observed abundance of OPI coho and the ocean catch of private hatchery fish in the OPI area in 1982.

Component of Stock Size Estimate	1982 Preseason Estimate	1982 Observed[a/]	Deviation of 1982 Preseason Estimate from Observed Value	
OPI Abundance Predictor (Jack Index)	897,500	1,289,700	-392,200	(-30%)
Private Hatchery Ocean Catch	193,300	122,100	+71,200	(+58%)
Total	1,090,800	1,411,800	-321,000	(-23%)

a/ Preliminary.

ocean harvest represents an apparent exploitation rate of 66% which provided an escapement of 441,300 to the OPI area, compared to the preseason objective of 300,000.

When discussing harvest rates relative to the final OPI number, it is important to distinguish between "apparent" harvest rates and "real" rates since the index is not a measure of absolute stock abundance. The real harvest rate will always be somewhat less than the apparent rate depending on the proportion of stock size included in the index. For example, the apparent harvest rate of 66% experienced in 1982 translates to an estimated real rate of approximately 59%, assuming 90% of the stock size is accounted for in the index.

In summary, the 1982 predicted stock size in the OPI area was 321,000 coho or 23% below the 1982 observed stock size; catches exceeded the preseason level of allowable catch by 166,400 fish or 21%; and, the OPI escapement goal of 300,000 was exceeded.

ESCAPEMENT

Escapements for major stocks are presented for the 1982 runs in relation to established goals. Where feasible, escapement information is reviewed for both natural and hatchery returns. Data presented are preliminary.

California Chinook

The most important salmon spawning streams in California are in the Sacramento and Klamath river systems. Other important spawning areas are in the Eel and San Joaquin river systems, and the Smith and Mad rivers. Virtually all of the chinook production from these areas is fall-run. Spring-run chinook and coho production are very low in California. Fall chinook spawning surveys are conducted annually in the Sacramento, San Joaquin, and Klamath river systems. A spawner escapement survey is currently underway in the Eel River. The outlook is dim, however, for usable escapement data for the Eel River this year due to high river flows. River flows are expected to be conducive to trapping and tagging operations in the Eel River in only two in ten years, with the two successful years usually coming in succession. The Eel River study will continue, subject to the availability of matching federal funds. Spawning area mapping conducted in the Smith River during the fall and winter of 1981-82 did not reveal any sizeable chinook concentrations. Trapping and seining efforts in the Mattole River during November and December of 1981 to obtain chinook for artificial spawning also indicated a very small population. (Several hundred man-hours were expended in this endeavor to catch two females and approximately 70 males.)

A table showing the relative importance of North Coast chinook rivers circa 1963 is included on page 15-IV of the 1981 Salmon Plan Amendment.

Fall chinook production from the Klamath River system and upper Sacramento River were expected to be depressed in 1982 due to small brood year spawning escapements in these areas in 1978 and 1979. Lower Sacramento River production was expected to be at or near optimum level.

The following estimates for 1982 are preliminary:

Sacramento River System

Escapement goals for natural spawning fall chinook in the upper (above Feather River) and lower Sacramento rivers in 1982 were 74,000 and 71,000 adults, respectively. The upper river goal was 75% of the long-term goal (99,000) as decided for economic reasons in 1979. The long-term goal is to be reached by 1988.

The 1982 upper river natural spawning escapement of 39,000 adults was 53% of the interim goal and 39% of the long-term goal. This upper river spawning escapement goal has not been met for three consecutive years (Table III-7).

The lower river spawner surveys were cut short in 1982 by early high flows and the estimates are based on less data than in most years. Lower river escapement of 100,000 natural spawners in 1982 exceeds the goal for this area (71,000) by 41%. Escapement goals for all individual rivers in this management area were met.

Table III-7. Sacramento-San Joaquin river system natural fall-run chinook salmon spawning population estimates for the 1982 season, including comparisons with recent years and escapement goals (in thousands of fish).[a/]

River Systems	Estimated 1982 Run[a/] Adults	Estimated 1982 Run[a/] Jacks	1981 Adults	1981 Jacks	1980 Adults	1980 Jacks	Average 1971-1980 Adults	Average 1971-1980 Jacks	1982 Escapement Goal (Adults)
Sacramento									
Upper Sacramento[b/]	39	20	53	36	45	13	64	22	74
Lower Sacramento:									
Feather	40	9	41	4	30	2	36	6	27
Yuba	23	16	11	2	10	2	9	2	20
American	37	3	38	5	32	2	37	2	24
Subtotal	100	28	90	11	72	6	82	10	71
Sacramento Total	139	48	143	47	117	19	146	32	145
San Joaquin	11	1	14	14	5	1.9	9	1	5
Central Valley Total	150	49	157	61	122	20.9	155	33	150

a/ Preliminary.
b/ Includes Tehama-Colusa Spawning Channel.

Hatchery escapement goals for fall-run chinook adults were exceeded at all three Sacramento River system hatcheries during 1982 (Table III-8). Coleman Hatchery received an unusually large September-October spawning run this year. Many of these fish were probably spring run. Fall-run chinook generally spawn during November in the Sacramento-San Joaquin river systems.

San Joaquin River System

The interim and long-term escapement goals of natural spawners in the San Joaquin River system are 5,000 and 7,000 adult chinook, respectively.

Natural spawner surveys were hampered in 1982 by early high flows. Estimates are based on less data than in most years.

Escapement of 11,000 natural spawners in the San Joaquin River system in 1982 exceeds interim and long-term goals for the system by 120% and 57%, respectively. The Tuolumne escapement of 5,600 adults was the single largest run in the system.

Escapement of adult spawners to San Joaquin hatcheries in 1982 was 35% of the 1982 goal of 5,500 (Table III-8).

Klamath River System

The 1982 interim spawning escapement goal for the Klamath River system was 86,000 fall-run adults. The long-term goal, to be achieved by 1988, is 115,000 fall-run adults (97,500 natural plus 17,500 hatchery).

The preliminary in-river run size estimate for the Klamath River system in 1982 is 62,700 adult chinook. This is 17% below the 1981 run (75,500) and 3% below the 1978-81 average (64,600) (Table III-9). The 1982 Indian fishery harvested 23% of the adult in-river fall chinook run compared to 44% of the in-river run in 1981 (Table III-10). Greater restriction of the river net fishery in 1982 coupled with higher flows (4,967 cfs in 1982 compared to 1,888 cfs in 1981) resulted in the reduced catch rate.

Total spawning escapement in 1982 is estimated to be 40,500 adult chinook which is 9% above the 1981 escapement (37,000) and is the largest escapement since 1978. Most of the increase was in the upper Klamath River where the Iron Gate Hatchery and Bogus Creek runs totaled 8,400 and 4,400 adults, respectively (Bogus Creek runs alongside the hatchery). The Trinity River natural and hatchery escapements were 9,200 and 2,100 adults compared to 15,300 and 2,400 adults in 1981. Natural spawning escapement in the Klamath Basin in 1982 totaled 30,100 adults, 8% less than the 1981 adult natural escapement of 32,600 (Table III-9).

It should be noted that even in the absence of all in-river fisheries on the Klamath, the total in-river run size of 62,700 adults amounts to only 73% of the 1982 spawning escapement goal. More severe ocean fishery closures coupled with highly restrictive in-river regulations would have been required to meet the goal in 1982.

Table III-8. Preliminary Sacramento-San Joaquin river system hatchery fall-run chinook salmon spawning population estimates for the 1982 season, including comparisons with recent years and escapement goals (in thousands of fish).[a/]

River Systems	Estimated 1982 Run		1981		1980		1971-1980 Average		1982 Escapement Goal
	Adults	Jacks	Adults	Jacks	Adults	Jacks	Adults	Jacks	(Adults)
Sacramento									
Coleman[b/]	16.2	3.4	5.7	7.5	3.9	0.6	2.3	1.0	9.0
Feather	6.5	1.2	7.3	1.0	2.9	0.6	5.6	0.8	5.0
Nimbus	8.3	2.5	17.8	2.8	13.5	2.0	7.6	1.5	6.0
Subtotal	31.0	7.1	30.8	11.3	20.3	3.2	15.5	3.3	20.0
San Joaquin									
Mokelumne	1.7	0.9	1.1	0.4	0.4	0.2	0.4	c/	0.5[d/]
Merced	0.2	c/	0.6	0.3	0.2	c/	0.3	c/	5.0
Subtotal	1.9	0.9	1.7	0.7	0.6	0.2	0.7	c/	5.5
TOTALS	32.9	8.0	32.5	12.0	20.9	3.4	16.2	3.3	25.5

a/ 1971-81, 1980 and 1981 estimates are final.

b/ The 1982 runs include a large number of September-October spawners.

c/ Less than 100 fish.

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

Table III-9. Klamath River basin fall chinook spawning escapement, in-river harvest and run-size estimates (numbers of fish), 1978-1982.[a/]

Spawning/Fishery Unit	1978			1979			1980			1981			1982		
	Jacks	Adults	Total	Jacks	Adults	Total	Jacks	Adults	Total	Jacks	Adults	Total	Jacks	Adults	Total
SPAWNING ESCAPEMENT															
HATCHERY															
Iron Gate Hatchery	915	6,925	7,840	257	2,301	2,558	451	2,412	2,863	540	2,055	2,595	1,833	8,353	10,186
Trinity River Hatchery	1,325	6,034	7,359	964	1,335	2,299	2,256	4,099	6,355	1,004	2,370	3,374	3,916	2,063	5,979
Subtotals	2,240	12,959	15,199	1,221	3,636	4,857	2,707	6,511	9,218	1,544	4,425	5,969	5,749	10,416	16,165
NATURAL															
Trinity River basin (above Willow Creek, excluding TRH)	4,712	31,052	35,764	3,936	8,028	11,964	16,837	7,700	24,537	5,906	15,340	21,246	8,393	9,181	17,574
Salmon River basin	1,400	2,600	4,000	150	1,000	1,150	200	800	1,000	450	750	1,200	300	1,000	1,300
Scott River basin	1,909	3,423	5,332	428	3,396	3,824	2,245	2,032	4,277	1,900	1,900	3,800	2,000	4,500	6,500
Shasta River basin	6,707	12,024	18,731	1,040	7,111	8,151	4,334	3,762	8,096	4,330	7,890	12,220	1,912	6,531	8,443
Bogus Creek Basin	651	4,928	5,579	494	5,444	5,938	1,749	3,321	5,070	912	2,730	3,642	2,350	4,400	6,750
Mainstem Klamath River (excluding Iron Gate Hatchery)	300	1,700	2,000	466	4,190	4,656	867	2,468	3,335	1,000	3,000	4,000	1,000	3,000	4,000
Misc. Klamath tribs. (above Hoopa Reservation)	735	2,765	3,500	57	238	295	500	1,000	1,500	500	1,000	1,500	500	1,500	2,000
Hoopa Reservation tributaries	b/	b/	b/	100[c/]	400[c/]	500[c/]	250[c/]	400[c/]	650[c/]	b/	b/	b/	b/	b/	b/
Subtotals	16,414	58,492	74,906	6,671	29,807	36,478	26,982	21,483	48,465	14,998	32,610	47,608	16,455	30,112	46,567
TOTAL SPAWNING ESCAPEMENT	18,654	71,451	90,105	7,892	33,443	41,335	29,689	27,994	57,683	16,542	37,035	53,577	22,204	40,528	62,732
IN-RIVER HARVEST															
RECREATIONAL HARVEST															
Klamath River below Highway 101 Bridge	122	854	976	216	484	700	805	533	1,338	800	1,500	2,300	988	3,200	4,188
Trinity R. basin above Willow Creek	d/	d/	d/	765	1,157	1,922	2,456	998	3,454	1,456	3,174	4,630	1,807	1,891	3,698
Balance of Klamath system	1,960	840	2,800	1,200	500	1,700	1,843	555	2,398	5,500	800	6,300	9,300	2,595	11,895
Subtotals	2,082	1,694	3,776	2,181	2,141	4,322	5,104	2,086	7,190	7,756	5,474	13,230	12,095	7,686	19,781
INDIAN NET HARVEST[c/]	1,800	18,200	20,000	1,350	13,650	15,000	987	12,013	13,000	2,465	33,033	35,498	1,799	14,482	16,281
TOTAL IN-RIVER HARVEST	3,882	19,894	23,776	3,531	15,791	19,322	6,091	14,099	20,190	10,221	38,507	48,728	13,894	22,168	36,062
IN-RIVER RUN															
TOTAL IN-RIVER RUN	22,536	91,345	113,881	11,423	49,234	60,657	35,780	42,093	77,873	26,763	75,542	102,305	36,098	62,696	98,794

a/ Prepared December 2, 1982. All figures are California Department of Fish and Game counts/estimates unless otherwise indicated. All figures for Iron Gate and Trinity River hatcheries represent counts of fish entering those facilities. All spawner escapement figures for the Shasta River basin, plus those for the Bogus Creek basin for 1980-1982, are based on counts made at counting stations located near the mouths of those streams. All remaining spawner escapements and all harvest figures are estimates developed from data obtained through ongoing field investigations in the Klamath-Trinity system. Figures for years through 1981 are final; 1982 figures are preliminary, subject to revision.

b/ Figure not available.

c/ U.S. Fish and Wildlife Service estimate.

d/ In 1978, the Klamath River system sport salmon fishing season was closed August 25. There was essentially no sport harvest of fall chinook in the Trinity River basin in 1978.

Table III-10. Klamath River adult in-river fall chinook run size, spawning escapement, sport catch, and Indian net harvest (in numbers and percent of the total in-river run size), 1978-1982.

	Spawning Escapement		River Sport Catch		Indian Net Catch		In-river Run Size
Year	Numbers	Percent	Numbers	Percent	Numbers	Percent	Numbers
1978	71,500	78	1,700	2	18,200	20	91,400
1979	33,400	68	2,100	4	13,700	28	49,200
1980	28,000	66	2,100	5	12,000	29	42,100
1981	37,000	49	5,500	7	33,000	44	75,500
1982[a/]	40,500	65	7,700	12	14,500	23	62,700

a/ Preliminary.

Oregon Coastal Chinook

Available information indicates that current escapements of natural spawning chinook salmon to Oregon coastal streams are adequate to meet 1982 management goals. These stocks remain in a generally favorable status, showing an average 3% per year increase in spawning escapements from 1952 to 1978 (Table III-11). Preliminary spawning surveys indicate that an escapement level of 77 adults per-mile was achieved in 1982 which is similar to that observed since 1978. The spawning levels observed in 1982, as judged by ODFW, were adequate to meet the management goal of 150,000 to 200,000 spawning adults.

Some Oregon coastal hatcheries may not receive adequate escapement of fall chinook salmon in 1982 to meet program goals (Table III-12). 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 Dam in 1982 was 71,100 adults, a slight improvement over the low runs of 1979-1981, but below the escapement goal of 100,000-120,000 fish (Table III-13). The escapement of adults into the Snake River at Lower Granite Dam was 12,400, below the minimum goal of 30,000 adult fish. The Priest Rapids Dam count of 8,700 adults, which measures upper Columbia River escapement above its confluence with both the Yakima and Snake Rivers, was below the 1971-81 average of 11,400. In general, escapement to the upriver hatchery production facilities was sufficient, but escapement to natural production areas was not.

Lower River Spring Chinook

The Willamette run was 72,000 fish in 1982 with the escapement of 46,200 adults, above the high range of the desired level of 30-35,000 escapement over Willamette Falls. The Cowlitz River run was 27,300 fish, including a hatchery escapement of 12,300 adult fish, above the escapement goal of 4,500. Table III-14 lists run sizes of these two predominant lower river spring chinook runs.

Summer Chinook

Despite in-river harvests being limited to treaty Indian ceremonial and subsistence catches, the Columbia River summer chinook run continues in a depressed state. The 1982 run as measured by the Bonneville Dam count was 26,600 fish (20,100 adults), the smallest run ever recorded (Table III-15). The major components of the summer chinook run originate from the Snake River and the Columbia River above Priest Rapids Dam. The principal reason for not achieving the escapement goal is in-river environmental problems associated with hydroelectric dam projects which are manifested more in the Snake River than other production areas. However, the problem is further aggravated by harvests in various fisheries. The Snake River component was especially poor, with only 4,500 fish counted over Lower Granite Dam.

Table III-11. Average number of spawning fish/mile observed in standard Oregon index streams, 1949-1982.

Year	Coastal Rivers						Columbia River Coho
	Chinook Salmon			Coho Salmon			Chum Salmon
	Jacks	Adults	Total	Jacks	Adults	Total	
1949	--	--	--	--	--	--	--	12
1950	7.7	27.4	35.2	2.9	22.3	25.1	--	24
51	2.6	45.8	48.4	9.4	66.2	75.7	--	70
52	9.9	77.6	87.5	3.9	49.1	53.0	--	51
53	4.7	18.5	23.2	2.8	14.4	17.2	--	18
54	3.5	17.9	21.4	4.1	15.0	19.1	--	29
55	13.4	16.9	30.3	2.0	29.5	31.5	--	26
56	5.9	12.4	18.4	12.0	37.6	49.6	--	53
57	12.0	37.8	49.8	2.4	40.2	42.6	--	54
58	8.6	55.8	64.4	2.9	14.3	17.2	--	22
59	3.7	39.0	42.6	1.7	26.8	28.5	--	21
1960	27.3	32.8	60.1	8.1	13.7	21.7	76	20
61	11.6	51.2	62.8	13.0	47.2	60.1	111	17
62	10.0	42.3	52.3	4.7	37.0	41.7	518	29
63	10.7	55.5	66.2	7.6	25.2	32.8	369	18
64	11.4	62.5	73.9	8.5	53.8	62.3	330	54
65	19.5	59.1	78.6	15.4	55.5	70.9	158	15
66	12.2	61.8	74.0	4.4	33.8	38.3	364	38
67	12.0	49.6	61.5	25.0	39.4	64.3	176	24
68	10.2	32.9	43.2	2.0	25.3	27.3	184	25
69	11.1	36.8	47.9	13.0	31.2	44.2	288	39
1970	20.9	79.9	100.8	6.0	42.6	48.7	434	30
71	8.9	43.2	52.1	3.0	48.1	51.0	308	11
72	19.9	41.3	61.2	5.7	14.9	20.6	532	14
73	5.4	51.8	57.2	2.4	28.3	30.7	744	4
74	13.6	58.8	72.4	11.0	17.9	29.0	752	8
75	22.8	58.7	81.5	5.1	20.0	25.1	731	6
76	15.4	39.5	55.0	5.1	20.3	25.4	286	2
77	14.0	67.9	81.9	2.3	7.8	10.1	417	2
78	6.9	77.0	83.8	2.8	9.4	12.2	1,127	2
79	12.1	81.5	93.6	2.5	21.7	24.2	154	2
1980	13.1	79.0	92.2	5.5	13.5	19.0	371	9
81	7.8	74.2	82.0	1.6	8.4	10.0	145	2
82[a/]	9.8	77.4	87.2	7.0	15.9	22.9	NA	2

a/ Preliminary. Influenced by private hatchery strays and returns from presmolt releases.

Table III-12. Preliminary 1982 adult escapement (numbers of fish) to Oregon Department of Fish and Wildlife salmon hatcheries on the Columbia River and Oregon coastal streams compared with recent escapements from 1971-81 and the 1982 management goal.

Hatchery Location and Species	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982[a]	Management Goal[b]
Columbia River													
Above Bonneville													
Spring-Summer Chinook	-	-	-	-	-	-	100	200	100	100	400	400	1,400
Fall Chinook	-	-	-	-	3,000	3,900	4,900	4,100	1,100	1,800	3,400	5,700	8,000
Coho	1,900	1,100	2,600	6,000	800	3,600	200	2,900	2,400	1,700	300	1,800	1,000
Below Bonneville[c]													
Spring Chinook	9,000	5,800	9,200	16,400	5,900	6,600	12,700	14,100	7,700	7,000	9,800	14,000	14,000
Fall Chinook	22,800	21,200	32,300	20,600	18,800	37,500	25,900	40,200	24,700	22,100	33,000	31,400	22,000
Coho	52,100	22,100	15,400	52,000	20,600	39,300	10,200	57,600	38,800	39,200	19,200	51,800	15,000
Oregon Coastal													
Spring Chinook	-	-	-	-	-	2,900	2,400	4,400	7,000	7,900	2,500	4,000	3,000
Fall Chinook	2,200	4,100	4,200	1,600	2,100	500	4,200	1,600	2,000	1,800	1,800	2,300	3,500
Coho	29,100	12,900	18,400	35,100	4,900	38,700	6,500	5,600	23,000	22,400	21,500	15,500	18,000[d]

a/ Preliminary returns.
b/ Hatchery escapement goals include number of adult fish needed to meet 1982 agency production and do not include private hatchery needs.
c/ Includes Willamette River hatcheries.
d/ Includes 2,000 excess adults for distribution in priority streams and 6,000 to provide eggs for coho fingerling releases to augment natural production.

Table III-13. Estimates of in-river run size and escapement (numbers of fish) of Columbia River adult spring chinook above Bonneville Dam, 1971-1982.

Year	In-river Run Size	Bonneville Escapement[a/]	Snake River Escapement[b/]	Upper Columbia River Escapement[c/]
1971	146,500	96,800	21,800	5,000
1972	269,500	136,400	38,500	8,400
1973	223,800	101,200	52,800	9,000
1974	99,800	61,900	15,500	10,900
1975	97,900[d/]	97,800[d/]	16,100	7,700
1971-75 Average	167,500	98,800	28,900	8,200
1976	63,900	63,500	15,900	11,500
1977	138,400	98,600	36,200	20,600
1978	127,000	124,400	40,700	21,200
1979	48,600	48,100	6,800	7,400
1980	53,100	53,100[d/]	5,500	8,500
1981	63,600	61,200[d/]	13,100	14,500
1982[c/]	71,100	66,800	12,400	8,700
Goal	250,000	100,000-120,000	30,000 (minimum)	

a/ Bonneville Dam count minus treaty Indian harvest above Bonneville.
b/ Count at uppermost Snake River Dam. In 1971-74 this was Little Goose Dam. In 1975-82 this was the Lower Granite Dam.
c/ Priest Rapids Dam count.
d/ Maximum figure, not adjusted for fallbacks at the dam.
e/ Preliminary.

Table III-14. Estimates of in-river run size and escapement (numbers of fish) of lower Columbia River spring chinook, including jacks, 1971-1982.

Year	Willamette River		Cowlitz
	In-river Run Size	Escapement (Willamette Falls Count)	In-river Run Size
1971	67,400	44,600	11,000
1972	47,100	26,200	9,300
1973	54,500	42,000	13,800
1974	71,800	44,500	27,800
1975	32,700	19,100	45,200
1971-75 Average	54,700	35,300	21,400
1976	40,700	22,200	53,400
1977	58,100	40,000	36,600
1978	71,400	47,500	35,700
1979[a/]	44,600	26,600	19,500
1980[a/]	42,500	27,000	32,300
1981[a/]	48,600	30,100	38,700
1982[a/]	72,000	46,200	27,300
Goal	-	30,000-35,000	-

a/ Preliminary.

Table III-15. Estimates of in-river run size and escapement (numbers of fish) of Columbia River adult and jack summer chinook above Bonneville Dam, 1971-82.

Year	In-river Run Size	Bonneville Escapement[a/]	Snake River Escapement[b/]	Upper Columbia Escapement[c/]
1971	89,500	72,100	26,800	17,700
1972	77,500	66,400	20,500	14,800
1973	48,900	43,400	12,000	14,300
1974	34,000	34,000	8,800	13,700
1975	44,400	44,400	8,600	22,200
1971-75 Average	59,600	52,100	15,300	16,500
1976	42,100	42,100	9,900	19,300
1977	41,200	41,000	8,400	19,600
1978	43,400	43,000	11,800	21,200
1979	34,400	34,200	3,600	22,700
1980	31,200	31,100	3,400	18,700
1981[d/]	26,900	26,900	3,800	12,300
1982[d/]	26,600	26,600	4,500	9,900
Goal	-	80,000-90,000	-	-

a/ Bonneville count minus treaty Indian harvest.
b/ Count at uppermost Snake River Dam.
c/ Priest Rapids Dam count.
d/ Preliminary.

Upriver Fall Chinook

The escapement of 31,100 adults over McNary Dam represented nearly a 50% improvement over the record low 1981 escapement for the upriver bright stock, but still substantially below the escapement goal of 40,000 (Table III-16). The Snake River component of the upriver bright stock escapement was 1,600 adult fish (Ice Harbor Dam count), slightly higher than recent years. Like spring and summer chinook runs, a weak Snake River component is typical of recent years.

The management constraint of limiting all in-river fisheries to a total catch of 10% or less of the upriver bright stock return, as measured in terms of McNary Dam passage if no fisheries occurred (McNary Dam equivalents), was achieved. About 3,000 upriver bright McNary Dam equivalents were harvested by Columbia River fisheries in 1982 to achieve a harvest of 334,700 hatchery fish.

A high rate of unaccountability of the upriver bright stock between Bonneville and McNary Dams occurred again in 1982, similar to the approximately 50% rate observed in 1980 and 1981. A tagging study to address this problem was initiated in 1982. Results of this study are not yet available.

The escapement to the Bonneville Pool hatchery complex was 30,000, above the goal of 15,000. Table III-17 summarizes the in-river run size and Bonneville escapement for combined bright and tule stocks of upriver adult fall chinook.

Lower River Fall Chinook

Escapements of the lower river hatchery stock met program goals for 1982. The count at Willamette Falls was 26,900 (25,800 adults; 1,100 jacks), the largest count since 1976.

Hatchery Chinook

Returns of adult chinook to Columbia River hatcheries since 1971 are shown in Table III-18. In general, egg take needs were met for all stocks of salmon except the upriver bright fall chinook. Spring chinook eggs were obtained from federal hatcheries located in Washington to meet Snake River hatcheries production goals. To meet system-wide program goals, exchange of eggs occurred between hatchery stations wherever suitable stocks were available.

Columbia River and Oregon Coastal Coho

In 1982, measured ocean escapements of coho salmon for the Oregon Production Index (OPI) area totaled 441,300. This was above the preseason objective of 300,000 and above the 1978-81 average of 281,300 (Table III-4). The 1982 OPI escapement figure included a run size of 409,200 to the Columbia River and an Oregon coastal escapement of 32,100 resulting primarily from hatchery production.

The run of 409,200 to the Columbia River was the largest in-river run size since 1974. The in-river run was considerably above the 1978-81 runs and also above the 1971-75 average of 360,100 (Table III-19). Hatchery escapement of 154,100 Columbia River coho below Bonneville Dam was the second largest

Table III-16. Estimates of in-river run size and escapement (numbers of fish) of adult bright fall chinook above Bonneville Dam, 1971-1982.

Year	Bonneville Count	Lower R. Catch	In-river Run Size	McNary Count	Ice Harbor Count	Snake River Escapement[b/]
1971	81,900	43,400	125,300	49,000	9,300	4,700
1972	64,500	29,700	94,200	37,600	7,500	1,800
1973	87,400	65,200	152,600	46,600	6,700	2,400
1974	76,400	21,800	98,200	34,600	2,400	900
1975	84,300	29,600	113,900	29,600	1,900	1,000
1971-75 Average	78,900	37,900	116,800	39,500	5,600	2,200
1976	80,800	26,400	107,200	28,800	1,100	500
1977	64,300	32,000	96,300	37,600	1,200	600
1978	65,900	16,900	82,800	27,300	1,100	600
1979	71,200	18,800	90,000	31,200	1,200	500
1980[a/]	70,800	6,300	77,100	29,900	1,200	500
1981[a/]	63,100	2,800	65,900	21,100	800	300
1982[a/]	71,300	2,600	73,900	31,100	1,600	700
Goal	--	--	--	40,000	--	

a/ Preliminary.
b/ Escapement above uppermost dam (Little Goose 1971-74; Lower Granite 1975-82).

Table III-17. Estimates of in-river run size and escapement (numbers of fish) of bright and tule Columbia River adult fall chinook above Bonneville Dam, 1971-1982.

Year	In-river Run Size	Bonneville[a/] Escapement
1971	244,800	102,000
1972	188,600	55,200
1973	249,300	91,100
1974	176,900	74,100
1975	311,600	97,200
1971-75 Average	234,200	83,900
1976	260,400	107,200
1977	199,000	85,700
1978	183,800	89,500
1979	172,100	84,000
1980[b/]	174,900[c/]	98,100
1981[b/]	158,000[c/]	101,500
1982[b/]	198,100[c/]	103,400

a/ Bonneville Dam count minus treaty Indian harvest.
b/ Preliminary.
c/ Estimated catches of upriver fish in fisheries below Bonneville based on mark recoveries.

Table III-18. Adult chinook and coho returns (numbers of fish) to Columbia River hatcheries, 1971-82. Includes hatcheries operated by all agencies.

	Chinook				Coho	
	Spring		Fall			
Year	Below Bonneville	Above Bonneville	Below Bonneville	Above Bonneville	Below Bonneville	Above Bonneville
1971	16,900	8,200	55,700	17,100	187,600	20,400
1972	9,300	20,500	41,200	9,600	91,300	6,200
1973	15,100	19,800	50,100	20,400	68,200	4,600
1974	33,200	6,400	34,200	14,200	152,800	10,000
1975	25,900	12,000	34,800	36,800	85,400	16,700
1976	29,900	14,800	51,600	25,800	117,300	14,400
1977	30,200	20,100	41,600	22,200	37,100	2,000
1978	25,200	14,100	59,400	20,100	131,400	7,800
1979	19,200	9,300	46,800	21,200	101,100	7,700
1980	28,400	11,200	36,300	31,200	120,400	3,400
1981	33,800	14,400	52,900	26,900	77,900	9,200
1982[a/]	32,000	10,200	47,100	32,400	154,100	31,400

a/ Preliminary.

Table III-19. Estimated in-river run size, catch and escapement (numbers of fish) of Columbia River adult coho, 1971-82.

Year	Catch	Escapement			
	Gillnet Below Bonneville	Hatcheries Below Bonneville	Bonneville Count	Willamette Count	Minimum Run Size
1971	264,300	187,600	53,800	17,400	523,100
1972	131,300	91,300	34,200	10,000	266,800
1973	183,700	68,200	25,800	5,200	282,900
1974	261,000	152,800	31,600	1,500	446,900
1975	156,600	85,400	32,800	5,900	280,700
1971-75 Average	199,400	117,100	35,600	8,000	360,100
1976	168,400	117,300	35,500	2,300	323,500
1977	39,000	37,100	9,300	1,000	86,400
1978	132,700	131,400	30,200	1,700	296,000
1979a/	127,600	101,100	29,600	1,800	260,100
1980a/	149,800	120,400	12,700	1,300	284,200
1981a/	59,000	77,900	21,200	1,000	159,100
1982a/	197,600	154,100	55,800	1,700	409,200

a/ Preliminary.

escapement since 1971 (Table III-18). Early stock coho (August-September) are largely unfishable in the river due to the mixed species problem that conflicts with chinook management needs during this period. This problem will exist as long as lower river harvest constraints exist for fall chinook of upriver origin. Required 1982 egg takes were achieved for the early coho stock and surpluses were available.

The dominant stock produced by Washington hatcheries is the late coho stock (October-January) of Cowlitz River origin. Program goals for these fish are intended to achieve an in-river run timing from October to mid-November after most chinook harvest constraints and before winter steelhead begin entering the river in significant numbers. The proper egg-taking pattern was achieved for the 1980-82 brood cycle.

Returns to Oregon's coastal hatcheries in 1982 of 15,500 (Table III-20) was less than the 21,500 in 1981 and was also below the 1971-75 average of 20,100. An additional 13,300 hatchery fish are estimated to have returned to coastal areas from off-station hatchery releases of smolts. Some surplus coho were available at two coastal hatcheries, but program needs were not met at five facilities. Approximately 5,200 adults were distributed in streams and 2.6 million eggs surplus to hatchery needs were taken at coastal hatcheries to provide for coho pre-smolt releases of 2.2 million to augment natural production.

A decline was observed from 1965 to 1978 in the abundance of natural spawning stocks of coho in Oregon coastal spawning index areas (Table III-11). The number of coho counted in Oregon coastal streams declined at an average rate of 9.3% per year to levels of 62,900 and 74,500 adults in 1977 and 1978, respectively (Table III-20). Assessment of the 1979 spawning escapement indicated a level of 172,200 adults was achieved which is equivalent to the 1976 parent year and represents significant improvement over 1977 and 1978. The 1980 spawning escapement indicated a level of escapement (107,500 adults) which was an improvement over the 1977 parent year but below 1979. It appears that significant progress was made in both 1979 and 1980 toward the long-term goal of rebuilding natural spawning stocks of Oregon coastal coho to a level of 200,000 adult escapement by 1987. Spawning surveys for 1981 indicated an escapement of 72,700 adults, which was below the 1981 goal of 125,000 and represents the second lowest spawning escapement on record. The natural escapement observed in 1981 was similar to that observed in the depressed 1978 parent year. Spawning surveys for 1982 indicate an adult escapement of 137,500 which is below the 1982 goal of 172,000 (maintenance of parent year level) but represent an improvement over levels observed in 1980 and 1981.

Declines have been noted in the abundance of natural spawning stocks of coho in the Columbia River (Table III-11). However, the decline is not unexpected since coho management in the Columbia River is based upon hatchery production which would tend to overharvest the natural stocks.

Oregon Private Hatchery Escapements

Returns to Oregon's private salmon hatcheries have increased since 1978 but not necessarily at the same rate that releases have increased. Returns of adult salmon in 1982 totaled 165,000 coho, 5,300 spring chinook, 2,200 fall chinook (7,600 combined), and 1,100 chum (Table III-21). The coho adult

Table III-20. Estimated escapement (numbers of fish) of Oregon coastal adult coho, 1971-1982.

Year	Hatchery Escapement: Returns to Facility	Hatchery Escapement: Returns from Off-Station Releases	Tenmile Lakes Escapement	Natural Spawning Escapement	Minimum Run Size
1971	29,100	-	28,000	302,400	-
1972	12,900	5,700	8,000	120,600	147,200
1973	18,400	4,500	13,000	148,000	183,900
1974	35,100	7,500	4,500	130,400	177,500
1975	4,900	900	2,500	157,800	166,100
1971-75 Average	20,100	-	11,200	171,800	-
1976	38,700	16,800	3,500	161,700	220,700
1977	6,500	2,500	4,000	62,900	75,900
1978	5,600	2,000	3,000	74,500	85,100
1979	23,000	15,800	2,500	172,200	213,500
1980	22,400	13,800	4,000	107,500	147,700
1981	21,500	9,500	4,500	72,700	107,900
1982[a/]	15,500	13,300	4,100[b/]	137,500[b/]	170,400
Goal	18,000	-	-	172,000[c/]	-

a/ Preliminary.
b/ Influenced by private hatchery strays and returns from pre-smolt releases.
c/ Interim 1982 goal; long-term goal 200,000.

Table III-21. Number of fish returned to Oregon private salmon hatcheries, 1978-1982.

Species	1978	1979	1980	1981	1982[a/]
Chinook adults	200	300	800	2,600	7,600
Chinook jacks	b/	100	2,600	2,500	4,400
Coho adults	8,100	47,700	27,900	98,700	165,000
Coho jacks	6,600	1,400	15,600	19,100	19,300
Chum	600	b/	500	500	1,100

a/ Preliminary.
b/ Under 50.

returns represent about 0.7% of the 23.8 million smolts released in 1981. The availability of seed stocks for chinook and chum improved in 1982 and private operators were also able to meet their program needs for coho production. No coho or chinook eggs have been imported since 1980 and local or "adjacent system" stocks continue to be used as a base for outcrossing of hatchery stocks.

Washington Chinook

Willapa Bay

Willapa Bay chinook are managed on the basis of hatchery returns. Even with the lack of any target fishery on Willapa chinook stocks in 1982, hatchery escapement goals will not be met. However, sufficient fish have returned to substantially increase chinook production, particularly at Naselle Hatchery. Table III-22 gives preliminary terminal run size information.

Grays Harbor

Grays Harbor is managed based on the strength of the wild run. Neither the wild nor the hatchery escapement goals will be met, though some segments of the population have shown increases in 1982. Table III-23 summarizes the available terminal run data.

North Washington Coast

All chinook stocks except Quinault fall chinook and Quillayute spring chinook are managed for natural production. A summary of 1973-82 escapements and 1982 escapement goals is presented in Table III-24. Natural spring/summer chinook on the Queets and Hoh rivers returned at the recent five-year average run strength, while Queets and Hoh natural fall chinook returned 17% and 13%, respectively, above the recent five-year average (Tables III-25 and III-26). The 1982 terminal runs to these drainages were somewhat below the record levels of 1981. Quillayute natural fall chinook returned 11% above the recent five-year average, and well above the 1981 return (Table III-27).

The preliminary estimate of Queets spring/summer chinook escapement is 800, slightly above minimum escapement defined by the federal court, and 57% of the WDF objective (Table III-25).

The preliminary estimate of escapement for Hoh spring/summer chinook is 1,600, above the goal adopted by the Fisheries Advisory Board for 1982, and 7% above the 1982 state objective of 1,500 (Table III-26).

The preliminary estimate of natural escapement, including hatchery strays, of Quillayute spring/summer chinook is 1,600, slightly above the WDF objective of 1,500, but 5% below the recent five-year average (Table III-27).

Preliminary estimates of natural fall chinook escapements to the Queets, Hoh, and Quillayute represented 100%, 92%, and 107%, respectively, of the WDF objectives for these stocks (Table III-24).

The hatchery egg requirements were met for chinook at Soleduck Hatchery. Chinook egg shortfalls occurred at Makah, a recently opened federal hatchery and at Cook Creek Federal Hatchery.

Table III-22. Estimated terminal run size, catch, and escapement (numbers of fish) for Willapa Bay fall chinook, 1973-82.

Year	Catch		Escapement		Terminal Run Size[a/]
	Gillnet	River Sport[a/]	Natural	Hatchery	
1973	12,600	350	2,500	5,500	20,950
1974	8,700	300	2,700	5,400	17,100
1975	8,600	200	800	4,000	13,600
1976	13,300	300	3,400	2,900	19,900
1977	9,400	500	3,000	5,800	18,700
1978	7,600	600	6,700	3,700	18,600
1979	12,700	400	5,000	3,900	22,000
1980	12,500	300	4,700	4,100	21,600
1981	12,300	400	3,600	3,000	19,300
1982[b/]	7,200	NA	3,600	3,800	14,600
Goal	-	-	-	8,000	-

a/ Jacks not included in sport catch.

b/ Preliminary. Total run size estimate biased to the low side due to the lack of a river sport estimate.

Table III-23. Estimated terminal run size, catch, and escapement (numbers of fish) for Grays Harbor chinook, 1973-1982.

Stock	Year	Catch		Escapement		Terminal Run Size[b/]
		Gillnet[a/]	River Sport[b/]	Natural	Hatchery	
Fall	1973	12,700	1,300	7,200	-	21,200
	1974	8,500	1,100	4,200	-	13,800
	1975	8,900	700	4,300	-	13,900
	1976	6,400	800	1,800	-	9,000
	1977	7,100	1,000	5,200	200	13,500
	1978	4,500	2,000	4,600	200	11,300
	1979	1,500	1,300	9,400	100	12,300
	1980	10,200	800	11,700	1,100	23,700
	1981	4,800	200	7,600	800	13,400
	1982[c/]	8,400	NA	5,600	300	14,300
	Goal	-	-	14,600	-	-
Spring/Summer	1973	800	0[d/]	250	-	1,050
	1974	300	0	350	-	650
	1975	100	0	450	-	600
	1976	400	0	650	-	1,050
	1977	900	0	850	-	1,700
	1978	600	0	1,050	-	1,650
	1979	800	0	350	-	1,100
	1980	300	0	250	-	550
	1981	300	0	600	-	900
	1982[c/]	50	0	600	-	650

a/ Includes Chehalis tribal catches.
b/ Jacks not included in sport catch. The 1982 terminal run size biased to the low side since a river sport catch estimate is not yet available.
c/ Preliminary.
d/ Under 50 fish per year for all years.

Table III-24. Chinook salmon wild spawning escapements (numbers of fish, does not include hatchery strays except as indicated) for north Washington coastal stocks, 1973-1982 (estimates provided by Washington Department of Fisheries).

Stock	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1982 Goal[a/]
Queets											
Spring/Summer	b/	b/	b/	b/	700	1,100	1,000[c/]	1,000	1,000	900[c/d/]	1,400 (700 mininum)
Fall	3,500	1,500	2,600	1,200	3,400	2,000	3,800	3,100	4,300	4,200[d/]	4,200 (2,500 minimum)
Hoh											
Spring/Summer	b/	b/	500	600	1,000	1,400	1,400	800	1,500	1,600	1,500 (1,200 minimum)
Fall	2,000	600	400	500	1,200	800	1,800	2,100	3,700	2,200[d/]	2,400 (1,200 minimum)
Quillayute											
Spring/Summer	NA	NA	1,100	1,100	2,500	2,200	2,000	900	800	1,600[d/]	--
Fall	4,700	2,300	2,100	2,100	3,000	4,600	4,600	6,600	5,700	6,400[d/]	6,000 (3,000 minimum)

a/ Washington Department of Fisheries goals. The 1982 management goals for the Queets and Hoh spring /summer stocks were established by F.A.B. ruling and are shown in parentheses. Escapements for Queets, Hoh, and Quillayute fall stocks were established by F.A.B. ruling as the larger of minimum levels (shown in parentheses) or 60% of in-river returns.
b/ The accuracy of estimates previously provided by WDF cannot be verified.
c/ Includes 100 hatchery fish in spawning populations.
d/ Preliminary.

Table III-25. Estimated in-river run size, catch and escapement (numbers of fish) of Queets River chinook stocks, 1973-82.

Stock/Year	Catch[a/]			Escapement		Terminal Run Size		
	Gillnet	Ceremonial & Subsistence	River Sport[b/]	Natural	Hatchery	Natural	Hatchery	Total
Spring/Summer								
1973	500	<50	100	NA[c/]	--	NA	--	NA
1974	400	<50	100	NA[c/]	--	NA	--	NA
1975	400	<50	100	NA[c/]	--	NA	--	NA
1976	200	<50	100	NA[c/]	--	NA	--	NA
1977	400	<50	200	700	--	1,300	--	1,300
1978	200	<50	100	1,100	--	1,400	--	1,400
1979	500	<50	200	900	100	1,500	200	1,700
1980	100	<50	100	1,000	--	1,200	--	1,200
1981	300	<50	100	1,000	--	1,400	--	1,400
1982[d/]	500	<50	<100	800	100	1,300	200	1,500
Fall								
1973	3,600	NA	100	3,500	--	7,300	--	7,300
1974	3,100	NA	100	1,500	--	4,700	--	4,800
1975	2,200	NA	100	2,600	--	5,000	--	5,000
1976	1,300	NA	100	1,200	--	2,600	--	2,600
1977	2,000	NA	100	3,400	--	5,600	--	5,600
1978	900	NA	100	2,000	--	3,200	--	3,200
1979	900	100	200	3,800	--	5,100	--	5,100
1980	2,600	NA	100	3,100	--	5,900	--	5,900
1981	3,800	NA	300	4,300	--	8,500	--	8,500
1982[d/]	2,300	NA	300	4,200	100	6,600	200	6,800

a/ Gillnet and ceremonial and subsistence catches provided by Quinault Tribe; other statistics provided by Washington Department of Fisheries.
b/ Predominantly fish under 28 inches in total length.
c/ These early estimates are now questioned by WDF.
d/ Preliminary.

Table III-26. Estimated in-river run size, catch and escapement (numbers of fish) of Hoh River chinook stocks, 1973-82.

Stock/Year	Catch[a/]			Escapement		Terminal Run Size		
	Gillnet	Ceremonial & Subsistence	River Sport[b/]	Natural	Hatchery	Natural	Hatchery	Total
Spring/Summer								
1973	700	<50	400	NA[c/]	--	NA[c/]	--	NA[c/]
1974	600	<50	300	NA[c/]	--	NA[c/]	--	NA[c/]
1975	500	100	500	500	--	1,600	--	1,600
1976	500	<50	200	600	--	1,400	--	1,400
1977	900	<50	100	1,000	--	2,000	--	2,000
1978	900	100	100	1,400	--	2,500	--	2,500
1979	700	100	300	1,400	--	2,500	--	2,500
1980	100	<50	200	800	--	1,200	--	1,200
1981	400	<50	100	1,500	NA	2,100	<50	2,100
1982[d/]	600	<50	200	1,600	NA	2,300	100	2,400
Fall								
1973	2,200	100	200	2,000	--	4,500	--	4,500
1974	800	100	200	600	--	1,700	--	1,700
1975	700	200	270	400	--	1,500	--	1,500
1976	500	<50	200	500	--	1,200	--	1,200
1977	1,600	<50	200	1,200	--	3,000	--	3,000
1978	800	100	100	800	--	1,800	--	1,800
1979	400	<50	300	1,800	--	2,500	--	2,500
1980	500	<50	400	2,100	--	3,000	--	3,000
1981	800	<50	200	3,700	--	4,600	--	4,600
1982[d/]	1,200	<50	300	2,000	NA	3,400	50	3,400

a/ Gillnet and ceremonial and subsistence catches provided by Hoh Tribe; other statistics provided by Washington Department of Fisheries.
b/ Predominantly fish under 28 inches in length.
c/ These early estimates are now questioned by WDF.
d/ Preliminary.

Table III-27. Estimated in-river run size, catch and escapement (numbers of fish) of Quillayute River chinook stocks, 1973-82.

Stock/Year	Catch: Ceremonial and Subsistence[a/]	Catch: Gillnet[a/]	Catch: River Sport[b/]	Escapement: Natural[c/]	Escapement: Hatchery[d/]	Terminal Run Size: Natural	Terminal Run Size: Hatchery[d/]	Terminal Run Size: Total
Spring/Summer								
1973	300	NA	1,500	NA	<50	NA	NA	NA
1974	100	NA	400	NA	NA	NA	NA	NA
1975	2,300	<50	900	1,100	1,400	1,000	4,700	5,700
1976	2,500	<50	1,500	1,100	1,800	2,500	4,500	7,000
1977	2,600	<50	600	2,500	900	1,200	5,400	6,600
1978	3,200	<50	300	2,200	700	3,200	3,200	6,500
1979	2,500	<50	200	2,000	200	3,900	1,000	4,900
1980	1,000	<50	200	900	400	1,700	800	2,600
1981	1,000	<50	100	800	300	1,700	500	2,200
1982[e/]	1,700	<50	500	1,600	100	3,100	800	3,900
Fall								
1973	5,000	NA	300	4,700	-	10,100	-	10,100
1974	3,800	NA	300	2,300	-	6,400	-	6,400
1975	2,300	<50	700	2,100	<50	4,500	500	5,100
1976	2,200	<50	600	2,100	<50	4,600	400	5,000
1977	5,300	<50	300	3,000	200	7,300	1,600	8,900
1978	1,400	<50	500	4,600	300	6,400	400	6,700
1979	2,600	<50	400	4,700	100	7,400	200	7,700
1980	1,400	<50	500	6,600	<50	7,700	700	8,400
1981	1,300	<50	600	5,700	100	7,000	400	7,400
1982[e/]	2,700	<50	600	6,400	100	9,400	400	9,800

a/ Gillnet and ceremonial and subsistence catches provided by the Quillayute tribe; other statistics provided by the Washington Department of Fisheries.
b/ Assumed to be predominantly fish less than 28 inches in length.
c/ Includes hatchery strays.
d/ Excludes hatchery strays.
e/ Preliminary.

Puget Sound

Total Puget Sound summer/fall chinook terminal run size in 1982 numbered about 230,000 fish, which is roughly equal to the most recent six-year average run size. Hatchery escapements were generally good with an egg-take of approximately 77 million for all Puget Sound hatcheries. Puget Sound spring chinook runs continue to be severely depressed.

Washington Coho

Willapa Bay

Willapa coho are managed on the basis of hatchery run strength. Escapements in 1982 will exceed all requirements. Table III-28 summarizes these data.

Grays Harbor

Grays Harbor coho are managed on the basis of wild run strength. Due to the incidental catches of coho taken during the fishery on the unexpectedly large return of chum, the coho escapement was 57% of the goal. Hatchery escapement needs will be met. Returns of summer coho were approximately one third of preseason expectations. Table III-29 summarizes these terminal run data.

North Washington Coast

The northern Washington coastal region is managed to achieve natural spawning escapement goals for all coho stocks except the Quillayute River summer coho and Quinault River fall coho. These two stocks are managed primarily for hatchery production, with provisions for achieving adequate seeding to the natural environment via normal escapement, augmentation of spawning populations with hatchery adults, or fry releases. The Queets and Hoh natural coho stocks returned to their streams of origin above predicted run strength, late run timing led to an early estimate that the in-river run was below preseason expectations. The Soleduck Hatchery summer coho returned above the predicted rate. Preliminary estimates of natural spawning escapements are presented in Table III-30. Terminal run size data are provided in Tables III-31 through III-34 for the years 1973-82.

Natural coho populations were managed to achieve escapements within the range specified by the U.S. District Court for 1982. The preliminary WDF escapement estimates for the Queets, Hoh, and Quillayute falls were 67%, 75%, and 74% of WDF revised goals, respectively.

Puget Sound

Puget Sound coho runs are managed on the basis of six regional units -- Strait of Juan de Fuca, Nooksack-Samish, Skagit, Stillaguamish-Snohomish, South Sound, and Hood Canal. Harvest from these units is managed to achieve either the natural spawning escapement goal or hatchery program needs, depending on the system. Hatchery program needs will be met in 1982.

Escapement estimates for the 1965-82 period are presented in Table III-35. Estimates of 1982 escapements are not presently available.

Table III-28. Estimated terminal run size, catch and escapement (numbers of fish) of Willapa Bay coho, 1973-82.

Year	Catch		Escapement		Terminal Run Size[a/]
	Gillnet	River Sport[a/]	Natural	Hatchery	
1973	16,700	1,200	NA	17,500	35,400
1974	15,800	1,100	4,500	11,300	32,700
1975	7,400	300	1,700	4,400	13,800
1976	9,000	800	7,000	10,100	26,900
1977	3,100	600	2,300	4,400	10,400
1978	7,000	700	3,300	7,600	18,600
1979	31,000	4,800	6,600	23,600	66,100
1980	25,000	800	5,000	11,000	41,800
1981	30,000	800	7,400	22,800	61,000
1982[b/]	66,500	NA	3,600	36,400	106,500
Goal	-	-	-	8,000	-

a/ Jacks not included in sport catch.
b/ Preliminary. Does not include river sport catch.

Table III-29. Estimated terminal run size, catch, and escapement (numbers of fish) for Grays Harbor coho, 1973-82.

Year	Catch		Escapement		Terminal Run Size[a/]
	Gillnet	River Sport[a/]	Natural	Hatchery	
1973	43,600	3,400	6,300	4,300	57,400
1974	54,400	4,200	53,800	17,500	129,900
1975	25,000	1,200	10,800	1,800	38,200
1976	32,400	2,600	38,500	2,300	69,000
1977	5,600	900	26,500	500	33,500
1978	7,000	2,300	11,800	7,300	28,300
1979	9,300	5,100	30,400	28,400	72,600
1980	38,100	1,700	29,900	8,200	77,600
1981	31,000	1,100	14,500	19,700	65,800
1982[c/]	49,400	2,000[b/]	20,200	10,400	82,000
Goal	-	-	35,400	-	-

a/ Jacks not included in sport catch.
b/ Estimated catch.
c/ Preliminary.

Table III-30. Coho adult salmon wild spawning escapements (numbers of fish, does not include hatchery strays) for north Washington coastal stocks, 1973-1982.[a/]

Stock	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982[b/]	Goal[c/]	Court Specified Range
Queets[d/]	2,700	1,700	1,700	1,200	1,900	2,700	6,800	4,700	4,800	7,000	10,500	5,600-10,500
Hoh	NA	3,000	2,000	2,200	1,600	1,500	4,600	1,600	2,000	3,600	4,800	2,000-4,800
Quillayute:												
Summer[e/]	1,300	1,000	700	800	700	1,100	1,000	600	600	900	2,000	not specified
Fall	NA	3,800	3,500	3,800	2,100	7,200	18,100	7,600	6,900	11,000	14,800	6,300-14,800

a/ Estimates provided by Washington Department of Fisheries.
b/ Preliminary.
c/ Washington Department of Fisheries goal.
d/ 1973-78 Tribal estimates. Actual spawning escapements in 1981-82 were regulated on the basis of guidelines established by a U.S. District Court order.

e/ This stock is managed for hatchery production.

Table III-31. Estimated in-river run size, catch and escapement (numbers of fish) of Quinault River coho, 1977-1982.

	Catch		Escapement[a/]		Terminal Run Size		
Year	Gillnet	River Sport	Natural	Hatchery	Natural	Hatchery	Total
1977	1,900	negligible	1,500	300	3,000	600	3,600
1978	6,900	negligible	2,500	1,600	6,600	4,200	10,900
1979	17,800	negligible	7,200	4,700	18,000	11,700	29,700
1980	12,400	negligible	2,500	4,900	6,300	13,400	19,700
1981	10,400	negligible	2,200	7,300	4,500	15,400	19,900
1982[a/]	11,000	negligible	7,200	4,900	14,400	8,700	23,200

a/ Escapement estimates for 1977-79 and all figures for 1982 are preliminary.

Table III-32. Estimated in-river run size, catch and escapement (numbers of fish) of Queets River coho and chum stocks, 1973-82.

Stock/Year	Catch[a/]			Adult Escapement		Terminal Run Size		
	Gillnet	Ceremonial & Subsistence	River Sport[b/]	Natural	Hatchery	Natural	Hatchery[c/]	Total[d/]
Fall Coho								
1973	9,000	NA	100	2,700	NA	11,800	0	11,800
1974	12,000	NA	100	1,700	NA	13,700	0	13,700
1975	3,200	NA	100	1,700	NA	5,000	0	5,000
1976	2,900	NA	100	1,200	100	41,000	300[d/]	4,400
1977	1,000	NA	100	1,900	300	2,600	500[d/]	3,100
1978	2,400	NA	100	2,700	600	4,100	900[d/]	5,000
1979	2,700	100	200	6,800	1,600[d/]	8,700	2,100[d/]	10,800
1980	3,200	<50	200	4,700	2,400[d/]	6,000	4,400[d/]	10,400
1981	4,200	NA	200	4,800	2,400[d/]	6,100	4,500[d/]	10,500
1982	1,600	NA	50	7,000	4,500[d/]	7,800	5,400[d/]	13,200
Chum								
1973	100	NA	NA	NA		NA		NA
1974	200	NA	NA	NA		NA		NA
1975	300	NA	NA	NA		NA		NA
1976	100	NA	NA	NA		NA		NA
1977	300	NA	NA	NA		NA		NA
1978	100	NA	NA	NA		NA		NA
1979	100	NA	NA	NA		NA		NA
1980	500	NA	NA	NA		NA		NA
1981	200	NA	NA	NA		NA		NA
1982	<100	NA	NA	NA		NA		NA

a/ Gillnet and Ceremonial and Subsistence catches provided by Quinault Tribe (includes Dip-In Hatchery fish); other statistics provided by Washington Department of Fisheries.
b/ Predominantly fish under 24 inches in length (jacks).
c/ Excludes hatchery dip-in fish.
d/ Preliminary.

Table III-33. Estimated in-river run size, catch and escapement (numbers of fish) of Hoh River coho and chum stocks, 1973-1982.

Stock/Year	Catch[a/]			Escapement		Terminal Run Size		
	Gillnet	Ceremonial & Subsistence	River Sport[b/]	Natural	Hatchery	Natural	Hatchery	Total
Coho								
1973	6,700	100	300	NA		NA		NA
1974	5,700	100	300	3,700		9,600		9,600
1975	2,400	400	300	2,200		4,900		4,900
1976	1,800	<50	200	2,200		4,200		4,200
1977	1,000	<50	200	2,300		3,400		3,400
1978	2,800	100	100	2,100		5,100		5,100
1979	3,100	100	300	5,200	400	7,300	1,800	9,100
1980	1,400	100	200	2,100	100	3,200	600	3,800
1981	2,100	<50	100	d/	100	3,900	700	4,600
1982	1,900	100	<50	3,600	100	5,400	300	5,700
Chum								
1973	NA	NA	NA	NA		NA		NA
1974	<50	<50	NA	NA		NA		NA
1975	100	<50	NA	NA		NA		NA
1976	<50	<50	NA	NA		NA		NA
1977	200	<50	NA	NA		NA		NA
1978	100	<50	NA	NA		NA		NA
1979	100	<50	NA	NA		NA		NA
1980	100	<50	NA	NA		NA		NA
1981	<50	0	NA	NA		NA		NA
1982[c/]	<50	NA	NA	NA		NA		NA

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

b/ Predominantly fish under 24-inches in length.

c/ Preliminary.

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

Table III-34. Estimated in-river run size, catch and escapement (numbers of fish) of Quillayute River coho stocks, 1973-1982.

Stock/Year	Catch[a/]			Escapement		Terminal Run Size		
	Gillnet	Ceremonial & Subsistence	River Sport[b/]	Natural[c/]	Hatchery	Natural	Hatchery[d/]	Total
Summer								
1973	1,100	NA	700	1,300	NA	3,100	NA	3,100
1974	1,600	NA	200	1,000	1,100	1,800	2,000	3,800
1975	700	<50	500	700	100	1,500	400	1,900
1976	1,300	<50	400	800	900	1,600	1,800	3,400
1977	1,400	<50	200	700	1,000	1,500	1,900	3,300
1978	300	<50	200	1,100	1,000	1,400	1,300	2,700
1979	11,200	100	800	1,000	9,700	2,000	20,700	22,800
1980	13,600	100	700	600	9,000	1,600	22,600	24,200
1981	2,400	<50	300	600	500	2,300	1,600	3,900
1982[e/]	12,400[e/]	<50	500	900	3,700	3,400	14,000	17,400
Fall								
1973	42,800	NA	2,300	13,700	29,300	28,000	60,000	88,100
1974	28,000	NA	500	4,600	2,500	23,000	12,700	35,600
1975	7,400	100	800	3,900	600	11,100	1,700	12,800
1976	7,400	100	700	3,900	1,200	10,200	3,100	13,300
1977	2,700	<50	300	3,100	400	5,800	700	6,500
1978	4,500	<50	400	10,100	3,500	13,800	4,700	18,600
1979	6,600	100	400	20,400	5,000	24,300	8,100	32,400
1980	5,500	100	200	10,200	2,100	14,900	3,200	18,000
1981	3,700	<50	700	8,400	600	12,200	800	13,000
1982[e/]	4,800[e/]	<50	200	11,000[f/]	1,500	14,900[f/]	2,900[f/]	17,800[f/]

a/ Gillnet and Ceremonial and Subsistence catches provided by Quileute Tribe; other statistics provided by Washington Department of Fisheries.
b/ Predominantly fish under 24-inches in length.
c/ Includes hatchery strays.
d/ Excludes hatchery strays.
e/ Preliminary WDF estimates. Tribal estimates of summer and fall coho catchs are 12,100 and 5,100, respectively.
f/ Tribal estimates for escapement, 9,400; natural terminal run size, 14,000; hatchery terminal run size, 3,100; and total run size, 17,100.

Table III-35. Puget Sound coho escapement (numbers of fish) estimates for natural and hatchery origin fish, 1965-82.

Year	Natural	Hatchery		Total
		On-station returns	Off-station returns	
1965	138,000	76,000	35,800	249,800
1966	187,000	98,600	44,800	330,400
1967	118,000	68,000	40,500	226,500
1968	149,000	141,200	7,100	297,300
1969	71,500	165,900	900	238,300
1970	210,000	265,100	8,200	483,300
1971	129,500	174,700	4,000	308,200
1972	62,500	110,900	30,900	204,300
1973	101,000	112,700	20,400	234,100
1974	155,000	215,100	17,700	387,800
1975	92,000	164,600	12,300	268,900
1976	105,000	146,600	8,400	260,000
1977	193,000	163,800	18,000	374,800
1978	127,000	122,600	11,400	261,000
1979	271,000	119,300	46,300	437,100
1980	209,000	207,400	24,100	440,500
1981	121,800	179,400	23,200	324,400
1982	NA	NA	NA	NA

Table III-36 compares preseason forecasts for escapement from ocean fisheries with in-season estimates for principal Washington coho runs originating north of the Columbia River.

Sockeye

The Quinault River sockeye run is managed for natural production, with an escapement goal of 26,500. The 1982 escapement was estimated from tribal acoustical surveys at 27,500. Historical terminal net catch and escapement estimates for this stock are presented in Table III-37.

Washington Hatchery Returns

Table III-38 provides a summary of adult escapement to Washington Department of Fisheries hatcheries in the Columbia River, Washington coast, and Puget Sound.

Table III-36. Comparison of 1982 preliminary inseason run size estimates with preseason forecasts for Washington coho runs north of the Columbia River.

Region of Origin[a/]	Preseason Forecast	Preliminary Inseason Estimate	Difference	Percent Difference from Preseason Forecast
Strait of Juan de Fuca	98,200	84,400	-8,400	-9
Nooksack/Samish	239,300	202,600	-36,700	-15
Skagit	98,600	74,900	-23,700	-24
Stillaguamish/ Snohomish	173,100	106,400	-66,700	-39
South Sound	630,600	613,900	-16,700	-3
Hood Canal	142,500	130,100	-12,400	-9
Puget Sound Total	1,376,900	1,212,300	-164,600	-12
Quillayute Summer	10,600	16,400	+5,800	+55
Quillayute Fall	17,000	16,200	-800	-5
Hoh	5,500	5,700	+200	+4
Queets	13,500	13,200	-300	-2
Quinault	18,700	23,200	+4,500	+24
Grays Harbor	101,000	82,000	-19,000	-19
Willapa Bay	145,600	NA	NA	NA
Washington Coast Total	311,900	NA	NA	NA

a/ Puget Sound forecasts are for run sizes entering the Strait of Juan de Fuca.

Table III-37. Estimated terminal run size, catch and escapement (numbers of fish) of Quinault River sockeye, 1973-82.

Year	Escapement Estimate	Harvest	Terminal Run Size
1973	15,200	12,400	27,600
1974	25,000	25,600	50,600
1975	60,500	73,800	134,300
1976	26,400	14,800	41,200
1977	34,900	30,500	65,400
1978	28,500	21,000	49,500
1979	60,800[a/] (18,000)	4,700	65,500[a/] (22,700)
1980	27,800	16,800	46,800
1981	28,000	21,700	49,700
1982[b/]	27,500	15,300	42,800
Goal	26,500	-	-

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

b/ Preliminary.

Table III-38. Summary of adult escapements (numbers of fish) to Washington Department of Fisheries salmon hatcheries on the Columbia River, Washington coast and Puget Sound, 1971-82.

	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	174,700	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	164,600	5,900	39,600	67,400
1976	5,300	14,500	2,200	24,800	146,600	23,800	40,000	82,300
1977	7,400	6,700	4,700	27,700	163,800	24,300	37,500	33,100
1978	4,900	19,300	5,700	23,200	122,600	39,700	34,300	71,200
1979	4,590	66,700	600	34,200	119,300	51,900	37,400	57,000
1980	6,000	32,500	7,200	42,500	207,400	57,000	36,200	69,800
1981	4,000	42,600	2,100	42,000	179,400	22,900	43,900	56,300
1982	NA	NA	NA	NA	NA	NA	NA	NA

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 1981 PFMC management for the north Washington coastal coho was to achieve allocation on a regional aggregation basis versus (1) river-by-river, stock-by-stock basis, or (2) regional species aggregate basis.

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

> "The rule of law which governs application of the allocation provisions with respect to treaty Indian fisheries is that such allocations are generally determined separately for each run of fish on a river-system by river-system basis, but this is not an inflexible rule. If special circumstances warrant, it may be modified by an agreement among the affected parties or by specific prior judicial determination.
>
> "While either the Secretary or the State of Washington (or both) may by an appropriate agreement with the affected tribes or judicial determination manage the fisheries under its jurisdiction so as to consider more than one run or one river system together for purposes of allocating the affected stocks of fish between treaty and non-treaty fishermen, the tribes, in the absence of such agreement or judicial determination, are entitled to take their harvestable share from each run of fish that returns to each of the separate river systems or waterways involved in this case."

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

Puget Sound salmon stocks in which there is a tribal treaty fishing right are managed according to a Puget Sound Management Plan and other court orders.

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

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

Treaty Indian Allocation

Specific allocations for treaty Indian obligations are not available for most areas at this time but will be included at a later date.

Columbia River

Four stock components of the Columbia River fall chinook run have been defined for management purposes, two of which are subject to treaty allocation requirements in the Columbia River. These are the upriver hatchery stock essentially originating from the complex of state and federal hatcheries in Bonneville Dam Pool (commonly called "tule") and the upriver bright stock essentially originating from the Hanford Reach natural production area above McNary Dam. The river timing of these stocks is shown in Figure III-2, while the ocean distribution is shown in Figure III-3. The availability of harvestable numbers of upriver brights is the major constraint placed upon the in-river manager to achieve necessary allocations of upriver origin fish. The ability of the Pacific Fishery Management Council (PFMC) and Washington/Oregon/California management to solve this problem is diminished because of the ocean distribution of the upriver bright fall chinook stock versus "tule" stock. A treaty between the United States and Canada presently under development may result in fishery management regimes designed to address this problem. The draft chinook management regime for 1983 includes a provision that savings resulting from reductions in southeast Alaskan and Canadian fisheries will accrue principally to spawning escapement.

The 1981 Amendment[1/] sets forth the analysis which indicates the goal of achieving an in-river run size of 300,000 upriver origin fall chinook is not possible, given current stock status, even if the ocean fishery north of Cape Falcon to the Canadian border were totally closed. All available information indicates this conclusion is still valid. Estimates of upper Columbia River fall chinook ocean catch are presented in Table III-39. The methodology to develop these estimates is currently being reviewed and new data will be provided when available. The question then becomes whether the "spirit" of the Columbia River Agreement is still being followed relative to management of the Washington/Oregon coastal harvests despite the depressed condition of the upriver Columbia River fall chinook resource.

One means of addressing this question is to review the trend in ocean harvest and in-river run sizes for recent years compared to the 1971-75 base period (prior to PFMC management and Columbia River Agreement). This information is presented in Table III-40.
This analysis shows that the ocean catch north of Cape Falcon has been reduced by a greater percentage than has the return to the Columbia River of upriver origin fall chinook.

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

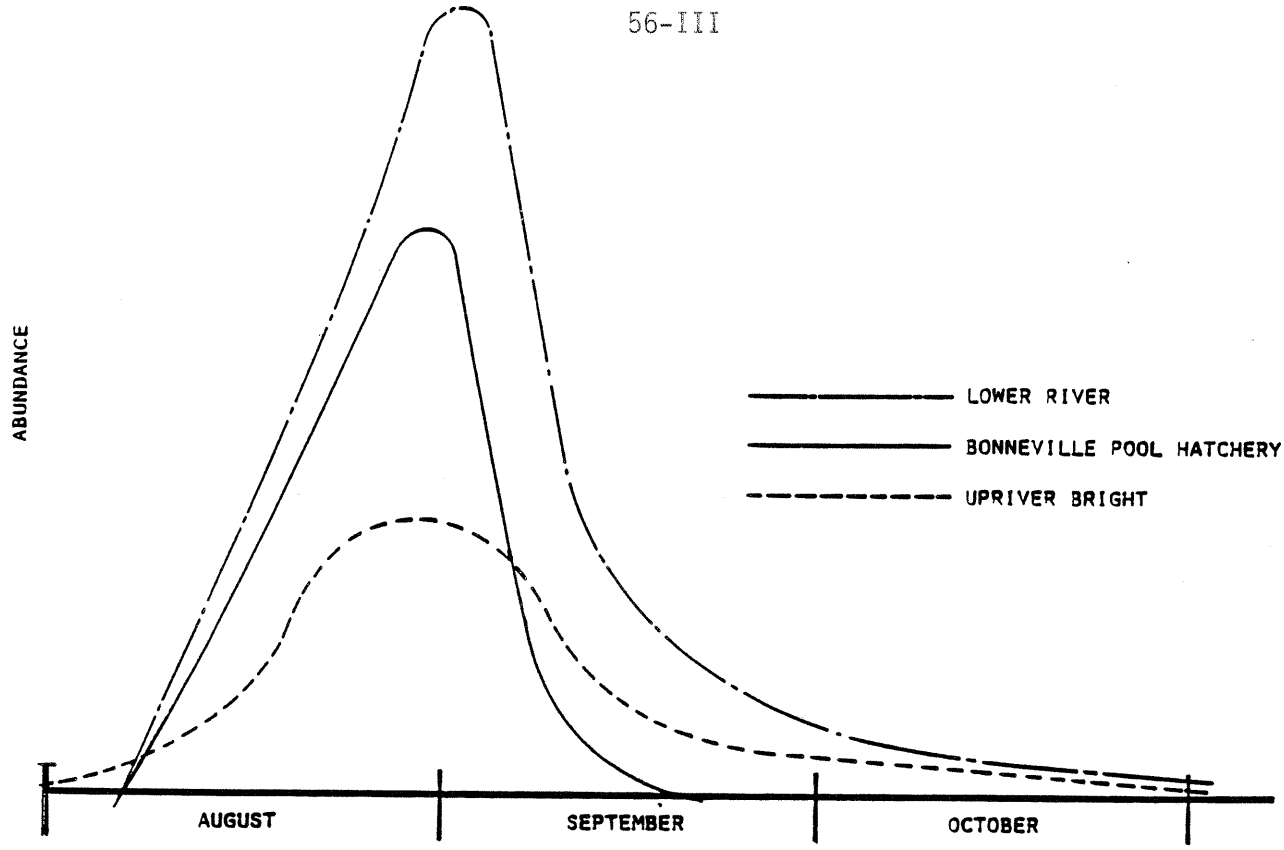

Figure III-2 Abundance of adult fall chinook salmon in the Columbia River estuary, by stock.

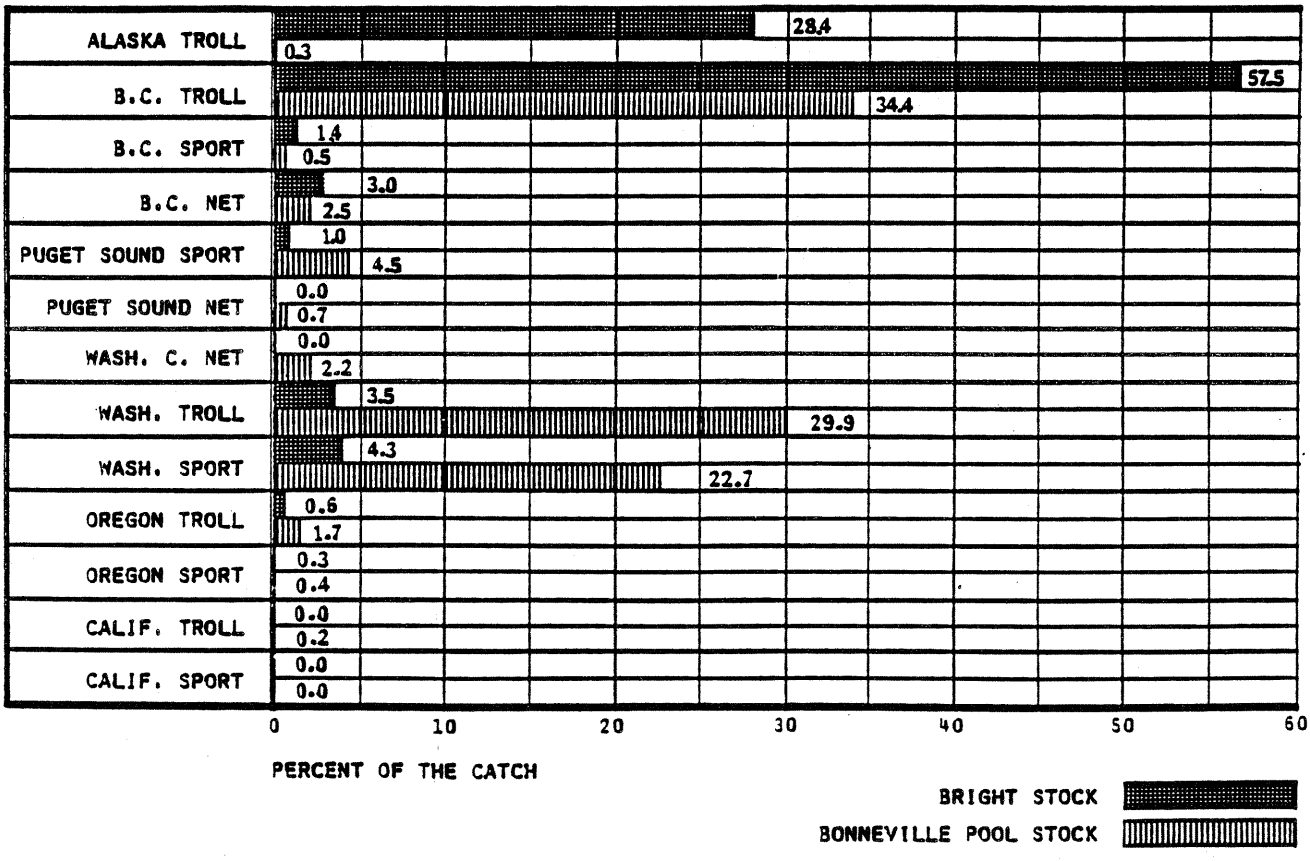

Figure III-3 Ocean catch distribution of Columbia River fall chinook based upon 1976 ocean regulation.

Table III-39. Preliminary estimates of 1979, 1980, 1981 and 1982 ocean fishery catches[a/] of upper Columbia River fall chinook off the Washington and Oregon coast.

	1979	1980	1981	1982
Washington ocean troll and recreational catch	209,300	181,800	197,900	270,700
x.70 to get Columbia River fall stock	146,500	127,300	138,500	189,500
x.485 to get upriver stock	71,100	61,700	67,200	91,900
Oregon ocean troll and recreational catch	262,900	224,300	186,100	263,500
x.05 to get Columbia River fall stock	13,100	11,200	9,300	13,200
x.485 to get upriver stock	6,400	5,400	4,500	6,400
Total Washington/Oregon ocean catch of upriver falls	77,500	67,100	71,700	98,300

a/ Catches not adjusted to adult equivalents.

Table III-40. Washington/Oregon ocean catch of chinook north of Cape Falcon and Columbia River returns of upriver origin fall chinook stocks for 1977-82 compared to 1971-75 base period.

	Wash./Ore. Catch N. of Cape Falcon[a/]		In-River Adult Run of Upriver Origin[b/] Columbia River					
	Chinook	Percent of Average	Bright	Percent of Average	Tules	Percent of Average	Total	Percent of Average
1971-75 Average	495,300	-	116,800	-	105,200	-	222,000	-
1977	428,500	86.5	96,300	82.4	103,400	98.3	199,700	90.0
1978	257,100	51.9	82,800	70.9	99,800	94.9	182,600	82.3
1979[c/]	218,800	44.2	90,000	77.1	89,900	85.5	179,900	81.0
1980[c/]	191,700	38.7	76,700	65.7	97,100	92.3	173,800	78.3
1981[c/]	206,000	41.6	63,900	54.7	94,100	89.4	158,000	71.2
1982[c/]	286,200	57.8	73,900[d/]	63.3	119,200	113.3	193,100[d/]	87.0

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

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

c/ Preliminary.

d/ Does not include 5,000 brights from lower river egg bank programs.

In 1981, the Council addressed the question of treaty Indian allocation for Columbia River stocks by stating that the desired in-river run sizes as set forth in the Columbia River Management Plan were to be considered goals and not management standards. It is assumed the Columbia River Plan will continue in 1983.

Treaty, non-treaty allocation shares in Columbia River fisheries, as defined in the Columbia River Management Plan, are limited to upriver spring and fall chinook. The 1982 upriver spring chinook harvests have not been identified by stock at this time, but only minor numbers were landed. The allocation status prior to 1982 fisheries for upriver spring chinook, as developed by the joint staffs of ODFW and WDF, was 7,800 adult fish owed to non-treaty users. The status of the 1982 fall chinook allocation cannot be quantified at this time, due to lack of subsistence catch values, lack of consensus on foregone opportunity values and other reasons. The fall chinook allocation status prior to 1982 fisheries was 9,200 owed treaty users, a value established by the U.S. District Court.

North Washington Coast

Prior interception rates and mortality induced by marine fisheries have not been agreed upon for North Coastal chinook stocks. However, based upon WDF analysis of coded-wire tag groups for North Coastal stocks, catches by treaty Indian fishermen in 1982 exceeded the treaty share of 50% on the Hoh, Queets, Quinault, and Quillayute Rivers as computed by WDF.

A Fisheries Advisory Board review of the status of allocation on Quillayute River summer and fall coho combined resulted in the determination that allocation probably would be met. Technical review of the Hoh coho allocation status also showed that allocation probably would be achieved on this stock. Point estimates of the allocation balance are still under review.

Preliminary review of the catch balance on the Queets shows that treaty Indian share was near (slightly below) the harvestable share of the Queets coho run. The treaty Indian fishery exceeded its allocation on the Quinault River. Point estimates are pending final assessment of run size.

Puget Sound

Allocation requirements to meet Indian treaty obligations for Puget Sound stocks are computed on the basis of six regions of origin in Puget Sound and Canada. Canadian stocks are also subject to allocation requirements. A summary of 1977-1982 Puget Sound treaty allocations, as computed by the Washington Department of Fisheries, is presented in Table III-41. The treaty tribes do not agree that the statistics contained in Table III-41 accurately represent allocations.

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

Although meeting treaty Indian allocations is one of the major goals of Council management, since 1977 the concerned parties have not been able to agree on whether allocation requirements have been met. This makes it impos-

Table III-41. Treaty Indian catches (in numbers of fish) [including commercial, ceremonial and subsistence, hatchery fish by agreement (except 1982), and opportunity fish not caught] of Puget Sound-origin salmon and federally mandated allocations as computed by the Washington Department of Fisheries during each fishing season, 1977-82.

Year	SUMMER/FALL CHINOOK[a] Treaty Indian Catch	Treaty Indian Alloc.	Diff.	SOCKEYE Treaty Indian Catch	Treaty Indian Alloc.	Diff.	PINK Treaty Indian Catch	Treaty Indian Alloc.	Diff.	COHO[e] Treaty Indian Catch	Treaty Indian Alloc.	Diff.	CHUM[e] Treaty Indian Catch	Treaty Indian Alloc.	Diff.	Total Diff. for All Species except Chinook
STRAIT OF JUAN DE FUCA																
1977							c/			9,300	6,400	+2,900	500	250	+250	+3,150
1978										14,081	12,692	+1,389	513	286	+227	+1,616
1979							13,458	21,911	-8,453	12,329	10,901	+1,428	99	50	+49	-6,976
1980	183	376	-193							19,721	14,990	+4,731	820	615	+205	+4,936
1981	183	1,586	-1,403				1,145	1,970	-825	12,104	12,113	-9	868	435	+433	-401
1982[b]	422	819	-397							47,244	29,175	+18,069	1,835	1,183	+652	+18,721
TOTAL	788	2,781	-1,993				14,603	23,881	-9,278	114,779	86,271	+28,508	4,635	2,819	+1,816	+21,046
NOOKSACK-SAMISH																
1977							c/			65,400	41,700	+23,700	27,000	18,250	+8,750	+32,450
1978										81,783	69,977	+11,806	11,455	14,335	-2,880	+8,926
1979							44,372	39,453	+4,919	109,680	91,701	+17,979	2,215	1,715	+500	+23,398
1980	59,723	51,365	+8,358							85,260	71,521	+13,739	7,269	5,996	+1,273	+15,012
1981	54,210	54,924	-714				32,664	29,720	+2,944	95,356	79,978	+15,378	19,355	12,204	+7,151	+25,473
1982[b]	50,775	55,211	-4,436							136,230	112,955	+23,275	33,505	27,628	+5,877	+29,152
TOTAL	164,708	161,500	+3,208				77,036	69,173	+7,863	560,025	459,586	+100,671	112,343	86,608	+25,735	+134,269
SKAGIT																
1977						c/	c/			11,500	10,000	+1,500	6,400	3,450	+2,950	+4,450
1978						c/				31,257	28,798	+2,459	47,301	46,653	+648	+3,107
1979						c/	152,606	192,467	-39,861	20,284	25,268	-4,984	11,377	7,892	+3,485	-41,360
1980	2,430	4,651	-2,221			c/				40,793	39,233	+1,560	55,081	47,498	+7,583	+9,143
1981	12,285	17,641	-5,356			c/	109,226	80,821	+28,405	23,685	26,605	-2,920	32,733	31,151	+1,582	+27,067
1982[b]	14,367	12,666	+1,701			c/				29,757	29,563	+194	38,496	64,445	-26,449	-26,255
TOTAL	29,082	34,958	-5,876			c/	261,832	273,288	-11,456	157,276	159,467	-2,191	191,388	201,589	-10,201	-23,848
STILLAGUAMISH/SNOHOMISH																
1977							c/			65,100	61,500	+3,600	8,000	4,800	+3,200	+6,800
1978										80,058	77,448	+2,610	17,972	14,236	+3,736	+6,346
1979							32,450	45,076	-12,626	46,626	46,132	+494	3,163	1,592	+1,571	-10,561
1980	16,775	13,903	+2,872							135,169	139,280	-4,111	32,646	22,473	+10,173	+6,062
1981	19,961	21,987	-2,026				37,776	30,105	+7,671	80,557	89,103	-8,546	26,421	23,191	+3,230	+2,355
1982[b]	13,602	9,745	+3,857							47,606	40,794	+6,812	51,882	51,340	-7,458	-646
TOTAL	50,338	45,635	+4,703				70,226	75,181	-4,955	455,116	454,257	+ 859	140,084	125,637	+14,452	+10,356
SOUTH PUGET SOUND																
1977[d]				36,900	24,850	+12,050	c/			336,100	356,300	-20,200	93,000	107,700	-14,700	-22,850
1978						c/				233,706	236,613	-2,907	164,148	143,171	+20,977	+18,070
1979						c/	24,792	21,996	+2,796	241,195	241,301	-106	17,424	9,114	+8,310	+11,000
1980[d]	30,054	30,904	-850	61,015	59,926	+9,089				403,907	374,660	+29,247	202,484	172,852	+29,632	+67,968
1981	29,207	56,803	-27,596			c/	16,005	18,974	-2,969	225,102	222,647	+2,455	109,550	99,755	+9,795[b]	+9,281
1982[b/d]	24,643	27,630	-2,987	15,408	13,972	+1,436				361,161	331,844	+29,317	130,370	152,650	-22,280[f]	+8,473
TOTAL	83,904	115,337	-31,433	121,323	98,748	+22,575	40,797	40,970	-173	1,801,171	1,763,365	+37,806	716,976	685,242	+31,734	+91,942
HOOD CANAL																
1977							c/			28,700	28,100	+600	63,900	84,850	-20,950	-20,350
1978										64,134	67,894	-3,760	219,955	219,955	0	-3,760
1979							2,334	5,742	-3,408	36,497	30,201	+6,296	46,341	30,134	+16,207	+19,095
1980	6,639	4,365	+2,274							124,074	124,755	-681	104,351	98,681	+5,670	+4,989
1981	10,570	11,199	-629				1,282	1,108	+174	35,897	40,388	-4,491	91,411	81,573	+9,838[b]	+5,521
1982[b]	6,418	4,423	+1,995							77,073	64,495	+12,578	126,170	137,465	-11,295	+1,283
TOTAL	23,627	19,987	+3,640				3,616	6,850	-3,234	366,375	355,813	+10,542	652,128	652,658	-530	+6,778
ALL PUGET SOUND REGIONS OF ORIGIN																
1977[d]				36,900	24,850	+12,050				516,100	504,000	+12,100	198,800	219,300	-20,500	+3,650
1978										505,019	493,422	+11,597	461,344	438,636	+22,708	+34,305
1979							270,012	326,645	-56,633	466,611	445,504	+21,107	80,619	50,497	+30,122	-5,404
1980[d]	115,804	105,564	+10,240	69,015	59,926	+9,089				808,924	764,439	+44,485	402,651	348,115	+54,536	+108,110
1981	126,416	169,140	-37,724				198,098	162,698	+35,400	472,701	470,834	+1,867	280,338	248,309	+32,029	+69,296
1982[d]	110,227	110,494	-267	15,408	13,972	+1,436				691,387	600,580	+85,039	393,802	449,691	-55,889	+30,586
SPECIES TOTAL	352,447	380,198	-27,751	121,323	98,748	+22,575	468,110	489,343	-21,233	3,460,742	3,728,719	+176,195	1,817,554	1,754,548	+63,006	+240,543

a/ Chinook allocation numbers calculated since August 8, 1980, per court order by Judge Craig. No commercial net allocations prescribed for spring chinook.
b/ Preliminary ("soft") data; subject to change.
c/ No commercial net allocation prescribed.
d/ Allocation prescribed for terminal areas only for sockeye salmon.
e/ Ceremonial and subsistence catches not included in 1979 per F.A.B. agreement.
f/ Does not include substantial Indian catches of late Nisqually chum yet to occur.
NOTE: Treaty Indian catches in FCZ are not included.

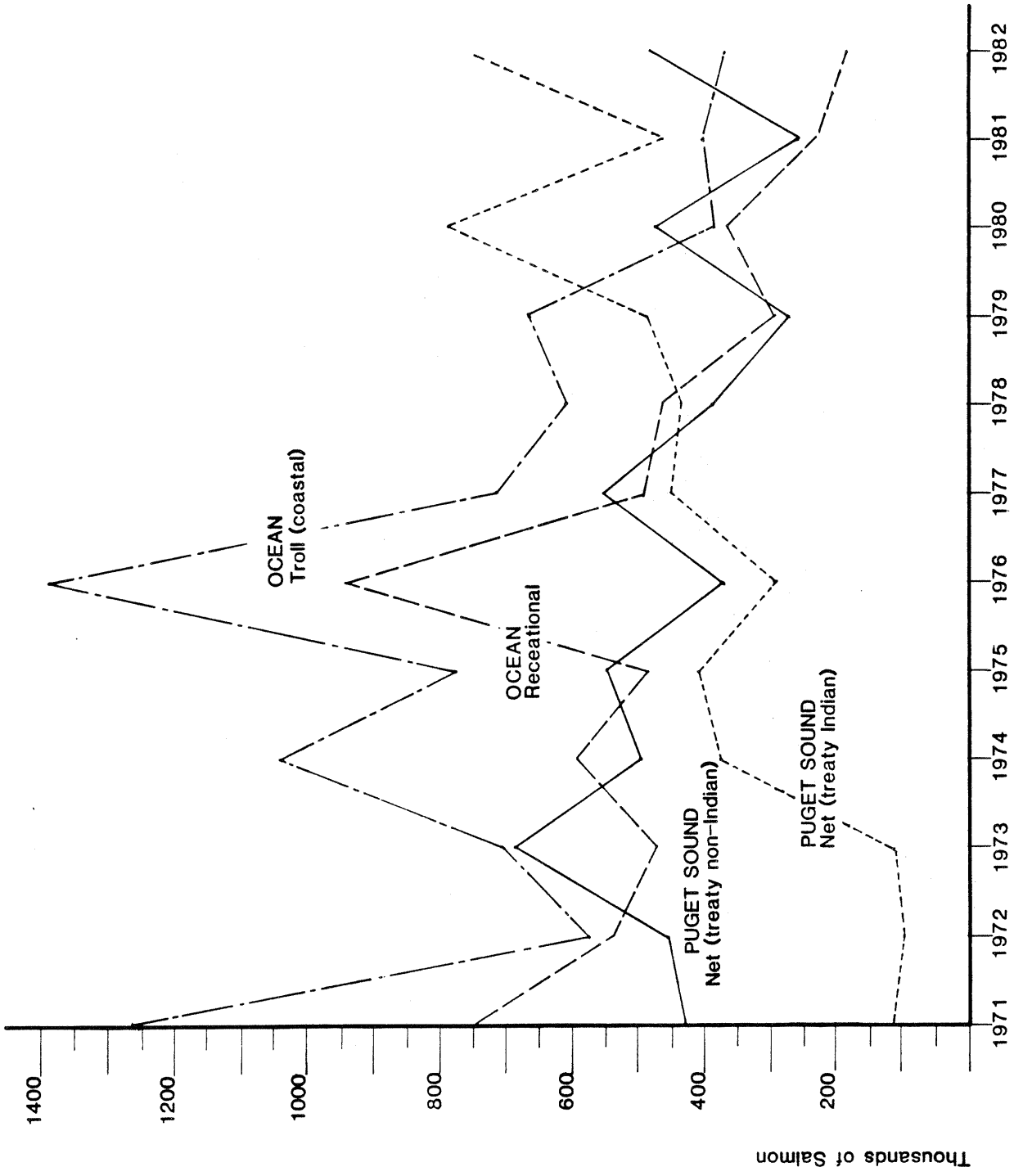

FIGURE III-4 Washington catch of coho in the ocean and Puget Sound gillnet fisheries 1971 through 1982

sible to determine whether this Council objective has been met in any year of Council management. This determination must be resolved as soon as possible. The issue for Puget Sound is presently before the U.S. District Court.

The tribes and the state agreed to a plan in 1981 to address chinook allocation imbalances in future years. The state and tribes are attempting to address imbalances of other salmon species at this time.

Table III-42 lists the treaty Indian and treaty non-Indian coho net catches in Puget Sound.

Other Allocation Considerations

Numerical management goals were established for allocation of the ocean harvest of coho salmon between the troll and recreational fisheries in 1982. The allocation goals between ocean fisheries were achieved in 1982 with only minor deviations occurring between the preseason and actual percentage allocation.

For the area north of Leadbetter Point, harvest quotas were established which provided for a 64% and 36% allocation of the coho salmon harvest between the troll and recreational fisheries, respectively. The 1982 ocean catch in this area was 332,600 while the respective allocation of the coho catch between the troll and recreational fisheries was 63:37 (Table III-43).

For the Columbia River area (Leadbetter Point to Cape Falcon), harvest quotas were established which provided for a 47% and 53% allocation of the coho salmon harvest between the troll and recreational fisheries, respectively. The 1982 ocean catch in this area was 191,200 while the respective allocation of the coho catch between the troll and recreational fisheries was 46:54.

For the area south of Cape Falcon, including California, harvest quotas provided for a 81% and 19% allocation of the coho salmon harvest between the troll and recreational fisheries, respectively. The 1982 ocean catch in this area was 766,200 while the respective allocation of the coho catch between the troll and recreational fisheries was 79:21. This allocation occurred largely because state waters remained open from July 22 to August 1 when nearly 40,000 coho were caught by the recreational fishery.

Allocation goals between ocean and "inside" non-Indian fisheries were not established for any stocks. Some level of harvest occurred in all "inside" commercial and recreational fisheries but not necessarily on all runs, i.e., upper Columbia River spring and summer chinook due to their depressed status. Allocation to "inside" fisheries is within the purview of the states. The trend of "inside" fishery catches is presented in various sections of this 1983 Salmon Plan Amendment: Upper Columbia River fall chinook, Table II-42; Grays Harbor coho, Table II-46; and Puget Sound coho, Table II-53.

SUMMARY OF 1982 MANAGEMENT

Table III-44 summarizes the degree to which management goals were met in 1982.

Table III-42. Annual treaty Indian and non-Indian Puget Sound commercial net coho catches (numbers of fish) in non-ocean pre-terminal and terminal areas, 1971-1982.

Year	Pre-Terminal Catch[a/]			Terminal Catch[b/]			Grand Total
	Treaty Indian	Non-Indian	Subtotal	Treaty Indian	Non-Indian	Subtotal	
1971	5,900	250,700	256,600	112,600	184,400	297,000	553,600
1972	1,500	219,900	221,400	94,700	233,800	328,500	549,900
1973	3,300	349,200	352,500	114,200	335,100	449,300	801,800
1971-73 Average	3,600	273,300	276,900	107,200	251,100	358,300	635,200
1974	20,600	397,300	417,900	358,300	97,100	455,400	873,300
1975	8,900	377,800	386,700	402,300	172,500	574,800	961,500
1976	31,700	347,000	378,700	258,600	29,400	288,000	666,700
1977	36,200	306,600	342,800	411,300	249,100	660,400	1,003,200
1978	25,000	245,400	270,400	410,100	137,900	548,000	818,400
1979	63,700	148,000	211,700	417,800	128,500	546,300	758,000
1980	107,400	283,500	390,900	680,600	191,800	872,400	1,263,300
1981	77,500	141,400	218,900	389,800	135,100	524,900	743,800
1982[c/]	148,000	118,900	266,900	587,200	275,400	862,600	1,129,500

a/ Includes Canadian- and U.S.-origin fish.
b/ Puget Sound-origin fish.
c/ Preliminary.

Table III-43. Summary of the allocation of the non-Indian ocean catch of coho salmon between the troll and recreational fisheries for three management areas in 1982. Percents in parentheses indicate preseason goals. Data are preliminary.

Area	Fishery		Total
	Recreational	Troll	
North of Leadbetter Point	124,700 37% (36%)	207,900[a/] 63% (64%)	332,600
Columbia River (Leadbetter Point to Cape Falcon	104,200 54% (53%)	87,000[b/] 46% (47%)	191,200
South of Cape Falcon (including California)	164,100 21% (19%)	602,100[c/] 79% (81%)	766,200

a/ Includes 14,000 coho taken in area 4B during IPSFC openings.
b/ Includes an estimated 5,000 hooking mortality during the all-species season plus an estimated 14,000 fish landed south of Cape Falcon after the July 8 closure.
c/ Includes 18,300 fish caught off Oregon and landed in Washington and an estimated hooking mortality of 24,300 during the July 13 to September 5 chinook fishery south of Cape Falcon. The 14,000 fish from the Columbia River area referenced in footnote b have been deducted.

Table III-44. Summary of 1982 performance by river system and stock in relation to goals.

System	1982 Goal	Was Goal Met in 1982?
1. Klamath Fall Chinook	Escapement 86,000 adults (115,000 long-term) plus provide for inside harvest.	No. Escapement was 40,500 adults or 47% of short-term goal.
2. Sacramento River		
Upper River Fall Chinook	Natural escapement of 74,000 adults (99,000 long-term).	No. Natural escapement was 39,000 adults or 53% of short-term goal.
Lower River Fall Chinook	Natural adult escapement of 71,000 (American River: 24,000; Feather River: 27,000; Yuba River: 20,000).	Yes. Adult escapement goals were exceeded. American River: 37,000 or 154% of goal; Feather River: 40,000 or 148% of goal; Yuba River: 23,000 or 115% of goal.
3. Oregon Coastal Chinook	Escapement of 150-200,000 adults.	Yes.
4. Columbia River		
Upper River Fall Chinook	Escapement of 40,000 adults above McNary Dam, plus meet treaty obligations.	No. McNary escapement was 31,100 adults or 78% of goal. Allocation cannot be quantified at this time.
Upper River Spring Chinook	Escapement of 100-120,000 adults above Bonneville Dam (not attainable) plus meet treaty obligations. Escapement of 30,000 minimum to Snake River.	No. Bonneville escapement 66,800 adults or 67% of minimum goal. Snake River escapement 12,400 or 41% of goal.
Upper River Summer Chinook	Escapement of 80-90,000 adults above Bonneville Dam (not attainable) plus meet treaty obligations.	No. Escapement of 20,100 adults, or 25% of minimum goal, was lowest on record.
Lower River Fall Chinook	Mainly managed for hatchery production.	Yes.
Lower River Spring Chinook (Willamette)	Escapement 30-35,000.	Yes. Escapement of 46,200 or 132% of the upper end of the range.
5. Washington Coastal Fall Chinook	Natural escapement of 28,000 plus meet treaty obligations.	No agreement on whether treaty obligations were met. Spawning escapements met U.S. District Court goals.
6. Washington North Coastal Spring/Summer Chinook	Natural escapement of 4,100 plus meet treaty obligations.	No agreement on whether treaty obligations were met. Spawning escapements met U.S. District Court goals.
7. Puget Sound Chinook	Minor part of Washington coastal catch.	
8. Columbia River and Oregon Coastal Coho (OPI)	OPI escapement of 300,000 (575,000 long-term) while achieving natural escapement of 172,000 (200,000 long-term).	OPI escapement goal of 300,000 was exceeded by 141,300 fish. Natural escapement of 137,500 was 80% of goal.
9. Washington Coastal Coho	Natural spawning escapements within 1982 court-ordered range for Queets, Hoh, and Quillayute. 35,400 escapement - Grays Harbor; meet treaty obligations.	Generally yes; Grays Harbor goal was not met and no agreement on whether treaty obligations were met on the Queets.
10. Puget Sound Coho	Natural escapement of 152,000 plus meet treaty obligations.	No agreement on whether treaty obligations were met. Spawning escapement goals probably not achieved in Skagit and Stillaguamish/Snohomish.

IV. OCEAN MANAGEMENT OF SALMON IN 1983

STATUS OF CHINOOK AND COHO RESOURCE FOR 1983

The purpose of this assessment is to provide the most current information available relative to the salmon stocks which will contribute to the 1983 salmon fisheries. This report is necessarily preliminary due to the nature of much of the data available for analysis. This report contains the best information available to the Salmon Team as of early December 1982.

California Chinook

Central Valley

Chinook salmon abundance in the ocean off California south of Cape Vizcaino is expected to be above average in 1983.

The fisheries in this area depend on fall chinook from the Sacramento and San Joaquin River systems (central valley).

Recruits for the 1979 and 1978 broods were fished heavily in 1982. Near-record ocean landings south of Eureka occurred in that year. Age 3 survivors that did not mature in 1982 will probably continue in above average abundance in 1983 as age 4 fish.

Ocean abundance of 1980 brood chinook appears to have been above average in 1982. From September through November, the San Francisco recreational fishery primarily harvests age 2 immature chinook. In 1982, the San Francisco recreational chinook catch during this period was 25,400 fish. Comparative catches during 1978-1981 ranged from 9,100 to 20,200. The 1971-75 average was 22,000.

Though difficult to evaluate, ocean commercial fishermen reported unusually large numbers of shakers during the latter half of the 1982 season. The fish were reported most concentrated in the San Francisco statistical area.

Above average ocean abundance of central valley chinook may stem from increased survival of hatchery chinook. Since 1979, an increasing percentage of the hatchery production from central valley hatcheries, not including Coleman National Fish Hatchery, has been trucked to release points downstream from the influence of major water diversions. Marking studies are confirming that the trucked fish are surviving and entering the fisheries at a much higher rate than their counterparts released at upstream points. Coupled with the trucking program, above average abundance of bait fish, anchovies in particular, has persisted all along the central California coast.

Ocean abundance of naturally-produced fall run chinook from the upper Sacramento River is expected to be depressed in 1983 with natural spawning escapements of 82,000 adults in 1979 and 45,000 adults in 1980. Optimum production from the upper Sacramento will occur with a natural spawning escapement of 99,000 adults.

Coastal Streams

Ocean abundance of naturally-produced age 3 and 4 recruits (1980 and 1979 broods) from the Klamath River are expected to be below average in 1983. This is due to low natural spawning escapements in the Klamath River system in 1980 and 1979 of 21,500 and 29,800 adults, respectively. Optimum natural production from the Klamath can be expected when 97,500 adults escape from the ocean and inside fisheries and reach the spawning grounds.

Ocean abundance of age 4 chinook from the Klamath will be down in 1983 as corroborated by the low in-river adult chinook run in 1982 (62,700) coupled with a low percentage of adult age 3 (1979 brood) fish (45% in 1982 compared with 80% in 1981 and 42% in 1980).[1/] Assuming an average percentage of 1979 brood fish matured in 1982, a very small ocean population of age 4 Klamath River chinook of the 1979 brood is indicated.

Lagging natural fish production is expected to be partially offset by increased production of hatchery yearlings for the Klamath River system hatcheries. Yearling production in 1981 totaled 2.1 million fish (193,000 pounds) compared to 1.8 million fish in any previous year (Table IV-1). These hatchery fish, however, will not reach commercial size until July or August. (Prolonged rearing in the hatcheries increases survival rate, but results in reduced average fish size due to relatively slow freshwater growth rate.)

There is no basis for projecting fall chinook recruitment from the other coastal streams to be available in the ocean in 1983.

California coastal rivers contribute to chinook fisheries primarily between Cape Vizcaino and Cape Blanco. Overall low stock abundance of age 4 chinook and age 3 naturally-produced fish is expected in this area in 1983.

Hatchery yearlings will be more abundant than in previous years.

Oregon Coastal Chinook Stocks

Oregon coastal chinook stocks contribute to ocean fisheries from Southeastern Alaska to California. On the basis of ocean catch contribution, coastal chinook can be grouped into two major production units, (1) the northern and central coastal fall chinook which have a northern migratory pattern and are caught primarily off Southeastern Alaska and British Columbia, and (2) Southern Oregon coastal fall and spring chinook which are caught primarily off Northern California and Oregon. Separation between the northern and southern Oregon coastal fall chinook stocks is not well defined at present, but is thought to occur between the Elk and Siuslaw river systems. The Oregon chinook stocks within the Umpqua, Coos, Coquille, Sixes, Elk, Rogue, and Chetco rivers are of particular concern in setting regulations off Oregon and Northern California. Most other Oregon stocks contribute to ocean fisheries off Washington, British Columbia, and Alaska, and these stocks are primarily

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1/ Fisheries Assistance Office, U.S. Fish & Wildlife Service, Arcata, California.

Table IV-1. Yearling fall-run chinook salmon production in thousands from Klamath River hatcheries, 1963-1980 broods.

Brood Year	Iron Gate Hatchery		Trinity River Hatchery		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
1963	0	0	300	10.4	300	10.4
1964	0	0	225	12.8	225	12.8
1965	0	0	52	NA	52	NA
1966	0	0	0	0	0	0
1967	0	0	0	0	0	0
1968	0	0	0	0	0	0
1969	0	0	750	55.1	750	55.1
1970	0	0	0	0	0	0
1971	0	0	1,045	64.6	1,045	64.6
1972	110	13.8	725	60.2	835	74.0
1973	0	0	463	47.6	463	47.6
1974	200	30.7	309	34.8	509	65.5
1975	149	15.4	660	59.6	809	75.0
1976	185	21.0	228	26.9	413	47.9
1977	0	0	493	54.5	493	54.5
1978	1,015	111.0	817	63.6	1,832	174.6
1979	1,034	92.7	713	NA	1,747	NA
1980[a/]	1,123	124.0	972	68.9	2,095	192.9

a/ Includes an estimated 100,000 yearlings weighing 10,000 pounds produced in Indian rearing ponds.

influenced by regulations in these northern areas. Table IV-2 indicates the approximate distribution of major Oregon coastal chinook stocks contributing to ocean fisheries from Alaska to California.

Natural Oregon Coastal chinook stocks are managed to achieve full natural production with a spawning escapement goal of 150,000 to 200,000 adult fish. Adult spawning levels during 1960-82 have averaged 71 adult fish per mile (Table III-11). More recently (1978-82) spawning escapement of adults has ranged from 77 to 82 adult fish per mile: levels sufficient to meet the spawning escapement goal for the coastal streams. There has been an upward trend in spawning escapement (jacks and adults) averaging about 3 percent per year for the period 1952-78 (Figure IV-1).

Spawning escapement of Oregon coastal chinook for the brood years contributing to 1983 returns (1978-80) were average or above, and the overall abundance of coastal stocks to the 1983 fishery is expected to be similar to recent year averages. No restrictions on ocean fisheries beyond the present level are considered necessary at this time to achieve full production from these stocks.

Public hatchery returns of fall chinook in 1982 were less than the management goal set due to low production and subsequent returns at some coastal stations (Table III-12). Spring chinook returns to hatcheries were above the management goal set for 1982.

The best available index of coastal chinook stock abundance for streams in the northern and central production unit (Siuslaw River and north) is spawning ground surveys. Peak counts have been collected on spawning fall chinook since 1950 (Table IV-3). Trends observed in these counts indicate healthy stocks with generally increasing escapement levels in recent years. Chinook stocks within this production unit consist mainly of wild fish, although hatchery production in the Trask, Salmon, and Alsea rivers contribute minor numbers of fish.

For river systems in the Southern unit of the Oregon coast (south of the Siuslaw River) less extensive peak spawning ground counts are available, however, other data provide information for major rivers in this unit including the Rogue, Elk, and Umpqua.

Rogue River Chinook - Rogue River fall chinook have been assessed by peak spawning ground counts since 1972. A more reliable index of fall chinook abundance, however, is available through average catch per seine haul data collected in the lower river (Table IV-4). No overall trend in abundance is apparent for the 1974-82 period for which data is available. Indications are that Rogue River fall chinook are producing at optimum levels and are being maintained primarily by natural production with minor hatchery contribution.

Quantitative estimates of the size of the fall chinook run in the Rogue are not available. Biologists familiar with the system estimate the fall chinook run to be much larger than the Rogue spring chinook run with estimates of average number of returning adults ranging from 30 to 80 thousand. Age structure of returning Rogue fall chinook is heavier to older age classes than in the Klamath, resulting in higher ocean exploitation rates. Rogue fall chinook may rival Klamath fall chinook as the single largest contributor to northern California and southern Oregon ocean chinook fisheries.

Table IV-2. Percentage distribution of selected Oregon coastal spring and fall chinook stocks contributing to West Coast ocean fisheries. Distribution only for those tag codes indicated and may vary from year to year.

		Coastal Chinook Stock				
Fishing Area	Trask[a/]	Salmon[b/]	Umpqua[c/]	Elk[d/]	Rogue[e/]	Chetco[f/]
SE Alaska	35.5	41.4	0.4	7.9	0.0	0.6
British Columbia	50.5	56.7	12.2	34.4	0.0	1.1
Washington	14.0	1.4	6.9	10.5	0.0	3.1
Oregon	0.0	0.5	62.3	46.7	45.5	60.8
California	0.0	0.0	18.2	0.5	54.5	34.4
Total fish caught	1,596	879	1,126	5,214	518	10,345

a/ 73 and 74 brook fall chinook, tag codes 7-10-10 and 7-11-13

b/ 76 brood fall chinook, tag codes 9-16-37

c/ 76 and 77 brood spring chinook tag codes 7-16-49, 7-16-50, 9-16-41, and 9-16-55

d/ 73,74, and 77 brood fall chinook, tag codes 7-10-13, 7-10-15, 7-12-9, 7-16-46

e/ 77 and 78 brook fall chinook tag codes 7-16-36, 7-18-53

f/ 74 and 77 brood fall chinook tag codes 7-12-10, 7-16-45; 70 brood fall chinook fin mark Ad-LM

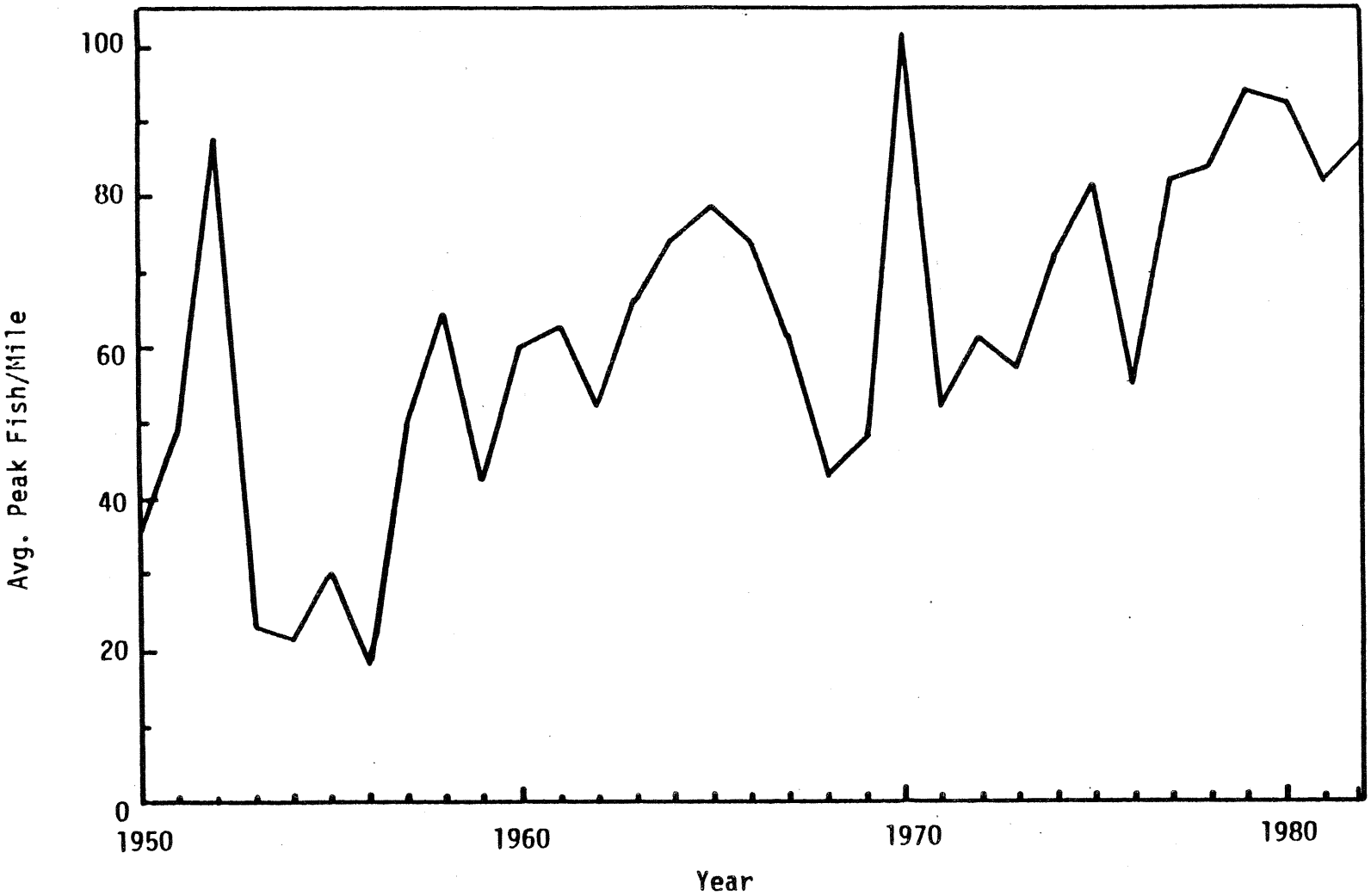

Figure IV-1. Trends in the escapement of fall chinook salmon (jacks and adults) in Oregon coastal rivers, 1950-1982.

Table IV-3. Peak counts on selected spawning fall chinook stream surveys, 1950-1981.

River Trib.	Nehalem Humbug	Tillamook Tillamook	Nestucca Niagara	Siletz Sunshine	Yaquina Grant	Alsea Buck	Siuslaw Lake	Coos W.F. Millicoma	Coquille Salmon	Sixes Lower Dry Creek
Date										
1950	13(0)[a/]	-	5(1)	-	91(23)	-	-	-	-	-
1951	34(8)	-	11(0)	-	105(0)	-	-	-	-	-
1952	23(2)	115(0)	137(2)	51(0)	226(46)	69(20)	-	-	-	-
1953	66(15)	34(13)	7(0)	17(2)	34(0)	1(0)	29(10)	-	14(1)	-
1954	41(15)	22(9)	15(0)	12(0)	56(1)	6(0)	-	-	-	-
1955	29(18)	7(4)	42(7)	1(1)	112(46)	24(19)	-	-	-	-
1956	42(3)	12(7)	11(0)	8(0)	69(36)	1(0)	2(1)	-	-	-
1957	74(24)	36(13)	104(19)	51(2)	97(27)	33(9)	25(8)	-	13(2)	-
1958	69(11)	83(12)	51(2)	131(12)	88(6)	-	58(16)	-	16(7)	-
1959	68(6)	104(14)	36(0)	37(1)	74(4)	5(2)	40(5)	-	7(0)	-
1960	134(80)	100(47)	97(29)	46(21)	31(9)	19(8)	-	-	-	-
1961	104(8)	166(36)	69(4)	63(11)	52(1)	46(8)	48(22)	6(3)	24(14)	-
1962	78(9)	117(22)	47(8)	160(29)	47(15)	13(5)	16(4)	2(0)	1(0)	-
1963	133(37)	150(22)	90(2)	71(8)	80(13)	51(12)	29(2)	2(2)	3(0)	-
1964	126(14)	163(29)	53(8)	25(7)	25(3)	29(7)	247(35)	1(0)	11(2)	-
1965	143(43)	111(18)	125(2)	40(8)	78(34)	45(14)	39(11)	2(0)	140(49)	-
1966	103(8)	110(25)	80(7)	42(6)	82(15)	62(20)	122(11)	6(1)	74(19)	-
1967	66(2)	158(41)	61(6)	42(3)	48(13)	26(14)	414(31)	7(0)	17(0)	206(46)
1968	46 (2)	110(29)	43(2)	23(4)	41(9)	30(12)	84(32)	0(0)	20 (4)	177(39)
1969	31(2)	54(13)	36(8)	10(3)	88(20)	15(2)	192(52)	8(2)	7(0)	115(3)
1970	57(3)	168(29)	47(8)	60(9)	115(10)	77(34)	332(76)	12(0)	59(23)	216(62)
1971	94(10)	39(4)	36(1)	45(5)	95(17)	46(8)	59(10)	43(22)	22(5)	123(30)
1972	117(46)	66(12)	92(10)	41(14)	48(12)	5(2)	144(56)	20(12)	12(4)	200(49)
1973	167(28)	85(1)	65(4)	47(0)	52(4)	24(4)	-	22(1)	18(0)	246(22)
1974	157(16)	49(4)	42(0)	49(2)	93(0)	13(0)	199(68)	44(28)	20(7)	125(3)
1975	100(28)	-	-	-	-	10(1)	166(60)	26(4)	27(9)	136(13)
1976	174(39)	40(5)	0(0)	30(12)	16(6)	1(0)	262(74)	52(24)	0(0)	27(7)
1977	170(12)	58(2)	16(2)	47(2)	180(20)	15(2)	241(60)	27(8)	14(7)	173(26)
1978	172(6)	70(8)	34(3)	28(0)	181(6)	12(0)	139(24)	60(18)	43(3)	137(10)
1979	170(2)	47(2)	53(3)	105(7)	198(54)	50(10)	140(12)	59(24)	41(8)	190(11)
1980	93(3)	120(14)	65(1)	46(2)	149(4)	48(2)	234(16)	95(65)	105(31)	88(9)
1981	149(1)	100(6)	42(1)	70(2)	198(13)	35(3)	183(43)	8(4)	51(8)	145(22)
Base Miles	104 1.0	110 1.7	61 0.4	45 1.2	52 1.5	30 1.0	122 0.6	7 0.5	19 0.8	1.7

a/ Figure in parenthesis is the number of jacks included in the total number of fish to the left.

Table IV-4. Average number of fall chinook captured per beach seine haul on the lower Rogue River (river mile 8), 1974-1982.

Year	Adults	Jacks	Total
1974	-	-	1.04
1975	1.12	0.19	1.31
1976	0.46	0.43	0.89
1977	0.36	0.95	1.31
1978	2.01	0.59	2.60
1979	2.60	0.17	2.77
1980	0.81	0.47	1.28
1981	1.20	0.45	1.65
1982	1.30	0.54	1.84
1975-82 average	1.23	0.47	1.71

Rogue River spring chinook are counted at Gold Ray Dam (river mile 125). These counts comprise the majority of the wild and hatchery stocks for the Rogue as few spawn below the dam. An additional 10 to 15 percent of the in-river run is caught annually in sport fisheries below Gold Ray Dam. Dam counts have fluctuated widely since 1960, but do not exhibit either an increasing or decreasing trend (Table IV-5). Stock recruitment analysis by ODFW indicates an optimum spawning escapement estimated at 20,000 spring chinook. Escapements during the past 20 years have generally exceeded the optimum level.

Umpqua River Chinook - Counts for Umpqua River spring chinook are recorded at the Winchester Dam ladder on the North Umpqua River. Fish counts are composed of both wild and hatchery stocks. Both spring and fall returning chinook are counted in the North Umpqua above the Winchester Dam ladder. Nearly all spring chinook salmon spawn above the dam; however, a substantial sport fishery exists below the dam. Trend counts for wild and hatchery stocks of spring chinook and wild fall chinook are shown for 1960-82 in Table IV-6. The wild spring stock has remained fairly stable since 1960, averaging 6,472 fish. Preliminary stock-recruitment analysis suggests an optimum spawning escapement of 5,600 adult fish (combined wild and hatchery spawners).

Elk River - Fall chinook in the Elk River have been the subject of extensive investigations since the Elk River hatchery was constructed in 1968. Annual estimates of wild fish entering the system have been compiled since 1970 (Table IV-7). These estimates are based on tagging studies at the mouth of the river and subsequent recoveries on the spawning grounds, in sport catches and from strays to the hatchery. Estimates of wild escapement show no consistent upward or downward trend with an 11-year average of 3,420 fish. Preliminary stock-recruitment analysis suggests that the spawning escapement of adult fish in recent years is above the optimum level.

Hatchery Production - Public hatchery chinook production has averaged between 3 and 4 million fish yearly since 1977 (Table IV-8). Private hatcheries have permits to release 42 million chinook, but releases have been limited by a shortage of eggs available from public hatcheries. Private hatchery chinook releases for 1982 totaled approximately 910,000 fish, less than the 2-3 million released in 1981 (Table IV-9).

Summary of 1983 status - Oregon coastal natural chinook stocks remain in a generally favorable status, showing recent upward trends in spawning escapement since 1952. These stocks have stabilized at optimal spawning levels in recent years. Spawning escapements for the 1978-80 brood years were average to good and the overall abundance of Oregon coastal chinook stocks is expected to be average in 1983. The Rogue River spring and fall chinook stocks should be of average abundance in 1983. The status of other south coast stocks will be average in 1983.

Table IV-5. Trend counts of spring chinook salmon at Gold Ray Ladder on Rogue River (1960-82).

Year	Spring Chinook		
	Adults	Jacks	Total
1960	19,977	6,240	26,217
1961	27,155	5,880	33,035
1962	27,100	5,551	32,651
1963	34,260	7,267	41,527
1964	32,224	6,240	38,464
1965	41,011	8,409	49,420
1966	29,115	3,473	32,588
1967	13,076	3,417	16,493
1968	14,372	8,606	22,978
1969	53,579	7,654	61,233
1970	39,986	8,183	48,169
1971	24,777	7,103	31,880
1972	24,327	6,127	33,499
1973	31,869	7,223	39,092
1974	15,065	3,991	19,056
1975	18,751	5,044	23,795
1976	16,188	8,030	24,218
1977	15,443	6,141	21,584
1978	39,437	13,662	53,099
1979	34,969	6,331	41,300
1980	30,934	8,904	39,828
1981	21,980	4,454	24,434
1982	21,886	12,593	34,479
1970-82 Avg.	26,047	7,525	33,573

Table IV-6. Trend counts of spring and fall chinook salmon (including jacks) at Winchester ladder on the North Umpqua River (1960-1982).

	Spring Chinook			Fall Chinook
Year	Wild	Hatchery	Total	Wild
1960	3,386	664	4,050	71
1961	4,370	883	5,253	90
1962	3,333	927	4,260	104
1963	8,684	2,336	11,020	185
1964	6,565	2,238	8,803	320
1965	9,028	2,702	11,730	182
1966	6,668	601	7,269	304
1967	6,484	2,554	9,036	719
1968	6,196	3,066	9,262	124
1969	11,419	9,358	20,777	263
1970	6,057	6,913	12,960	199
1971	6,028	3,902	9,930	86
1972	7,949	8,474	16,423	160
1973	11,431	8,243	19,674	193
1974	5,755	5,143	10,898	127
1975	5,412	5,178	10,590	28
1976	5,520	5,177	10,697	24
1977	6,808	5,457	12,263	145
1978	5,412	2,811	8,223	103
1979	5,541	3,966	9,507	100
1980	5,679	1,907	7,586	64
1981	4,645	4,057	8,702	89
1982a/	6,484(2,476)	1,989(862)	8,472(3,338)	

a/ Jack chinook counts indicated in parentheses for 1982; total counts are combined jack and adult fish.

Table IV-7. Annual estimates of the population of wild fall chinook salmon entering Elk River for spawning, 1970-80.

Return year	Wild		
	Jacks	Adults	Total
1970	2,457	3,355	5,812
1971	1,040	1,421	2,461
1972	747	1,392	2,139
1973	1,059	2,029	3,088
1974	1,150	2,110	3,260
1975	1,750	1,714	3,464
1976	2,800	1,475	4,275
1977	600	2,555	3,155
1978	750	2,700	3,450
1979	83	3,005	3,088
1980	972	2,461	3,433
Average	1,219	2,202	3,420

Table IV-8. Public hatchery production of Oregon coastal chinook stocks, 1976-1980.

Hatchery	Run	# Released (Brood Year) 1976	1977	1978	1979	1980
Nehalem	CHF		202,511	118,171	212,271	243,187
Trask	CHS	283,377	337,577	325,697	269,789	318,620
Trask	CHF	49,300	471,450	426,822	456,204	460,284
Nestucca	CHS	55,688	56,000	102,384	51,698	66,213
Nestucca	CHF	17,460	93,518	85,872	81,605	44,894
Salmon	CHF	49,199	49,582	176,731	218,521	254,186
Alsea	CHF	47,920	159,348	122,594	182,947	147,380
Umpqua	CHS	322,862	170,176	130,284	112,097	62,821
Rogue	CHS	911,347	688,699	776,390	824,441	762,892
Rogue	CHF		35,551	27,902		23,100
Elk/Chetco	CHF	152,117	1,509,925	1,457,912	1,368,813	878,769
Totals						
N. Coast	CHF	163,879	976,409	546,050	1,151,548	1,149,931
S. Coast	CHF	152,117	1,545,476	1,485,814	1,368,813	901,869
Coastal	CHS	1,573,274	1,252,452	1,334,755	1,258,025	1,210,546
Chinook		1,889,270	3,774,377	3,366,619	3,778,386	3,262,346

Table IV-9. Private hatchery production of Oregon coastal chinook stocks, 1977-1981.

Hatchery	Chinook Release Permits	Number Released (Brood Year) 1977	1978	1979	1980	1981
Oregon Aqua	20,000,000					
CHS		15,790	1,199,495	0	201,225	0
CHF		393,202	141,034	151,915	291,905	338,449
Domsea	12,000,000					
CHF		0	62,458	91,206	33,662	74,100
Anadromous	5,000,000					
CHS		0	197,636	633,998	616,067	93,474
CHF		128,899	19,319	95,983	147,261	87,035
Burnt Hill	5,000,000					
CHS		0	0	634,720	938,600	257,942
CHF		0	0	99,032	0	59,056
Total	42,000,000	537,891	1,619,942a/	1,706,854a/	2,255,720a/	910,056a/

a/ Includes approximately 1,368,000, 1,667,000, 1,884,000, and 478,531 chinook for 1978, 1979, 1980, and 1981 brood years respectively (spring and fall combined), from private hatchery stocks that primarily contribute off central and Southern Oregon and Northern California.

Columbia River Chinook Stocks

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

Status of specific stocks of Columbia River chinook is presented below by current, in-river management components, given recent ocean fishing regulations. The U.S./Canada agreement, currently being negotiated, may increase the in-river run size of these stocks.

Lower River Spring Chinook

The major lower river spring chinook runs originate in the Willamette and Cowlitz rivers with minor runs also originating in the Lewis, Kalama, and Sandy rivers. The 1983 Willamette run is expected to be similar to the return in 1982 (72,000), well above the 1971-75 average of 54,700 fish.

The 1983 Cowlitz run is expected to be greater than 1982 (29,300) and above the 1971-75 average of 21,400 fish.

Upriver Spring Chinook

The 1983 upriver spring chinook in-river run is projected to be about 49,000 fish, a run of the magnitude observed in 1979 (record low). This projection is based upon a relationship between returning numbers of jacks at The Dalles Dam and adult returns of the same brood.

Upriver Summer Chinook

There are no indications that the summer chinook will improve above record low runs seen since 1979.

Upriver Fall Chinook

Based on the jack index indicator at The Dalles and John Day Dams used successfully in 1982, the preliminary forecast for the 1983 upriver bright stock return to the river is 72,200 adults, compared with returns of 77,800 in 1980, 63,900 in 1981, and 73,900 in 1982.

The Bonneville Pool hatchery stock run to the river in 1983 is expected to be similar to the 1979-1982 average of 94,800 adult fish. The 1971-75 average Bonneville Pool hatchery stock return is 105,200.

Lower River Fall Chinook

The 1983 lower river hatchery stock run is not expected to be significantly different than the 1979-81 returns, which averaged 106,100 fish. The 1971-75 average lower river hatchery stock return is 181,400.

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 and are the primary component of the Oregon Production Index (OPI). The OPI is an index of the annual abundance of Oregon coastal and Columbia River coho stocks from Leadbetter Point, Washington, south to California.

The preseason estimate of the coho stock size in the OPI area is developed by using the OPI abundance predictor (jack index) and an independent estimate of the private hatchery contribution. The number of three-year-old adult coho in the OPI area can be predicted by the number of two-year-old jack coho returning to selected facilities in the prior year. The assumption is made that three-year-old fish will return in proportion to two-year-old fish. The predictor compares the number of coho jacks returning to selected hatcheries and dams with the catches and returns of adults making up the OPI, as previously described (Chapter III). New production sources, such as private hatcheries, are not 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 using the observed survival rate and expected harvest rate. Production of coho from private hatcheries is estimated independently and added to the OPI stock predictor to determine the total number of coho contributing to the OPI area.

Preseason abundance estimates of coho salmon in the OPI area were first applied to management of the ocean salmon fisheries in 1979 and have been utilized annually since that time. During the period 1979-82, actual stock sizes have exceeded preseason predictions by 96,000 to 321,000, with the greatest error occurring in 1982 (Table IV-10, Figure IV-2). Following the 1982 season a complete review of the OPI stock abundance estimation procedure was undertaken in order to improve the accuracy of the stock size forcast for 1983. The following changes were incorporated into the OPI abundance predictor (jack index) for application in 1983:

(1) Lewis River Hatchery jack counts were adjusted upward in 1981 (1979 brood) to reflect increased production at that facility.

(2) Columbia River jack counts were adjusted upward to account for the lower jack to adult ratio and higher survival observed for delayed smolt releases affecting the 1979-83 adult production.

(3) California coho jack and adult counts were added to the data base.

(4) Jack and adult data for the years 1970, 1971, 1972, and 1978 were added to the data base bringing to 13 the number of data points in the relationship.

(5) Tenmile Lake coho jack and adult counts were excluded from the OPI relationship.

(6) Counts of jacks and adult coho at North Fork Dam (Columbia River) and Winchester Dam (coastal) were added to the data base.

Table IV-10. Comparison of preseason OPI area abundance predictions (including private hatchery) with actual OPI abundance, 1979-1982.[a/]

Year	Preseason Prediction			Actual OPI Area Abundance	Difference of Actual OPI from Preseason Prediction
	Jack Index	Private Hatchery	Total		
1979	1,287,000	--	1,287,000	1,534,300	+247,300
1980	1,024,600	58,000	1,082,600	1,317,000	+234,400
1981	1,069,300	140,000	1,209,300	1,305,400	+96,100
1982b/	897,500	193,300	1,090,800	1,411,800	+321,000

a/ The preseason prediction and comparison for any given year are based on the data base used in that year. These values should not be confused with those generated in later years as the predictive model is updated yearly with the incorporation of additional years' data or by changes in the data base.

b/ Preliminary.

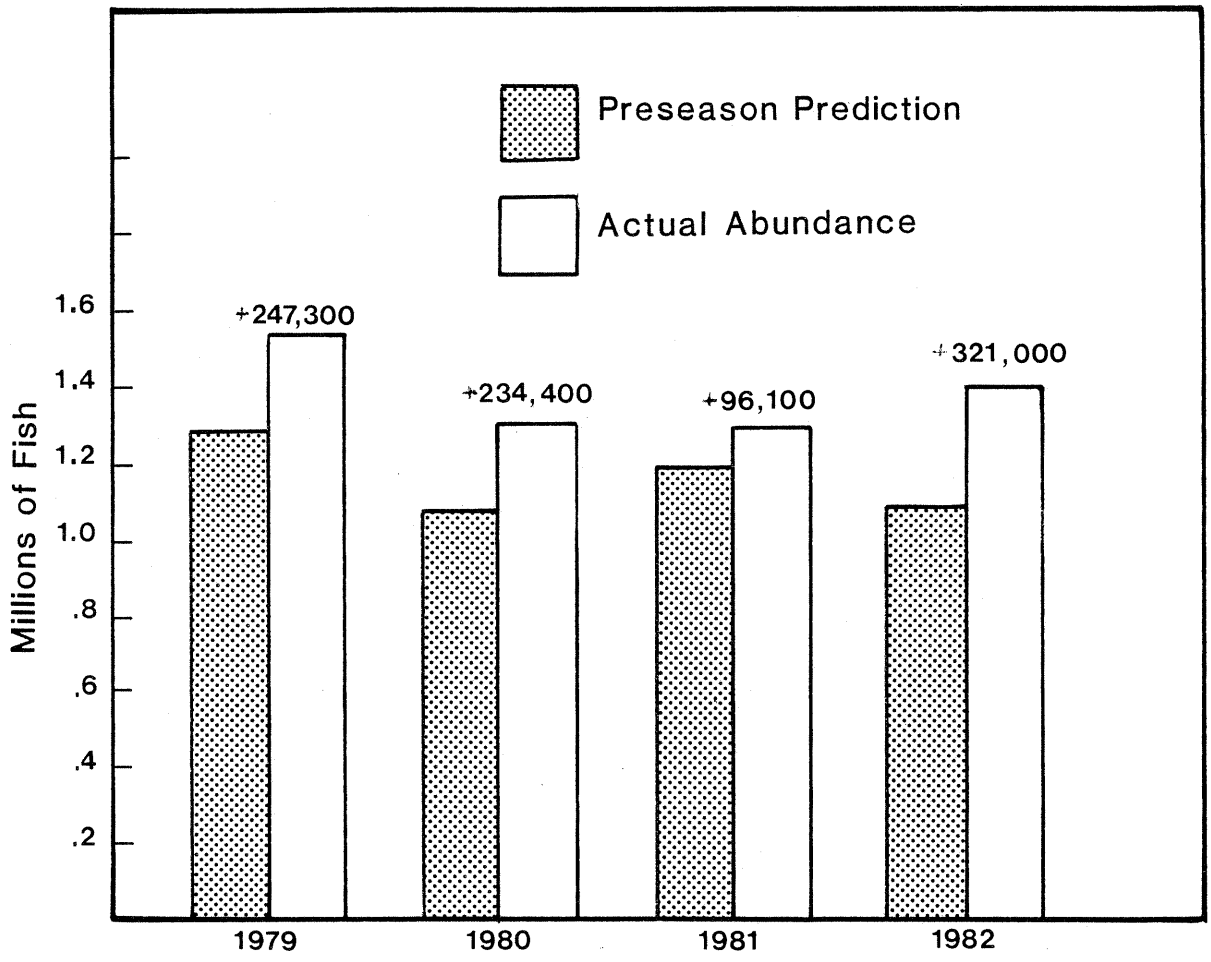

Figure IV-2. Preseason prediction and actual abundance of coho salmon in the Oregon Production Index area, 1979-82.

The adjustments in jack counts for Lewis River hatchery and for the delayed releases from the Columbia River were the most important changes in the OPI jack to adult relationship. These factors were considered to be the major sources of error in 1982 leading to the underestimation in stock size. Table IV-11 and Figure IV-3 show the data and regression calculation which make up the 1970-82 jack to adult relationship. It should be noted that due to the changes in the OPI predictor, the data base in the 1983 relationship varies from that utilized in the 1982 relationship (Table III-5 and Figure III-1). Jack returns to index areas during the fall of 1982 were improved over 1981. The adjusted jack count was 90,200 for the Columbia River and coastal index areas (Table IV-11). Based on the 1970-82 relationship of jacks to adults (Figure IV-3), the predicted stock size for the OPI in 1983 is 1,777,000. However, a closer review of the relationship indicates that in four of the last five years the 1970-82 relationship would have overestimated actual stock abundance by an average of over 200,000 fish, suggesting a high probability for overestimating the true 1983 stock size using this relationship.

If one compares the more recent years (1977-82) in the relationship shown in Figure IV-3, a different jack to adult relationship is apparent which seems to better predict stock sizes during this period. It appears that the jack to adult relationship has changed in recent years in relation to changes in hatchery production and stock utilization, changes in harvest patterns, and reduction in the proportion of wild fish comprising the stock size (Figure IV-4). Based on these data it appears most appropriate to utilize the 1977-82 data base in predicting the 1983 stock abundance (Figure IV-5). Based on this relationhsip and the adjusted jack count of 90,200, the total adult production for the OPI in 1982 is expected to be 1,554,000. It is recommended that this estimate be used in managing the 1983 ocean salmon fisheries.

Because of the variables in any biological system, the OPI stock prediction technique cannot predict coho abundance with absolute accuracy. It rather defines a range of expected stock size with the estimate of 1,554,000 as the midpoint. The 1983 predictor using the 1977-82 data base has an R^2 value of 0.93. The potential accuracy of the revised predictor is best indicated by comparing the expected and observed value of the OPI for individual years from 1977-82 (private hatchery fish excluded). Observed stocks sizes deviate a maximum of 102,000 ($\pm$ 8%) from expected values for a population which varied between 1.1 and 1.8 million fish. The deviations range between 2% and 8%. On contrast, use of the 1970-82 data base, with an R^2=0.91, indicates the expected and observed stock sizes would deviate a maximum of 275,000 fish during the year 1977-82 ($\pm$ 18%). The deviations range between 1% and 18%.

A separate estimate was made of the private hatchery origin fish contributing to the ocean catch in the OPI area. Returns from releases of 23.1 million coho at coastal facilities can be expected in 1983. 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. In projecting 1983 ocean contribution, 1982 private hatchery coho releases were divided into yearling and accelerated (0-age) components. A survival rate of 2.1% was applied to yearling releases and an expected survival of 0.7% was applied to 0-age (accelerated) releases. The survival rate applied to 0-age releases was based on the 1982 observed survival value of 1981 releases at Yaquina Bay since all of the 19.9 million 0-age smolts contributing to the 1983 fishery were released at that site in 1982. To estimate ocean contribution, a harvest

Table IV-11. Relationship of Columbia River and Oregon coastal coho jack index to the Oregon Production Index for coho adults in thousands of fish, 1972-1983.

Year of Adult Production	Jacks[a/] of Previous Year			Adult Production Index[b/]
	Columbia[c/]	Coastal[d/]	Total	
1970	147.6	18.0	165.6	2,794.1
1971	171.7	6.6	178.3	3,657.8
1972	98.3	4.1	102.4	2,036.5
1973	82.9	5.7	88.6	1,997.6
1974	124.8	14.0	138.8	3,128.5
1975	72.8	1.2	74.0	1,768.2
1976	144.5	32.2	176.7	4,113.5
1977[e/]	46.1	9.3	55.4	1,125.0
1978[e/]	98.4	4.9	103.3	1,784.6
1979[e/]	74.6	12.5	87.1	1,547.9[f/]
1980[e/]	69.2	7.0	76.2	1,253.8[f/]
1981[e/]	51.9	9.3	61.2	1,165.8[f/]
1982[e/]	67.6	9.1	76.7	1,296.8[f/]
1983[e/]	81.2	9.0	90.2	

a/ Components of jacks are ODFW and WDF hatcheries below Bonneville, Willamette, Winchester, and North Fork dam counts, and Oregon and California coastal hatchery counts.

b/ Oregon production index includes: (1) ocean catches off the Columbia River, Oregon, and California; (2) Oregon and California coastal hatchery returns; (3) Winchester Dam counts; (4) gillnet catches; (5) Bonneville, Willamette, and North Fork dam counts; and (6) hatchery returns to the Columbia River below Bonneville Dam.

c/ Columbia River jack counts were adjusted to account for the lower jack: adult ratio and higher survival observed for delayed smolt releases affecting the 1979-83 adult production.

d/ Includes estimated returns of jacks and adults to Oregon and California 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.

e/ Data are preliminary.

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

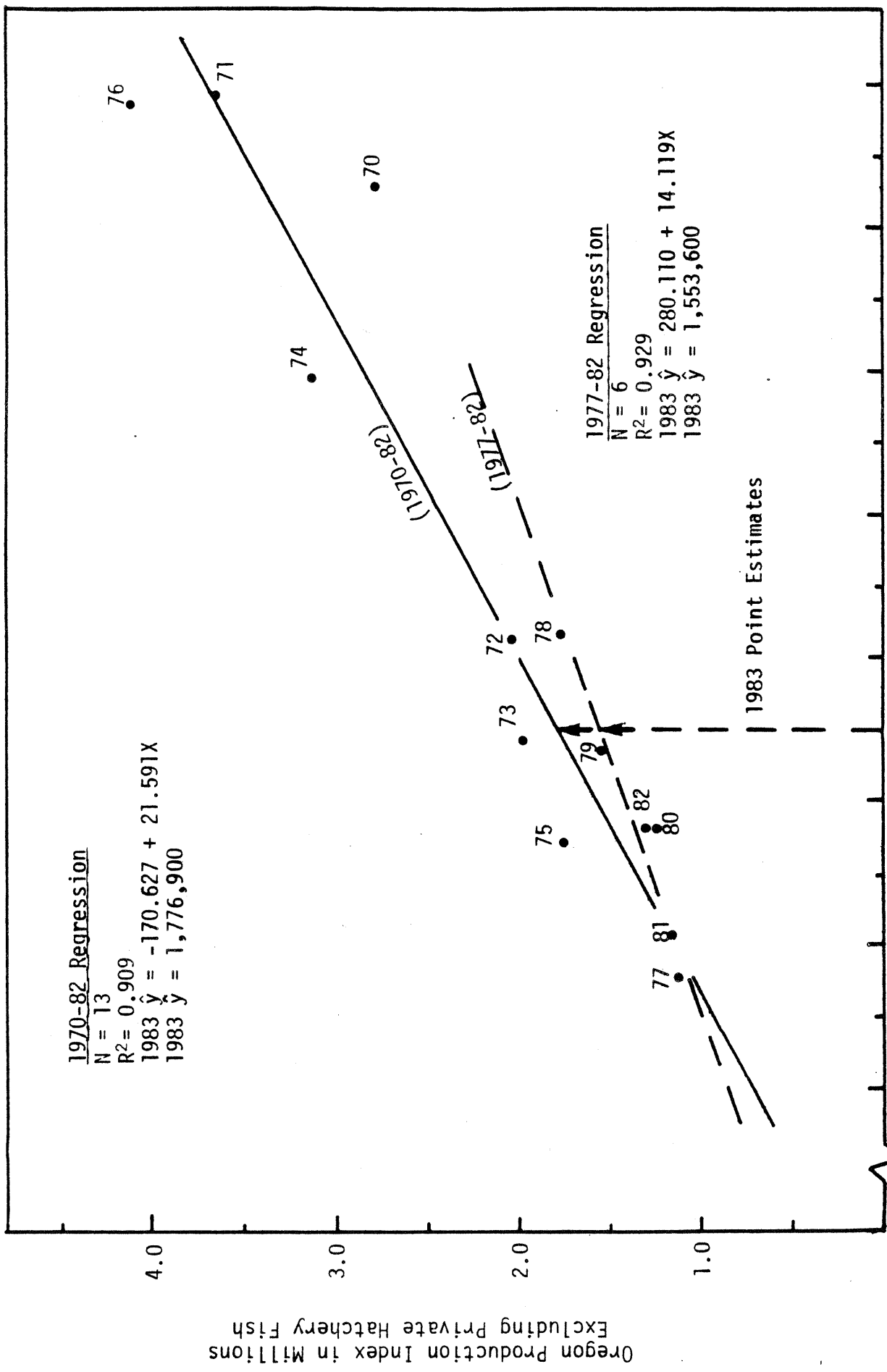

FIGURE IV-3. Relationship of the Columbia and Oregon-California Coastal Coho Jack Index to the Oregon Production Index, 1970-82 and 1983 Predictions.

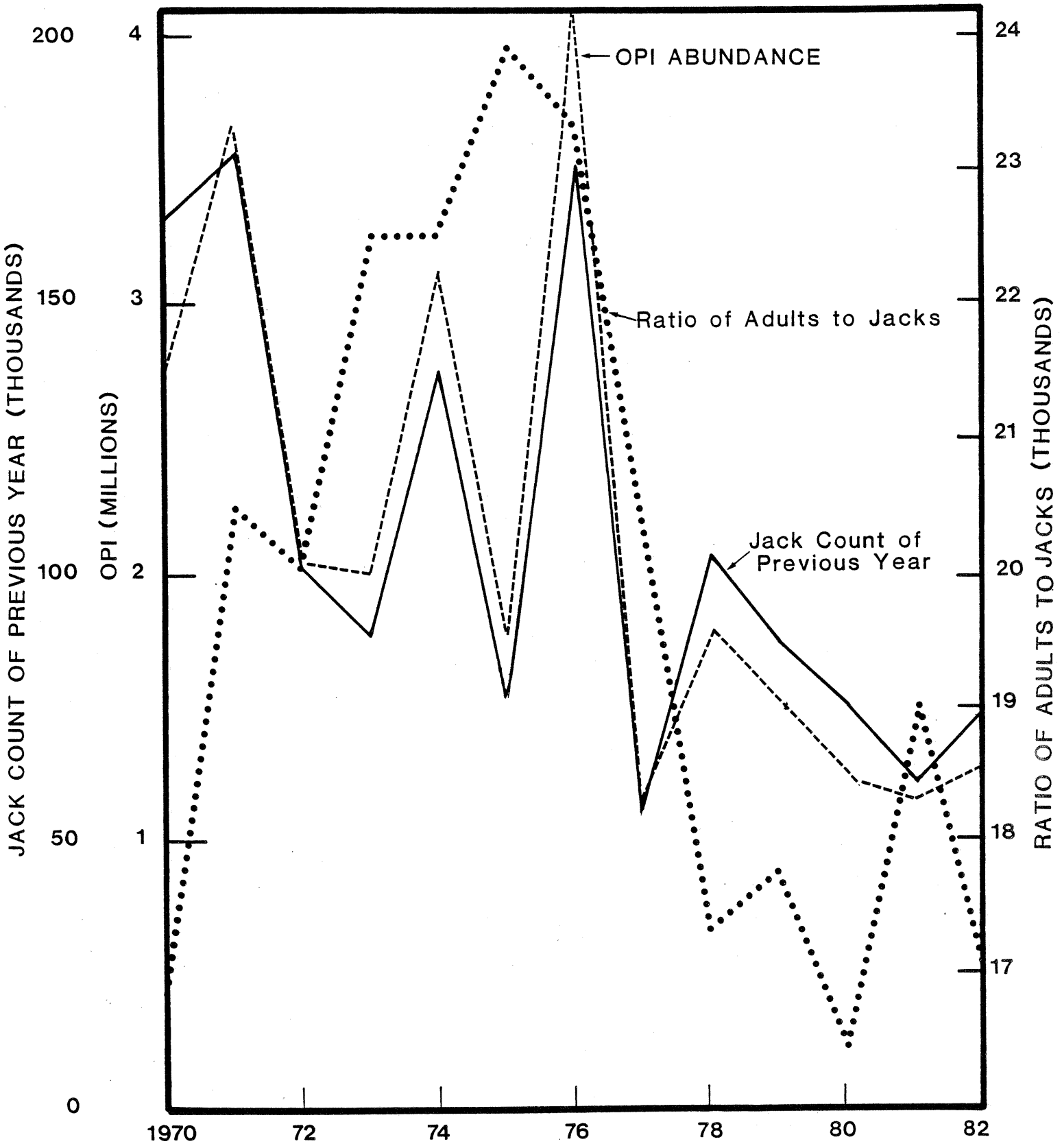

Figure IV-4. Relationship between coho jacks and subsequent adult abundance.

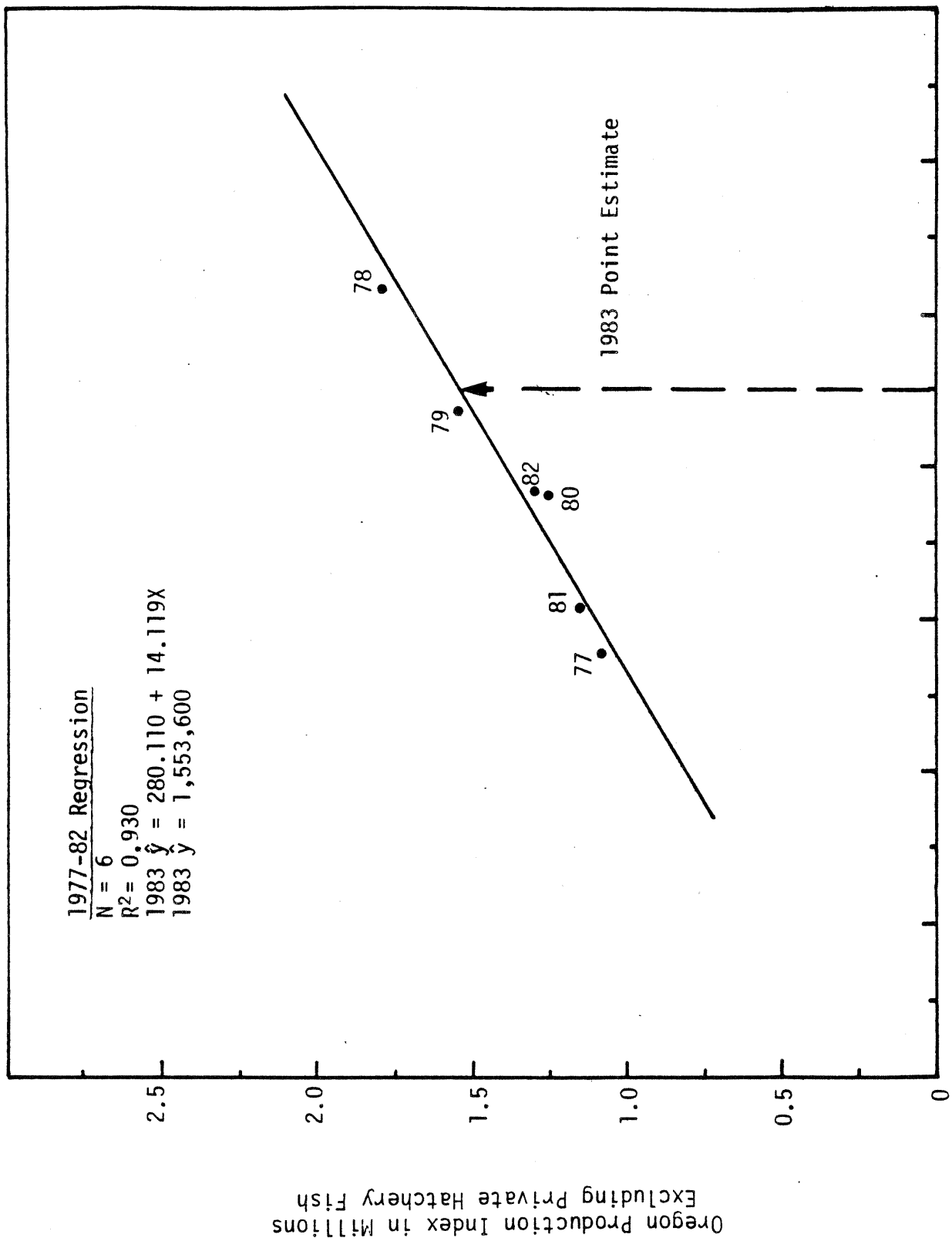

FIGURE IV-5. Relationship of the Columbia and Oregon-California Coastal Coho Jack Index to the Oregon Production Index for 1977-82 and 1983 Prediction.

rate of 0.50 was applied to the estimates of total production based on the observed relationship between harvest rates on OPI stocks and private hatchery stocks and the expected rate. It is estimated that private hatcheries will add an additional 103,000 fish to the catch in the OPI area in 1983 as summarized below:

Release Type	Number Released	Percent Survival	Total Projected Adult Survival	Harvest Rate	Total OPI Ocean Contribution
Yearlings	3,208,378	2.1	66,700	0.50	33,400
Accelerated (0-age)	19,898,938	0.7	139,300	0.50	69,650
Total	23,107,316	0.9	206,000	0.50	103,000

This would bring the total number of fish contributing to the OPI area to 1,657,000 (Table IV-12). Fish of private hatchery origin would then comprise about 8% of the ocean catch. Since experience with private hatchery fish is limited, actual contribution rates could vary considerably from that predicted. Therefore, it will be necessary to verify the contribution of private hatchery coho to the ocean catch by in-season analysis of micro-tags and scale analysis, in order to separate private production from the remaining sources of production contributing to the ocean catch of coho in the OPI area.

In summary, the 1983 coho abundance is forecast to be 1,657,000 which is a 17% increase over 1982 (1,411,800). There is particular concern for natural stocks returning to Oregon coastal streams in 1983 because of the rebuilding program for these stocks. A low escapement of 108,000 was achieved in the 1980 parent year and adequate protection will be needed in 1983 to improve this low cycle year.

Table IV-12. Preseason estimate of coho stock size in the OPI area in 1983.

Component of Stock Size Estimate	1982 Preseason Estimate
OPI Abundance Predictor (Jack Index)	1,554,000
Private Hatchery Ocean Catch	103,000
Total OPI Area Stock Size	1,657,000

Washington Coastal Chinook Stocks

Willapa Bay

Willapa Bay chinook are primarily of hatchery origin, returning as 3-, 4-, and 5-year-old fish, 1980, 1979, and 1978 broods, respectively, with about 50% of any run made up of 4-year-olds. Compared with the 1982 returns, releases of fish returning as 5-year-olds will be down, releases of fish returning as 4-year-olds will be up slightly, and releases of fish returning as 3-year-olds will be up very substantially. The contribution of wild fish should be down from 1982. The overall run of chinook should be higher than 1982.

Grays Harbor

The outlook for Grays Harbor fall chinook is the best in several years due to an improvement in the wild escapements and a slight increase in hatchery releases. While the total run size may exceed the escapement goal this year, no directed fishery on chinook is likely, due to the level of incidental catch during management for other species. Returns of spring/summer chinook to the Chehalis River are anticipated to remain severely depressed.

North Coast

Natural chinook stocks are expected to return at somewhat reduced run strength from recent levels because of the influence of the 1979 winter flood on the brood returning as four-year-olds in 1983. The impact of this storm was evidenced in juvenile chinook abundance indices for that brood. The reduction in 1983 returns may also be influenced by a severe winter flood in 1980. The below average return of these brood years will be tempered somewhat by an above average recruitment of five-year-olds to the terminal areas. Hatchery chinook are expected to return at levels similar to those of recent years, so overall abundance should be below 1982 levels.

Washington Coho Stocks

The general abundance of coho expected off the Washington coast in 1982 is anticipated to be less than 1982, or at near record low levels. Expectations by region are presented below. Specific 1983 forecasts for individual stocks is presented in Table IV-13.

Willapa Bay

Coho returns to Willapa Bay are primarily from hatchery releases. The releases of the 1980 brood totaled approximately 3.6 million, down from the 5.2 million that produced the very high returns in 1982, but still well above the typical releases of prior years. Preliminary jack returns are well below the 1981 level also suggesting that abundance will be lower in 1983 than it was in 1982.

Grays Harbor

The returns to Grays Harbor are a combination of hatchery and wild fish. The releases of hatchery fish were well above average and should provide a good return, though preliminary jack returns in 1982 have been extremely poor. The

Table IV-13. Preliminary pre-season forecasts for coho salmon stocks expected off the Washington coast in 1983.[a/]

Production area	Coho salmon stock	Type of prediction	Estimated number of adults (X 1,000) Preliminary 1983	Prediction methodology	Prediction base years	Source
California and Oregon coasts and Columbia River	Same	OPI abundance	1,554.0	Relationship of jack returns to adult production following year	1977-1982	Oregon Department of Fish & Wildlife (ODFW) Technical staff
Oregon Coast	Private aquaculture facilities	Ocean catch contribution south of Leadbetter	103.0	Juvenile to adult survival rate from coded-wire tag experiments	1982	ODFW
Washington coast	Willapa	Ocean fishery escapement	70.0	Average adult return	1978-1982	Washington Department Fisheries (WDF)
	Grays Harbor	Ocean fishery escapement	(N)56.2	Average return per spawner	1979-1982	WDF
			(H)47.1	Average juvenile to adult survival rate	1979-1982	WDF
	Quinalt	Ocean fishery escapement	(N) 6.0	Average between recent years and Queets recruit per spawner		WDF, Quinalt Tribe
			(H) 8.9	Juvenile to adult survival rate trend	1979-1982	Quinault Tribe
	Queets	Ocean fishery escapement	(N) 5.6	Relationship of jack to adult returns	1975-1982	WDF
			(H) 3.2	Average juvenile to adult survival rate	1979-1982	Quinault
	Hoh	Ocean fishery escapement	(N) 2.4	Recruits per spawner from Quillayute		WDF
			(H) 0.6	Average juvenile to adult survival rate	1979-1982	WDF
	Quillayute fall run	Ocean fishery escapement	(N)11.0	Relationship of jack to adult returns	1975-1982	WDF
			(H) 0.9	Relationship of jack to adult returns	1975-1981	WDF
	Quillayute summer run	Ocean fishery escapement	(N) 1.0	Relationship of adult to peak cycle year redd counts	1974-1982	WDF
			(H) 4.2	Relationship of jack to adult returns	1975-1982	WDF

Table VI-13. (continued)

Production area	Coho salmon stock	Type of prediction	Estimated number of adults (X 1,000) Preliminary 1983	Prediction methodology	Prediction base years	Source
Puget Sound	Strait	U.S. Puget Sound net catch plus spawning escapement	54.9[b/]	c/ d/		WDF
	Nooksack-Samish	U.S. Puget Sound net catch plus spawning escapement	159.0[b/]	c/ d/		WDF
	Skagit	U.S. Puget Sound net catch plus spawning escapement	37.4[b/]	c/ d/		WDF
	Stillaguamish-Snohomish	U.S. Puget Sound net catch plus spawning	119.0[b/]	c/ d/		WDF
	South Sound	U.S. Puget Sound net catch plus spawning escapement	472.2[b/]	c/ d/		WDF
	Hood Canal	U.S. Puget Sound net catch plus spawning escapement	86.0[b/]			
Southern British Columbia	West Coast Vancouver Island	Spawning escapement	53.8	Cycle-year spawning escapement, stream flows, and weather and environmental conditions	Varied	Canadian Department of Fisheries and Oceans "1982 Salmon Expectations"
	North Georgia Strait	Spawning escapement	122.2	Cycle-year spawning escapement, stream flows, and weather and environmental	Varied	Canadian Department of Fisheries and Oceans "1982 Salmon Expectations"
	Southeast Vancouver	Spawning escapement	61.8	Cycle-year spawning escapement, stream flows, and weather and environmental conditions	Varied	Canadian Department of Fisheries and Oceans "1983 Salmon Expectations"
	Fraser River and vacinity	Spawning escapement	50.5	Cycle-year spawning escapement, stream flows, and weather and environmental conditions	Varied	Canadian Department of Fisheries and Oceans, "1983 Salmon Expectations"
	Capilano early	Spawning escapement	23.0			

a/ Puget Sound forecasts do not include potential increases resulting from ocean regulatory controls implemented since 1978. Remainder of ocean fishery escapement forecasts are actual expectations given 1982-1982 fishery conditions.
b/ Total natural plus hatchery prediction.
c/ Natural prediction: Relationship of summer stream flows and adult returns 2 years later; 1965-1978 base years.
d/ Hatchery production: Average juvenile to adult survival rates; 1973-1977 base years.

wild fish are returning from a moderate escapement in 1980, which was below that for the 1979 brood. Grays Harbor is managed for wild stocks and no improvement is anticipated in the 1983 run.

North Coast

Natural coho abundance is estimated on the basis of jack to three-year-old returns. Preliminary data indicate that hatchery coho returning to the Solduc River will be severely reduced from 1982 levels. Return rates for other hatchery coho stocks in the region are expected to be below recent averages.

Puget Sound

Summer stream flows in 1981 were slightly below average and 1983 returns of natural coho should reflect these environmental conditions, with abundance reduced from 1982 levels. Hatchery releases of 1980 brood coho were similar to recent years and hatchery returns in 1983 are expected to be near recent high levels. Overall Puget Sound resource abundance in 1983 will be less than it was in 1982.

Pink

Puget Sound

Pink returns to Puget Sound origin systems are expected to be severely depressed and well below desired escapement levels. The maximum run size estimate (prior to any fishery interception) is expected to be 779,000. This run will result from record low spawning escapements in the cycle year (1981) of 249,000 pinks. Expected 1983 spawning escapement will be less than half of the goal of 900,000 pinks and could be another record low.

Fraser River

A good return of pinks to the Fraser River is expected in 1983, with a total return of almost 20 million.

Sockeye

North Coast

The return of sockeye in 1983 is expected to be less than the 1982 run size because of a poorer than average escapement in the 1979 brood and the severe 1979 winter storm.

Fraser River

The 1983 sockeye run to the Fraser River will be about 6.5 million fish, well below the 1982 run.

1983 MANAGEMENT GOALS

Before regulation options can be developed for the 1983 ocean fishery, the relevant 1983 management goals must be defined. The options and goals are related to the preliminary assessment of the 1983 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

Sacramento River System Fall-Run Chinook

For the Sacramento River system, fall-run chinook abundance should be similar to 1982. In 1982, the spawning escapement goal was met in the lower Sacramento; however, the 39,000 escapement into the upper Sacramento was 53% of the 74,000 chinook goal. In 1983, upriver Sacramento River stocks are still facing environmental problems. Major problem areas are:

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

Achievement of long-term spawning escapement goals in 1983 for upper Sacramento fall-run chinook would require the imposition of additional severe restrictions and consequential severe short-term economic impact on the ocean troll fisheries. In addition, the lower Sacramento would probably greatly exceed escapement goals in the American and Feather rivers.

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

The 1982 goals seem appropriate for 1983. This would set the upriver goal for 1983 at 74,000 adult fall-run (75% of the long-term goal) and result in achievement of 100% of the lower Sacramento River fall-run chinook long-term goal of 71,000 chinook. In the lower river, it should be recognized that the American and Feather Rivers will probably exceed the long-term goal. However, this usually occurs due to the high contribution of hatchery fish to these runs.

Coastal Streams

The long-term spawning escapement goal of 115,000 (97,500 natural; 17,500 hatchery) adult fall chinook in the Klamath system will be difficult to achieve in 1983. For the last four years, spawning escapements in the Klamath River have been well below the interim fall chinook escapement goal of 86,000 adults (75% of the long-term goal of 115,000) (Table IV-14).

There has been considerable pressure from some ocean salmon fishermen not to use the Klamath River salmon escapements for ocean management purposes. There has been additional testimony that the escapement goal is too high. The

Table IV-14. California adult fall run chinook salmon long-term and 1983 spawning escapement goals, compared to spawning escapements in earlier years (in thousands of fish).

Year	Sacramento River System			Klamath River System
	Upper River	Lower River	Total	
1971-80 average	64	82	146	NA
1978	65	47	112	72
1979	82	72	154	33
1980	45	72	117	28
1981	53	90	143	37
1982	39	88	127	41
Goals:				
1983	74	71	145	86
Long-term	99	71	170	115

recent report of the PFMC Klamath River Task Force (Appendix B), however, concluded that there was no basis to alter the 115,000 spawning escapement goal.

The Klamath River, in spite of depressed fall chinook runs, is still the single-most important producer of salmon along the north coast of California. The depressed status of this stock cannot be ignored in the 1983 management plan.

For 1983, the Klamath River interim spawning escapement goal (86,000) again seems appropriate.

Council Action

CDFG has submitted, and the Council has agreed to consider, a new management scheme for the California fisheries. Recognizing the depressed status of the fall chinook stocks in the Klamath River systems and the upper Sacramento River, the plan calls for increasing the runs in these areas a total of 20% every four years until ocean fishery escapement goals are met. The CDFG proposal also sets California escapement goals in terms of in-river run sizes (ocean escapements) for the Klamath River and spawning escapements for the Sacramento River.

The following outlines the proposed California escapement goals of adult fall chinook salmon:

Proposed California Fall Chinook Salmon Escapement Goals
(numbers of adults)

Sacramento River System:

Upper Sacramento River: 99,000 natural and 9,000 hatchery spawners.

Lower Sacramento River: 71,000 natural and 11,000 hatchery spawners.

San Joaquin River System: 7,000 natural and 5,500 hatchery spawners.

Klamath River System: 97,500 natural and 17,500 hatchery in-river.

The numerical goals are unchanged. The only change is that the Klamath River goal is for in-river run size, whereas the other goals are for spawning escapements. Thus, these new Klamath River goals would be reduced by the amount of harvest by the inside fisheries.

Inside salmon catches are relatively small in California streams except for the Klamath as there are no terminal net fisheries in any other streams. In California rivers, the harvest by recreational anglers has generally been less than 10% of the adult run, but has been growing in recent years on the Klamath. The Klamath River Indian fishery, which currently is allowed to fish only for subsistence/ceremonial purposes, has harvested between 20% and 44% of the adult runs.

In 1982, the Department of the Interior adopted regulations to restrict Indian in-river harvest to 30,000 adult fall chinook, because of the depressed stock status. It is not known, however, what type of restrictions may be imposed for 1983 and for future years; therefore, impacts of ocean fishery constraints upon spawning escapements cannot be determined at this time. Without harvest limits on the in-river fisheries, there can be no assurance that a certain number of salmon, or percent of the run, will reach the spawning grounds regardless of any ocean fishery constraints. It is apparent that this problem needs to be resolved if the Klamath River escapements and runs are to be rebuilt with any degree of certainty.

The proposed CDFG stock rebuilding schedule, in terms of in-river run size, is as follows:

Period	Upper Sacramento Spawners	Klamath River In-River Run[a/]
1979-1982 (base)	54,800	57,400
1983-1986	65,800	68,900
1987-1990	79,000	82,700
1991-1994	94,800	99,200
	1995-1998	99,000115,000+[b/]
	Goal	99,000115,000

a/ Hatchery and natural adults. Estimates of the catch of hatchery versus natural fish in the harvest have not been made.
b/ Spawning escapement subject to resolution of in-river harvest.

Commercial fishery options are to be selected to effect the increased runs. These options, however, would be fixed along with the recreational fishery options during each rebuilding stage (four year period). This proposal would provide stability to the fishery and to the data base.

Oregon Coastal Chinook

The 1983 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 1978-80 have ranged from 77 to 82 fish per mile and it is anticipated that counts for 1983 within this range would be indicative of adequate escapement.

Columbia River Chinook

Apparently two tribes have given formal notice of withdrawal from the five-year Columbia River Management Plan. The U.S. District Court directed the Secretary of Commerce to confer with state, federal, and tribal representatives and examine alternatives for the regulation of ocean fisheries so as to increase in-river returns of upriver Columbia chinook. In addition, U.S. and Canada are developing a salmon interception treaty. The current draft of 1983 management regimes would require that Alaska and Canadian harvest reductions of Columbia River chinook stocks be transferred principally to spawning escapement.

The 1983 escapement goal for upper Columbia River bright fall chinook is 40,000 adults above McNary Dam. No specific allocation goals for 1983 are defined for these stocks.

Columbia River and Oregon Coastal Coho

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

The desired 1983 objective for natural spawning stocks of Oregon coastal coho is to achieve a spawning escapement of 140,000 adults. This goal represents an increase of 30% over the 1980 brood year (107,500) and is consistent with Oregon's program for rebuilding coastal stocks to optimum spawning levels of 200,000 by 1987 as stated in the Oregon Coho Plan. Under this rebuilding schedule, the optimum escapement of 200,000 adults would be achieved in 1987 and each year thereafter (Table IV-15).

In order to achieve the 1983 coastal escapement of 140,000 an adult escapement from the ocean to the OPI Area (index escapement) of 492,000 would be required under existing fishery conditions. This is determined from the relationship between coastal escapement and index escapement from 1977-82 (Figure IV-6). Achievement of this escapement level translates into a harvest rate of 68% based on the predicted 1983 OPI stock size of 1,554,000 (excluding private hatchery fish) or an "actual" harvest rate of approximately 61% assuming that coastal natural escapement adds an additional 10% to the stock size.

The probability that an OPI escapement of 492,000 and a harvest rate of 61% will meet the coastal escapement goal of 140,000 can be assessed by reviewing recent levels of natural coho production from Oregon coastal streams in relation to the expected harvest rate. Estimated adult production from Oregon coastal streams has averaged 365,000 from 1977-82 (excluding 1979) based on escapement information and observed harvest rates (Table IV-16). Assuming that the 1983 abundance of natural coho from coastal streams is similar to recent years, an escapement of 140,000 adults in 1983 would require an ocean

Table IV-15. Rebuilding schedule for adult escapement of natural spawning stocks of Oregon coastal coho in thousands of fish. Parentheses indicate projected rebuilding schedule.

	Year of Adult Return										
Cycle	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	172			138			(175)			(200)	
2		108			(140)			(170)			(200)
3			73			(135)			(200)		
	Completed				Continuation Phase				Final Phase		

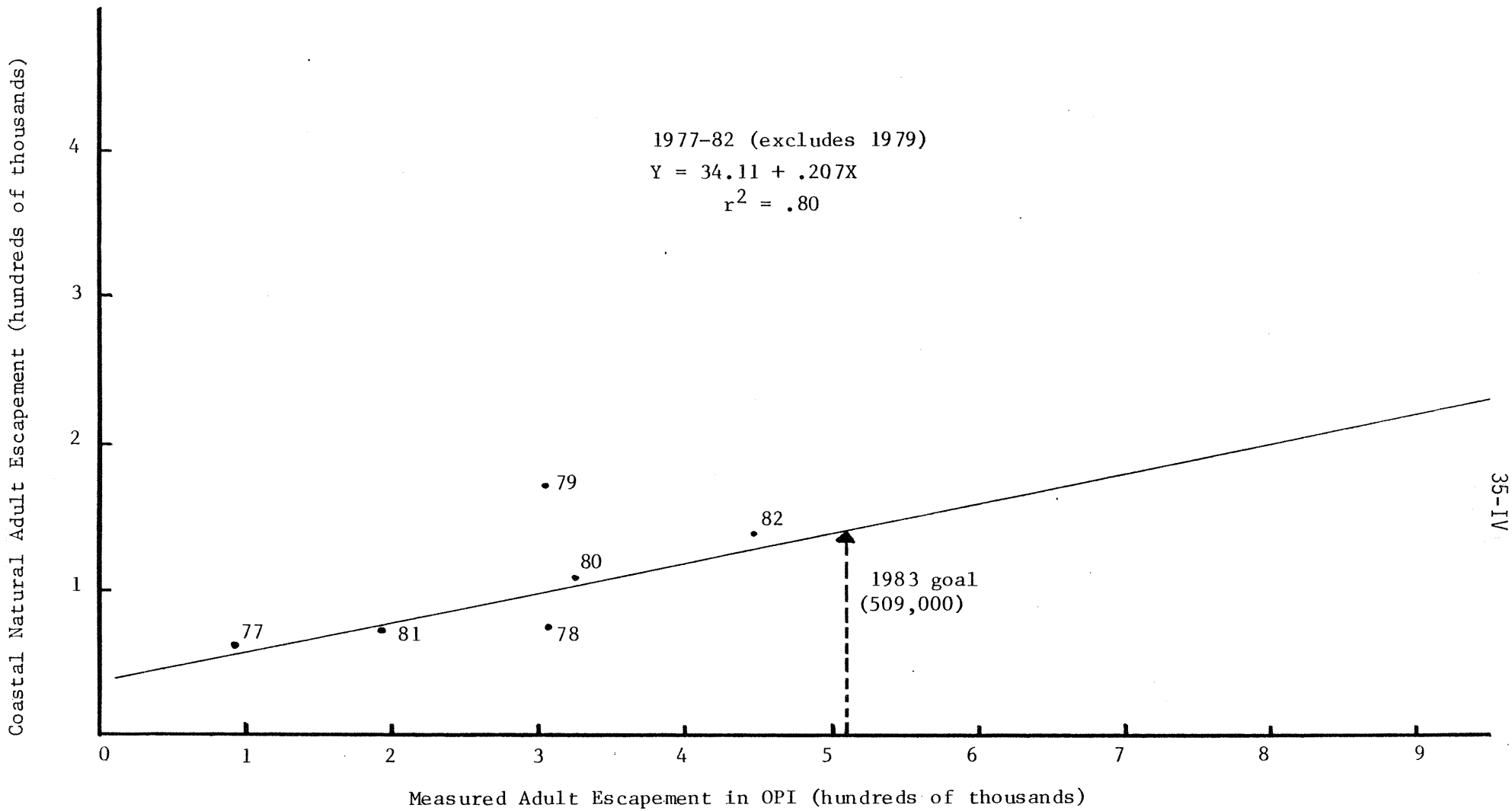

FIGURE IV-6 Relationship between the natural adult coho salmon escapement to Oregon coastal rivers and the total measured escapement of adult coho salmon to the Oregon Production Index (OPI) area, 1977-82.

Table IV-16. Estimated production of natural spawning stocks of coho salmon from Oregon coastal streams, 1977-1982.

Year	Coastal Escapement	Estimated[a/] Harvest Rate	Estimated Ocean Harvest	Estimated Total Production
1977	62,900	0.86	386,400	449,300
1978	74,500	0.80	298,000	372,500
1979	172,200	0.73	465,600	637,800
1980	107,500	0.68	228,400	335,900
1981	72,700	0.78	257,800	330,500
1982[b/]	137,500	0.59	197,900	335,400
1977-82 Average/b	104,600	--	305,700	364,700/c

a/ Determined from OPI ocean harvest divided by total OPI stock size including Oregon coastal natural escapement.
b/ Preliminary.
c/ Excludes 1979.

harvest rate of approximately 61%, essentially the same as that expected in 1983 with an OPI escapement level of 509,000. It is expected that 1983 coastal natural production will at least be equivalent to recent years since jack counts for natural spawners in coastal index streams were improved in 1982 (Table III-11).

An OPI escapement of 509,000 while better assuring achievement of Oregon coastal spawning objectives, results in hatchery surpluses and does not provide for full utilization of early run Columbia River hatchery coho production. The OPI escapement requirement may be reduced by reprogramming the ocean catch of coho in the OPI area to minimize impacts on Oregon coastal natural stocks while at the same time optimizing utilization of Columbia River hatchery stocks. This can be accomplished by reducing northern California and southern Oregon catches (south of Heceta Head), where Oregon coastal stocks are relatively most abundant, and shifting these catches to northern portions of the OPI where Columbia River hatchery stocks are relatively most abundant (Figure IV-7). The net effect would be an increase in the overall allowable OPI harvest rate and reduction in the needed escapement goal. With appropriate reprogramming the OPI escapement goal for 1983 could be reduced and still provide for an inside net fishery on the Columbia River and would meet Oregon coastal escapement and hatchery production needs.

Additional analysis of the impact on fisheries and stocks (i.e., Washington coastal coho) outside of the OPI area are needed before the feasibility of such a management strategy can be fully evaluated.

Washington Coastal Chinook

For Washington coastal chinook stocks originating north of the Columbia River, the management objective, at a minimum, should be the achievement of natural spawning escapement goals and meeting treaty obligations. As with Columbia River stocks, these stocks are also important contributors to Canadian and Southeastern Alaskan troll fisheries. All Washington coastal chinook stocks are managed for natural spawning escapement goals except Willapa Bay, Quinault River and spring/summer chinook of Quillayute River origin. Washington Department of Fisheries escapement goals for these natural stocks are outlined in Table 1V-17.

Washington Coho

The ocean fishery management goals for the Washington coho are:

1. Provide sufficient escapement from the ocean fisheries to achieve spawning escapement goals for those regions managed for natural production.

2. Provide sufficient escapement from ocean fisheries to achieve treaty obligations.

3. Provide for continuance of ocean and inside commercial and recreational fisheries at equitable levels.

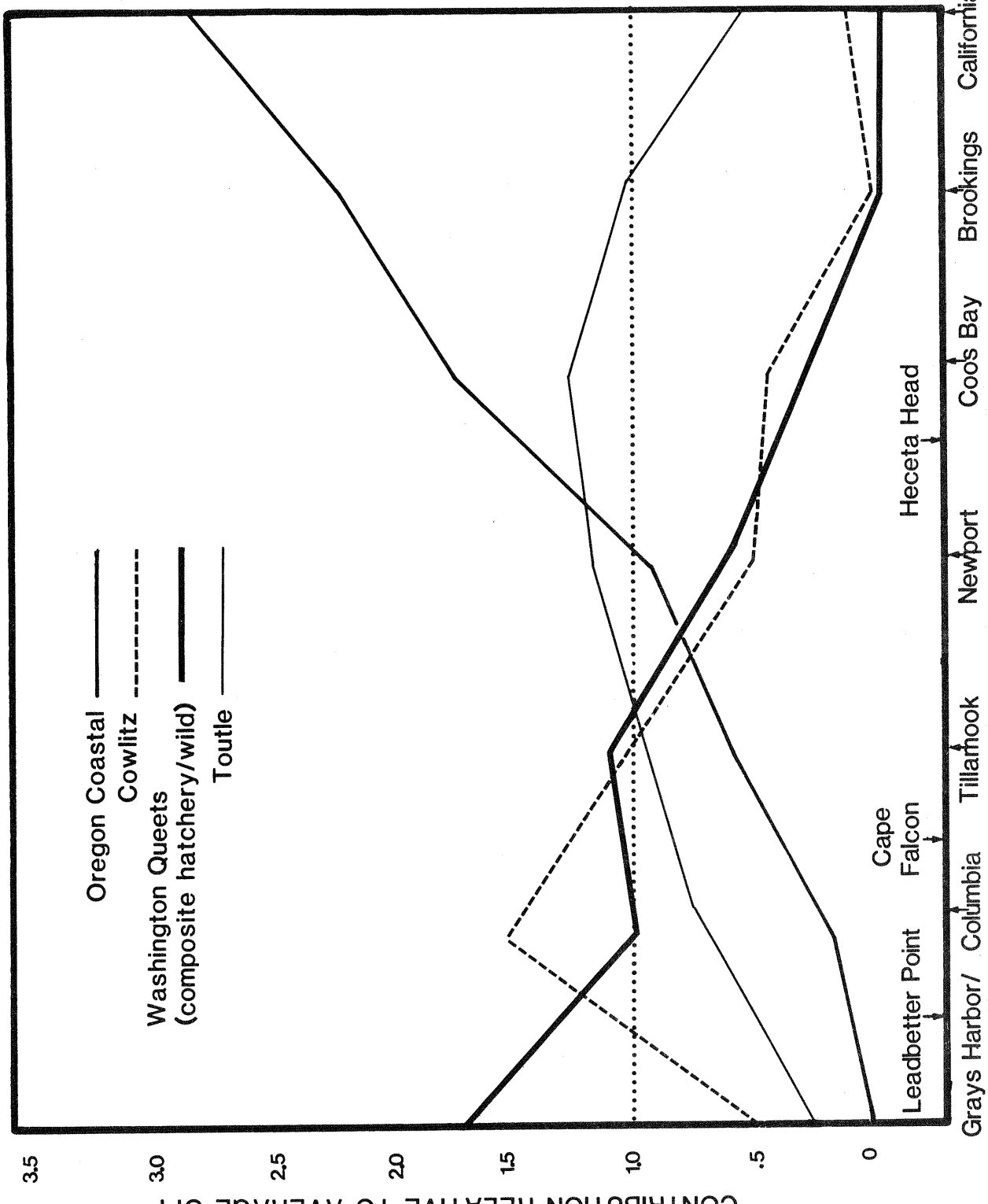

Figure IV-7. 1981 contribution of selected coho stocks to specific ocean areas, compared to the average contribution to the entire OPI. Average OPI contribution as percent of total landings for each stock indexed at 1.0. Point values represented by $\frac{\text{Total area tag recoveries}}{\text{Total area landings}} / \frac{\text{Total OPI tag recoveries.}}{\text{Total OPI landings}}$

Table IV-17. Natural chinook spawning escapement goals for Washington coast, 1983.[a/]

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

a/ Washington Department of Fisheries goals. Includes jacks.

For the Washington coast (from Grays Harbor northward), a long-term management plan, which will define management objectives more specifically, is being developed by representatives from federal, state, and tribal agencies under the direction of the U.S. District Court. This plan has not yet been completed and goals for 1983 have not been agreed to. Goals will have to be developed before the Council can take final action on the 1983 season.

For Puget Sound, six regional management units exist which have separate conservation and allocation requirements (in addition, treaty allocation requirements exist for Canadian stocks). Specifically, 1983 ocean fishery management objectives will be quantified for these regional units based upon preseason abundance expectations.

SUMMARY OF 1983 RESOURCE STATUS AND MANAGEMENT GOALS

The status of the chinook and coho resources for 1983 and the management goals presented in this report are summarized in Table IV-18.

1983 REGULATION OPTIONS TO ACHIEVE GOALS

This 1983 Management Plan, which is the fifth 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 1983 season. These options should, in general, be considered as representative of a limited range of management possibilities available if objectives are to be achieved. The options are presented separately for the troll and recreational fisheries and can be paired in any manner. The presentation of these options does not preclude the modification of an individual troll or recreational option in a particular management area so long as the option so modified is reasonably calculated to achieve management objectives. This presentation is not meant to preclude consideration of management alternatives outside the range of options here presented which:

1. arise from the public comment period;

2. arise from Court-ordered planning processes in Hoh Indian Tribe, Quinault Indian Nation, Quileute Indian Tribe v. Baldrige, Civ. No. C81-742R (W.D. Wash., filed Sept. 24, 1981);

3. arise from the Court-ordered review of ocean interceptions of upper Columbia River fall chinook in Confederated Tribes and Bands of the Yakima Indian Nation v. Baldrige, Civ. No. C80-3421 (W.D. Wash., filed June 30, 1980).

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

Management Boundaries

Because of the expected regional differences in the status of the salmon resource, the following management boundaries are presented for consideration in 1983 to provide maximum flexibility in setting regulations (Figure IV-8):

Point Arena, California	39°00'00"N
Cape Vizcaino, California	39°43'20"N
Cape Blanco, Oregon	42°50'20"N
Heceta Head, Oregon	44°08'16"N
Cape Perpetua	44°18'00"N
Cascade Head, Oregon	45°04'00"N
Cape Kiwanda	45°13'00"N
Cape Falcon, Oregon	45°46'00"N
South Jetty	46°14'06"N
North Head	46°18'00"N

(continued)

Table IV-18. Summary of 1983 resource status and management goals.[a/]

System	Stock Prediction 1983	1983 Goal	Long-Term Goal
1. Klamath River Fall Chinook	Increased yearling hatchery production from 1979 & 1980 brood years. Natural stocks depressed. Overall abundance depressed, similar to 1982.	Ocean escapement to average 68,900 during 1983-86.	Spawning escapement 115,000 adults by 1995 subject to resolution of in-river allocations.
2. Sacramento River			
Upper River Fall Chinook	Natural stocks depressed, similar to 1982.	Natural spawning escapement to average 65,800 during 1983-86, plus 9,000 hatchery spawners.	Natural spawning escapement of 71,000 adults by 1995, plus 9,000 hatchery spawners.
Lower River Fall Chinook	Similar to 1982, above average.	Natural spawning escapement of 71,000 adults, plus 11,000 hatchery spawners.	Spawning escapement 71,000 adults, plus 11,000 hatchery spawners.
3. Oregon Coastal Chinook	At optimal level.	Spawning escapement 150-200,000 adults.	Spawning escapement 150-200,000 adults.
4. Columbia River			
Upper River Fall Chinook	Similar to 1982, bright stocks depressed.	Escapement of 40,000 adults above McNary Dam, plus meet treaty obligations.	Escapement of 40,000 adults above McNary Dam, plus meet treaty obligations.
Upper River Spring Chinook	Near record low (depressed), minor part of Washington coastal ocean catch.		Escapement 100-120,000 adults above Bonneville Dam, plus meet treaty obligations.
Upper River Summer Chinook	Near record low (depressed), minor part of Washington coastal ocean catch.		Escapement 80-90,000 adults above Bonneville Dam, plus meet treaty obligations.
Lower River Fall Chinook	Near recent levels.	Mainly managed for hatchery production.	
Lower River Spring Chinook (Willamette)	Above average, minor part of Washington coastal ocean catch.	Escapement 30-35,000.	Escapement 30-35,000.
5. Washington Coastal Fall Chinook	Hatchery production similar to 1982, wild production below recent years. Ocean distribution primarily north of Washington.	Meet spawning escapement objectives and treaty obligations.	Meet spawning escapement objectives and treaty obligations.
6. Washington North Coastal Spring/Summer Chinook	Hatchery stocks comparable to 1982; natural stocks expected to return below recent levels.	Meet natural spawning escapement objectives and treaty obligations.	Meet natural spawning escapement objectives and treaty obligations.
7. Puget Sound Chinook		Minor part of Washington coastal ocean catch.	

8.	Columbia River & Oregon Coastal Coho (OPI)	1.7 million: 17% above 1982 (1.4 million)	492,000 OPI ocean escapement, while achieving 140,000 adult natural coastal spawning escapement.	575,000 OPI ocean escapement, while achieving 200,000 adult natural coastal spawning escapement. To be reached by 1987.
9.	Washington Coastal Coho	Natural stocks remain depressed; hatchery stocks below recent levels.	Numerical goals will be developed through Court-ordered technical review.	Numerical goals will be developed through Court-ordered technical review.
10.	Puget Sound Coho	Hatchery stocks similar to 1982; natural stocks below 1982 and the average.	Meet escapement objec-jectives, treaty allocation require-ments, and inside non-Indian fishery needs for six management units.	Meet escapement objec-tives, treaty allocation requirements, and inside non-Indian fishery needs for six management units.
11.	Puget Sound Pink	Severely depressed escapement requirements.	900,000 natural spawning escapement, plus meet treaty obligations.	900,000 natural spawning escapement, plus meet treaty obligations.
12.	Fraser River Pink	20 million run size (10 million IPSFC harvest).	5 million natural spawning escapement.	Maximum utilization of spawning grounds.

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

Figure IV-8. Geographic reference points for management boundaries.

Management Boundaries (cont.)

Klipsan Beach	46°28'12"N
Leadbetter Point, Washington	46°38'10"N
Point Brown	46°55'42"N
Split Rock, Washington	47°24'28"N
Queets River	47°31'42"N
Carroll Island, Washington	48°00'03"N
Cape Alava, Washington	48°10'00"N

Point Arena or Cape Vizcaino - Recoveries of marked (CWT) fall chinook of the 1978 and 1979 broods from Klamath and Sacramento river hatcheries provide evidence of the ocean distributions of these stocks. During 1982, ocean commercial fisheries off California and Oregon landed approximately 20,900 of these marks including 9,200 Klamath marks and 11,700 Sacramento marks.

Landing area data indicate all the Klamath River tag groups had similar distributions in the ocean. All Sacramento groups also had similar distributions to each other.

A composite of the landing areas of these marks is shown in Figure VI-9. The data indicate Sacramento River fish were most abundant from Fort Bragg to Monterey and that Klamath River fish were approximately equally distributed in the fisheries between and including Fort Bragg and Coos Bay. Fort Bragg appeared to be the best area in 1982 to separate Klamath River and Sacramento River fall chinook stocks.

Fort Bragg trollers primarily fish the ocean waters between Point Arena and Cape Mendocino. Cape Vizcaino, which was used in 1980 to separate Klamath and Sacramento stocks, is located approximately in the middle of the Fort Bragg fishing area. It is a reasonal choice for separating Klamath and Sacramento stocks when there is no information about ocean catch areas of marked fish landed in Fort Bragg.

In 1982, CDFG reports show that most of the fishing in the Fort Bragg area was conducted to the south of Noyo Harbor (Fort Bragg) and Klamath marks were relatively uncommon in landings all season except during the month of July. During this month, a major fishery developed north of Fort Bragg between Usal Creek (located just north of Cape Vizcaino) and Punta Gorda (located just south of Cape Mendocino). Landings of Klamath River marks in Fort Bragg in 1982 totaled approximately 1,500 fish and 89% of these were landed during the month of July. Most of the marks probably originated from north of Cape Vizcaino. This situation probably occurs most years.

Ocean abundance in 1983 of Klamath and Sacramento river stocks are expected to be similar to 1982. In the event special regulations are needed in 1983 for Klamath or Sacramento chinook, the team recommends adopting Cape Vizcaino as the management boundary for separating the fisheries.

Cape Blanco to Point Arena or Cape Vizcaino - Considerable data are now available on the ocean distribution and timing of the catch of Klamath River fall chinook. These data originated from the release of approximately 2.7 million CWT fall chinook salmon of the 1976-79 broods from Klamath River

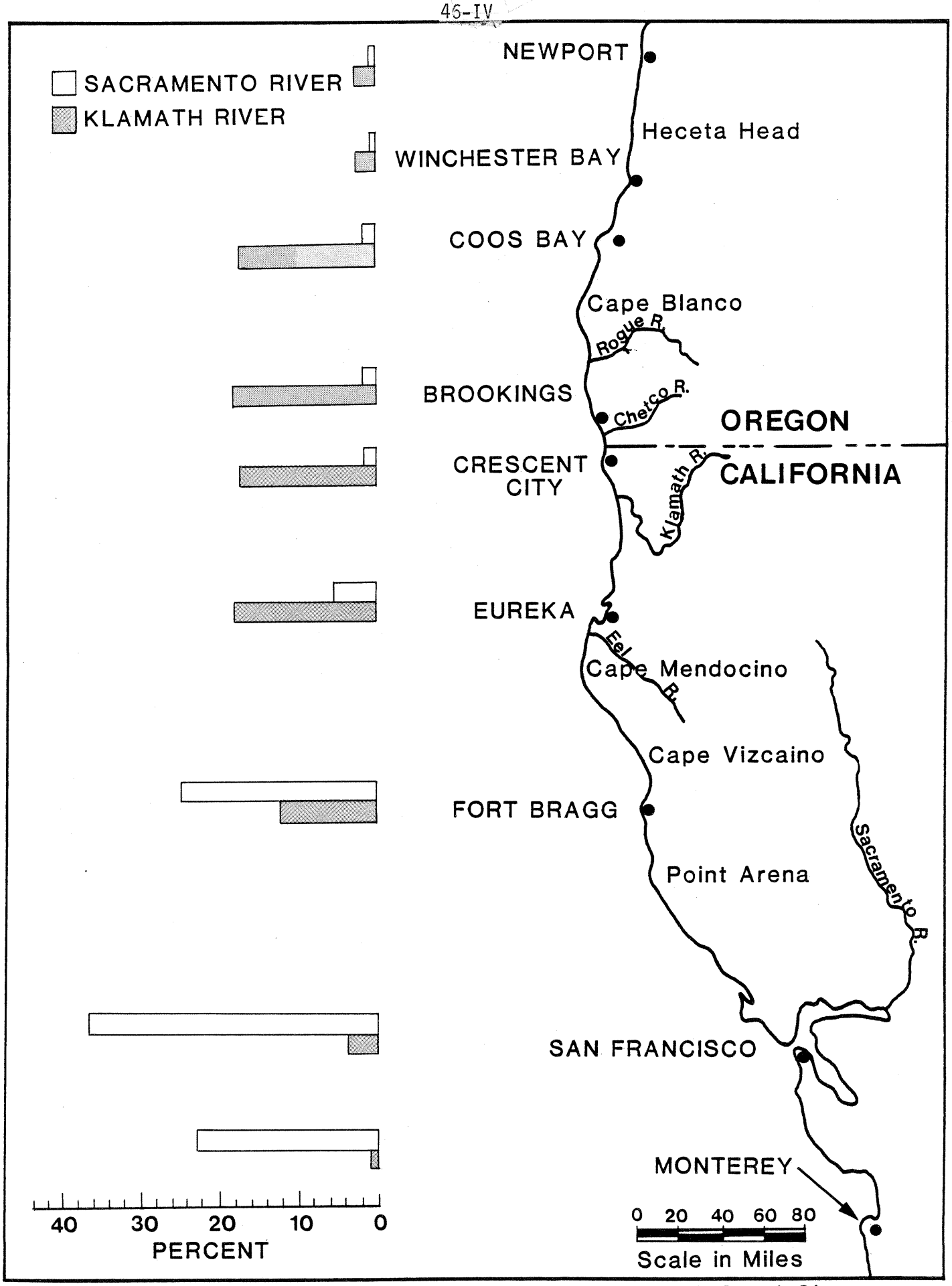


Figure IV-9. Ocean commercial landings in 1982 of Sacramento and Klamath Rivers CWT fall chinook salmon of the 1978-79 broods in percent by area landed.

hatcheries (Iron Gate and Trinity River) and the subsequent recovery of these tags in the fisheries. The fish were usually released at the hatchery and were either fingerling size or yearling age at release (fingerlings are released usually in May at a size of about 90/lb.; yearlings go out in the fall or spring and average 7-10/lb.).

Estimated ocean landings in the commercial fisheries off California and Oregon of these marks during 1979-1982 totaled approximately 23,400 fish; 17,800 yearlings and 5,600 fingerlings.

Fish released as yearlings and fingerlings appeared to be similarly distributed in the California and Oregon ocean commercial fisheries (Figure IV-10). Age 3 fish from both groups appeared to be similarly distributed in fisheries between and including Coos Bay and Fort Bragg, with a slightly higher landings of yearlings in the Brookings area and a slightly higher landings of fingerlings in the Eureka area.

Troll landings of age 4 fish were particularly heavy in the Eureka area, exceeding 40% of the total catch of age 4 fish for both release types. The balance of the age 4 landings was approximately equally distributed in the other fisheries from Brookings to Fort Bragg.

A composite of the landings of Klamath River hatchery CWT fall chinook of the 1976-79 broods in California and Oregon commercial fisheries in 1979-82 is shown in Figure IV-11.

July and August were the principal months that age 3 fingerlings and yearlings were landed (Figure IV-12) (June landings probably would have been higher had the fishery been open during 1979-82). Respective totals of 45% and 50% of the fingerling and yearling releases caught at age 4 were harvested during May. June catches of fours were low because June was generally closed during 1979-82. Catches of age 4 fish were much lower during July than May and dropped off even further during August and September.

Analysis of these data by port and month of landing indicates a high abundance of Klamath River marks in the Eureka area during May, particularly of age 4 fish. Both release types show high catch levels in this area during this period (Figures IV-13 and IV-14).

The other important catch areas and periods were, July in Coos Bay and Fort Bragg, and August in Brookings and Crescent City. These data suggest a convergent migration of Klamath fish ending off the river mouth in August.

Klamath River fall-run chinook migrate upstream primarily from mid- through late-August. The September catches, therefore, were primarily of nonmaturing fish.

It is apparent to the team that southern Oregon and northern California fisheries have a major impact on Klamath River fall chinook -- the Coos Bay, Brookings, Crescent City and Eureka fisheries in particular.

The principal chinook salmon fishing area by the Coos Bay fleet is located to the south of the port entrance. Cape Blanco is a major fishing area for these

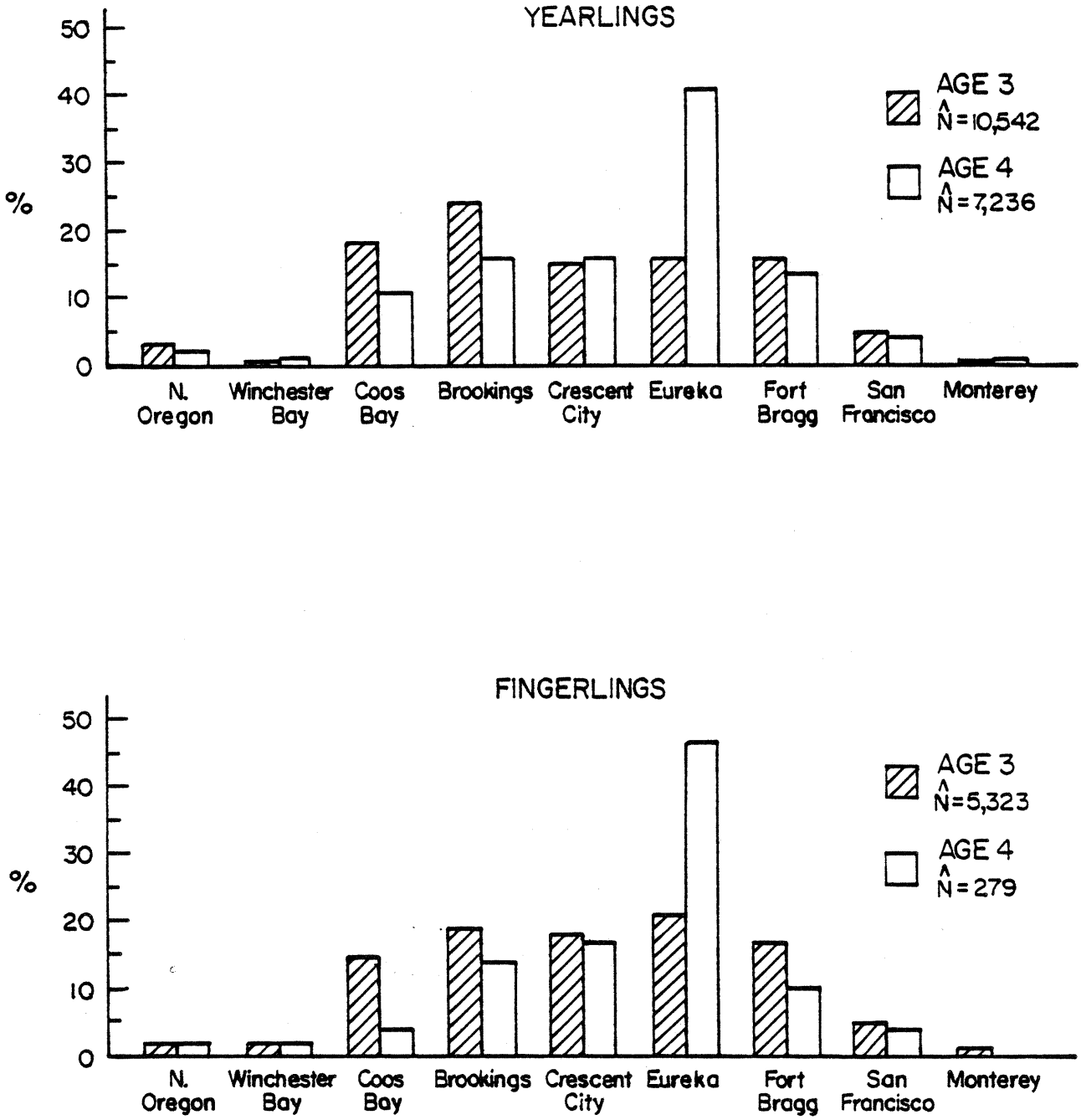


Figure IV-10. Ocean commercial landings during 1979-1982 of Klamath River hatchery CWT fall chinook of the 1976-1979 broods in percent by size at release, age class and area landed.

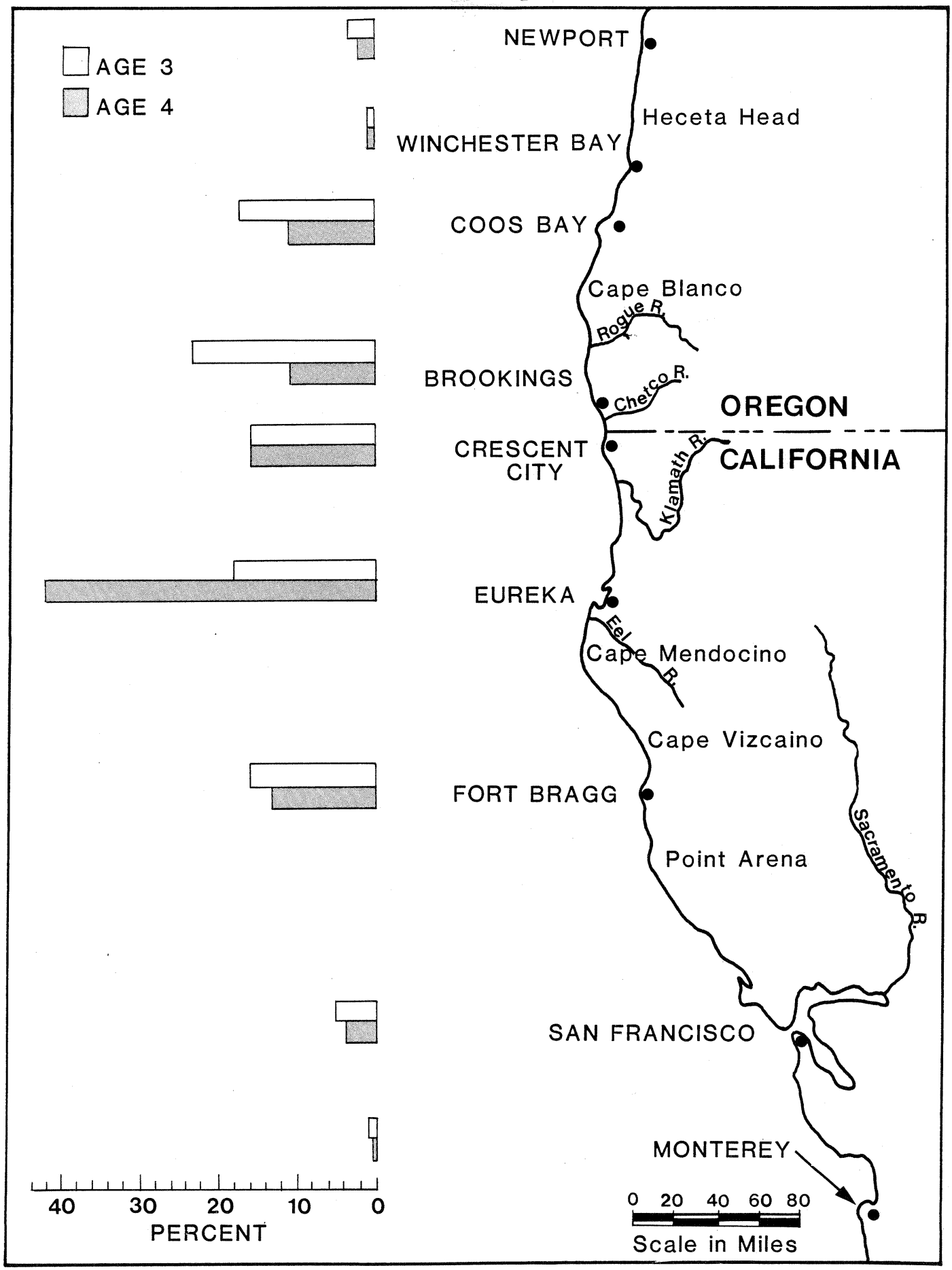


Figure IV-11. Ocean commercial landings during 1979-82 of Klamath River hatchery CWT fall chinook salmon of the 1976-79 broods in percent by age class and area landed.

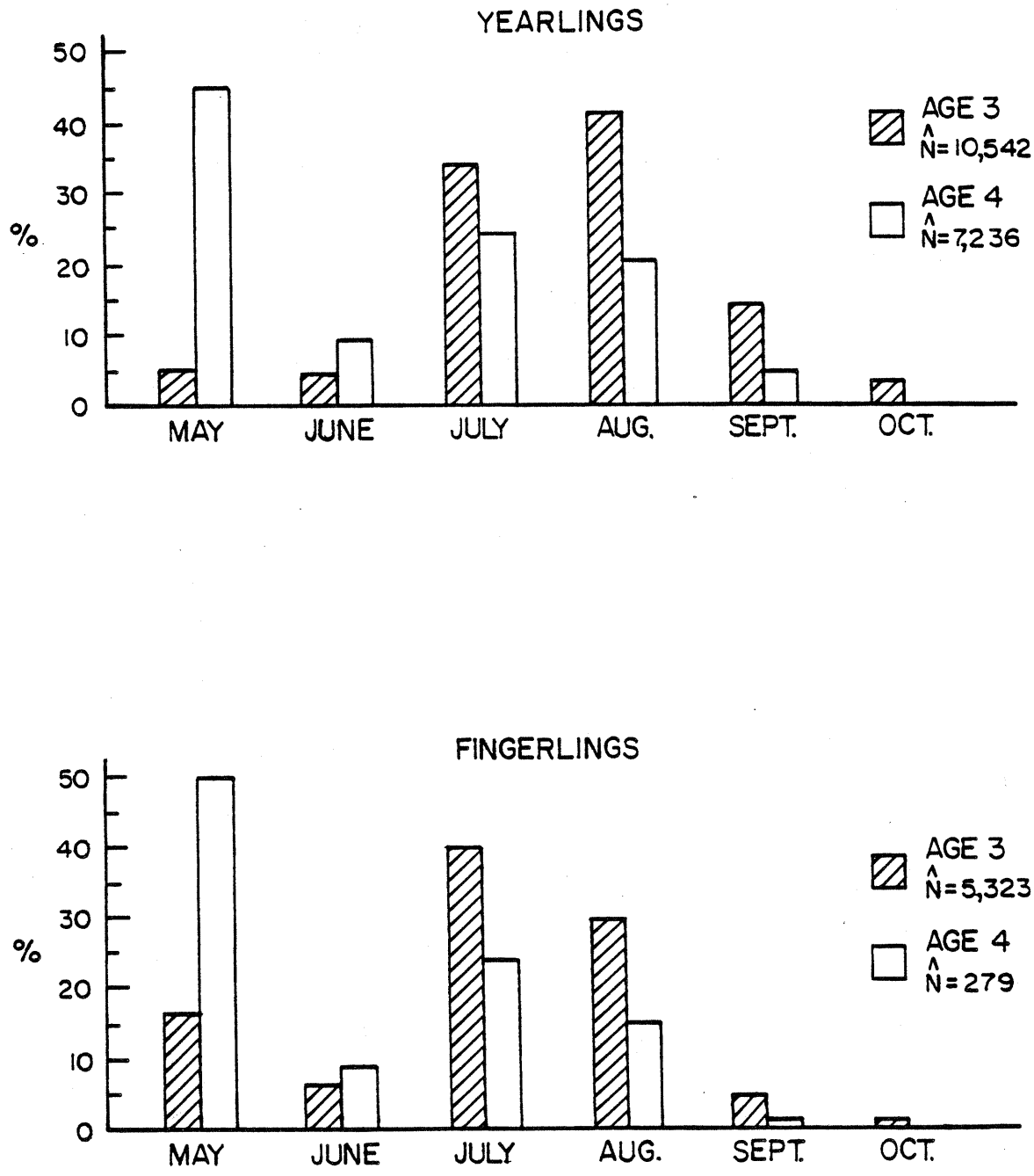


Figure IV-12. Ocean commercial landings during 1979-1982 of Klamath River hatchery CWT fall chinook of the 1976-1979 broods in percent by size at release, age class and month landed.

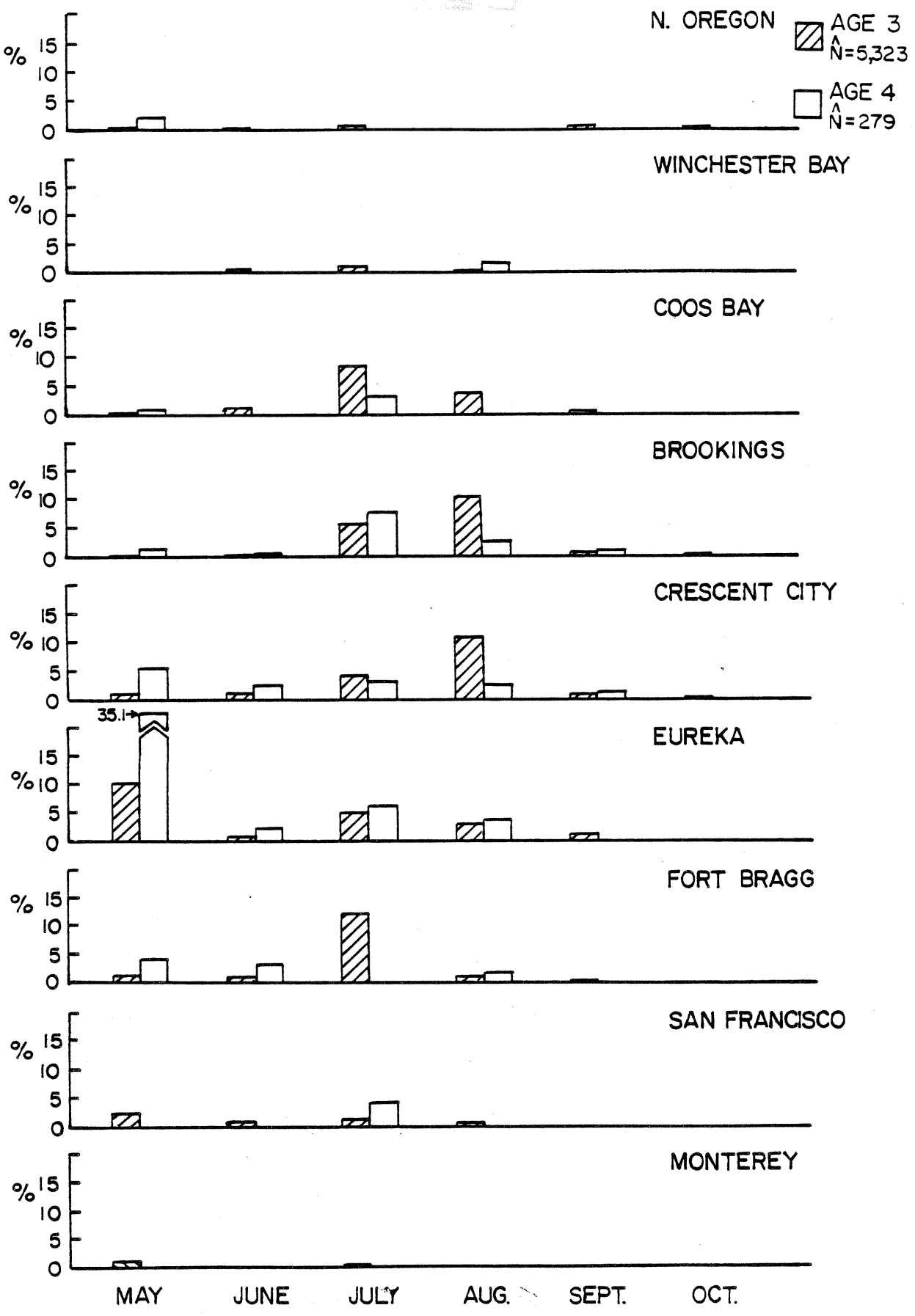


Figure IV-13. Ocean commercial landings during 1980-1982 of Klamath River hatchery CWT fall chinook of the 1977-1979 broods released as fingerlings in percent by age class, area landed and month.

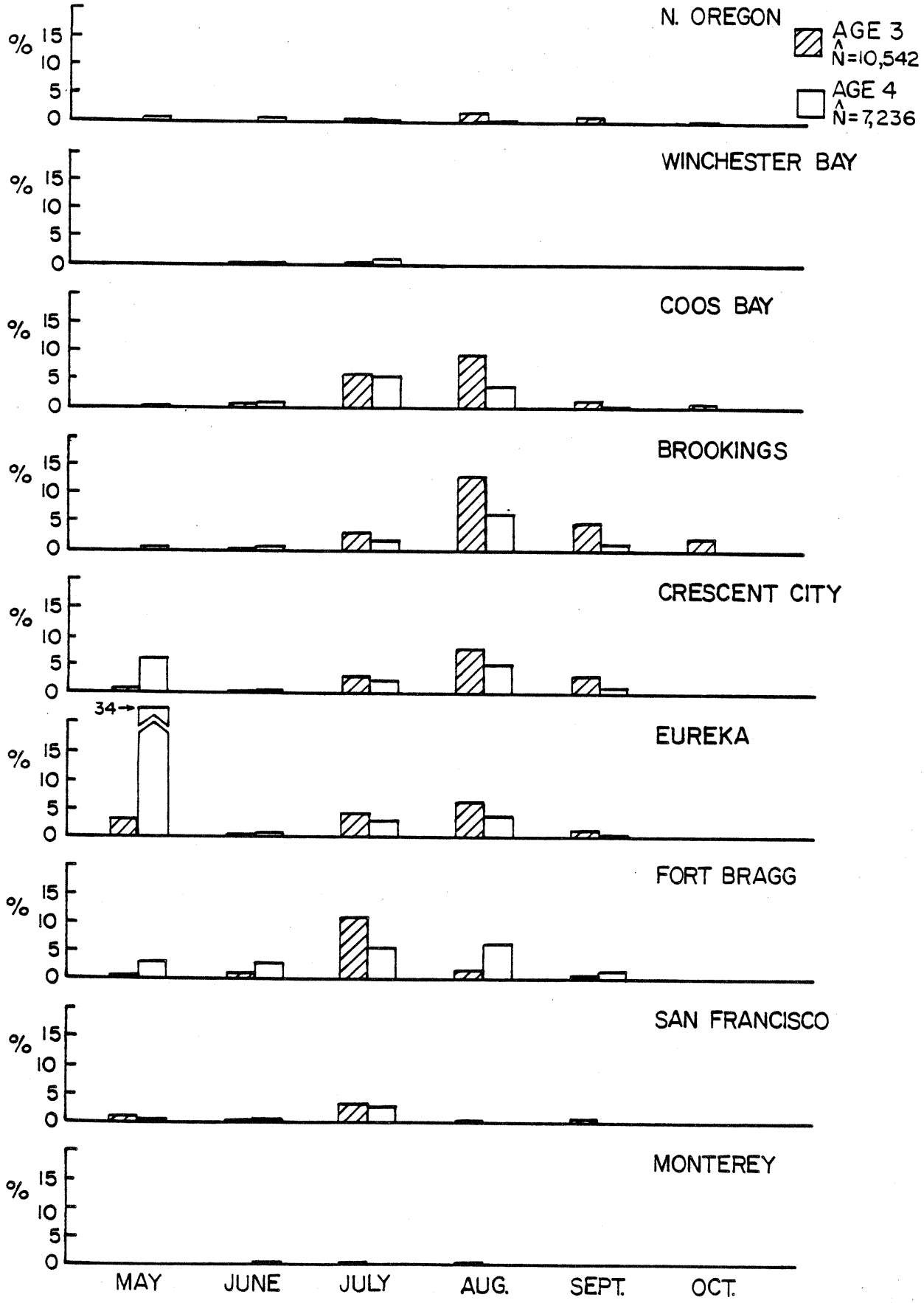


Figure IV-14. Ocean commercial landings during 1979-1982 of Klamath River hatchery CWT fall chinook of the 1976-79 broods released as yearlings in percent by age class, area landed and month.

fishermen. In the event special regulations are needed for Klamath River chinook in 1983, the team recommends a management zone for these fish extending from Cape Blanco to Cape Vizcaino (see previous section for discussion about Cape Vizcaino).

There has been a lack of definitive historic chinook stock distribution and contribution data for the southern Oregon and northern California areas. Major stocks from both southern Oregon and northern California rivers are known to mix over a wide ocean area, and collectively, contribute significantly to ocean troll and recreational fisheries from Winchester Bay, Oregon to Fort Bragg, California. Rogue (fall and spring), Chetco (fall), and Klamath (fall) River chinook stocks have been evaluated by port of landing through coded-wire tags to determine their relative ocean distribution. Analysis of the 1978 brood year indicates a similar area distribution for these stocks for both three-and four-year-old fish (Figure IV-15).

The consistant intermixing of these stocks severely reduces the potential for targeting on or avoiding any particular stock. Additionally, timing analysis for these four major stock contributors (both three- and four-year-old-fish) emphasizes the unavailability of significant time periods when a fishery could be targeted successfully on a specific stock without significantly impacting the other stocks (Figures IV-14, IV-16, IV-17, and IV-18). For example, ocean restrictions designed to increase Klamath River fall chinook spawning escapement will prevent ocean fisheries from fully utilizing Chinook production from southern Oregon rivers. While data from several brood years is necessary to fully evaluate definite distributional patterns, it appears that each of the four stocks represented show a high degree of intermixing in ocean distribution and timing.

Heceta Head - Possible boundary for separation of Columbia River and Oregon coastal coho stocks.

Cape Perpetua - This is the northern boundary for chinook fishing after the southern subarea troll coho quota is met. This management boundary is designed to include the northern end of the Heceta Banks, which is an important offshore chinook fishing ground, in the chinook-only fishing area prior to August 1. This boundary will only be utilized between the time the southern subarea troll coho quota is met and July 31.

Cascade Head - Possible boundary for separation of Columbia River and Oregon coastal coho stocks.

Cape Kiwanda - This is the northern boundary for the southern subarea troll coho quota. This boundary is used for separation of Columbia River and Oregon coastal coho stocks.

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

South Jetty - This is the northern boundary for the 1983 early and late all-species recreational season in the area from Cape Falcon to the Columbia River.

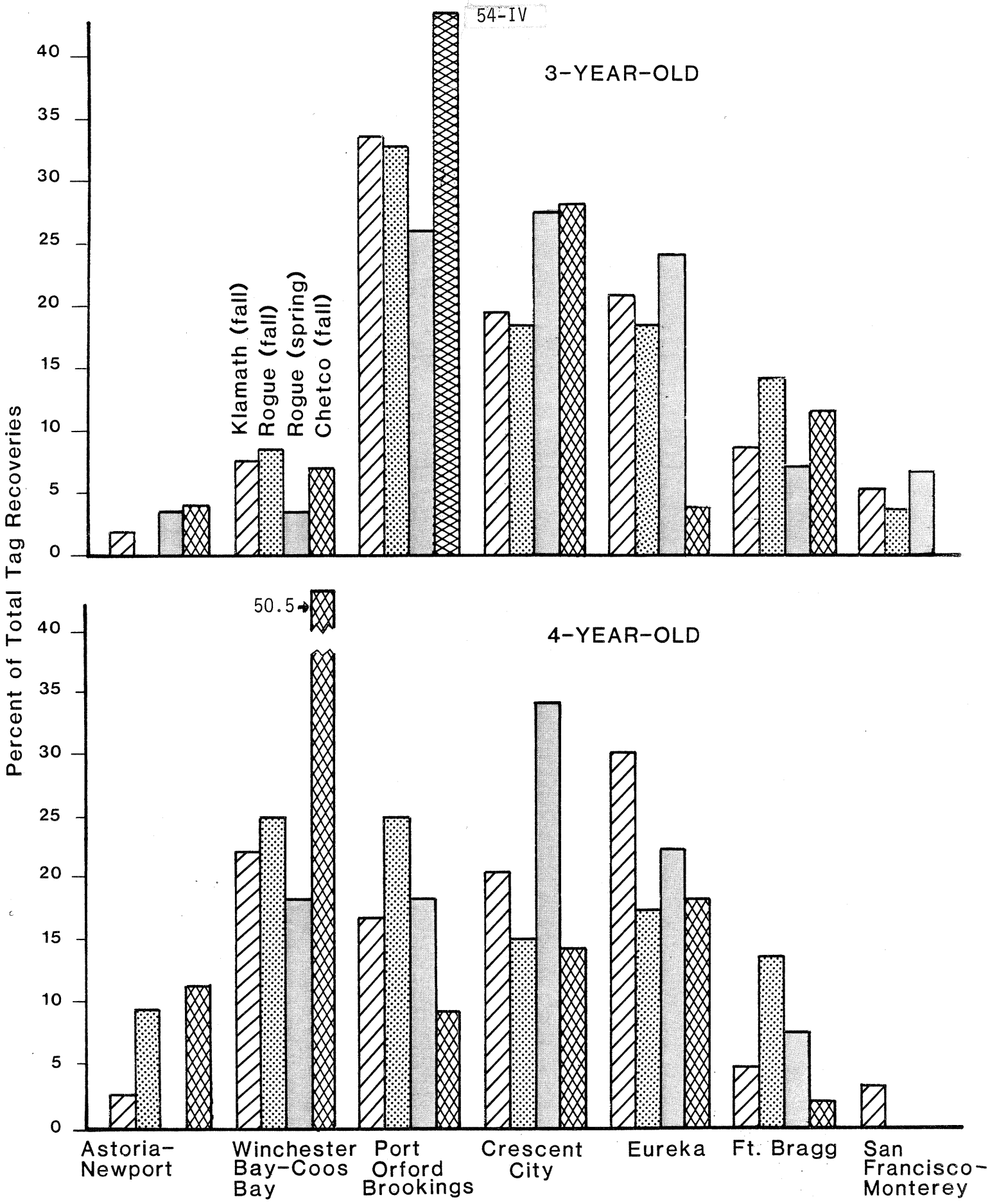


Figure IV-15. Distribution by port of landings of four stocks of 3 and 4-year old 1978 brood CWT chinook salmon. Tag recoveries expanded for sampling rates.

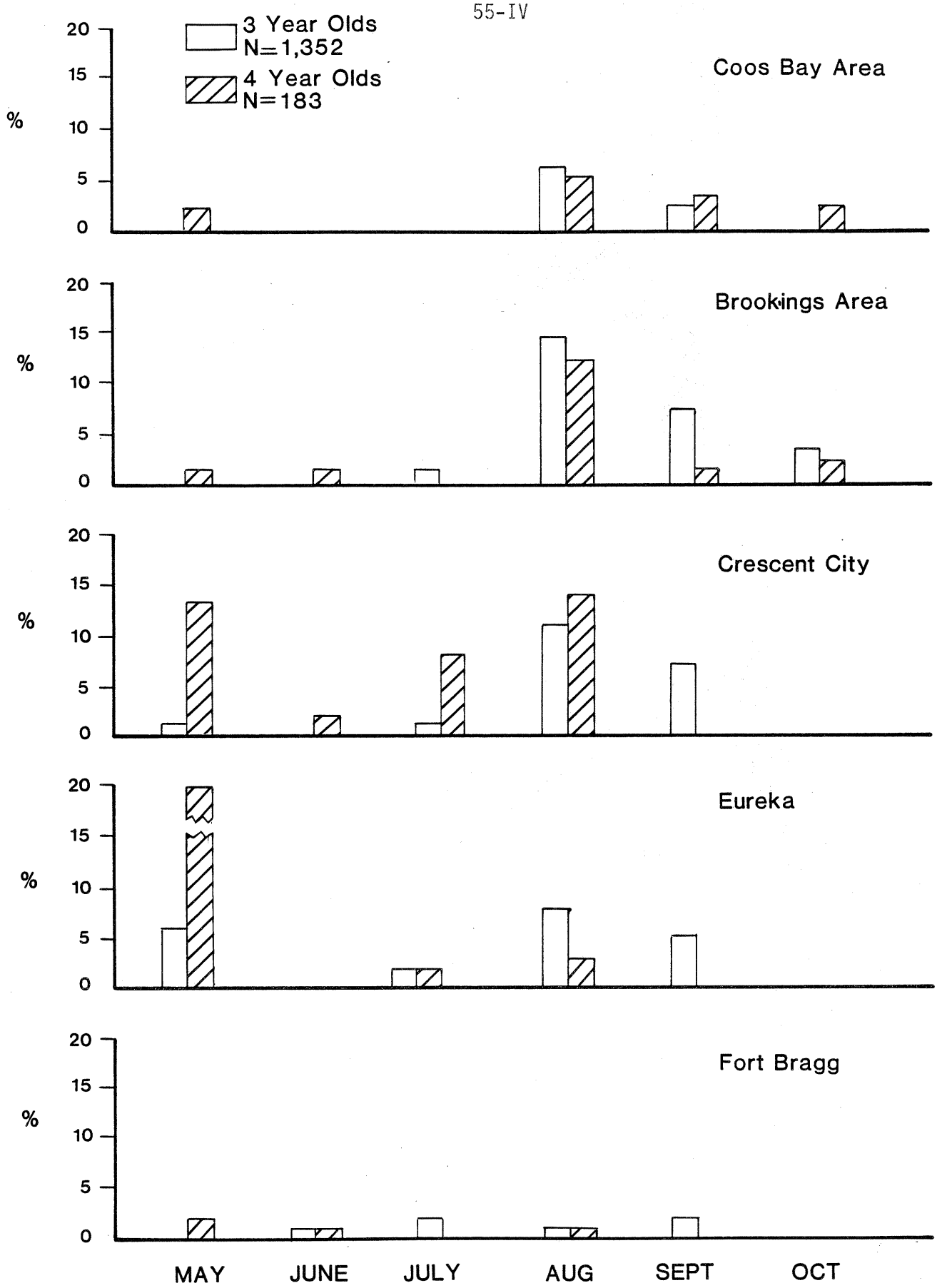


Figure IV-16. 1977 and 78 brood year Rogue River Spring chinook coded-wire tag recoveries as 3 and 4-year olds from the 1980-82 ocean fisheries. Recoveries from the two brood years were summed by age class and divided by total Oregon and California ocean recoveries from the respective age class.

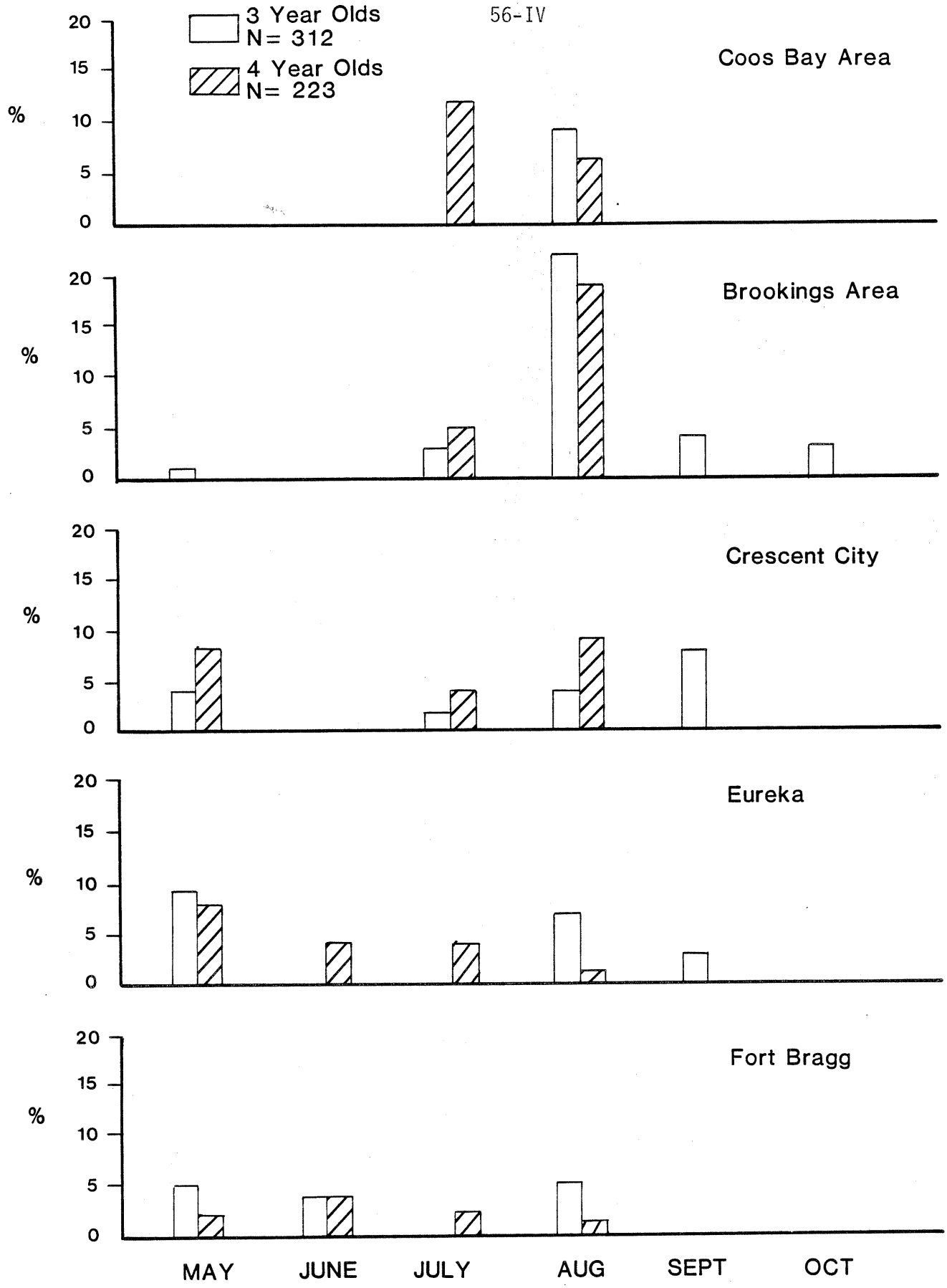


Figure IV-17. 1977 and 78 brood year Rogue River Fall chinook coded-wire tag recoveries as 3 and 4-year olds from the 1980-82 ocean fisheries. Recoveries from the two brood years were summed by age class and divided by total Oregon and California ocean recoveries for the respective age class.

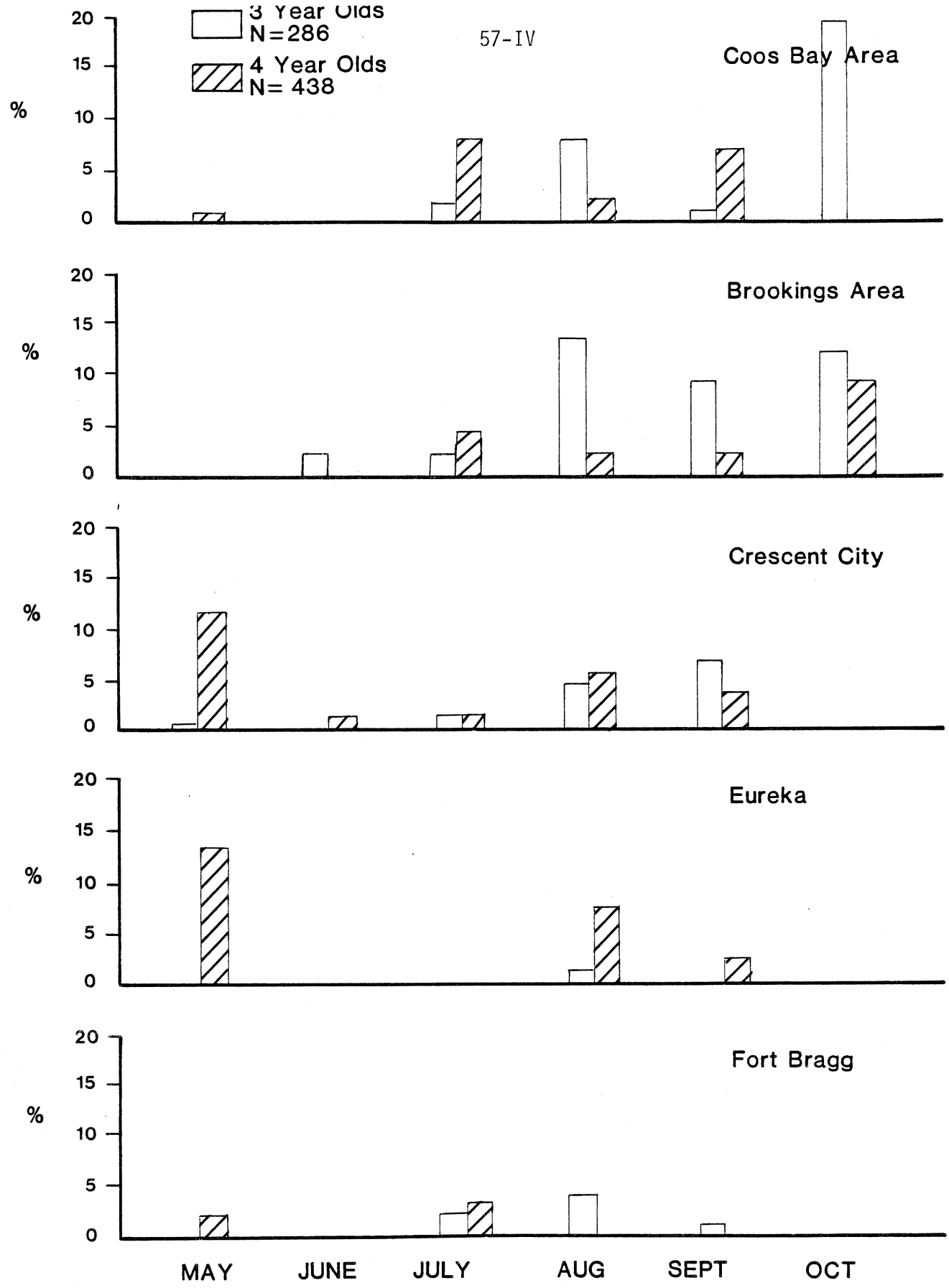


Figure IV-18. 1977 and 78 brood year Chetco River Fall Chinook coded-wire tag recoveries as 3 and 4-year olds from the 1980-82 ocean fisheries. Recoveries from the two brood years were summed by age class and divided by total Oregon and California ocean recoveries for the respective age class.

North Head - This is the southern boundary for the 1983 early all-species recreational season in the area north of the Columbia River.

Klipsan Beach - The Klipsan Beach boundary provides a good separation between the Westport and Illwaco based sport fisheries and is the southern boundary for the early 1983 chinook-only recreational season.

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

Point Brown - This is the northern boundary for the 1983 late all-species recreational season for the Westport fleet.

Split Rock - This boundary could be used to provide additional protection to Washington coastal stocks.

Queets River - This is the southern boundary for the 1983 late all-species recreational season and the northern boundary for the 1983 early chinook-only recreational season off the north coast of Washington.

Carroll Island - This boundary could be used to concentrate troll harvest in areas of high pink availability and provide additional protection for Washington coastal stocks.

Cape Alava - This represents the boundary between Washington statistical areas 3 and 4. This line could be used to concentrate troll harvest in areas of high pink availability and give greater protection to Washington coastal stocks.

Specific Options

Four recreational and four troll options are presented for management of the 1983 ocean salmon fisheries (Figures IV-19 and IV-20). Any recreational option can be paired with any of the troll options. Any of the troll or recreational options can be implemented in conjunction with any of the in-season management options discussed later in this chapter. Figure IV-21 presents the actual 1982 troll and recreational seasons for comparative purposes. If a quota (fixed or adjustable) is implemented, it may not be necessary to specify season ending dates in advance. If the Council adopts the California proposal, any options could be considered for a four-year period. Troll and recreational Option 1 correspond to the 1982 seasons adopted by the Secretary. Troll Option 4 was proposed by the salmon advisors.

Recreational Options

Recreational Option 1 - Recreational Option 1 has the same 1983 seasons as were adopted by the Council in 1982. It should be pointed out that in areas where the fishery was managed on the basis of a coho quota, i.e., north of California, early in-season closures were necessary in 1982. Without reallocation of coho from the troll to the recreational fisheries, early in-season closures should again be expected with the all-species opening dates adopted in 1982.

Figure IV-19.

1983 RECREATIONAL OPTIONS

DATES		1 (1982 Recreational)						2						3						4					
		CA	OR			WA		CA	OR			WA		CA	OR			WA		CA	OR			WA	
		All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.	All of California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.	All California	OR/CA Border to Cape Blanco	Cape Blanco to Cape Falcon	No. of Cape Falcon	So. of Leadbetter Pt.	No. of Leadbetter Pt.
February 12–May 15																									
May 16–31																									
June 1–15											g/	g/											g/	g/	
June 16–30																									
July 1–15									a/												f/	f/			
July 16–31																									
August 1–15			a/	b/	b/	b/	b/								a/	b/									
August 16–31										b/	b/	b/	b/				b/	b/	b/				b/	b/	b/
September 1–15																									
September 16–30																									
October 1–15																									
October 16–31																									
November 1–15																									
BAG LIMIT		2	2	2	2	2	2	2	2			2 e/		2	2			2 e/		2	2 h/	2 h/	2	2	2 e/
SIZE LIMIT	Coho	c/	none		16"	16"		c/	none d/		16"	16"		c/	none d/		16"	16"		c/	none d/		16"	16"	
	Chinook	c/	none		24"	24"		c/	none d/		24"	24"		c/	none d/		24"	24"		c/	none d/		24"	24"	

All salmon Closed All salmon except coho

a/ All Salmon except coho after coho quota is reached until October 31.

b/ Will close when coho quota is reached.

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

d/ First two fish, regardless of size. This option could also be considered with a 16-inch size limit for coho and a 22-inch size limit for chinook.

e/ For the area north of the Queets River, the bag limit is 3, only 2 of which can be chinook or coho.

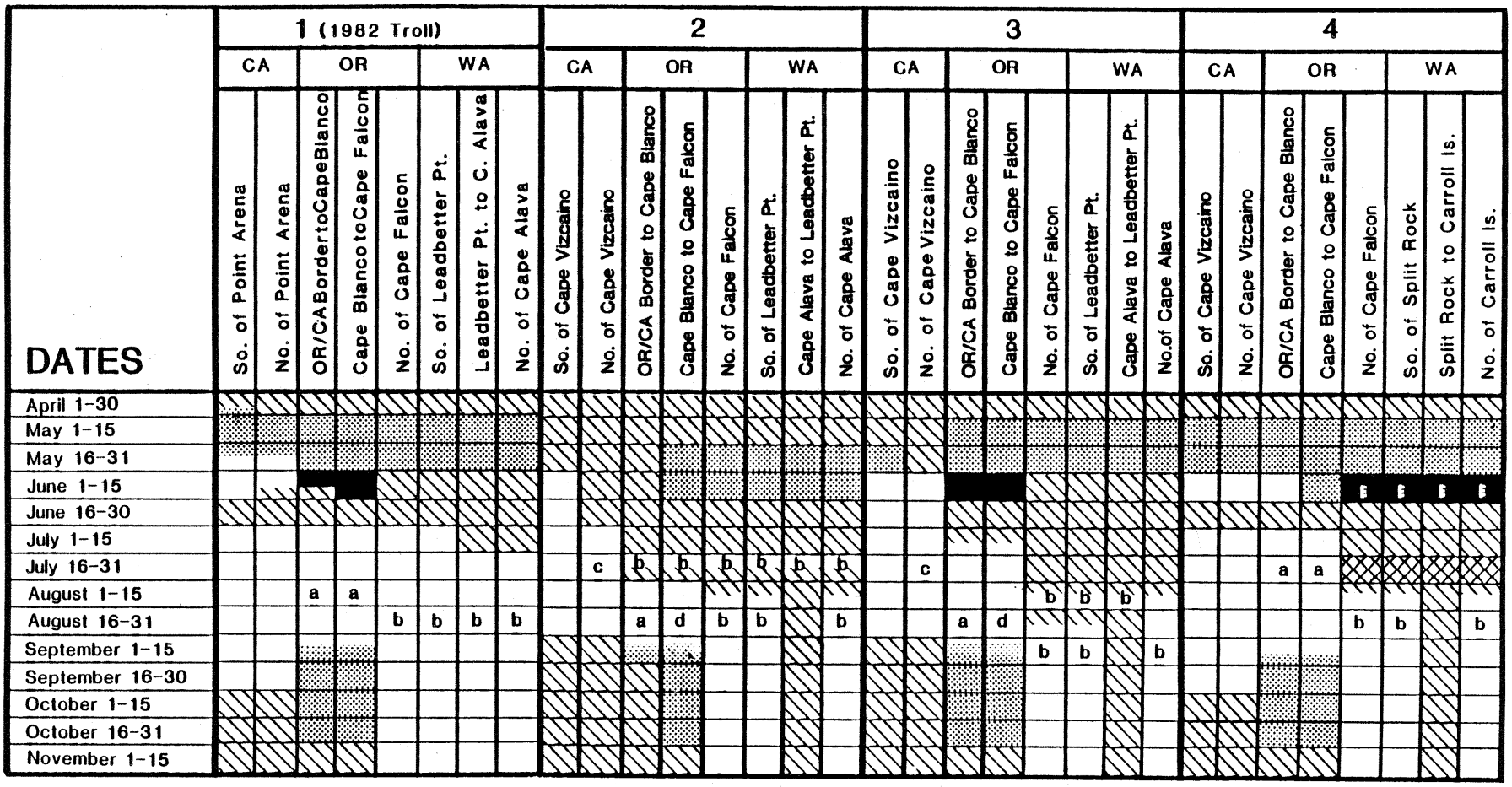
f/ All-species season is fixed; closing date could be earlier south of Cape Blanco and opening date could be later north of Cape Blanco.

g/ No recreational salmon angling allowed between 46 18'00'N latitude and 46 11'10'N latitude.

h/ Bag limit could be adjusted inseason.

1983 TROLL OPTIONS

Figure IV-20.



a/ All salmon except coho when coho quota is reached. Special gear only.

b/ Season for all salmon would close if quota for area is reached.

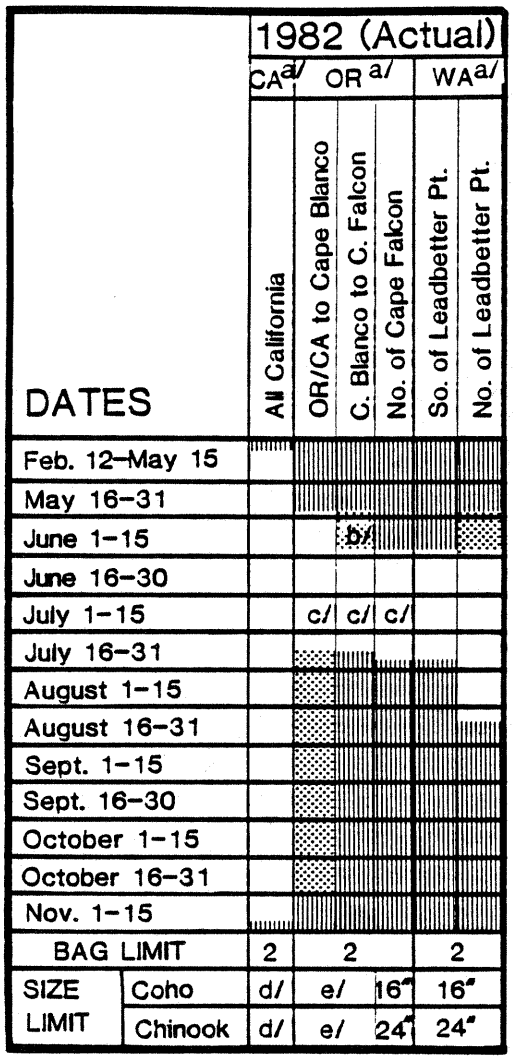
c/ All salmon except coho when total California catch of coho reaches a certain percentage of the total OPI troll quota before either July 31 or August 31.

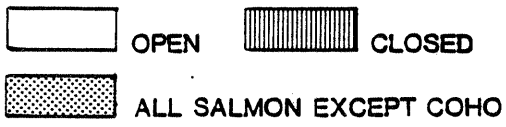
d/ All salmon except coho when coho quota is reached, but not to begin before August 1. Special gear only.

e/ All species except coho only if late seasons restrict chinook fishing areas and times. Special gear only.

Figure IV-21. Actual 1982 Troll and Recreational Seasons.

RECREATION





a/ Recreation Harvest Guideline:
Oregon and California-south of Cape Falcon: 114,000 coho.
Oregon and Washington-Cape Falcon to Leadbetter Point: 100,000 coho.
Washington north of Leadbetter Point: 115,000 coho.

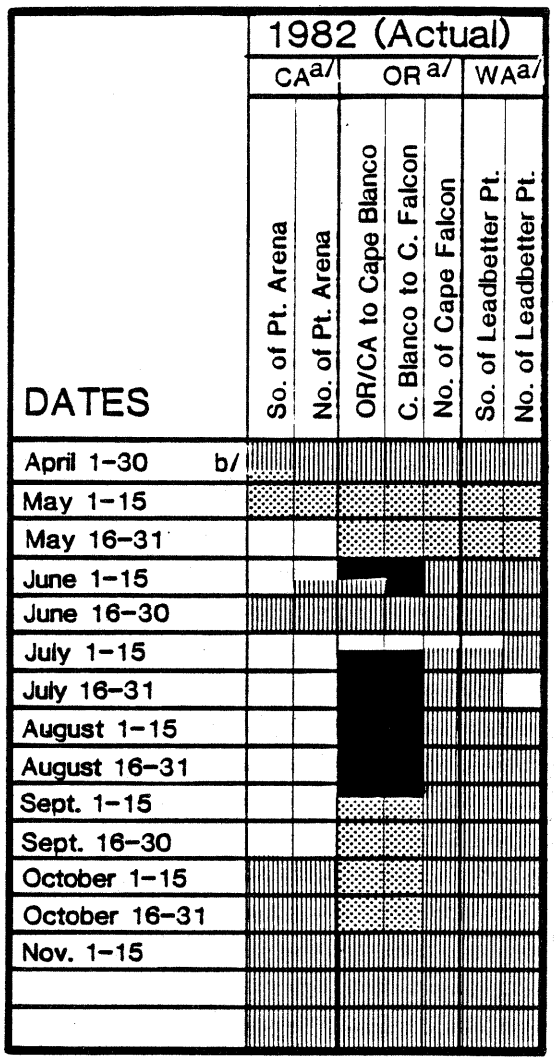
b/ Oregon state waters only (using barbless hooks)

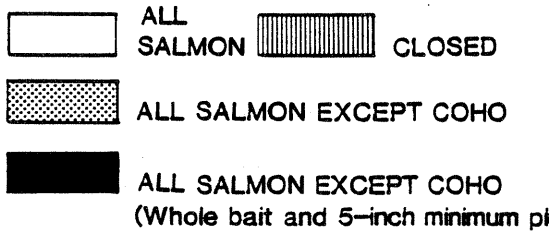
c/ Oregon state waters remained open through August 1.

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

e/ No size limit (first two fish).

TROLL





a/ Troll Harvest Guidelines:
OR and CA south of Cape Falcon: 488,000 coho
OR and WA, Cape Falcon to Leadbetter Point: 89,000 coho
WA north of Leadbetter Pt.: 204,000 coho

b/ State waters only.

Recreational Option 2 - Recreational Option 2 has the same 1983 seasons for California as were adopted by the Council in 1982. For the Oregon coast and for Washington south of Leadbetter, the all-species season would open one week later (June 18) than in 1982 (June 12). For Washington north of Leadbetter Point, the 1983 recreational all-species season would begin six weeks later (July 23) than in 1982 (June 12). Fishing would continue until the coho quota was reached or through September 18, whichever came first.

These season opening dates were based on recent average fishery catch and effort data computed by working back in the season from Labor Day. Fisheries would be managed based on coho quotas and no guarantee could be given for remaining open until Labor Day.

For the area north of Cape Falcon, this option includes an all-salmon-except-coho season from May 28-June 12 except in a conservation zone bracketing the Columbia River. The northern boundary of the conservation zone would be 46°18'00"N and the southern boundary 46°11'10"N with the zone extending seaward 200 miles. This option provides for Oregon south of Cape Blanco a chinook-only fishery from the time the coho quota is reached through October 31, as in 1982.

This option also provides for a daily bag limit of 2-fish, except north of the Queets River where the bag limit would be 3 salmon, only 2 of which may be coho or chinook. For Oregon south of Cape Falcon, this option includes a provision that the first two salmon caught must be kept although the option could also be considered with a 16-inch size limit for coho and a 22-inch size limit for chinook.

Recreational Option 3 - Recreational Option 3 has the same 1983 seasons for California as were adopted by the Council in 1982. For the Oregon coast and for Washington south of Leadbetter, the all-species season would open four weeks later (July 9) than in 1982 (June 12). For Washington north of Leadbetter Point, the 1983 recreational all-species season would begin nine weeks later (August 13) than in 1982 (June 12). Fishing would continue until the coho quota was reached or through September 18, whichever came first. As in Option 1, this option also provides for a chinook-only fishery south of Cape Blanco after the coho quota is reached.

These season opening dates were computed conservatively to reasonably assure that the fisheries would remain open through Labor Day. Fisheries would still be managed on the basis of a quota.

This option also provides for a 2-fish bag limit, except for a 3-fish bag limit north of the Queets River, only 2 of which can be coho or chinook, to take advantage of odd-year pink availability. For Oregon south of Cape Falcon, this option includes a provision that the first two salmon caught must be kept although the option could also be considered with a 16-inch size limit for coho and a 22-inch size limit for chinook.

Recreational Option 4 - Recreational Option 4 has the same 1983 all-species seasons for California as were adopted by the Council in 1982 (February 12 to November 13).

For the Oregon coast south of Cape Falcon, this option provides for a fixed all-species season from Memorial Day weekend through Labor Day weekend. Within the concept of the fixed all-species season, the closing date south of Cape Blanco could be earlier than Labor Day weekend (after July 4) and north of Cape Blanco the opening date could be later than the Memorial Day weekend, if inclusion of Labor Day weekend were a major concern. The option can also consider in-season bag limit adjustments and mid-season closures to control catch levels. If catches were expected to exceed initial allocations (based on the sliding scale principle), in-season downward adjustments to the troll allocation or quota would be necessary in order to guarantee a fixed season to the recreational users. It would be necessary to pair this recreational option with a troll option that had a late all-species opening or split season to allow for in-season adjustments of the troll fishery. The other alternative would be to close the troll fishery at some percentage of its allocation until the performance of the recreational fishery could be projected and appropriate in-season adjustments made.

For the area north of Cape Falcon to Leadbetter Point, the all-species season would open one week later (June 18) than in 1982 (June 12). For Washington north of Leadbetter Point, the 1983 recreational all-species season would begin six weeks later (July 23) than in 1982 (June 12). Fishing would continue until the coho quota was reached or through September 18, whichever came first.

These season opening dates north of Cape Falcon were based on recent average fishery conditions computed working back in the season from Labor Day. Fisheries would be managed based on coho quotas and no guarantee would be given for remaining open until Labor Day.

For the area north of Cape Falcon, this option includes a chinook-only season from May 28-June 12 except in a conservation zone around the mouth of the Columbia River, as in Option 2. This option provides for Oregon south of Cape Blanco a chinook-only fishery from September 6 through October 31, similar to 1982.

This option also provides for a daily bag limit of 2-fish, except north of the Queets River where the bag limit would be 3 salmon, only 2 of which may be coho or chinook. For Oregon south of Cape Falcon, this option includes a provision that the first two salmon caught must be kept although the option could also be considered with a 16-inch size limit for coho and a 22-inch size limit for chinook.

Troll Options

Troll Option 1 - Troll Option 1 has the same 1983 seasons as were adopted in 1982. It should be pointed out that in areas where the fishery was managed on the basis of a coho quota, i.e., north of California, early in-season troll closures were necessary in 1982 as in the recreational fisheries. If the 1982 all-species opening dates are adopted in 1983, early season closures and resultant losses of coho poundage and pink harvest opportunity should be expected in 1983.

Troll Option 2 - For California, the all-species season would open June 1 south of Cape Vizcaino (four weeks later than in 1982) and would close

August 31 (four weeks earlier than in 1982) with no mid-season closures. North of Cape Vizcaino, the season would open on July 1 and close on August 31. An additional caveat of this and all the troll options is that California north of Cape Vizcaino would close to coho fishing when the total California catch of coho reaches a certain percentage of the total OPI troll quota. Chinook-only fishing would continue to the end of the season. This option reduces fishing pressure on maturing four-year-old chinook early in the season and immature three-year-olds late in the season in an attempt to begin the rebuilding program for depressed natural stocks.

For Oregon south of Cape Falcon, there would be a chinook-only fishery from May 16-June 15 except that the area south of Cape Blanco would be closed consistent with northern California regulations. The early chinook-only season was scheduled for May 16-June 15 to reduce the potential impacts of effort shifts from California northward. The all-species season would begin on July 16 and continue for one week through July 22. A short mid-season closure for data assessment would be followed by a second opening on August 1 with the season continuing until the coho quota is met. After the coho quota is reached, this area would be open for chinook-only fishing after August 1 north of Cape Blanco with whole bait and 5-inch minimum plugs through September 4 when the special gear restrictions would be dropped. Chinook-only fishing would then continue through September 15 south of Cape Blanco to the Oregon/ California border and October 31 north of Cape Blanco to Cape Falcon.

For the Cape Falcon to Leadbetter Point area, the season would be the same as south of Falcon except that the mid-season all-species closure would extend through August 9 and the season would end once the coho quota was met. No late season chinook-only fishery would be allowed in this area.

For the area from Leadbetter Point to Cape Alava, the season would be the same as for the area between Cape Falcon and Leadbetter Point except that the all-species would not reopen after the July 22 closure.

The scheduled season north of Cape Alava would be the same as for the Cape Falcon to Leadbetter Point area; however, the closing dates would be dependent upon attainment of the appropriate coho quotas.

This regulation package was designed to minimize effort shifts in Oregon and Washington with a common all-species opening on July 16, provide maximum protection to depressed Washington coastal coho stocks, reserve a portion of the Washington coastal coho quota for the period of peak pink abundance in August, and address the depressed natural chinook stock problems in California.

Troll Option 3 - Troll Option 3 is the same as Option 2 for California except that a two-week chinook-only fishery from May 16-31 would be allowed south of Cape Vizcaino and the all-species season north of Vizcaino would open June 1 rather than July 1. This option would increase the impacts on depressed natural chinook stocks compared to Option 2, but would be significantly shorter than the 1982 season.

For Oregon south of Cape Falcon, the historical May 1-31 chinook-only fishery would be authorized along with a June 1-15 special chinook fishery using special gear (whole bait and 5-inch minimum plugs). The all-species season

would open on July 11 and continue until the coho quota is reached. Chinook-only fishing with special gear would be allowed after the coho quota is met south of Cape Blanco, but only after August 1 for the area from Cape Blanco to Cape Falcon. Chinook-only fishing without gear restrictions would continue from September 5-October 31.

For the area north of Cape Falcon to the Washington/Canada border, chinook-only fishing would be allowed for May 1-31 and the all-species season would begin on August 10. The all-species season for Cape Falcon to Cape Alava would close on August 16 and reopen south of Leadbetter Point on August 22 after a short mid-season closure. The area from Leadbetter Point to Cape Alava would not reopen whereas the area north of Cape Alava would remain open from the August 10 beginning date. All areas would then close when the appropriate coho quotas were reached.

This option is less restrictive for California and Oregon fisheries, but may not meet resource needs, especially in California. For Washington, this option is designed to schedule the all-species season at the time of peak pink abundance in order to maximize catch and poundage yields of both coho and pink salmon.

Troll Option 4 - For California, this option is very similar to what was adopted for the 1982 season except that the mid-season closure north of Cape Vizcaino would be only two weeks rather than three. This would increase the impacts on depressed Klamath River natural chinook stocks over 1982 and would have a considerably greater impact than Options 2 or 3.

For Oregon south of Cape Blanco, the season is again similar to 1982 except the period June 1-15 is open to all-species rather than to chinook-only (special gear) as occurred in 1982. Thus, the impact on chinook would be about the same as in 1982 and would have a considerably greater impact than Option 2 and slightly greater than Option 3. For Oregon south of Cape Falcon, the historical May 1-31 chinook-only fishery would be authorized along with a June 1-15 chinook-only fishery between Cape Falcon and Cape Blanco. The all-species season opens on July 1 and would continue until the coho quota is reached. A chinook-only fishery with special gear would be allowed after the coho quota is met until September 8. Chinook-only without gear restrictions would continue from September 9-October 31.

For the area north of Cape Falcon to the Washington/Canada border, the historical May 1-31 chinook-only season would be authorized along with a June 1-15 special chinook-only fishery using special gear (whole bait and 5-inch minimum plugs). This special season would occur only if late seasons restrict chinook fishing areas or times. There would be a short season from July 16-31 with a catch ratio of one chinook to one coho. The all-species season south of Split Rock and north of Carroll Island would begin on August 7 and continue until the coho quota was reached. There would be no all-species season after July 31 between Split Rock and Carroll Island.

Recreational Options

Option 1 (1982 Adopted)

		California	
Entire state	all salmon	2-fish bag limit	Feb. 13-Nov. 14
		Oregon	
Cape Blanco to OR/CA Border	all salmon	2-fish bag limit	May 29-coho quota
	all salmon except coho	2-fish bag limit	coho quota-October 31
Cape Falcon to Cape Blanco	all salmon except coho	2-fish bag limit	May 29-June 11
	all salmon	2-fish bag limit	June 12-coho quota
		Washington and Oregon	
Cape Falcon to Leadbetter Point	all salmon	2-fish bag limit	June 12-coho quota
North of Leadbetter Pt.	all salmon except coho	2-fish bag limit	May 29-June 11
	all salmon	2-fish bag limit	June 12-coho quota

Option 2

		California	
Entire state	all salmon	2-fish bag limit	Feb. 12-Nov. 13
		Oregon	
Cape Blanco to OR/CA Border	all salmon	2-fish bag limit	June 18-coho quota
	all salmon except coho	2-fish bag limit	coho quota-October 31
Cape Falcon to Cape Blanco	all salmon	2-fish bag limit	June 18-coho quota[a/]
		Washington and Oregon	
Cape Falcon to Leadbetter Pt.	all salmon except coho	2-fish bag limit	May 28-June 12[b/]
	all salmon	2-fish bag limit	June 18-coho quota[a/]
No. of Leadbetter	all salmon except coho	2-fish bag limit	May 28-June 12
	all salmon	2-fish bag limit[c/]	July 23-coho quota[a/]

Option 3

		California	
Entire state	all salmon	2-fish bag limit	Feb. 12-Nov. 13
		Oregon	
Cape Blanco to OR/CA Border	all salmon	2-fish bag limit	July 9-coho quota
	all salmon except coho	2-fish bag limit	coho quota-October 31
Cape Falcon to Cape Blanco	all salmon	2-fish bag limit	July 9-coho quota[a/]
		Washington and Oregon	
Cape Falcon to Leadbetter Pt.	all salmon	2-fish bag limit	July 9-coho quota[a/]
No. of Leadbetter	all salmon	2-fish bag limit[c/]	Aug. 13-coho quota[a/]

Option 4

		California	
Entire state	all salmon	2-fish bag limit	Feb. 12-Nov. 13
		Oregon	
Cape Blanco to OR/CA Border	all salmon	2-fish bag limit	May 28-Sept. 5
	all salmon except coho	2-fish bag limit	Sept. 6-Oct. 31
Cape Falcon to Cape Blanco	all salmon	2-fish bag limit	May 28-Sept. 5
		Washington and Oregon	
Cape Falcon to Leadbetter Pt.	all salmon except coho	2-fish bag limit	May 28-June 12[b/]
	all salmon	2-fish bag limit	June 18-coho quota[a/]
No. of Leadbetter	all salmon except coho	2-fish bag limit	May 28-June 12
	all salmon	2-fish bag limit[c/]	July 23-coho quota[a/]

---

a/ Or September 18.

b/ No recreational fishing would be allowed in a conservation zone in the vicinity of the Columbia River mouth between 46°18'00"N latitude and 46°11'10"N latitude from buoy 10 to 200 miles seaward.

c/ 3-fish bag limit north of the Queets River, only 2 of which may be chinook or coho.

Troll Options

Option 1 (1982 Adopted)

California

		(Dates are inclusive)
South of Pt. Arena	all salmon except coho	April 22-May 24
	all salmon	May 25-June 15
	all salmon	July 1-Sept. 30
North of Pt. Arena	all salmon except coho	May 1-May 24
	all salmon	May 25-June 8
	all salmon	July 1-Sept. 30

Oregon

Cape Blanco to OR/CA Border	all salmon except coho	May 1-May 31
	all salmon except coho (spec. gear)	June 1-June 8
	all salmon	July 1-coho quota
	all salmon except coho (spec. gear)	coho quota-Sept. 5
	all salmon except coho	Sept. 6-Oct. 31
Cape Falcon to Cape Blanco	all salmon except coho	May 1-May 31
	all salmon except coho (spec. gear)	June 1-June 15
	all salmon	July 1-coho quota
	all salmon except coho (spec. gear)	coho quota-Sept. 5
	all salmon except coho	Sept. 6-Oct. 31

Washington and Oregon

Leadbetter Pt. to Cape Falcon	all salmon except coho	May 1-May 31
	all salmon	July 1-coho quota
North of Leadbetter Pt.	all salmon except coho	May 1-May 31
	all salmon	July 15-coho quota

Option 2

	California	
South of Cape Vizcaino	all salmon	June 1-August 31
North of Cape Vizcaino	all salmon	July 1-August 31[a/]
	Oregon	
Cape Blanco to OR/CA border	all salmon	July 16-July 22[b/]
	all salmon	August 1-coho quota
	all salmon except coho (special gear)	coho quota-September 4
	all salmon except coho	September 5-September 15
Cape Falcon to Cape Blanco	all salmon except coho	May 16-June 15
	all salmon	July 16-July 22[b/]
	all salmon	August 1-coho quota
	all salmon except coho (special gear)	coho quota-September 4
	all salmon except coho	September 5-October 31
	Washington and Oregon	
Leadbetter Point to Cape Falcon	all salmon except coho	May 16-June 15
	all salmon	July 16-July 22[b/]
	all salmon	August 10-coho quota
Cape Alava to Leadbetter Point	all salmon except coho	May 16-June 15
	all salmon	July 16-July 22[b/]
North of Cape Alava	all salmon except coho	May 16-June 15
	all salmon	July 16-July 22[b/]
	all salmon	August 10-coho quota

Option 3

	California	
South of Cape Vizcaino	all salmon except coho	May 16-May 31
	all salmon	June 1-August 31
North of Cape Vizcaino	all salmon	June 1-August 31[a/]
	Oregon	
Cape Falcon to OR/CA border	all salmon except coho	May 1-May 31
	all salmon except coho (special gear)	June 1-June 15
	all salmon	July 11-coho quota
	all salmon except coho (special gear)	coho quota-September 4[c/]
	all salmon except coho	September 5-October 31
	Washington and Oregon	
Leadbetter Point to Cape Falcon	all salmon except coho	May 1-May 31
	all salmon	August 10-August 16[b/]
	all salmon	August 22-coho quota
Cape Alava to Leadbetter Point	all salmon except coho	May 1-May 31
	all salmon	August 10-August 16[b/]
North of Cape Alava	all salmon except coho	May 1-May 31
	all salmon	August 10-coho quota

Option 4

	California	
Entire state	all salmon except coho	May 1-May 31
	all salmon	June 1-June 15
	all salmon	July 1-Sept. 30
	Oregon	
Cape Blanco to OR/CA border	all salmon except coho	May 1-May 31
	all salmon	June 1-June 15
	all salmon	July 1-coho quota
	all salmon except coho (special gear)	coho quota-Sept. 8
	all salmon except coho	Sept. 9-Oct. 31
Cape Falcon to Cape Blanco	all salmon except coho	May 1-June 15
	all salmon	July 1-coho quota
	all salmon except coho (special gear)	coho quota-Sept. 8
	all salmon except coho	Sept. 9-Oct. 31
	Washington and Oregon	
Split Rock to Cape Falcon	all salmon except coho	May 1-May 31
	all salmon except coho (special gear)	June 1-June 15[d/]
	one-to-one catch rates of coho to chinook (special gear)	July 16-July 31
	all salmon	Aug. 7-coho quota
Carroll Island to Split Rock	all salmon except coho	May 1-May 31
	all salmon except coho (special gear)	June 1-June 15[d/]
	one-to-one catch ratio of coho to chinook (special gear)	July 16-July 31
North of Carroll Island	all salmon except coho	May 1-May 31
	all salmon except coho (special gear)	June 1-June 15[d/]
	one-to-one catch ratio of coho to chinook	July 16-July 31
	all salmon	Aug. 7-coho quota

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a/ California north of Cape Vizcaino will close to coho fishing when the total California catch of coho reaches a certain percentage of the total OPI troll quota before either July 31 or August 31.

b/ Season for all salmon would close if quota for area is reached.

c/ For the area between Cape Blanco and Cape Falcon, "all salmon except coho" fishing with special gear is not permitted until after August 1.

d/ All salmon except coho (whole bait and 5-inch minimum plugs) only allowed if later season restricts chinook areas or times.

CONSIDERATION OF IN-SEASON MANAGEMENT

Decision Process

Prior to application of in-season management, the mechanism for review and decision-making processes needs to be precisely 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, at the same time recognizing that, where practical, a 48-hour notice of closure will be provided to the industry.

In-season management procedures implemented during previous seasons have proven to have several serious deficiencies that require correction in 1983. Most of these deficiencies are directly related to restrictive management regimes adopted in response to depressed stock status conditions. Computerized catch data are compiled from landing tickets as rapidly as feasible, but weekly statistics have not been available until the following Thursday morning. Such a data lag is excessive for timely management action necessary to meet Council objectives. State agencies have therefore relied upon telephone surveys of fish buyers and preliminary hand tallies of fish tickets to obtain information necessary for decision-making. Incorporation of preliminary data into the computerized reporting system would require extensive correction and could increase public confusion. Procedures to more frequently update computerized coast-wide catch data are being investigated for possible application in 1983.

Because of the short length of recent all-species seasons, the necessity for estimating daily harvests has become particularly acute. In addition to the difficulty of obtaining catch data from landing tickets, the presence of significant numbers of trip boats in the fishery poses an additional catch estimation problem since these vessels may not land until after the season is closed.

The Regional Director of NMFS, the Council Chairman, and appropriate state fishery directors would be consulted regarding management actions necessary to meet the Council's objectives.

Quotas

In-season management for 1983 could consist of quotas (either fixed or adjustable) for various management areas and species. Under any quota system, in-season changes in the bag limit might or might not be allowed. These quotas would be established by the Council after receiving recommendations from the Salmon Team and advice from the SSC and the Salmon Advisory Subpanel. If quotas are chosen for use in 1983, it may be necessary to consider a projection scheme which can take into account any unanticipated fisheries in state waters.

Coho Quotas

Coho quotas will need to be developed for any of the recreational and/or troll options presented in this 1983 Plan.

In-season coho management in 1983 will consist of basically fixed quotas with the possibility of in-season adjustments for the following reasons:

1. Changes from preseason estimates of private hatchery contribution for the OPI area quotas.

2. Allowances for unanticipated loss of shakers during the season.

3. Allowances for loss of shakers during an all-salmon-except-coho season.

4. Adjustments between fisheries and areas depending on performance toward catching the total allowable harvest.

Allowable harvest levels are anticipated to remain at low levels in 1983. The short season expected in 1983 will require improvement and refinement of fishery monitoring and in-season closure procedures. The Council's desire to provide 48-hour closure notice where practical places further demands on harvest managers to develop and implement monitoring systems which provide adequate protection of the resource. Several alternatives exist for in-season quota assessment:

1. Daily troll fishery monitoring - Summaries of daily troll coho landings should be obtained directly from commercial buyers in 1983. These data can be collected by existing fishery sampling crews from fish dealers at key landing ports and through telephone contacts with buyers in other areas. The state agencies currently are refining such procedures for the 1983 season.

2. Trip boat monitoring - While daily troll landings can be computed rapidly during the season, estimating potential trip boat landings in the event of closure ("fish on the water") can be difficult. Trip boat monitoring programs in 1983 should consist of aerial counts and daily estimates of average trip boat catch-per-day-fished from dock sampling interviews. Problems which should be anticipated for such a program include: (a) poor aerial visibility (fog); and (b) the question of whether trip boat landing samples (from fishing activity which may have occurred up to a week earlier) are representative of actual fishing success at the time samples are collected. The state agencies are currently refining such procedures for the 1983 season.

   An alternative monitoring program would be to incorporate a split season concept, where trollers fish from five to seven days and then are required to land. Landing estimates for the period fished would be made prior to scheduling or opening the next fishing period. While this approach could be practically applied in 1983, open and closed fishing periods would have to be coordinated between quota areas to avoid a transfer of landings. Otherwise the whole intent of the split season concept would be subverted.

3. Recreational fishery monitoring - State agencies currently have intensive recreational fishery sampling programs which enable daily estimates of in-season ocean harvest. These estimates normally are compiled on a weekly basis until fisheries begin to reach their respective quotas.

4. Estimates of private hatchery contribution in OPI - Specific technical procedures for estimating in-season contribution of private hatchery coho to the OPI area needs to be outlined prior to the 1983 season. Techniques available are: (a) scale analysis for accelerated release types; and (b) coded-wire tags. ODFW is currently reviewing procedures and criteria for making 1983 in-season adjustments for private hatchery contributions.

5. Treaty Indian and non-Indian quotas north of Cape Falcon - Independent quotas for treaty Indian and non-treaty fisheries north of Cape Falcon will be developed in 1983 to meet requirements for spawning escapement and treaty obligations in a manner consistent with inside:outside allocation objectives. The quota for treaty ocean fisheries would be initially defined as the maximum allowable ocean harvest that could be permitted while achieving spawning escapement goals and treaty allocation requirements for the weakest stock unit. This quota could be adjusted downward as a result of intertribal allocation agreements.

6. North of Leadbetter Quotas - Area 4B - Preliminary WDF analysis of 1982 coded-wire tag data indicates that contribution of non-Puget Sound and Canadian coho groups in the Cape Flattery area, inside and outside the Bonilla-Tatoosh line, are similar during July and August. Stock composition appears to be the same in area 4B and adjacent ocean waters until the primary entrance of Puget Sound-origin coho, during the first week of September. In 1983, the recreational and troll quotas north of Leadbetter Point will include catches in area 4B (Strait of Juan de Fuca - Bonilla-Tatoosh line to Sekiu River).

Chinook Quotas

A comprehensive discussion of the quota concept was presented in the 1980 and 1981 amendments. These discussions are still relevant in 1983 but do need some expansion relative to the development of a chinook quota.

A technique has yet to be developed to accurately predict the abundance of chinook available to the ocean fisheries in any single year. This is in contrast to abundance predictions which are made each year for coho. 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. Additionally, there is a lack of information available relating to stock distribution for several major chinook stocks. Quotas must also reflect the status of stocks present in the area to which the quota is applied. Under these circumstances, a quota may result in higher than desirable harvest rates on runs that are weaker than anticipated, or lower than desirable harvest rates on runs that are stronger than anticipated.

Quotas are used as direct controls on harvests to achieve specific management objectives for escapement from ocean fisheries. 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.

Harvest ceilings could be employed to limit chinook catches within a specified season. Although similar in concept to quotas, harvest ceilings are not necessarily designed to achieve a specific management goal such as a given escapement, but rather to constrain catch to a level that minimizes the risk of overfishing due to unexpectedly high availability or effort. Time-area closures would remain the principal means of regulating fisheries, but harvest ceilings would provide direct means of constraining catches to acceptable levels within a given season. The distinction between harvest ceilings and quotas is not clear in practical application and the terms are frequently used interchangeably.

Despite the problems outlined above, quotas or harvest ceilings could be developed for chinook salmon management. However, unlike the current use of a quota for coho, the chinook quota or harvest ceiling could not be based upon the current year's forecasted abundance. This quota or harvest ceiling would be developed through use of recent harvest and escapement numbers, analysis of trends in these parameters, and other factors such as environmental conditions and parent-brood spawning escapements or hatchery production levels. Such an analysis was presented for the California ocean fishery in the 1980 Amendment. The chinook quota or harvest ceiling implemented in California in 1981 was based on a similar analysis. This method was also used by the North Pacific Fishery Management Council in 1981 and 1982 for the southeast Alaskan chinook fishery.

No Quotas

Having no quotas at all, either fixed or adjustable, of course, is another alternative. Under this alternative, seasons would be set based on the pre-season estimates of stock strength and projections of ocean harvest and effort. This sytem would have the advantage of being less costly, less demanding of data requirements, and simpler to understand. Fisheries regulation without quotas, however, could be the least accurate of available alternatives and could place the achievement of spawning escapements and treaty obligations at greater risk. Reliance upon indirect measures to control harvest, such as time-area closures, could also require the need for more conservative seasons in order to compensate for possible errors.

COHO ALLOCATION FOR 1983

OPI Area

The Council directed that, in 1983, allocation between the troll and recreational fisheries in the Oregon Production Index area (OPI) should be based on a sliding scale which relates percentage catch to abundance. A sliding scale allocation plan does not consider a fixed level of fish allocation year after year to either troll or recreational fishermen but simply allocates annually to each user group a share based on their historical fishing performance at different levels of allowable coho harvest. Figure IV-22 illustrates this concept using both the troll and recreational fishery's share of the harvest for different allowable catches during the 1962-78 period for the entire OPI area.

The Council also directed that the OPI should be managed for subareas north and south of Cape Falcon with the overall allowable catch divided into separate quotas for these subareas, but with the total overall OPI quota being the governing factor. Tables IV-19 and IV-20 show the coho allocation for the Columbia River area and the area south of Cape Falcon at various levels of allowable catch using the 1962-78 sliding scale approach. Allowable catches have been divided north and south of Cape Falcon based on the 1982 preseason division of 24% and 76%, respectively.

The above referenced tables also indicate the suggested seasons at various levels of allowable catch. It is anticipated that the harvest of the troll fishery allocation will occur with a quota and seasons will be variable depending on management objectives. For the recreational fishery, suggested season opening dates are presented at various levels of allowable catch. These recreational opening dates are based on average catch information at various levels of allowable harvest and are designed to provide some reasonable assurance, but no guarantee, that the fishery will extend through Labor Day (September 5).

For levels of catch expected in 1983, the opening date would be approximately June 18 based on the 1979-82 average catch pattern. The data in these tables are based on average conditions and for any particular year could vary considerably from these results. Furthermore, changes in fishing pattern or effort would affect the results which are shown. The season will close at the time the quota is reached regardless of allocation considerations. In order to better assure a season extending through Labor Day, opening dates would need to be more conservative to allow for the maximum variation that might occur in the catch. Based on the maximum variation in recreational catches (due to effort increases and fish availability), the conservative minimum fixed season opening date should be delayed until July 9 at the levels of allowable catch expected in 1983. The later opening date would increase the likelihood of reaching Labor Day; however, if the recreational quota is met earlier or later the season will close at the time the quota is reached.

The discussion concerning recreational season opening dates for 1983 is based on levels of allowable catch observed in recent years. Season opening dates may vary after OPI stock size is determined and the actual allowable catch for 1983 is calculated.

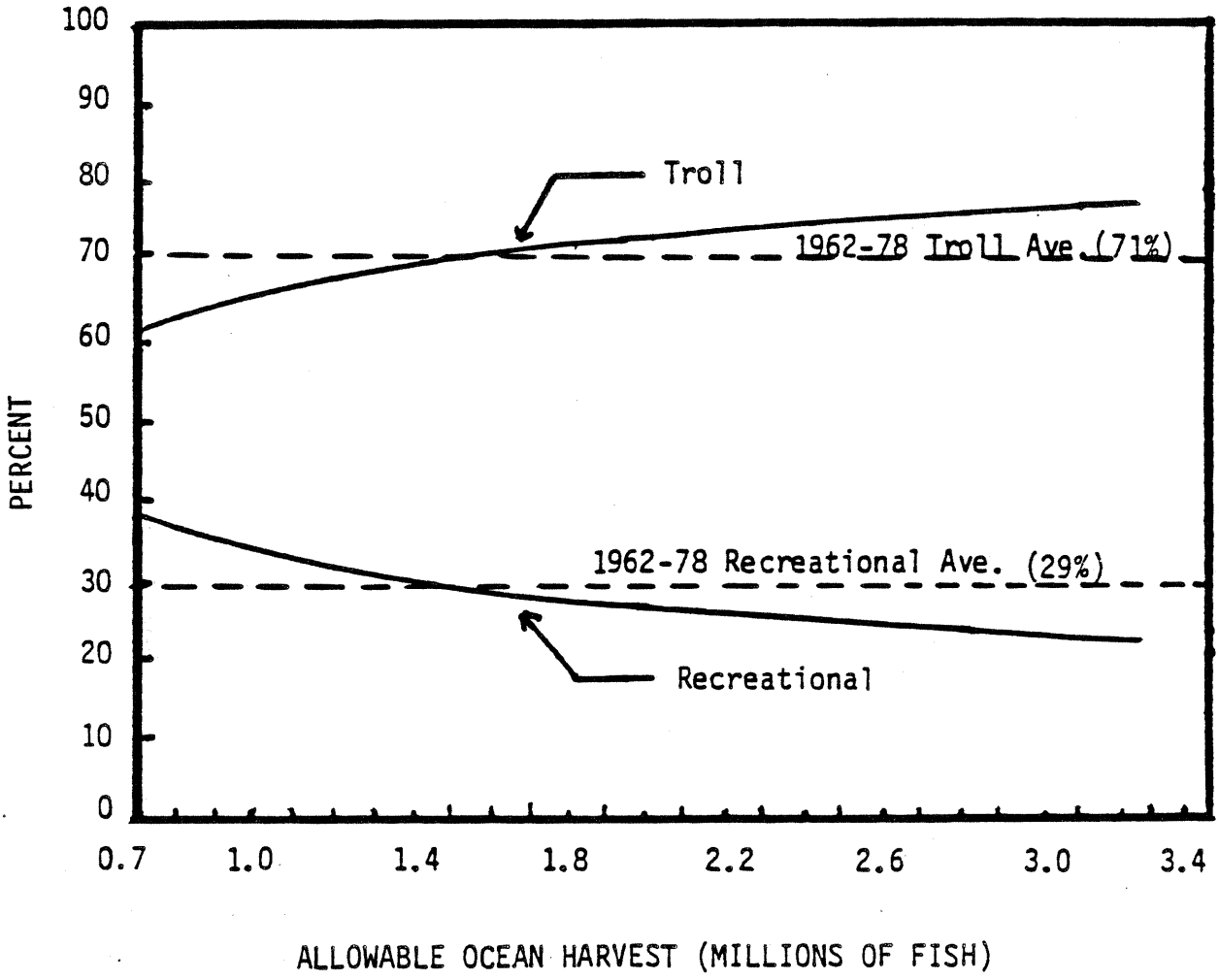

Figure IV-22. Sliding scale allocation for ocean troll and recreational coho fisheries based on historic share to each user in Oregon Production Index (OPI) area.

Table IV-19. Coho allocation and suggested season using the 1962-78 sliding scale approach for the Columbia River area.

Seasons/ Allocations	Total Allowable OPI Ocean Coho Harvest (thousands) 600	1,000	1,400	1,800	2,200	2,600	3,000	3,400
	Total Allowable Ocean Coho Harvest in the Columbia River Area (thousands)[a/]							
	144	240	336	432	528	624	720	816
	Troll							
Percent Allocated	18	31	37	42	46	49	51	53
Total Number Allocated (thousands)	26	74	124	181	243	306	367	432
Suggested Season[b/]	(Managed with quota)							
	Recreational[c/]							
Percent Allocated	82	69	63	58	54	51	49	47
Total Number Allocated (thousands)	118	166	212	251	285	318	353	384
Suggested Season Opening Date	7/16	6/25	6/4	5/14	5/14	5/14	5/14	5/14
Estimated Season Closing Date[d/]	9/5	9/5	9/5	9/30	9/30	9/30	9/30	9/30

a/ Derived by using the 1982 preseason division of 24 and 76 percent of the total allowable OPI ocean harvest north and south of Cape Falcon, respectively.

b/ Season will close when allocation is met; season associated with quota can vary depending on management goals.

c/ Assumes two-fish daily bag.

d/ Season closing date is an estimate of when the allocation will be met. If the allocation is filled earlier or later, the season will close accordingly.

Table IV-20. Coho allocation and suggested season using the 1962-78 sliding scale approach for areas south of Cape Falcon.

Seasons/ Allocations	Total Allowable OPI Ocean Coho Harvest (thousands) 600	1,000	1,400	1,800	2,200	2,600	3,000	3,400
	Total Allowable Ocean Coho Harvest South of Cape Falcon[a/] (thousands) 456	760	1,064	1,368	1,672	1,976	2,520	2,890
				Troll				
Percent Allocated	74	78	80	81	83	84	84	85
Total Number Allocated (thousands)	337	593	851	1,108	1,388	1,660	2,117	2,457
Suggested Season[b/]				(Managed with quota)				
				Recreational[c/]				
Percent Allocated	26	22	20	19	17	16	16	15
Total Number Allocated (thousands)	119	167	213	260	284	316	403	434
Suggested Season Opening Date	7/16	6/25	6/4	5/14	5/14	5/14	5/14	5/14
Estimated Season Closing Date[d/]	9/5	9/5	9/5	9/30	9/30	9/30	9/30	9/30

a/ Derived by using the 1982 preseason division of 24 and 76 percent of the total allowable OPI ocean harvest north and south of Cape Falcon, respectively.

b/ Season will close when allocation is met; season associated with quota can vary depending on management goals.

c/ Assumes two-fish daily bag.

d/ Season closing date is an estimate of when the allocation will be met. If the allocation is filled earlier or later, the season will close accordingly.

North of Leadbetter Point

For the area north of Leadbetter Point, the ratio of troll to recreational coho catch is 63:37 based on the 1971-75 average. The team has calculated two different opening dates for this recreational fishery. The first date is based on average conditions from 1979-82 and, thus, on the average would give some assurance of the season continuing through Labor Day. The second date is based on 1982 weekly catch and would give a greater probability of reaching the Labor Day weekend. Assuming that coho abundance in this area will be somewhat less than in 1982, the starting date should not be before August 13 based on the most conservative estimate or before July 23 based on average conditions. Again, it should be pointed out that the quota would be the governing factor and the season would close when the quota was reached regardless of whether it was before or after Labor Day.

A sliding scale allocation scheme between troll and recreational users could also be applied in the area north of Leadbetter Point if a suitable relationship can be developed. Analyses will be undertaken by WDF to determine if there is a historical basis for such an allocation scheme.

OTHER 1983 MANAGEMENT CONSIDERATIONS

OTHER REGULATION CONSIDERATIONS

All other regulations in effect for 1982 would also apply in 1983 (e.g., minimum size limit; prohibition of net fishing for salmon in the FCZ; prohibition of steelhead retention by trollers; use of barbless hooks during the chinook-only seasons in the troll fishery; and retention of heads on marked salmon caught by freezer boats).

In the discussion of specific options, all reference to the early season was with respect to a chinook-only fishery. The intent is that this early fishery as well as the late season chinook-only fishery should be open to all salmon species except coho.

At its November 1982 Monterey meeting, the Council instructed the team to evaluate a list of various management measures and policies which it is considering for 1983. The team has had time to address several of these items in some detail as outlined below. A summary of the Council's guidance on issues for the 1983 amendment is presented in Appendix C.

1. Troll Coho Allowances off Washington - The troll industry has proposed a July chinook-only fishery north of Cape Falcon which would provide an allowance to land one coho per chinook to lengthen the season and reduce wastage. Two issues must be addressed in this proposal: (1) increased chinook harvest versus allowable chinook harvest relative to impacts on depressed stocks; and (2) coho shaker mortality.

   In recent years, Washington ocean harvests of depressed Columbia River chinook stocks have been reduced through restriction of all-species seasons and fishing effort designed to address coho conservation needs and treaty allocation requirements. Recent discussions between U.S. and Canada have outlined 1983 Canada and Alaska fishing regimes to increase depressed coast-wide chinook spawning escapements. This agreement would require that northern savings of upper Columbia River chinook stocks would be transferred principally to spawning escapements. Any increased chinook harvest rates off the Washington coast, especially in July and August, in 1983 would conflict directly with U.S./Canadian fishing plan. In contrast, some reduction in 1983 Washington ocean chinook harvest rates may be required to meet the intent of this plan.

   The SPDT estimates that a July troll chinook-only fishery in 1983 would harvest approximately 75,000 chinook, which would represent a 22% increase over the 1978-1982 average total troll harvest. If provisions for troll coho allowance and chinook/pink fisheries were extended through August, an estimated 110,000 troll chinook (July and August total) would be landed, which would represent a 30% increase over the 1978-1982 average.

   In addition to the chinook harvest issue, the team would have serious concerns about coho shaker wastage during target chinook/pink fisheries, even with a coho allowance. During 1978 through 1982 the average ratio of coho:chinook off the Washington coast was 6.5:1 in July and 9.9:1 in August. Under the coho allowance proposal, five to nine coho would have to be released for each chinook caught assuming no selective fishing

capability. Under this scenario, the troll coho quota, in terms of fish landed and shaker mortality, could be taken in a July chinook fishery with two-thirds of the quota being shaker mortality and no potential for pink harvest.

The potential for selective capability is difficult for the team to assess at this time. No gear restrictions were provided for in the proposal.

2. Columbia River Chinook Conservation Zone - The recreational industry has proposed the establishment of a "conservation zone" off the Columbia River mouth to make an early season recreational chinook-only fishery a viable option for 1983 in this area. In 1982 the Council rejected a recreational chinook-only fishery off the Columbia River mouth due to concerns for both chinook and coho shaker mortality. In addition, the U.S. Department of Commerce preempted state of Oregon regulations for a May 29-June 11 chinook-only fishery in Oregon state waters north of Cape Falcon due to the same concerns. A May troll chinook-only fishery has operated in the same area during past years.

   Historical data indicate that the Columbia River mouth area has high concentrations of immature feeding chinook. Prior to 1976, when the recreational size limit in the area was 20-inches, over half of Washington's chinook catch landed at Ilwaco was in the 20- to 24-inch size range. In 1976, the recreational fleet reacted to the chinook new size limit restriction by moving offshore to fish concentrations of coho salmon.

   Troll logbook data from 1970 and 1971 also indicated high incidence of chinook shakers off the Columbia River mouth relative to the remainder of the Washington coast. When the 28-inch size limit was instituted in 1978, Columbia River troll effort was expected to shift to other areas of the coast. While this effort response occurred initially, May Columbia River troll effort has increased in 1981 and 1982.

   The team does not have access at this time to sufficient shaker information by subarea between Cape Falcon and Leadbetter Point to determine whether a conservation zone could be established off the Columbia River to protect chinook and coho shakers during a target chinook fishery. Further evaluation of the potential will be considered as data permit. Some offshore area limitation would be essential to avoid coho. No specific comments can be made at this time on nearshore north/south restrictions. A large portion of the 1982 Westport recreational chinook-only effort did occur near Leadbetter Point with relatively low shaker incidence.

   The team would like to emphasize that aside from potential shaker problems, recreational chinook-only fishery options need to be carefully evaluated relative to expected increases in total chinook harvest north of Cape Falcon.

3. Recreational Chinook-Only Seasons North of Cape Falcon - The team has not incorporated any recreational chinook-only fisheries into the 1983 regulatory options. While such fisheries may be viable for certain areas relative to shaker concerns, any directed chinook fisheries north of Cape Falcon will need to be carefully evaluated relative to potential increases

in 1983 chinook harvest. Recent discussions between U.S. and Canada have outlined 1983 Canada and Alaska fishing regimes to increase depressed coast-wide chinook spawning escapements. This agreement would require that northern savings of upper Columbia River chinook stocks would be transferred principally to spawning escapements. Any increases in chinook harvest rates off the Washington coast in 1983 could conflict directly with the U.S./Canada fishing plan.

Recreational chinook-only fisheries could be evaluated with any of the 1983 options listed in the 1983 draft PFMC plan. Criteria would be shaker impacts and total allowable chinook harvests. Coho shaker losses would also require later openings of all-species seasons.

4. Recreational 1+1 Bag Limits - The Council asked the team to evaluate possible impacts of a 2-fish recreational bag limit, only one of which may be a coho, as a means to extend recreational fishing time. This measure would equate to a form of directed chinook fishery since the average ratio of coho to chinook in most Oregon and Washington coastal areas exceeds 2:1 and has ranged as high as 20-30:1 in some months in recent years. The team is concerned with shaker wastage under this bag limit option, especially in areas where coho cannot be avoided (Columbia River mouth, 1982). In areas where coho sorting would be high, coho mortality actually could exceed the numbers caught under a straight 2-fish bag limit. The impact of target chinook effort would require complete evaluation, particularly north of Cape Falcon. The use of barbless hooks should not be expected to substantially reduce coho shaker mortality.

5. Selective Pink or Sockeye Fisheries - The team is currently evaluating the potential for selective troll pink or sockeye fisheries off the Washington coast to determine if commercial or experimental fisheries could be justified in 1983.

6. May Chinook-Only Fishery North of Cape Falcon - Harvests during the May chinook-only fishery north of Cape Falcon, Oregon have been increasing substantially in recent years. The 1982 catch by this fishery was 73,500 chinook, well above the 1971-75 average.

   The predominant stocks impacted by this fishery are of Columbia River hatchery and Oregon coastal origin. However, it is estimated that approximately 3% of the catch consists of upper Columbia River summer chinook. In-river returns of this stock reached a record low of 26,600 in 1982, approximately 50% of the 1971-75 average (52,100). Spawning escapements for this stock have been in a steadily declining trend since 1971 even with elimination of all commercial in-river fisheries after 1973. The 1982 escapement count for summer chinook at Bonneville Dam was only 25% of the escapement goal. The primary areas of harvest for this stock are northern British Columbia and southeast Alaska.

   In late 1982, the United States and Canada were involved in final negotiations regarding a treaty limiting fishery interceptions. As part of this treaty, a coast-wide chinook conservation program is scheduled to be implemented in 1983. This conservation program involves substantial reductions in chinook harvests by Canadian and southeast Alaska fisheries and would require the Council to adopt regulations to ensure that savings

of depressed stocks resulting from reduced fisheries to the north would accrue principally to spawning escapement.

For 1983, the Council may consider direct management controls for any May chinook-only fishery to restrict the harvest of depressed Columbia River stocks.

7. May 1 Opening for California - Based on a preliminary analysis of catch and effort data, a May 1 chinook opening would likely necessitate a season closure prior to August 1 to make the desired progress towards meeting 1983 goals. In addition, a May 1 opening would cause unnecessary shaker losses since only about 50% of the maturing three-year-old chinook in California north of Cape Vizcaino reach the legal size limit of 26-inches by May 15. Poundage yields would also be reduced due to the harvest of fish with significant remaining growth potential. Coded-wire tag recoveries indicate that a May 1 opening would also have a greater impact on maturing four-year-old fish than a later opening.

8. Evaluation of the Use of Barbless Hooks as a Means to Extend the Coho Season - The use of barbless hooks by all troll fisheries would reduce coho mortality by less than 2% depending upon total recapture rates and would not provide sufficient savings to extend the season significantly. If barbless hooks had been employed during the all-species coho season off Oregon in 1982, for example, the total estimated savings would have amounted to a small fraction of the average daily catch.

   Similar information on the impact of barbless hooks in the recreational fishery is not currently available, but is is assumed that the reduction in hooking mortality would be of a similar magnitude as observed in the troll fishery.

9. Single Rod and Line Regulation for the California Recreational Fishery - Restricting California salmon anglers to a single rod and line would not assist measurably in meeting ocean management objectives. Any Council action on such gear limitations should be consistent with CDFG regulations.

10. Recreational Size Limit in California - California's current size limit for chinook and coho is 22-inches except one chinook or coho may be 20 to 22-inches. The team sees no biological or economical basis for this regulation. Chinook and coho salmon off California grow from 20- to 22-inches usually in a couple of weeks. As a result, relatively few salmon in the 20- to 22-inch range are actually landed. The team feels either a 20- or 22-inch minimum would help simplify the regulations. Any Council action should be consistent with CDFG regulations.

11. Whole Bait - Commercial trollers typically fish brightly-colored spoons and hootchies with flashers when targeting on coho. Whole bait is generally not used in commercial fisheries for coho because of high cost of the bait and lost fishing time from having to continually rebait hooks. Whole bait has been used as a management technique to minimize the incidental coho catch in the Oregon commercial all-species-except-coho fishery after the coho quota was met. The concept originated from a lure selectivity study that indicated whole bait was more selective for chinook

over coho than any of the other gear types tested except for 6-inch trolling plugs. It is noteworthy that the coho in the lure study were 17-24-inches in length whereas the coho in the Oregon all-species-except-coho fishery are much larger.

It is likely the selectivity of whole bait for coho diminishes as coho grow and are better able to take baited hooks. In the 1981 experimental troll fishery off the Columbia River mouth, whole bait was the most successful terminal gear for chinook and coho. No selectivity was indicated. Additional study of the selectivity of whole bait for larger-sized coho is needed in order that the merits of the Oregon whole bait fishery can be properly evaluated.

The troll fishery technique is of equal or greater importance in the application of bait in a chinook-only fishery. Selectivity depends on the combination of the gear used and fishing technique. Even though whole bait will not necessarily avoid coho, the technique of fishing for chinook is different than fishing for coho. Troll gear is fished slower and deeper when fishing for chinook which minimizes hooking of coho which are generally distributed nearer to the surface. Also fishing patterns change and trollers tend to concentrate their effort in areas of chinook abundance. Both of these factors; however, are dependent on the skill level and commitment on the part of the fisherman to avoid the unwanted species.

Oregon evaluated an experimental chinook-only fishery from June 16-30 in 1980 between Cape Falcon and Cape Blanco with gear limited to 6-inch minimum plugs and whole bait. The chinook to coho ratio in this fishery was 2.5:1. Assuming a 30% hooking mortality, the ratio of chinook caught to coho killed was 10:1 (ODFW Information Report Number 80-7).

The timing of the fishery and location of fishing is of equal importance in the use of whole bait in a chinook fishery and resultant total impact on coho. Fishing with selective gear should be designed at times and places where coho:chinook ratios are minimal. Paramount in this is also the total amount of fishing effort, since chinook-only fisheries off Oregon have resulted in reduced troll effort and reduced impacts on coho.

Economic tradeoffs must also be considered in determining the desirability of selective fisheries using whole bait or other gear types. If economic tradeoff favors the target species with minimal impacts on coho, such a fishery can be justified, if, without the fishery, surpluses of chinook would not be harvested.

The team would like to encourage the evaluation of chinook-only selective fisheries involving whole bait in future seasons. On-board observations coupled with comparison between conventional gear and whole bait should be included in the plan.

12. Common Recreational Size Limits for Oregon and Washington - Size limits have been a management tool used by the Council to help reduce fishery impacts on immature salmon stocks and increase ocean fishery escapements, where appropriate. Recreational size limits for Oregon and Washington fisheries should be based first on management needs and, secondly, simplifying regulations.

For chinook, management needs differ north and south of Cape Falcon. Columbia River stocks predominate in the area north of Cape Falcon, and WDF and the Council implemented a 24-inch recreational chinook size limit in 1976 and 1977, respectively, to increase returns of chinook to the river. In this case, common size limits for Washington and Oregon north of Cape Falcon are necessary for management consistency. If the size limit was reduced for this management area, other restrictive regulations would have to be enacted to maintain reduced impacts on Columbia River stocks. For Oregon, south of Cape Falcon, Oregon coastal chinook stocks predominate in the catch. The current status of these stocks allows more liberal size limit regulations than those north of Cape Falcon.

For coho, size limits have been adopted by the Council to eliminate the harvest of age 2 coho during the latter part of the season. The 16-inch total size limit separates immature age 2 from mature age 2 and age 3 coho. Stock differences would not vary enough to change the applicability of the size limit. A common 16-inch coho size limit for Washington and Oregon would represent a consistent management option with a sound biological basis.

13. Mixed Stock Fishery Management Criteria - The Council has no management guidelines for determining the maximum allowable impacts of depressed stocks in mixed stock ocean fisheries. Such criteria are essential for providing consistent, adequate protection for viable natural stocks experiencing conservation problems, while defining some level of acceptable incidental harvest.

Mixed stock criteria have been utilized in terminal area fisheries management to minimize the impacts on depressed natural stocks. For example, in 1982, the upper Columbia River natural fall chinook (bright) run was managed for no more than a maximum 10% incidental harvest during in-river chinook and coho fisheries. While this stock has been afforded protection off the Washington coast by reduced all-species seasons, no maximum allowable ocean impacts have been defined.

Other examples of depressed natural stocks which are experiencing mixed stock management problems under the Council's jurisdiction include upper Sacramento River fall chinook, Klamath River fall chinook, upper Columbia River summer chinook and Grays Harbor fall chinook. The proportion that these individual stocks represent in the ocean harvest in areas of key management concern may range from approximately 1.5% (Grays Harbor fall chinook) to 30% (Klamath River fall chinook). In some management areas, a number of relatively small depressed stocks may, in combination, represent a significant proportion of the total harvest.

While no specific mixed stock management criteria have been developed for ocean fisheries, terminal area management guidelines could provide a basis for developing ocean management guidelines. Two standards have been commonly used for determining maximum allowable impacts on depressed stocks in inside fisheries: (1) the proportion of a fishery's catch which represents stock(s) needing protection; and (2) the proportion of the stock's run size or escapement which would be impacted by the fishery.

Quantifying a specific numerical relationship would require consideration of total incidental fishery impacts on a stock throughout its range and the potential impact on the continued viability of a stock given various levels of incidental impact. Application of terminal area management mixed stock management concepts to ocean fisheries may be more difficult to implement and may require more refined methods of stock identification.

14. First 2-Fish Bag Limit - The daily bag limit for the Oregon recreational fishery south of Cape Falcon was changed in 1982 to the first 2-fish with no minimum size limit. Prior to 1982, minimum size limits of 16-inches for coho and 22-inches for chinook were in effect. The Oregon Department of Fish and Wildlife evaluated the first 2-fish concept in 1982 by random sampling of length frequency information from fish landed and determining the percentage of the catch less than 16-inches and 22-inches for coho and chinook, respectively. These data were compared with information on the number of fish hooked and released during the period 1979-81, when minimum size limits were in effect.

    The elimination of the minimum size limit increased recreational chinook catches but had no impact on coho catches. The chinook catch south of Cape Falcon was increased 18%, or 5,200 fish, over what it would have been with the 22-inch minimum size regulation in effect. The increase in catch observed in 1982 is less than the 30% increase in catch expected based on the 1979-81 hook and release information. Even though the new regulation increased chinook catches, they did not stop sorting of fish which probably will always occur to some degree irrespective of minimum size limits.

    In the Columbia River area, there was no change in the minimum size limit of 24-inches for chinook salmon and 16-inches for coho in 1982. Application of the first 2-fish concept in the Columbia River area with no minimum size limit would increase catches dramatically. Information on fish hooked and released from 1979-81 shows that 63% of the chinook hooked had to be released. In 1982, this percentage dropped to 46%. Based on the 1979-82 data, if the first 2-fish regulation were adopted in the Columbia River area, catches of chinook would increase by approximately 150%. Assuming that the mortality rate of chinook hooked and released is not excessive, a first 2-fish provision would impose significantly higher impacts on Columbia River chinook stocks. An alternative measure for reducing chinook shaker impacts would be to consider area closures in the vicinity of high shaker abundance.

    The regulation change would have little, if any, impact on coho catches, comparing potential sub-16-inch to total season coho catch. A high incidence of small coho would be expected in this area in late August through September when recruitment of age 2 coho occurs.

15. Puget Sound Pink Considerations - While Fraser River pinks are expected to be at above average abundance in 1983, preliminary expectations of Puget Sound pink stocks are for returns to Puget Sound below natural spawning escapement requirements. WDF's preliminary estimate of the proportion of Puget Sound pink in the 1983 ocean pink harvest will be approximately 6%.

Other management measures outlined in the 1978 Salmon Plan or in subsequent amendments could be considered for 1983.

TEAM CONCERNS ON 1983 MANAGEMENT

1. California Proposal for 1983 Management - The majority of the team has several serious concerns with the proposal presented by CDFG for ocean management in 1983. These concerns primarily relate to the following three issues presented in the CDFG proposal: (1) ocean escapement goals for the Klamath River; (2) natural stock rebuilding schedule (20% every four years); and (3) fixed seasons over a four-year period.

   The California proposal converts present adult fall chinook spawning escapement goals for the Klamath River system to in-river run size (ocean escapement goals) without any adjustment. What this effectively means is that the natural spawning escapement goal is being reduced by the level of the recent inside catches. Recent inside Indian and sport fisheries in the Klamath River have taken as many as 38,500 adult fall chinook (1981), 51% of the in-river run size in 1981. In 1982, in-river regulations on Indian harvest were geared to restrict the catch to a maximum of 30,000 (14,500 adults were caught). If an Indian catch limit and catch of this magnitude were to occur in the future and an average sport harvest of 5,000 were to occur, the Klamath River system escapement goal would effectively be reduced by 35,000 (30% of the long-term goal) under the California proposal.

   The PFMC Klamath River Task Force concluded that there was no basis to alter the Klamath River adult spawning escapement goal of 115,000. Thus, the team can see no basis for changing the present Klamath River spawning escapement goals to ocean escapement goals unless the figures are adjusted to account for in-river harvests.

   The natural stock rebuilding schedule (20% every four years) is another issue of concern to the team. The natural fall chinook stocks in the upper Sacramento and Klamath river systems have been severely depressed in recent years. If a 10% harvest rate by inside sport fisheries on the upper Sacramento River return and a 35,000 catch by inside Indian and sport fisheries in the Klamath were to occur as discussed above, the resulting adult spawning escapements for the next four years would average 59,200 for the upper Sacramento River and 33,900 for the Klamath River under the CDFG proposal. These spawning escapements represent 80% and 39% of the 1982 interim goals for upper Sacramento and Klamath rivers, respectively, and 60% and 29% of the present long-term optimum spawning escapement goals. For the Klamath River, in particular, an escapement of 33,900 for four years would be considerably less than the 1982 adult spawning escapement of 40,500, and slightly less than the 1979-82 base period average of 34,800. Actual in-river sport and Indian catches in the Klamath River have averaged 22,600 during the 1978-81 base period rather than the 35,000 figure used in the hypothetical example and spawning escapements would increase accordingly. However, in the absence of a specified inside catch limit, the team feels that the potential exists for in-river catches in the magnitude of 35,000, and this figure should be used in evaluating potential impacts to spawning escapements. The majority of the team feels that significant steps need to be taken in 1983 to provide greater spawning escapements through ocean fishery restrictions than would occur under the CDFG proposal and more quickly rebuild these runs to their full production potential.

Finally, the majority of the team questions the advisability of fixing the California ocean regulations for a four-year period. A fixed season for the recreational fishery would be no problem since recent seasons have only varied by a few days anyway; however, a fixed season for four years for the troll fishery causes great concern. While a four-year fixed season would provide stability to the troll fishery and the data base, the season would have to be very conservative or else management agencies must accept the risk of significant overharvest of the stocks during years of low stock abundance, high effort, high catchability, or any combination thereof. The majority of the team does not feel that this risk to the already depressed natural chinook stocks is worth the benefits that may result from fixing seasons for four-year periods. Management, especially in the case of depressed stocks, needs to be more responsive to yearly harvest patterns, catch distributions, effort patterns, abundance indices, etc., rather than less responsive.

2. Reduction of Impacts on Oregon Coastal Coho - Oregon coastal coho stocks are at depressed levels and regulatory regimes have been imposed since 1979 as part of the rebuilding program for these stocks to reach optimum spawning population levels by 1987. Coded-wire tag recoveries from 1980 and 1981 show that Oregon coastal coho are primarily distributed in the fisheries from central Oregon through northern California and regulatory regimes to protect these stocks must be directed at the above areas (Figure IV-22).

   In order to minimize impacts on Oregon costal coho stocks, it may be desirable to shift more of the allowable catch in the OPI area to management areas off the northern Oregon coast and the Columbia River. These latter areas contain higher concentrations of Columbia River hatchery coho and lower abundance of Oregon coastal stocks. A more northerly shift in the allowable coho catch within the OPI area would reduce impacts on Oregon coastal stocks and more efficiently harvest hatchery stocks, thereby reducing hatchery surpluses in the Columbia River. A transfer of OPI catches to northern areas to reduce impacts on Oregon coastal coho stocks would require reduced California and southern Oregon catches in 1983. This is important since a significant portion of Oregon coastal coho are distributed off the California and southern Oregon coast. In addition, coho fisheries to the south should be scheduled prior to mid-August, after which Columbia River hatchery coho migrate north; however, fisheries to the north could be programmed later.

   The aforementioned management strategy would require some reduction of catches north of Leadbetter Point, Washington to compensate for any increased impacts on Washington coastal coho stocks associated with increased catches in the Columbia River area. Additional modeling of stock distribution and fishery data are needed before the feasibility of such a management strategy can be fully evaluated.

3. Elimination of Ocean Commercial Fisheries for Chinook from September through April - The major fall chinook producers in the PFMC management area are the Columbia, Rogue, Klamath, and Sacramento river systems. Fall chinook populations spawning in these systems leave the ocean generally from mid-August through mid-September. Fall-run chinook supply the large majority of chinook harvested in ocean commercial fisheries in the PFMC management area.

Chinook salmon populations accrue weight at a greater rate than they die from natural causes throughout their lives in the ocean. It is in the best interest of the ocean commercial fishery, therefore, to target on chinook that will mature in the current year. In terms of optimizing fall chinook yield to the commercial fishery, ocean seasons should be set for fall chinook to close after the ocean escapement of most maturing stocks. The season should open at a time that will reduce shaker loss, and loss of potential growth dependent on the allowable harvest rate for individual stocks (i.e., consistent with spawning escapement needs).

From September through the following April, relatively few legal-sized chinook are available in ocean waters in the PFMC management area. Commercial fishing during this period results in high shaker losses and reduced yield of fish that would be caught next year, but at a much larger size. September-April commercial fishing is viewed by the team as being contradictory to the concept of maximizing ocean commercial fisheries for optimum yield.

4. Treaty Non-Treaty Allocations - Although meeting treaty Indian allocations is one of the major goals of Council management, since 1977 the concerned parties have not been able to agree on whether allocation requirements been met. This makes it impossible to determine whether this Council objective has been met in any year of Council management. This determination must be resolved as soon as possible.

SPECIFICATION OF OY FOR THE FISHERY

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

(1) the annual spawning escapement goals for natural and hatchery stocks, as adopted by the Council;

(2) the obligation to provide for treaty Indian harvest opportunity, as mandated by applicable decisions of the Federal courts;

(3) the requirements of the Indian subsistence fishery for chinook on the Klamath River;

(4) the allocation goals between or among ocean fisheries, as adopted by the Council;

(5) the allocation goals between other than treaty Indian ocean and "inside" fisheries, as recommended by the various states;

(6) other socioeconomic goals of the FMP and its amendments.

For the 1983 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 1983. 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 1983.

Recent discussions between U.S. and Canada have outlined 1983 Canadian and southeast Alaska fishing regimes to limit fishery interceptions and increase depressed coast-wide chinook spawining escapements (proposed U.S./Canadian treaty). This conservation program would require that northern savings of depresssed upper Columbia chinook stocks would be transferred principally to spawning escapements rather than accrue to southern fisheries. The proposed treaty is currently being reviewed by the various affected states, provinces and fishing interest groups before submission to the governments of the two countries.

V. SOCIOECONOMIC TRENDS IN THE OCEAN SALMON FISHERIES AND POTENTIAL SOCIOECONOMIC IMPACTS OF PROPOSED MANAGEMENT MEASURES

A great deal of descriptive socioeconomic background information was provided in Chapter V of the 1982 Salmon Plan Amendment and in Appendix B ("Social and Economic Description of the Salmon Fisheries") of the 1981 Salmon Plan Amendment. That information is generally still valid, and is therefore incorporated into this 1983 Amendment by reference. Chapter V of this 1983 Amendment is intended to update and expand on the initial information provided in the 1981 and 1982 Amendments, with newly available data.

TRENDS IN AVAILABLE SOCIOECONOMIC DATA

The Marketing of Salmon in 1982 -- an Overview

The salmon market has a very complex structure; multiple species are involved (chinook, sockeye, chum, coho, and pink), distinct product forms are demanded (fresh, frozen, canned, cured, smoked, roe) and different markets exist (domestic and international). Add to this the seasonality of the fishery, and the potential for marketing difficulties multiply.

Salmon must compete with other protein sources e.g., poultry, beef, and pork, for the consumer's dollar. As of late, Pacific salmon abroad is competing with Norwegian pen-reared salmon. Due to the strength of the U.S. dollar in Europe, Norwegian salmon is priced lower than some high grade Pacific troll-caught chinook. One of the most attractive aspects of this Norwegian product is that the fish, from salmon ranches in the Norwegian fjords, can be delivered, on order, fresh, well processed, and to size. Norwegian salmon is also imported to the U.S. during the off-season when fresh Pacific salmon is not as available. This importing has increased as of late. In fact, during the first six months of 1982, Norway sold $1.8 million worth of fresh and frozen salmon to the U.S. During the same period in 1981, only $10 thousand worth of salmon was purchased by the U.S. with $135 thousand worth purchased for the entire year. In June alone of 1982, $110 thousand worth of Norwegian salmon was sold in the states.

Salmon is traded internationally and therefore, fluctuating exchange rates, real income variations due to inflation, changes in the prices of inputs to production (labor, fuel, interest rates), and changes in consumer preferences affect the demand for and the price of salmon. The majority of the salmon landed and processed in the U.S. originates in Alaska and therefore events which affect Alaskan salmon have an impact on Washington, Oregon, and California markets as well. The 1982 Alaskan salmon season profile is characterized by some atypical marketing-factor conditions. These conditions may prevail for sometime and impact the salmon markets for fish landed in the lower states and therefore a review of these conditions is included:

1) The Botulism Scare and Canned vs. Frozen Salmon Product-mix Change

   The effects of the botulism scare are still echoing through salmon market channels. This event resulted in: the recalling of a significant percentage of the Alaskan canned salmon product; additional processor costs in inspecting and/or redesigning canning machinery; and, excess inventory holdings due to the drop in the demand for this product form.

Some Alaskan salmon which would have gone into a canned product form is now being sold in a fresh or frozen form. This product-mix change may have an effect on the price of fresh and frozen salmon from Washington, Oregon, and California, since large amounts of this product form originating in Alaska will be competing with salmon landed in the lower states.

2) Weakening of Foreign Currencies Relative to the U.S. Dollar

The yen weakened during the early part of the 1982 calendar year, to a greater extent than had been anticipated (from 220 yen per U.S. dollar to 252 yen per U.S. dollar). The net effect of these changes was a greater initial drop in the export demand for Alaska salmon, than had been forecasted, due to the decreased real purchasing power of this foreign currency. However, with the canned-to-frozen shift in product mix, U.S. salmon exports to Japan actually increased. In addition, the Japanese yen began to strengthen relative to the U.S. dollar during the end of the calendar year. These two events helped salvage the market for salmon. Table V-1 quantifies the financial importance of the Japanese market. In 1982, 84% of the total dollar value of U.S. salmon was exported to Japan. The bulk of this product was Alaskan sockeye.

Other foreign currency also experienced a decrease in exchange value. The British pound which declined relative to the U.S. dollar throughout 1982 (with the exception of slight gains in April and July) reached a two year low point in mid-October and then began regaining some ground in November. The French franc and the West German deutschemark followed similar trends.

3) Recessionary Trend in U.S. Economy

Salmon is viewed as a superior good and, therefore, decreased disposable personal income, low corporate profits, and double digit unemployment rates which have recently characterized the U.S. economy have tended to decrease the demand for the salmon product in this country.

4) Lower than Expected Salmon Supplies in Alaska

Although more salmon than initially anticipated was landed in Washington, Oregon, and California during 1982, the 20% decrease in actual vs. anticipated salmon landings in Alaska has had an effect on the overall market for salmon.

5) Alaskan Fishermen and Processors

Continuing price disputes between fishermen and processors in Bristol Bay and Prince William Sound during 1982 resulted in a decline in product and higher production costs. This should result in higher prices for both the canned and frozen product form, however, the botulism problem and the change in product-form demand cloud the issue and make quantifying the impact of these price problems difficult.

6) Preliminary Plan to Permit Foreign Ships in Alaskan Waters

Joint venture operations between Japanese and Korean processing vessels and U.S. fishermen during 1982 resulted in the transfer of 1.6 million salmon. Although this is only 1.5% of the total harvest of Alaskan salmon, these fish will compete with U.S. fish on the world market. Also, increased joint-venture activity in the future may have a depressing effect on U.S. salmon prices .

Specific Export Information

Information on fresh, chilled, and frozen salmon exports from U.S. West Coast customs districts is presented in Table V-2. Unfortunately, these data are only available by species for 1981 and 1982; in prior years, and for fillets, steaks, and portions in all years, all salmon species were grouped together. In 1982, chinook and coho comprised 28.6% of the total fresh, chilled or frozen, whole or eviscerated salmon exports from Washington, Oregon, and California. This represents an 18.8% increase over 1981 levels. A major portion of the exports from Seattle probably was comprised of Bristol Bay sockeye and other salmon from Alaska. It should be noted that fresh chilled or frozen sockeye salmon is exported from the U.S. in greater quantities than any other salmon species (Table V-1).

The value of West Coast exports of fillets, steaks, and portions exhibited a decreasing trend between 1979 and 1981, and in 1982 demand fell nearly 50% from 1981 levels. Chum salmon steaks reportedly have become more and more popular as a substitute for chinook and coho steaks, in recent years, because of improved quality and relatively low prices. Although the West Coast data supplied in Table V-2 does not show exports by species, Table V-1 provides this information on a national basis. An increase in demand for chum since 1981 by Japan and by other nations is documented by the data supplied in this table. A decrease in demand for chinook since 1981 is also indicated.

Some of the decrease in demand for fillets, steaks, and portions may represent a change in preference toward whole or eviscerated salmon. The value of this latter category was over 70 times the value of fillet, steak, and portions in 1981 and over 160 times the value of fillet, steak, and portions in 1982. Japan and France continue to be the major recipients of these salmon exports from the U.S. West Coast.

Ex-vessel Prices and Values

Seasonal Trends

California - California categorizes landing and catch data by the following areas:

1. Northern California: Crescent City, Eureka, and Fort Bragg
2. Central California: San Francisco and Monterey Bay

California coho and chinook prices were relatively stable all season in 1982. Northern California dealers paid fishermen an average price of $2.51 per pound for chinook and $1.36 per pound for coho. Central California

Table V-1. U.S. exports to Japan and to all nations, prior and current year by country through October 1982.

Species[a/]	October 1981 Pounds	October 1981 Dollars	October 1982 Pounds	October 1982 Dollars	Through October 1981 Pounds	Through October 1981 Dollars	Through October 1982 Pounds	Through October 1982 Dollars
				JAPAN				
Chinook	609,500	$1,444,500	19,500	$41,800	5,129,800	$11,695,300	2,731,600	$5,890,000
Chum	2,589,100	4,247,500	4,852,600	6,337,000	11,198,900	16,306,500	15,460,000	18,918,500
Pink	485,800	693,700	9,572,000	7,494,000	902,000	1,232,900	25,841,800	19,887,100
Sockeye	20,968,000	41,580,700	13,366,400	25,821,000	88,846,400	181,454,900	110,414,900	203,773,000
Other Salmon	2,338,900	4,343,000	6,043,000	9,763,800	14,208,100	23,046,200	27,001,600	42,356,300
Total	26,991,300	52,309,400	33,853,500	49,457,600	120,285,200	233,735,800	181,449,900	290,824,900
				ALL NATIONS				
Chinook	975,100	$2,779,800	185,900	$415,600	7,252,000	$18,440,800	3,657,500	$8,514,800
Chum	3,903,000	6,222,200	7,548,000	10,930,500	18,398,000	27,526,900	23,066,300	31,749,500
Pink	3,773,900	4,450,500	13,083,400	11,076,400	18,533,700	18,706,900	33,425,200	28,098,700
Sockeye	24,148,200	47,661,500	13,746,500	26,632,200	98,202,500	197,955,800	113,675,900	208,843,400
Other Salmon	5,212,200	11,014,900	9,968,200	18,221,400	28,021,200	49,286,200	38,862,300	65,865,500
Total	38,012,400	72,128,900	44,532,000	67,276,100	147,322,400	311,916,600	212,687,200	343,071,900
% of total purchased by Japan					82%	75%	85%	84%

a/ Fresh chilled or frozen.

Source: Fishery Market News, NMFS.

Table V-2. Fresh, chilled, and frozen salmon exports from U.S. West Coast customs districts, 1978-1982 (January-October).

Customs District	Fillets, steaks, and portions		Whole or eviscerated		Total
	Value (dollars)	Major Destinations[a/]	Value (dollars)	Major destinations[a/]	Value (dollars)
1982 (Jan.-Oct.)					
San Diego					
All species	$19,600	Mexico	$48,000	Mexico	$67,600
Coho only[b/]			41,500		
Los Angeles					
All species	88,800	Indonesia	342,500	Japan, Sweden	520,100
Coho only[b/]		Korea	125,800		
Chinook only			0	Japan	
San Francisco					
All species	401,300	France	15,360,100	Belgium/Luxemburg	15,761,400
Coho only[b/]		Japan	4,971,600	France	
Chinook only			469,100	Korea	
Portland					
All species	0		6,110,000	Japan	6,110,000
Coho only[b/]			847,600		
Chinook only			24,300		
Seattle					
All species	1,179,700	France	6,110,000	Japan	7,289,700
		Sweden		France	
		Japan		Canada	
		Canada		Sweden, Denmark	
		United Kingdom		United Kingdom	
Coho only[b/]			39,241,800		
Chinook only			3,652,300		
1982 WA/OR/CA Subtotal					
All species	1,689,400	France	170,634,800	Japan	172,324,200
		Japan		France	
Coho only[b/]			45,228,200		
Chinook only			4,145,700		
Anchorage					
All species	572,100	Japan	196,416,500	Japan	196,988,600
Coho only[b/]			28,353,200	Korea	
Chinook only			4,907,100		
AK/WA/OR/CA Totals					
All species	2,261,500	France, Sweden	367,051,400	Japan	369,312,900
		Japan, Canada		France	
Coho only[b/]			73,581,300		
Chinook only			9,052,800		
1981 (Jan.-Oct.)					
San Diego					
All species	$45,500	Mexico	$20,600	Mexico	$66,100
Coho only[b/]			15,700		
Los Angeles					
All species	42,800	Japan	1,008,400	Japan	1,051,200
Coho only[b/]			363,100		
Chinook only			334,000	Japan	
San Francisco					
All species	179,800	France	7,655,100	Belgium/Luxemburg	7,834,900
Coho only[b/]			3,286,100	Japan	
Chinook only			25,900		
Portland					
All species	136,300	Japan	4,054,200	Japan	4,190,500
Coho only[b/]			852,000		
Chinook only			159,100		
Seattle					
All species	4,059,400	France	169,462,600	Japan	173,522,000
		Sweden		France	
		Japan		Italy	
		Canada		West Germany	
		United Kingdom		Canada	
Coho only[b/]			35,442,500		
Chinook only			12,978,200		

Table V-2. (continued)

Customs District	Fillets, steaks, and portions: Value (dollars)	Fillets, steaks, and portions: Major Destinations[a/]	Whole or eviscerated: Value (dollars)	Whole or eviscerated: Major destinations[a/]	Total Value (dollars)
1981 WA/OR/CA Subtotal					
All species	$4,463,800	France, Sweden, Japan, Canada	$182,200,900	Japan France	$186,464,700
Coho only[b/]			4,516,900		
Chinook only			13,497,200		
Anchorage					
All species	0		147,307,700	Japan	147,307,700
Coho only[b/]			15,646,200		
Chinook only			6,811,600		
AK/WA/OR/CA Totals					
All species	4,463,800	France, Sweden Japan, Canada	329,508,600	Japan France	333,972,400
Coho only[b/]			55,605,600		
Chinook only			20,308,800		
1980 (all species)					
San Diego	4,800	Mexico	6,300	Mexico	11,100
Los Angeles	77,400	Sweden, Hong Kong	332,100	Japan, France	409,500
San Francisco	714,600	France, Venezuela	3,029,700	France, Japan Belgium/Luxemburg	3,744,300
Portland	136,300	France, Netherlands	1,952,400	France	2,088,700
Seattle	6,050,000	France, Canada Japan, West Germany Italy	128,004,500	Japan, France Canada, United Kingdom, Italy	134,054,500
WA/OR/CA Subtotal	6,983,100	France, Canada Japan, West Germany	133,325,000	Japan, France, Canada, U. K.	140,308,100
Anchorage	10,000	Japan	58,723,600	Japan	58,733,600
AK/WA/OR/CA Total	6,993,100	France, Canada Japan, West Germany	192,048,600	Japan, France, Canada, U. K.	199,041,700
1979 (all-species)					
San Diego	26,000	Mexico	42,800	Mexico	68,800
Los Angeles	20,700	Taiwan	493,600	Sweden, Australia United Kingdom	514,300
San Francisco	1,578,300	France, West Germany	3,373,100	France/Belgium Luxemburg	4,951,400
Portland	42,000	Japan	3,823,700	France, Netherlands, United Kingdom	3,865,700
Seattle	3,547,600	Canada, France Japan	166,975,800	Japan, France United Kingdom	170,523,400
WA/OR/CA Subtotal	5,214,600	France, Canada	174,709,000	Japan, France, U.K.	179,923,600
Anchorage	2,969,900	Japan	116,152,600	Japan	119,122,500
AK/WA/OR/CA Total	8,184,500	Japan, France Canada	290,861,600	Japan, France United Kingdom	299,046,100
1978 (all species)					
Los Angeles	207,100	Australia	1,389,900	Japan	1,597,000
San Francisco	643,900	West Germany, France	5,245,600	Japan, France	5,889,500
Portland	72,100	Netherlands, U. K.	4,529,700	Japan, France	4,601,800
Seattle	6,432,600	Japan, France	215,461,300	Japan, France	221,893,900
WA/OR/CA Subtotal	7,355,700	Japan, France	226,626,500	Japan, France	233,982,200
Anchorage	98,300	Japan, Canada	39,298,100	Japan	39,396,400
AK/WA/OR/CA Total	7,454,000	Japan, France	265,924,600	Japan, France	273,378,600

a/ For all salmon species.
b/ Includes unclassified salmon as well as those classified as coho.
Source: National Marine Fisheries Service, unpublished data, 1982.

dealers paid $2.57 per pound for chinook and $1.35 per pound for coho. Statewide averages were $2.55 and $1.36 per pound for chinook and coho, respectively.

Oregon - Oregon categorizes landing and price data by the following areas:

1. North Coast: Astoria, Garibaldi, Hammond, Seaside, and Warrenton
2. Newport: Includes Newport, only
3. Charleston: Bandon, Charleston, Coos Bay, Reedsport, and Winchester Bay
4. South Coast: Brookings, Gold Beach, and Port Orford

The North Coast experiences the widest range per week in ex-vessel chinook prices of all the areas in Oregon. The South Coast, Newport (with the exception of two weeks in mid-July), and Charleston (with the exception of one week in July) exhibit stable prices and/or price ranges.

The average weekly ex-vessel price of troll-caught coho increased as the quota was quickly approached. The ex-vessel price range reached a high of $1.65 in Newport and Charleston immediately prior to the July 12 closure in regulatory Area C, Cape Falcon to Cape Blanco. The North Coast ex-vessel price for coho reached a high of $1.60 per pound near the July 30th closure in regulatory Area A, Canadian Border to Leadbetter Point. The overall average price per pound for Oregon chinook and coho was $2.59 and $1.40, respectively.

Washington - Ex-vessel prices for troll-caught chinook in Washington, with the exception of small chinook in early July, exhibit a constant price or price range throughout the season. Price appears to be positively correlated with chinook size, with large chinook receiving the highest price per pound.

Average ex-vessel price for troll-caught coho increases as the season progresses and as the quota is approached. However, the maximum ex-vessel price per pound of $1.40 for coho is substantially below the average price per pound of $2.00 for small chinook. The preliminary overall average price per pound for Washington chinook and coho was $2.59 and $1.40, respectively.

Annual Trends

Available salmon ex-vessel price and value data by species, compiled from state fish landing tickets and deflated to 1972 levels, are presented in Tables V-3, V-4, and V-5, and Figure V-1. The total value of salmon landings in California increased in 1982 by 36% (28% when deflated to 1972 levels) over the 1981 total value figures. California's substantial gain in total value is attributable to increases in landings of chinook and, to a lesser extent, coho. The total value of Oregon salmon increased slightly in nominal terms but showed a decrease in real terms.

The average price per pound for California and Oregon chinook increased in nominal terms but actually decreased in real terms while the price per pound for coho decreased compared to 1981 levels in both nominal and real terms.

Although 1982 data for Washington are not currently available, historical data for 1971-78 and for 1981 are provided. The total value of salmon landings peaked in 1976 and has been declining ever since. The 1981 total value repre-

Table V-3. Estimates of ex-vessel value[a/] (in dollars) of California troll landings and average price (dollars/lb.), 1979-1982.

	GNP	Chinook				Coho				Total	
Year	Price Deflator	Nominal Value	Real Value	Nominal Price/lb.	Real Price/lb.	Nominal Value	Real Value	Nominal Price/lb.	Real Price/lb.	Nominal Value	Real Value
1979	162.8	17,356,000	10,661,000	2.53	1.55	2,303,000	1,415,000	2.19	1.35	19,659,000	12,076,000
1980	178.6	12,741,000	7,134,000	2.27	1.27	408,000	228,000	1.36	0.76	13,149,000	7,362,000
1981	195.5	13,417,000	6,863,000	2.45	1.25	905,000	463,000	1.94	0.99	14,322,000	7,325,800
1982[b/]	207.2	18,754,000	9,051,000	2.55	1.23	735,000	355,000	1.36	0.66	19,489,000	9,405,888

a/ Dressed weight value (preliminary).
b/ Preliminary.

Table V-4. Estimates of ex-vessel value[a/] (in dollars) of Oregon troll landings and average price (dollars/lb.) in 1971-82.

Year	GNP Price Deflator	Chinook				Coho				Total	
		Nominal Value	Real Value	Nominal Price/lb.	Real Price/lb.	Nominal Value	Real Value	Nominal Price/lb.	Real Price/lb.	Nominal Value	Real Value
1971	96.0	$587,000	$611,000	$0.59	$0.61	$3,155,000	$3,287,000	$0.36	$0.38	$3,742,000	$3,898,000
1972	100.0	982,000	982,000	0.75	0.75	2,476,000	2,476,000	0.51	0.51	3,458,000	3,458,000
1973	105.7	3,520,000	3,330,200	1.02	0.96	4,004,000	3,788,000	0.78	0.74	7,524,000	7,118,000
1974	114.9	2,412,000	2,099,000	1.05	0.91	5,525,000	4,809,000	0.76	0.66	7,937,000	6,908,000
1975	125.6	2,680,000	2,134,000	1.04	0.83	3,128,000	2,490,000	0.77	0.61	5,808,000	4,624,000
1976	132.1	3,410,000	2,581,000	1.77	1.34	11,458,000	8,674,000	1.26	0.95	14,868,000	11,255,000
1977	139.8	7,938,000	5,678,000	2.17	1.55	3,546,000	2,536,000	1.34	0.96	11,484,000	8,215,000
1978	150.0	3,584,000	2,389,000	1.89	1.26	3,756,000	2,504,000	1.35	0.90	7,340,000	4,893,000
1979	162.8	6,639,000	4,078,000	2.57	1.58	10,350,000	6,357,000	2.26	1.39	16,988,000	10,434,000
1980	178.6	5,259,000	2,945,000	2.42	1.35	2,926,000	1,638,000	1.34	0.75	8,185,000	4,583,000
1981	195.5	4,039,000	2,066,000	2.57	1.31	5,534,000	2,831,000	1.66	0.88	9,570,000	4,895,000
1982[b/]	207.2	5,856,000	2,826,000	2.59	1.25	3,799,000	1,833,000	1.40	0.68	9,655,000	4,660,000

a/ Dress weight.
b/ Preliminary.

Table V-5. Estimates of ex-vessel value[a/] (in dollars) of Washington troll landings and average price (dollars/lb.), 1971-1982.

Year	GNP Price Deflator	Chinook				Coho				Total	
		Nominal Value	Real Value	Nominal Price/lb.	Real Price/lb.	Nominal Value	Real Value	Nominal Price/lb.	Real Price/lb.	Nominal Value	Real Value
1971	96.0	$1,654,000	$1,723,000	$0.62	$0.64	$2,477,000	$2,580,000	$0.36	$0.38	$4,131,000	$4,303,000
1972	100.0	1,709,000	1,709,000	0.76	0.76	1,959,000	1,959,000	0.58	0.58	3,668,000	3,668,000
1973	105.7	3,480,000	3,292,000	1.05	0.99	3,112,000	2,944,000	0.83	0.78	6,592,000	6,237,000
1974	114.9	3,794,000	3,302,000	1.00	0.88	4,272,000	3,718,000	0.76	0.66	8,066,000	7,631,000
1975	125.6	2,935,000	2,337,000	1.02	0.81	3,481,000	2,771,000	0.79	0.63	6,416,000	5,108,000
1976	132.1	6,034,000	4,568,000	1.59	1.20	7,790,000	5,889,000	1.25	0.95	13,824,000	10,465,000
1977	139.8	6,170,000	4,413,000	2.17	1.55	4,770,000	3,412,000	1.28	0.92	10,940,000	7,825,000
1978	150.0	4,872,000	3,248,000	2.35	1.57	5,153,000	3,435,000	1.84	1.23	10,025,000	6,683,000
1979	162.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1980	178.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1981	195.5	3,279,000	1,677,000	2.66	1.36	2,642,000	1,351,000	1.52	0.78	5,921,000	3,029,000
1982	207.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

a/ Dressed weight.

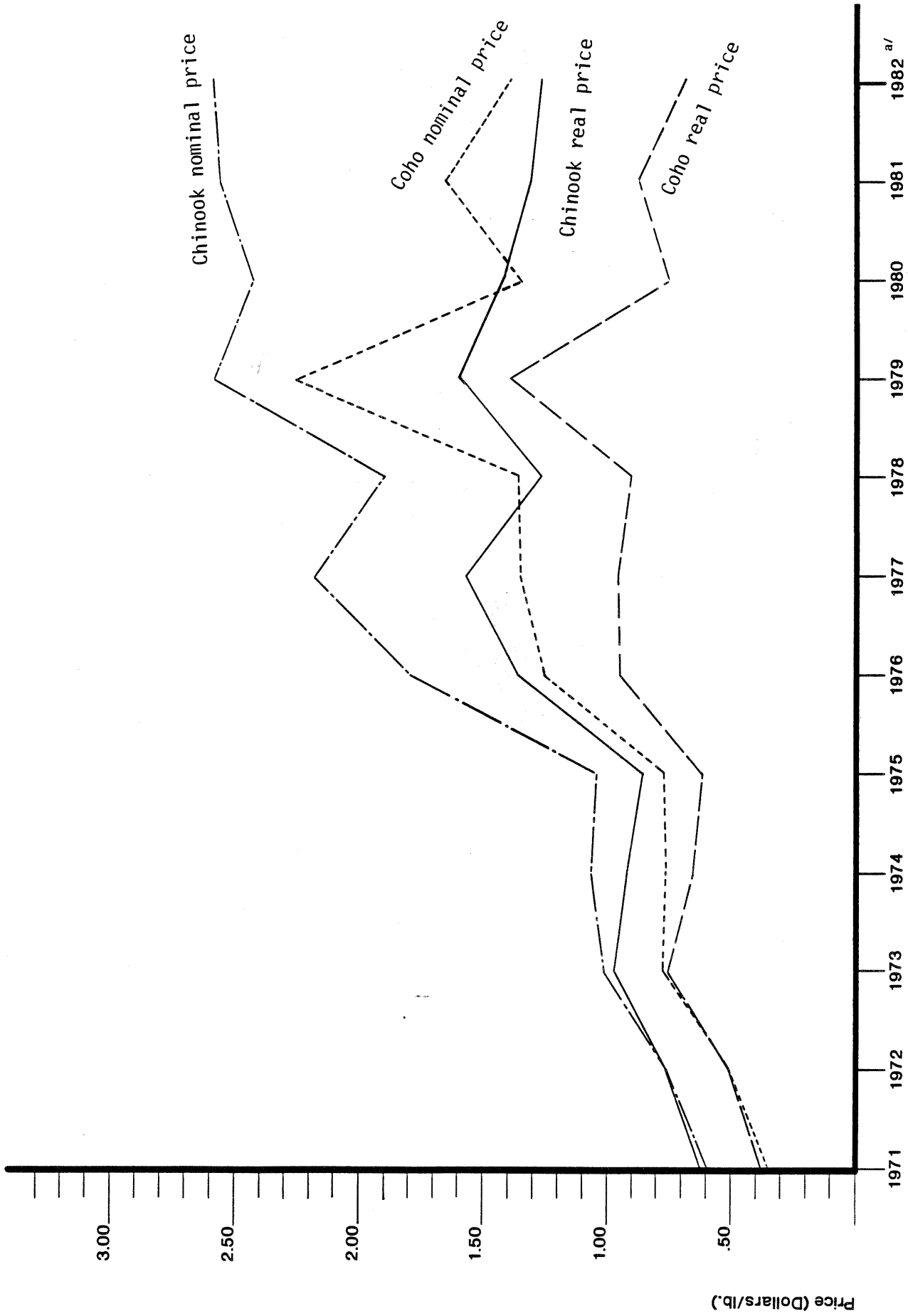

Figure V-1. Nominal and real ex-vessel price trends, Oregon. 1971-82

a/ Preliminary.

sented a 71% decrease from 1976 levels. Chinook and coho prices showed an increasing trend between 1971 and 1978. In 1981 the real price of chinook dropped off while both the real and the nominal price of coho fell.

Progress of State Programs to Limit Entry to the Fisheries

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 vessels replacing others leaving the fisheries.

California - The moratorium enacted by the California state legislature in 1979 resulted in commercial salmon permits being sold during 1980, 1981 and 1982 to masters of vessels which were used to take and land salmon commercially in California. The number of registered vessels making commercial salmon landings between 1960 and 1982 is given in Table V-6. These permits were nontransferable and were issued to individuals who qualified during any year from 1974 through 1979 by either:

(1) possessing a commercial fishing license and landing at least one salmon for sale in California;

(2) working as a commercially licensed deckhand and aiding in the capture of at least one salmon for sale in California; or

(3) making a substantial investment in a commercial salmon fishing vessel with good faith anticipation of entering the California commercial salmon fishery.

California has taken a new approach to controlling effort. In 1982, California salmon fishermen requested and the state legislature enacted a limited entry system based on fishing vessel permits, effective January 1, 1983 through December 31, 1988. In 1983, salmon vessel permits will be issued to persons who:

(1) own a commercially registered salmon fishing vessel which was used to take and land salmon commercially in California during the 1980, 1981, or before August 11 of the 1982 commercial salmon season as evidenced by a salmon landing receipt issued to a commercial salmon permittee with that vessel's Department of Fish and Game boat number on it; or

(2) possessed a commercial salmon permit and, prior to August 11, 1982, has under construction, reconstruction, or contracted for construction, or purchased, a vessel with good faith anticipation of that vessel's entry into the California commercial salmon fishery, as determined by a Commercial Salmon Fishing Review Board composed of four commercial salmon vessel owners and a Department of Fish and Game representative.

These permits will remain with the vessel upon change of ownership and cannot be transferred to another vessel. If a permitted vessel is destroyed or permanently retired from the salmon fishery, the owner will be issued a new permit for a replacement vessel of equal or less salmon fishing potential. A commercial salmon review board will be established to review appeals of permit denials, establish eligibility criteria for new entries into the fishery, recommend the number of new permits to be issued each year, and report to the legislature annually on the effectiveness of the new law.

Table V-6. Commercial landings (lbs.), and value ($) of salmon to California, and number of registered vessels making commercial salmon landings.[a/]

Year	Landings	Ex-Vessel Value	Vessels Landing Salmon	Nominal Average Ex-Vessel Value/Vessel	Real Average Ex-Vessel Value/Vessel[b/]
1960	6,221,000	$3,339,000	1,364	$2,450	NA
1961	8,638,000	4,698,000	1,615	2,910	NA
1962	6,673,000	4,023,000	1,563	2,570	NA
1963	7,859,000	3,959,000	1,611	2,460	NA
1964	9,481,000	5,013,000	1,775	2,820	NA
1965	9,737,000	4,989,000	2,001	2,490	NA
1966	9,447,000	4,845,000	1,928	2,510	NA
1967	7,402,000	3,945,000	2,137	1,850	NA
1968	6,952,000	4,014,000	2,249	1,780	NA
1969	6,151,000	3,843,000	2,125	1,810	NA
1970	6,612,000	5,101,000	2,065	2,470	NA
1971	8,116,000	4,757,000	2,227	2,140	$2,230
1972	6,423,000	4,830,000	2,395	2,020	2,020
1973	9,669,000	8,991,000	NA	NA	NA
1974	8,749,000	8,013,000	3,185	2,520	2,190
1975	6,925,000	6,972,000	3,150	2,210	1,760
1976	7,786,000	10,707,000	3,526	3,040	2,300
1977[c/]	5,938,000	NA	3,797	NA	NA
1978[c/]	6,537,000	NA	4,917	NA	NA
1979[c/]	7,910,000	19,659,000	4,565	4,290	2,630
1980[c/]	5,907,000	13,149,000	NA	NA	NA
1981[c/]	5,964,000	14,322,000	3,854	3,720	1,900
1982[c/]	7,907,000	19,489,000	3,767	5,170	2,495

a/ Derived from vessel registrations and fish landing tickets.
b/ Using Implicit GNP Price Deflator.
c/ Preliminary.

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

To maintain eligibility for a permit in subsequent years, a vessel must obtain a permit each year and land at least one salmon for sale. Should the number of permits fall below the 1978 level, a lottery will be held until that number is once again reached. 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 only in an emergency.

The establishment of a restricted vessel permit system drew a number of historically active vessels back into the fishery in 1980. This phenomenon is illustrated in Table V-7.

In mid-March of 1983, Oregon was negotiating with the state of Washington and the federal government to receive $500,000 in federal funds for the establishment of a permit buy-back program. Eligibility is limited to permits held by non-Indian Columbia River gillnetters who landed gillnet salmon in Oregon prior to February 28, 1977. Oregon, Washington, and the federal government are currently developing the procedures for implementing this buy-back program.

Washington - 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 Washington by obtaining a single delivery permit.

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.

Table V-8 shows the number of charterboat licenses granted between 1975 and 1981. A substantial increase is evident in 1977 when historically active vessels were re-entering the fleet under the moratorium.

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.

Table V-7. Number of vessels landing troll caught salmon in Oregon, 1974-1982.

Year	Number of Vessels	
1974	2,253	
1975	2,304	
1976	2,770	
1977	3,108	
1978	3,158	
1979	3,114	
1980[a/]	3,875	(4,314)[b/]
1981	3,615	(3,926)[b/]
1982	3,259[c/]	(3,641)[c/]

a/ The establishment of a restricted vessel permit system drew a number of historically active vessels back into the fishery in 1980.
b/ Numbers of vessels qualified for troll salmon fishing under the state license moratorium, but not necessarily landing salmon, are noted in parentheses.
c/ Preliminary.

Table V-8. Washington charterboat licenses, 1975-1982.

Year	Number of Licenses Issued
1975	404
1976	427
1977[a/]	569
1978	535
1979	516
1980	510
1981	478
1982	414

a/ First year moratorium in effect.

The Washington state buy-back program began in 1975 with $3.5 million in federal funds. An additional $1 million was granted in 1980 for continuation of the effort reduction program. In January of 1982, Washington received $5 million, $500,000 of which was earmarked for Oregon's buy-back program.

The main goal of Washington's buy-back program is to reduce the level of effort in the non-Indian commercial and charterboat fleets. When the buy-back program was first initiated, the state would purchase the vessels that were selected and then resell them. This is no longer the case; two options exist in the current program:

1. 30% option.

   The state purchases all the current licenses on the vessel and then pays 30% of the fair market value of the vessel to the owner. The owner retains the vessel but cannot resume fishing in the Washington salmon fishery for a period of 10 years. He may, however, participate in some other Washington state fishery or move his vessel to another state to fish. If, after the 10-year waiting period, the owner wishes to resume fishing for salmon in Washington, he may do so by purchasing a salmon license on the open market.

2. License-only option.

   The vessel's license(s) is purchased under this option while no money is received for the vessel itself.

   All purse seiners, trollers, charterboat operators, and gillnetters (in Puget Sound, Willapa Bay/Columbia River, and Grays Harbor/Columbia River) licensed in Washington are eligible for either the 30% option or the license-only option. Reefnetters may take advantage of the license-only option.

Table V-9 illustrates the number of vessels taking part in the buy-back program and the size of the fleet prior to the initiation of this program and in 1981.

Landings by Vessel Size Class

A somewhat more informative indicator of fishery economic conditions would be gross income from salmon fishing by vessel size class, since such data take into consideration an important variable in vessel productivity. California and Oregon landings data (in pounds) by vessel size class currently are available in Tables V-10 through V-18. In the future, it may be possible to convert these figures to ex-vessel value (gross income) by size class. No Washington data of this type are currently available. In California, the 36-40 foot size class continues to harvest the greatest percentage of the total catch, while the 41-45 foot group took the greatest proportion of the catch relative to the number of vessels (i.e., greatest salmon productivity per vessel) in 1982 as in 1981 compared with the 51-55 foot class in most previous years. The average catch per boat in 1982 exceeded 1981 levels in all vessel categories.

Table V-9. Progress of Washington state's buy-back program, vessels involved, size of fleet prior to program and in 1981.

	No. of Vessels in Fleet[a/]		Vessels Taking Advantage of:[a/]	
	1975	1981	30% Option	License-Only Option
Puget Sound Gillnetters	1,659	1,448	26	14
Willapa Bay/ Columbia River/ Grays Harbor Gillnetters	702	659	12	27
Purse Seiners	385	396	10	1
Trollers	3,030[b/]	2,601[b/]	31	25
Charterboat Operators	404	478	16	6
Reefnetters	81	62	--	4

a/ As of October 1982.
b/ Includes trollers with vessel delivery permits.

Table V-10. California commercial salmon troll boat-size catch statistics 1974 (pounds-dressed).[a/]

Size Category Length (feet)	Number of Boats	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 ≤	823	26	671	552,384	6
21-25	564	18	868	489,442	6
26-30	480	15	2,276	1,092,628	12
31-35	386	12	3,986	1,538,442	18
36-40	485	15	4,821	2,338,275	27
41-45	202	6	5,822	1,176,056	13
46-50	143	4	5,840	835,085	10
51-55	50	2	7,957	397,875	5
56-60	36	1	6,044	217,571	2
61-65	9	0.3	3,448	31,031	.4
66-70	1	0.0	310	310	0.0
≥ 71	6	0.2	1,056	6,336	0.1
TOTALS	3,185			8,675,435	

a/ Derived from vessel registrations and fish landing tickets.

Table V-11. California commercial salmon troll boat-size catch statistics 1975 (pounds-dressed).[a/]

Size Category Length (feet)	Number of Boats	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 ≤	743	24	408	303,500	4
21-25	605	19	597	361,276	5
26-30	463	15	1,545	715,533	10
31-35	369	12	3,029	1,117,701	16
36-40	500	16	3,797	1,898,493	27
41-45	215	7	4,957	1,065,844	15
46-50	155	5	5,040	781,154	11
51-55	51	2	7,190	366,694	5
56-60	33	1	6,599	217,771	3
61-65	10	0.3	4,748	47,485	0.7
66-70	2	0.1	3,436	6,872	0.1
≥ 71	4	0.1	1,442	5,769	0.1
TOTALS	3,150			6,888,200	

a/ Derived from vessel registrations and fish landing tickets.

Table V-12. California commercial salmon troll boat-size catch statistics 1976 (pounds-dressed).[a/]

Size Category Length (feet)	Number of Boats	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 ≤	900	25	624	561,951	7
21-25	787	22	835	656,927	8
26-30	516	15	1,805	931,483	12
31-35	378	11	3,110	1,175,477	15
36-40	496	14	3,846	1,907,765	24
41-45	206	6	5,276	1,086,932	14
46-50	143	4	5,452	779,617	10
51-55	48	1	7,382	354,349	5
56-60	32	0.9	6,376	204,043	3
61-65	15	0.4	3,606	54,093	0.7
66-70	3	0.1	1,893	5,678	0.1
≥ 71	2	0.1	830	1,660	0.0
TOTALS	3,526			7,720,000	

a/ Derived from vessel registrations and fish landing tickets.

Table V-13. California commercial salmon troll boat-size catch statistics 1977 (pounds-dressed).[a/]

Size Category Length (feet)	Number of Boats	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 ≤	990	26	456	451,075	8
21-25	856	22	634	542,979	9
26-30	549	14	1,334	732,426	12
31-35	412	11	2,188	901,315	15
36-40	513	13	2,723	1,397,010	23
41-45	231	6	3,692	852,814	14
46-50	142	4	3,761	534,135	9
51-55	45	1	5,026	226,163	4
56-60	38	1	3,767	143,141	2
61-65	18	0.5	1,603	28,862	0.5
66-70	2	0.1	5,132	10,265	0.2
≥ 71	1	0.0	1,171	1,171	0.0
TOTALS	3,797			5,821,400	

a/ Derived from vessel registrations and fish landing tickets.

Table V-14. California commercial salmon troll boat-size catch statistics 1978 (pounds-dressed).[a/]

Size Category Length (feet)	Number of Boats	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	1,236	25	446	551,626	8
21-25	1,167	24	620	723,635	11
26-30	705	14	1,158	816,157	12
31-35	440	9	1,794	789,316	12
36-40	640	13	2,527	1,617,440	24
41-45	313	6	2,961	926,904	14
46-50	239	5	3,607	862,064	13
51-55	83	2	3,597	298,562	4
56-60	60	1	2,692	161,536	2
61-65	19	<1	2,022	38,426	<1
66-70	11	<1	488	5,372	<1
> 71	4	<1	217	869	<1
Unknown				11,707	<1
TOTALS	4,917			6,803,610	

a/ Derived from vessel registrations and fish landing tickets.

Table V-15. California commercial salmon troll boat-size catch statistics 1979 (pounds-dressed).[a/]

Size Category Length (feet)	Number of Boats	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 <	996	22	529	526,516	6
21-25	1,162	25	709	823,320	9
26-30	720	16	1,211	871,739	10
31-35	421	9	2,160	909,395	10
36-40	599	13	3,406	2,040,360	23
41-45	279	6	4,421	1,233,430	14
46-50	209	5	4,393	918,225	10
51-55	78	2	6,057	472,426	5
56-60	52	1	4,294	223,307	3
61-65	21	<1	2,491	52,306	1
66-70	13	<1	768	9,979	<1
> 71	15	<1	116	1,735	<1
Unknown				725,661	8
TOTALS	4,565			8,808,400	

a/ Derived from vessel registrations and fish landing tickets.

Table V-16. California commercial salmon troll boat-size catch statistics 1981 (pounds-dressed).[a/]

Size Category Length (feet)	Number of Boats	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 ≤	658	17	348	229,273	4
21-25	956	25	493	471,055	8
26-30	635	16	978	621,175	11
31-35	375	10	1,787	670,070	12
36-40	579	15	2,809	1,626,550	29
41-45	276	7	3,421	944,306	17
46-50	228	6	2,762	629,820	11
51-55	74	2	2,836	209,879	4
56-60	45	1	2,589	116,488	2
61-65	18	<1	1,629	29,321	1
66-70	5	<1	98	488	<1
≥ 71	5	<1	175	875	<1
TOTALS	3,854			5,549,310	

a/ Derived from vessel registrations and fish landing tickets.

Table V-17. California commercial salmon troll boat-size catch statistics 1982 (pounds-dressed).[a/]

Size Category Length (feet)	Number of Boats	Percent of Fleet	Average Catch/Boat (lbs)	Total Catch (lbs)	Percent of Total Catch
20 ≤	681	16	598	407,111	5
21-25	1,039	25	758	787,112	10
26-30	695	17	1,265	879,339	11
31-35	412	10	2,094	862,781	11
36-40	626	15	3,178	1,989,680	25
41-45	314	8	4,339	1,362,580	17
46-50	226	5	4,187	946,223	12
51-55	76	2	4,083	310,322	4
56-60	48	1	3,034	145,649	2
61-65	24	<1	2,110	50,636	1
66-70	6	<1	370	2,223	<1
≥ 71	10	<1	399	3,994	<1
TOTALS	4,158			7,996,580[b/]	

a/ Preliminary. Derived from vessel registrations and fish landing tickets.

b/ Total includes 248,930 landed by unknown vessels.

Table V-18. Oregon salmon troll boat-size catch statistics (pounds of fish), 1978-1982.

Year	Length Category (feet)	Vessels Number[b/]	Vessels Percentage	Poundage Number	Poundage Percentage
1982[a/]	< 20	115	3.5	53,495	1.0
	20-29	1,649	50.6	1,400,927	27.7
	30-39	758	23.3	1,755,145	34.7
	40-49	494	15.2	1,368,141	27.0
	> 50	203	6.2	434,438	8.6
	no length given	40	1.2	43,852	.9
TOTAL		3,259		5,055,998	
1981	< 20	138	3.8	57,187	1.1
	20-29	1,787	49.3	1,661,845	31.9
	30-39	834	23.1	1,859,471	35.6
	40-49	569	15.7	1,323,819	25.4
	> 50	235	6.5	268,036	5.1
	no length given	52	1.4	37,393	0.7
TOTAL		3,615		5,215,715	
1980	< 20	172	4.4	35,745	0.8
	20-29	1,909	49.3	1,056,819	24.6
	30-39	865	22.3	1,502,453	35.0
	40-49	640	16.5	1,340,416	31.2
	> 50	269	6.9	343,213	8.0
	no length given	20	0.5	14,982	0.3
TOTAL		3,875		4,293,628	
1979	< 20	129	4.1	95,119	1.3
	20-29	1,567	49.4	2,149,194	29.6
	30-39	718	22.6	2,401,024	33.0
	40-49	493	15.5	2,015,614	27.7
	> 50	177	5.6	532,875	7.3
	no length given	90	2.8	78,773	1.1
TOTAL		3,174		7,272,599	
1978	< 20	155	4.7	73,470	1.2
	20-29	1,599	48.3	1,451,587	31.2
	30-39	730	22.1	1,585,081	34.0
	40-49	481	14.5	1,111,362	23.8
	> 50	185	5.6	381,883	8.2
	no length given	158	4.8	56,422	1.2
TOTAL		3,308		4,659,805	

a/ Preliminary.
b/ Only includes vessels with permits.

In Oregon, where data were provided by 10 foot vessel length increments, the 30-39 foot size class continues to take the greatest percentage of the total Oregon troll catch, while the 40-49 foot size class continues to be the most productive on a per vessel basis. The percentage of vessels in each length category has remained fairly constant over the years (1978-1982).

Tables V-9 through V-18 are provided as a basis for future monitoring of trends in fleet size class upgrading and of economic impacts on specific segments of the fleet.

More Productive Segments of the Fleet

Table V-19 presents numbers of vessels landing 50% and 90% of the total Oregon troll catch each year for all salmon species combined. Such information is not yet available for California and Washington.

The data show that a small segment of the fleet (300-500 vessels) lands most of the total Oregon troll catch. In 1982, 11.0% of the fleet caught 50% of the total harvest, and 38.5% of the fleet caught 90% of the total harvest. In other words, most of the troll fleet lands very few fish, while a small group of fishermen are very productive. This small, highly productive, segment of the fleet became a smaller and smaller percentage of the fleet as a whole between 1974 and 1980, while maintaining its large percentage of the total catch. However, in 1981 and 1982 a slight increase in the percentage of the fleet landing 50% and 90% of the salmon was observed. It should be noted that these data are for Oregon only. Many vessels are highly productive but spread their landings over two or more states; their individual state landings, therefore, may be relatively low.

Out-of-State Vessels

Tables V-20, V-21, V-22, and V-23 present preliminary, hand-tallied data on home state of vessels registered to fish salmon in California and Oregon.

The data show that for California as a whole, out-of-state vessels remained a fairly constant percentage (10-12%) of the fleet for the period 1978-82. Most of these out-of-state vessels were registered to fish on the North Coast (Crescent City and Eureka); only 1-3% of vessels on the South Coast were from out of state in recent years. However, the composition of California's out-of-state portion of the fleet has varied. On the North Coast (Crescent City and Eureka only), where the longest time series of data is available, there has been great variability in the amount of out-of-state participation. During the 1978-80 period, out-of-state vessels comprised 55-59% of the vessels in the over-36-foot size class; this percentage dropped to 31-32% during 1981-82 which represents the lowest percentage since 1972.

In Oregon, the percentage of the fleet comprised of out-of-state vessels increased from 1977 to 1980 (16%-20%); a decreasing trend was observed for 1981 and 1982 with out-of-state vessels accounting for 19% and 18% of the fleet, respectively, in those years. Data for 1982, in Table V-24, indicate that out-of-state vessels were only responsible for 18% of the total salmon troll landings reported in Oregon.

Table V-19. Number of vessels landing 50% and 90% of total Oregon salmon troll catch each year, 1974-1982.

Year	Total Vessels[a/]	Number Landing 50% lbs.[a/]	Number Landing 90% lbs.[a/]
1974	1,914	326 (17.0%)	1,032 (53.9%)
1975	1,979	329 (16.6%)	1,054 (53.3%)
1976	2,770	453 (16.4%)	1,460 (52.7%)
1977	3,108	473 (15.2%)	1,597 (51.4%)
1978	3,157	446 (14.1%)	1,576 (49.9%)
1979	3,114	423 (13.6%)	1,449 (46.5%)
1980	3,875	372 (9.6%)	1,375 (35.5%)
1981	3,615	420 (11.6%)	1,391 (38.5%)
1982	3,242	359 (11.0%)	1,248 (38.5%)

a/ Includes licensed and properly identified vessels only. Total poundage on which the numbers are based is not equal to total aggregate troll landings because of landings by unlicensed or misidentified vessels. Percentages of total pounds not credited to licensed vessels were: 1974-19%; 1975-19%; 1976-9.4%; 1977-8.0%; 1978-1.4%; 1979-0.2%; 1980-1.7%; 1981-.11%; 1982-.05% (totals for 1980-1982 are for permitted vessels only).

Table V-20. California boat registrations by length and home state - combined north coast and south coast, 1978-82.[a/]

Home State[b/]	Length	1978	1979	1980	1981	1982
California	< 25	2,756	2,346	2,602	2,327	1,888
	26-36[c/]	1,335	1,191	1,233	1,319	1,167
	> 36[d/]	479	910	769	1,483	1,304
	Sub-total	5,070	4,447	4,604	5,129	4,359
Oregon	< 25	84	58	73	73	62
	26-36[c/]	183	160	177	111	97
	> 36[d/]	291	227	257	298	219
	Sub-total	558	445	507	482	378
Washington	< 25	4	4	3	2	2
	26-36[c/]	15	11	16	17	9
	> 36[d/]	107	75	98	123	80
	Sub-total	126	90	117	142	91
Total	< 25	2,844	2,413	2,678	2,402	1,952
	26-36[c/]	1,533	1,362	1,426	1,447	1,273
	> 36[d/]	1,377	1,212	1,124	1,904	1,603
	Grand Total	5,754	4,987	5,228	5,753	4,828

a/ 1978-1980 are preliminary, hand-tallied data compiled from commercial fishing license and commercial boat registration files. 1981 and 1980 are computer tallies. All fishermen/vessels stating on their registration forms that they intended to troll for salmon that year were included in these tallies, whether or not they eventually actually fished for salmon.

b/ "Home state" refers to the declared state of residence of vessel skipper, who, in most cases, was also the vessel owner.

c/ Length category for 1981 is 26-35.

d/ Length category for 1982 is $\geq$36.

Table V-21. California boat registrations - south coast (Fort Bragg - south) only, 1978-82.[a/]

Home State[b/]	Length	1978	1979	1980	1981	1982
California	< 25	1,789	1,549	1,961	1,764	1,489
	26-36	1,098	969	996	1,103	957
	> 36	735	678	536	1,230	1,036
	Sub-total	3,622	3,196	3,493	4,097	3,482
Oregon	< 25	8	5	6	24	15
	26-36	6	7	2	0	0
	> 36	35	6	13	59	4
	Sub-total	49	18	21	83	19
Washington	<25	2	0	0	0	1
	26-36	6	4	4	4	0
	> 36	18	10	11	50	16
	Sub-total	26	14	15	54	17
Total	< 25	1,799	1,554	1,967	1,788	1,505
	26-36	1,110	980	1,002	1,070	932
	> 36	788	694	560	1,339	1,056
	Grand Total	3,697	3,228	3,529	4,196	3,493

a/ Preliminary, hand-tallied data compiled from commercial fishing license and commercial boat registration files. All fishermen/vessels stating on their registration forms that they intended to troll for salmon that year were included in these tallies, whether or not they eventually actually fished for salmon.

b/ "Home state" refers to the declared state of residence of vessel skipper, who, in most cases, was also the vessel owner.

Table V-22. California boat registrations - north coast (Crescent City - Eureka) only, 1978-82.[a/]

State[b/]	Length	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
CA	< 25	288	339	435	509	455	695	967	797	641	563	399
	26-36	133	131	167	155	165	255	237	222	237	216	210
	> 36	145	140	140	190	216	245	244	232	233	253	268
	Sub-total	566	610	742	854	836	1,195	1,448	1,251	1,111	1,032	877
OR	< 25	17	15	32	32	24	50	76	53	67	49	47
	26-36	45	79	101	80	106	120	177	153	175	111	97
	> 36	79	116	130	152	144	190	256	221	244	239	215
	Sub-total	141	210	263	264	274	360	509	427	486	399	359
WA	< 25	0	0	0	1	0	0	2	4	3	2	1
	26-36	2	5	2	3	2	4	9	7	12	13	9
	> 36	30	43	23	63	25	36	89	65	87	73	64
	Sub-total	32	48	25	67	27	40	100	76	102	88	74
Total	< 25	305	354	467	542	479	745	1,045	854	711	614	447
	26-36	180	215	270	238	273	379	423	382	424	377	341
	> 36	254	299	563	405	385	491	589	518	564	565	547
	Grand Total	739	868	1,030	1,185	1,137	1,595	2,057	1,754	1,699	1,556	1,335

a/ Preliminary, hand-tallied data compiled from commercial fishing license and commercial boat registration files. All fishermen/vessels stating on their registration forms that they intended to troll for salmon that year were included in these tallies, whether or not they eventually actually fished for salmon.

b/ "Home state" refers to the declared state of residence of vessel skipper, who, in most cases, was also the vessel owner.

Table V-23. Percentages of vessels landing troll salmon in Oregon by license holder's state of residence, 1977-82.

Year	Oregon	California	Washington	Other/Unknown
1977	82.5	6.9	8.7	0.6
1978	83.6	5.9	10.0	0.5
1979	83.8	6.5	10.3	0.7
1980	81.2	8.5	9.6	1.5
1981[a/]	81.0	7.4	9.9	1.6
1982[a/]	82.0	6.3	10.1	1.6

a/ Preliminary.

Table V-24. Oregon troll fleet by home state and salmon landings, 1982.[a/]

Home State	Number	Percent	Landings (lbs.)	Percent
Oregon	2,672	82.0	4,152,941	82.1
California	206	6.3	293,639	5.8
Washington	330	10.1	556,225	11.0
Unknown & Other	51	1.6	53,193	1.0
Total	3,259		5,055,998	

a/ Preliminary.

Fuel Costs

One of the many factors influencing commercial and recreational fishing effort levels and fleet mobility is fuel costs. Table V-25 and Figure V-2 present No. 2 diesel fuel prices from 1975 to 1982. In 1982, however, a 6% decrease in the price of fuel was observed. Even after adjustment for inflation, these prices have risen significantly between 1975 and 1981. Should 1982 be the beginning of a price decreasing trend, a change in commercial and recreational fleet behavior may become apparent.

Moorage Patterns in West Coast Ports

A survey of West coast ports reported the mooraging this season on large number of transient boats. This may be indicative of effort shifts resulting, in part, from non-uniform opening dates in the salmon fisheries. For example, in the Grays Harbor basin at Westport, 398 transient boats were observed at the start of the commercial coho season (July 15).

Ports located in management areas which were closed earlier than had been expected, due to the rapid attainment of the coho quota, suffered economic hardship. Ports such as Grays Harbor, Ilwaco, Newport, Winchester Bay, and Coos Bay reported high vacancy rates in their marinas and a significant drop in tourism once the season was terminated. Newport, for example, reported moorage vacancies for the first time this year with revenues down by $100,000 and tourism in general down by 20%. Ilwaco reported vacancy rates at 50% along with a 37% drop in the number of charters operating out of its ports, from 145 in 1980 to 91 in 1982, a 37% decrease.

The ports in those areas in which the salmon season continued subsequent to the attainment of the coho quota (i.e., south of Cape Falcon) reported crowded conditions in their marinas due to the presence of large numbers of boats which had migrated from the north. Marinas in both Gold Beach and Brookings have exceeded their moorage capacity. Moorage at Moss Landing was reported to be at capacity with a 4 to 7 year waiting list in existence for commercial and recreational moorage space.

Capital Investment in the Commercial Salmon Industry

Salmon trollers have a sizeable capital investment in their industry. Weather, high operating costs, restrictive seasons, catch quotas, and poor fishing seasons result in decreased earnings for the fishermen. Since much of the capital investment has been financed by credit agencies, this also translates into delinquency problems for the financiers of these fishing operations. Redwood Empire Production Credit Associations' records in Table V-26 indicate the loan volume associated with salmon trolling. (Comparable records for other credit associations were not available)

Economic Considerations in Other Fisheries

Albacore

Another determinant of effort patterns in the troll fisheries is the availability of other fish species. Albacore traditionally functions as an additional fishery for many salmon trollers. Figures V-3 and V-4 show albacore

Table V-25. Average annual wholesale prices of No. 2 diesel fuel, 1975-82.

Year	GNP Price Deflator	Nominal Price/Gallon (¢)	Real Price/Gallon (¢)
1975[a/]	125.6	30.8	24.5
1976	132.1	31.9	24.1
1977	139.8	36.1	25.8
1978	150.0	37.1	24.7
1979	162.8	58.2	35.7
1980	178.6	81.2	45.5
1981	195.5	98.5	50.4
1982[b/]	207.2	92.7	44.7

a/ July - December average only.
b/ Preliminary data - December not included.

Source: National Energy Information Center, U.S. Department of Energy.

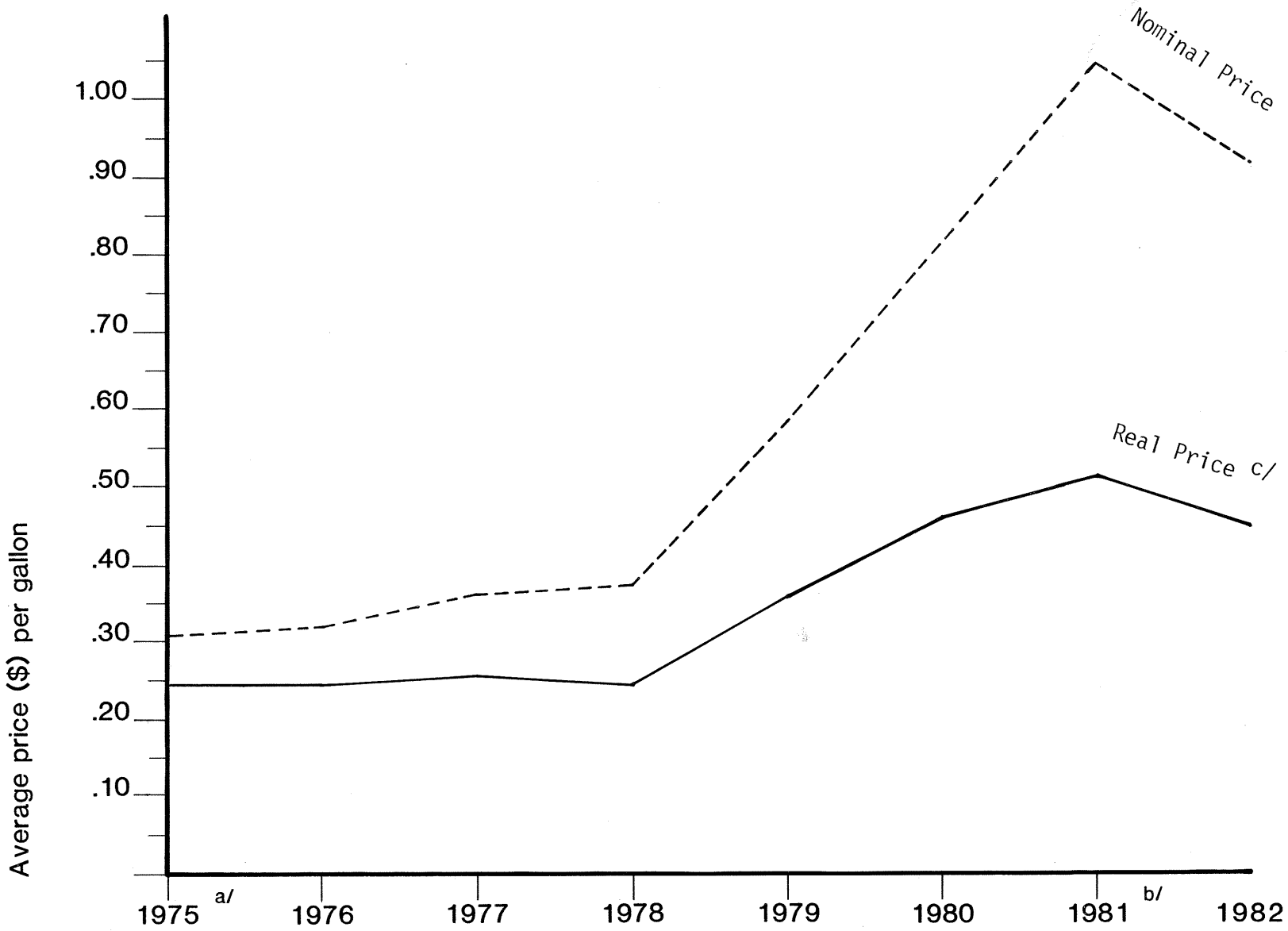

FIGURE V-2. Average annual wholesale price of no. 2 diesel fuel, 1975-82.

a/ July-December average only.

b/ January-June average only.

c/ Deflated to 1972 level.

Table V-26. Redwood Empire Production Credit Association's loan volume in Northern California ports.

Port	Loan Volume	Vessels Number	Type
Fort Bragg	$11,367,000	66	Trollers
		36	Other
Eureka	5,780,000	20	Trollers
		20	Other
Crescent City	6,303,000	14	Trollers
		44	Other
	$23,460,000	100	Trollers
		110	Other

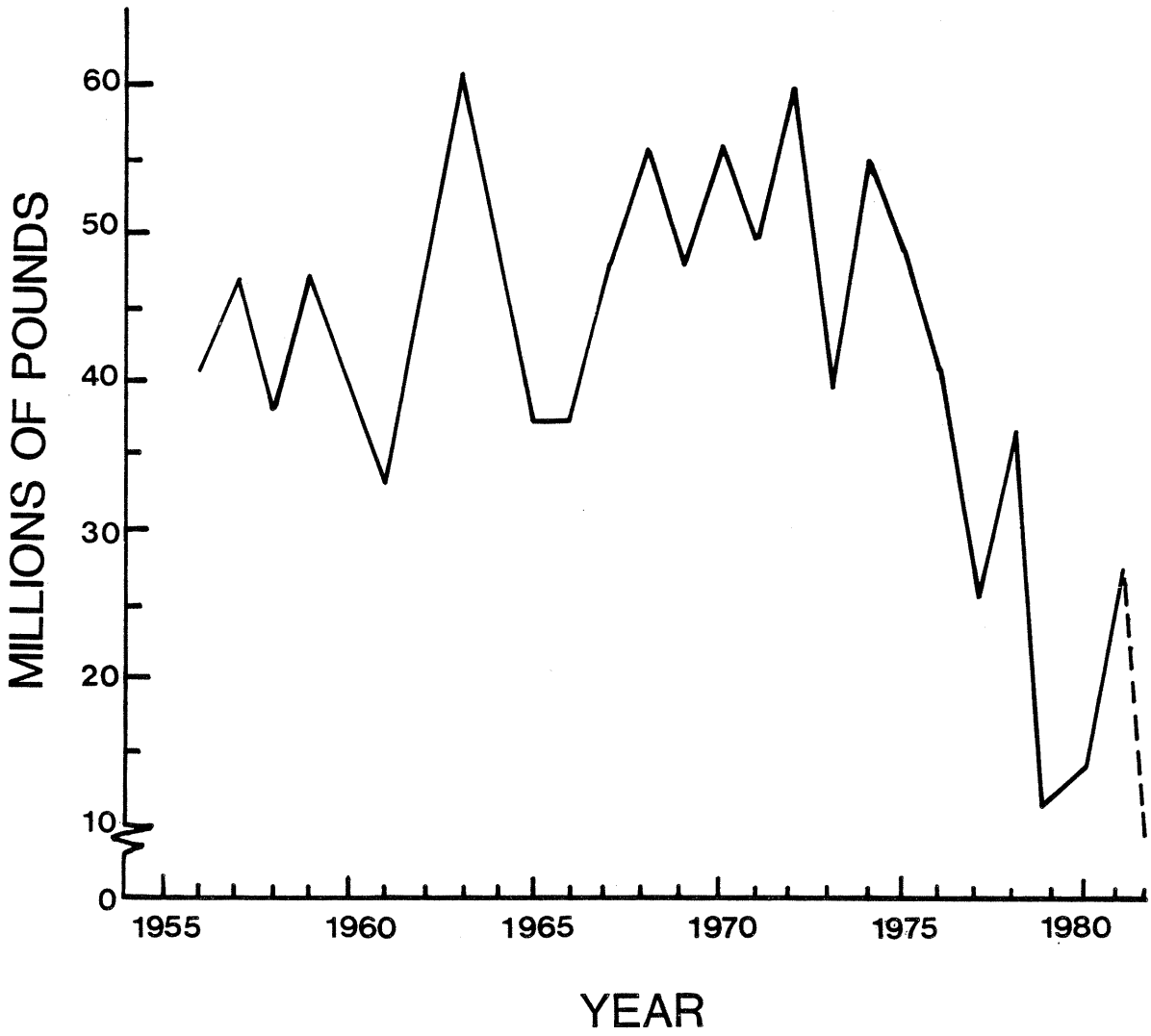

Figure V-3. Annual albacore landings by state, 1956-1982.

Source: 35th Annual Report of the Pacific Marine Fisheries Commission, for the year 1982, forthcoming.

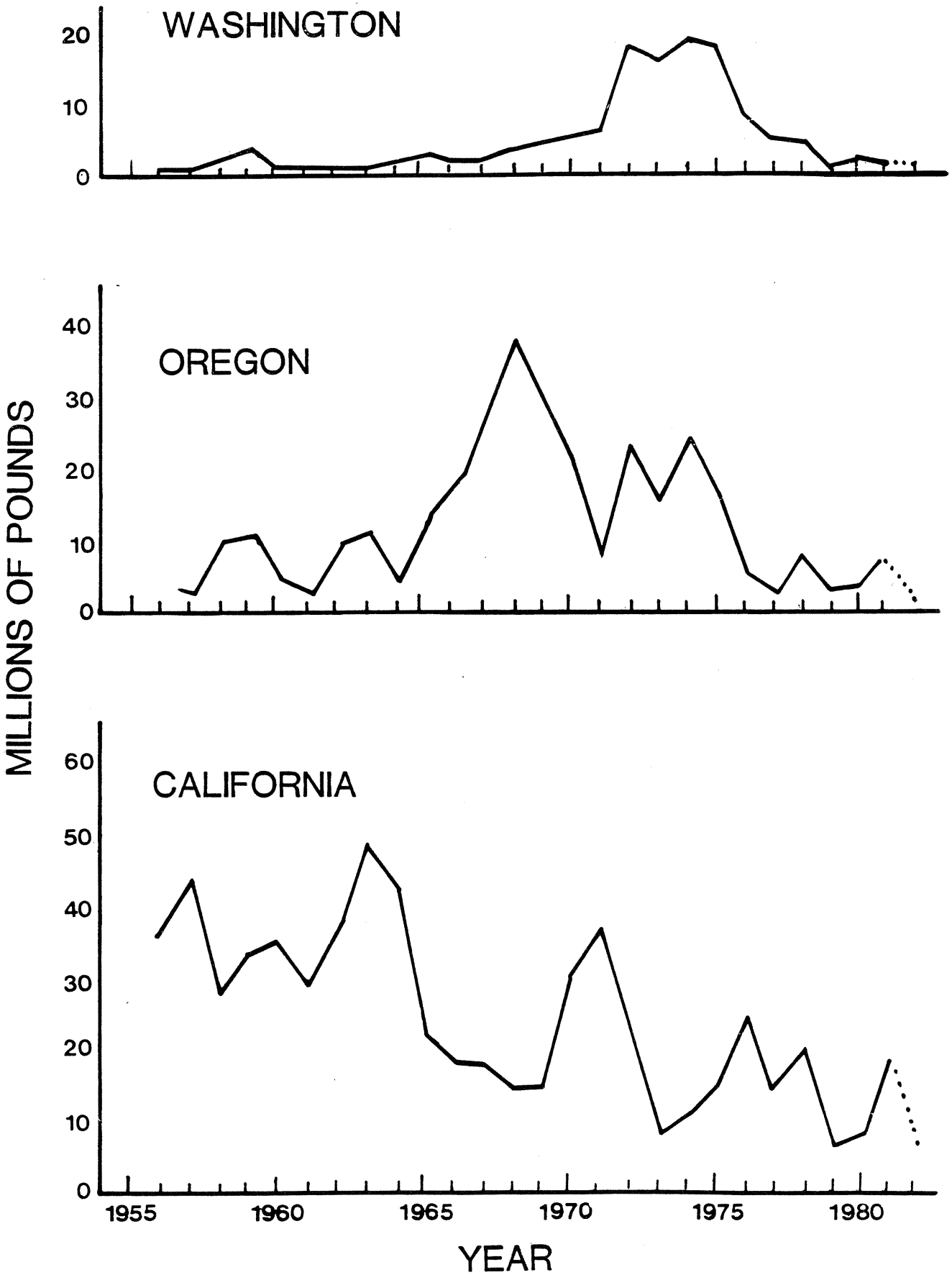

Figure V-4. Annual albacore landings by state. 1956-1982.

Source: 35th Annual Report of the Pacific Marine Fisheries Commission, for the year 1982, forthcoming.

landings on the Pacific coast for 1956-1982. Although landings have varied greatly over time, coastwide and by state, it is clear that the coastwide landings have severely declined since 1974. (The fishery recovered somewhat in 1981.)

During the 1982 season, markets for albacore along the Western Coast were more scarce than in the past, and in addition, ex-vessel price plummeted. In July of 1981, a price of $1,425/ton of albacore was agreed upon; this represented a 20% decrease from the 1980 price of $1,800/ton. The 1982 fall season saw further price reductions to: $1,000/ton for albacore weighing less than 9 lbs., $1,225/ton for fish weighing more than 9 lbs. but less than 18 lbs., and $1,350/ton for fish weighing 18 lbs. and over. These price decreases have been attributed to a worldwide oversupply of tuna, in general, coupled with the presence of lower priced foreign caught fish from the Philippines, Japan, Korea, Thailand, Taiwan, and South Africa. As an illustration of decreased availability of markets, only one plant in San Pedro continued to buy albacore, but, due to its limited capacity, three-week delays in unloading were reported. Fishermen turned to an alternative market for their product, namely, direct sale to the public of fresh and frozen albacore. Sales appeared to be well organized with the going price of $1 per pound; the public seemed to be receptive to this new marketing strategy.

The existence of these problems in the albacore fishery may shed some light on the increased effort experienced in the California salmon fishery. Amid uncertainty in the albacore fishery, fishermen may have opted to continue to fish for the more dependable and more marketable salmon.

Dungeness Crab

Dungeness crab, like albacore, is an additional fishery for northern California, Oregon, and Washington salmon trollers. Figure V-5 shows Dungeness crab landings by state for 1954-82. Crab abundance during the 1982 fishing season was low, therefore some salmon fishermen may have increased their effort in the salmon fishery to compensate for an expected lower than usual income from the crab fishery. This, in addition to the albacore situation, could shed some light on the substantial increases in effort experienced in the salmon fishery in California.

Weather Patterns

Table V-27 presents data on another important influence on salmon fishing effort levels, i.e., weather patterns. Data currently are available for 1981 only; data on weather will be available in the near future.

The Pacific Environmental Group monitors weather wind speed data at six locations within the jurisdiction of the PFMC. Wind stress is a function of the square of the wind speed and, unlike small craft warnings which forecast wind conditions, wind stress values are estimates of the actual observed state.

The number of days in 1981 with wind speeds in excess of 20 knots for each of the six monitoring stations is given in Table V-27. (When winds exceeding 20 knots are predicted, small craft warnings are issued.) The California area experiences winds of this nature to a fairly great extent during May, June, July, and August; however, since a gradient of wind speeds exists in the

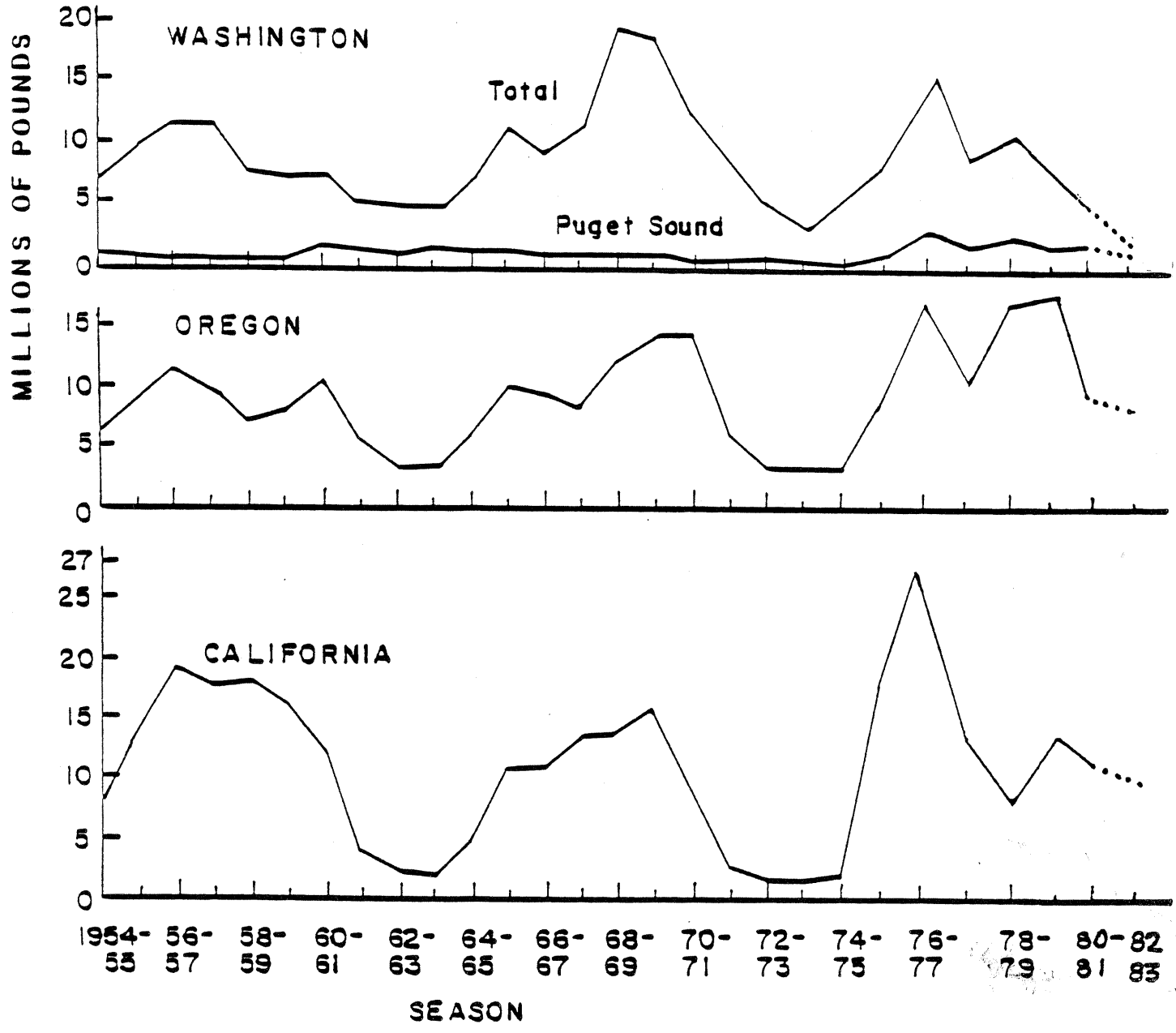

Figure V-5. Dungeness crab landings by season and state, 1954-55 through 1981-82. Dotted lines = preliminary.

SOURCE: 35th Annual Report of the Pacific Marine Fisheries Commission, for the year 1982, forthcoming.

Table V-27. Number of days in 1981 with wind speeds in excess of 20 knots.

Location	May	June	July	August	September	October
33°N 119°W[b/] (North of LaJolla, CA)[c/]	11	13	17	13	2	0
36°N 122°W (Lopez Point, CA)[c/]	11	6	0	1	0	0
39°N 125°W (Pt. Arena, CA)[c/]	11	15	16	6	2	3
42°N 125°W (South of Cape Ferrelo, OR)[c/]	2	3	2	0	0	2
45°N 125°W (Cascade Head, OR)[c/]	0	0	0	0	0	5
48°N 125°W (South of Cape Alava, WA)	0	0	0	0	5	3

a/ NMFS Pacific Environmental Group data.
b/ Because a strong gradient of wind speeds exists in the Southern California Bight, readings from 33°N 119°W should be analyzed with caution.
c/ Approximate land reference point for latitudinal readings.

southern California Bight, winds of this strength may be very localized. Wind speeds in excess of 20 knots appear to be less frequent in Oregon and Washington.

Accidents at Sea

U.S. Coast Guard data on accident at sea involving fishing vessels under 60 ft. long for the period May-October are available for 1982 for the Washington and Oregon coasts only. Comparative data for 1981 is available in Chapter II (page 40-II) of the 1982 salmon plan amendment. The record of accidents for 1982 is as follows:

North of Cape Falcon	South of Cape Falcon
255 cases	578 cases
2 adrift and capsized	15 aground
9 aground	2 capsized
185 disabled	1 collision
21 disoriented	427 disabled
2 endangered	8 fires
1 fire	28 flooding
19 flooding	6 out of fuel
1 medical incident involving crew	4 overdue
1 other	55 rough bar
6 out of fuel	
6 overdue	
Total lives lost - 2	Total lives lost - 2
Total lives saved - 7	Total lives saved - 19
Persons otherwise assisted - 545	Persons otherwise assisted - 1,282

Treaty Indian Fisheries

The salmon has a special place in the traditions and religions of the Pacific Northwest tribes and special ceremonies are still held to pay homage to the fish and insure their continued return to the rivers. In contrast to the highly mobile commercial troll and recreational fleets that operate in ocean waters, treaty Indian fisheries are generally place-oriented. Thus, while ocean fisheries may harvest a complex mixture of stocks over a larger geographic area, the treaty fisheries of each tribe are dependent upon the specific runs of fish that return to or pass through their recognized usual and accustomed fishing places.

Regulations governing treaty Indian fishing are established and enforced by individual tribal governments. Regulation of traditional tribal river fisheries is usually accomplished through the following methods: (1) limiting the number of fishermen; (2) establishing fixed fishing locations; (3) restricting the length of nets; (4) controlling mesh sizes; (5) closing the fishery for certain periods during the week; and (6) establishing fishing seasons to harvest different species. In addition, certain natural regulation of river fisheries occurs because of variations in water flow conditions, wind and tidal action, and debris accumulation.

Two major types of treaty fisheries exist; while a few tribes harvest salmon in ocean waters, predominant treaty fisheries are still conducted in or near the mouths of the major river systems. Although all the Indian tribes share an important dependence upon anadromous fish, the cultures of different tribes vary. It is not possible here to fully describe each of these cultures and tribal societies. However, a brief description of coastal Indian fishing communities in Washington is provided here.

There are several Indian fishing communities located on Indian reservations situated along the coast of Washington. The Makah Tribal village, Neah Bay, is the base for a predominantly marine troll and net fishery. Because of their location at the northwest tip of the Olympic Peninsula, Makah fishermen harvest fish bound for many different rivers. The fisheries conducted by other coastal tribes are principally directed at fish returning to the major river systems that are located on or near their reservations. Members of the Hoh Tribe live in a small fishing village located on their reservation at the mouth of the Hoh River. Members of the Quileute Tribe operate a small ocean troll fleet out of the port of LaPush, but the primary tribal fishery occurs on the Quillayute River system. The Quinault Tribe maintains fishing villages at the mouths of the Queets and Quinault rivers and conducts fisheries on tributary rivers to Grays Harbor. (A very small number of Quinault fishermen also participate in the ocean troll fishery.)

The terminal area fisheries of the coastal tribes are small net types, principally involving gillnets operated from river skiffs. Other harvesting methods such as hand-operated dip nets may also be employed depending upon water conditions. When the salmon return to the rivers, nearly the entire community, from children to the elderly, participate in the fishery.

Terminal fisheries on the Hoh, Quillayute, Queets, and Quinault rivers are conducted principally on fixed fishing grounds that generally are considered the property of a single family. These grounds are handed down from generation to generation and the income derived from fishing is distributed to members of the community or family, depending upon such things as ownership, interest, need, and compensation for the fisherman tending the net.

The coastal fishing villages are small and remotely located. In general, no occupation or source of employment besides fishing is readily available. The economic and cultural continuity of these communities is dependent upon the various runs of fish that return to the rivers at different times throughout the year. In recent times, traditional tribal fishing seasons have been severely restricted, frequently being reduced to fisheries conducted for the limited purpose of measuring the number of fish returning to the rivers. Treaty fisheries in the Hoh River, for example, have been reduced by 92%, 89%, and 85% for spring-summer chinook, fall chinook, and coho, respectively (Table V-28). The fall chinook treaty fishery in the Quinault River was reduced nearly 20% from 1981 levels (Table V-29). Although the treaty fall chinook and coho fishery in the Quillayute increased 55% from 1981 levels, it still remains 50% below 1974 levels (Table V-30).

Table V-28. Number of treaty fishing days on the Hoh River, by species, pre-1974 to 1982 (Hoh Tribe).

	Spring-Summer	Fall	
Year	Chinook (no. of days)	Chinook (no. of days)	Coho (no. of days)
Pre-1974	153	91	91
1975	138	91	91
1976	148	91	91
1977	59	73	58
1978	53	37	52
1979	42	10	28
1980	12	10	14
1981	21	11[a/]	
1982	31	16.5[a/]	

a/ Represents the total number of chinook and coho treaty fishing days. A species breakdown is not available for the fall fishery in 1981 and 1982.

Source: 1982 Salmon Plan Amendment.

Table V-29. Number of treaty fishing days[a/] on the Quinault River, by species, pre-1974 and 1977-1982 (Quinault Tribe).

Year	Summer Chinook (Days)	Fall Chinook (Days)	Coho (Days)
pre-1974	b/	44c/	28
1977	b/	44	NA
1978	b/	44	NA
1980	b/	36	NA
1981	b/	29	25

a/ Number of days given denotes management period.
b/ Summer chinook fishery only operates for a few days per year.
c/ Estimate.

Table V-30. Number of treaty fishing days on the Quillayute River for the fall chinook and coho fishery, 1974-1982 (Quileute Tribe).

Year	Number of Days
1974	55
1975	52
1976	50
1977	41
1978	17
1979	21
1980	16
1981	18
1982	28

These reductions have severely disrupted the social fabric of the Indian communities that depend upon anadromous fisheries for tribal economies, community life, personal subsistence, and the emotional well-being of tribal members. Similar disruptions are occurring in the social fabric of inland and ocean commercial salmon fishermen who are finding it harder and harder to make their financial ends meet through the income derived from the fishing lifestyle to which they are accustomed. An analagous situation exists for many individuals involved in the recreational charter industry.

THE IMPACT OF THE EARLY CLOSURE OF THE 1982 RECREATIONAL FISHING SEASON ON OREGON COASTAL COMMUNITIES AND RECREATIONAL FISHERMEN

The early closure of the recreational salmon fishing season in Oregon north of Cape Blanco resulted in a decrease in angler effort of 100,000 trips compared to Oregon Department of Fish and Wildlife trip totals for 1980 and 1981. This analysis provides an estimate of the economic impact which the early season closure had on the Oregon coastal communities. In addition, the loss in net economic benefits experienced by recreational fishermen is estimated.

Based on data in two studies, it appears that at least 75% of the fishing trips taken in Oregon were taken primarily for the fishing experience. (In William G. Brown, et al, Estimated Expenditures by Sport Anglers and Net Economic Value of Salmon and Steelhead for Specific Fisheries in the Pacific Northwest, data indicate that no less than 78% of fishing trips taken in Oregon in 1977 were primarily taken for fishing. In James A. Crutchfield and Kurt Schelle, Survey of Washington Recreational Fishing Industry, 1976, data indicate that at least 95% of the trips taken to ocean salmon fishing areas were taken primarily to go salmon fishing.) It can be estimated conservatively that 75,000 ocean fishing trips would have been taken had the early season closure not occurred. Of these 75,000 trips, approximately 25% (according to ODFW data) would have been charterboat trips.

Average expenditure data for Oregon ocean salmon anglers were taken from the Marine Recreational Fishery Statistics Survey (NMFS, 1980). The average per day expenditure was $19.04 which when inflated to 1982 dollars (by multiplying the 1980 expenditures by the ratio of the GNP price deflators in 1982 and 1980; 207.2/178.6) equals $22.09. To estimate the impact of the reduction in trips and expenditures, the Tillamook County Input/Output model was used as a proxy for a state model (which does not presently exist). (The Tillamook County model is discussed in Socio-Economics of the Idaho, Washington, Oregon and California Coho and Chinook Salmon Industry done by Oregon State University for the Pacific Fishery Management Council in 1978.)

Average per sector expenditure percentages were taken from the Crutchfield and Schelle study referenced above and were assigned to comparable sectors in the Tillamook County model. The total impact on the economy resulting from the decrease in demand in the sectors was determined by using the industry multiplier. Table V-31 shows the overall impact attributable to reductions in expenditures in the sectors.

Reduction in demand in each of the six sectors also reduces demand in those sectors which furnish inputs to these six sectors. For example, a reduction in the tourism and lodging sector negatively affects the campground and service station sectors. Figure V-6 depicts those sectors directly and indirectly impacted by a reduction in demand in the recreational fishery.

This gross impact analysis utilizes the best information currently available; however, certain qualifications need to be made when interpreting the results of this study. The Tillamook County Input/Output model may not accurately reflect the economy of Oregon's coastal communities. The multipliers which are derived in this model indicate changes in total business activity and not changes in income or employment. These latter changes can not be readily

Table V-31. Total impact of the early closure of the recreational fishery in 1982 on Oregon coastal communities.

Category/Sector	% of Average Expenditures[a/]	Total Lost Expenditures[b/]	Total Lost Expenditures Per Sector	Industry Multiplier	Total Direct & Indirect Impact on Economy
Cafes and taverns	19%	$1,656,750	$314,782	2.187	$ 688,428
Retail and wholesale sales	11%	1,656,750	182,242	1.834	334,232
Campgrounds	5%	1,656,750	82,838	2.160	178,930
Tourism/lodging	8%	1,656,750	132,540	2.295	304,179
Sportfishing/marina	56%[c/]	1,656,750	927,780	2.425	2,249,866
TOTAL					$3,755,636

a/ Based on Crutchfield and Schelle, 1977.
b/ Total lost expenditures: 75,000 trips x $22.09 = $1,656,750.
c/ This percentage may be on the high side for Oregon because the data was derived from a Washington study in which 75% of the angler effort was expended in charterboat trips. In Oregon only 25% of the angler effort is spent in charterboat trips.

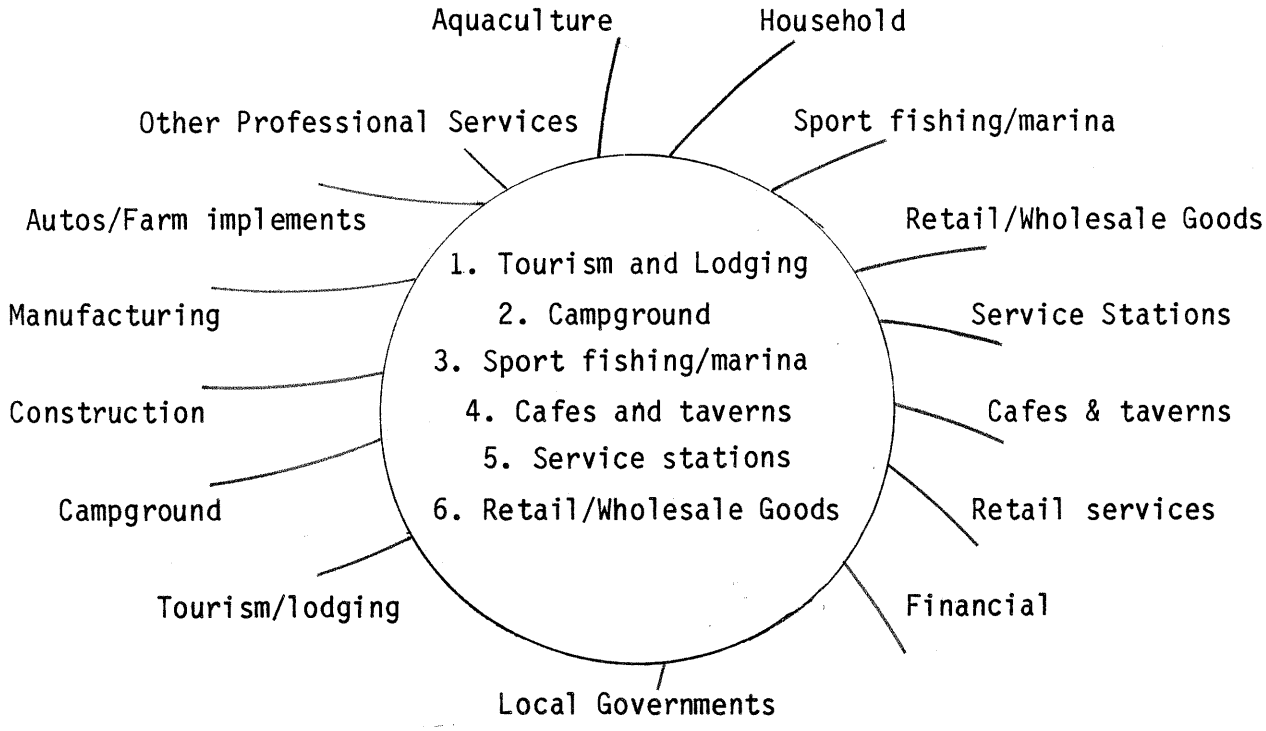

Figure V-6. Sectors directly and indirectly affected by a reduction in the recreational fishery.

Inner circle represents sectors in which reduced demand initially occurs.

Outer rays illustrate sectors which also experience reduction in demand due to the initial reduction in the five sectors in the inner circle.

inferred from the study since some of this business activity may be in the form of imports from outside regions and thus will result in neither income nor employment increases in the region itself.

The average per day expenditure data was collected in 1980 by the Marine Recreational Fishery Statistics Survey (NMFS) and inflated to 1982 dollars. However, it should be noted that inflating the $19.04 figure to 1982 dollars may not accurately reflect the actual expenditure patterns if expenditures in all sectors did not keep pace with inflation. This may be especially true of the sportfishing/marina sector where the cost of charterboat trips have not changed significantly during the past several years.

The percent expenditure information for each sector is derived from the Crutchfield and Schelle study. This expenditure data may be biased upward because the proportion of charterboat (vs. private boat) fishing days in Washington (75%) exceeded the proportion for Oregon (25%). However, the Washington data may have a negative bias because expenditures of non-anglers who are "tied" to anglers were not included.

The impacts estimated in this analysis are associated with the reduction in the sport fishing season; they do not represent the total magnitude of the ocean sport salmon fishery (or the commercial troll salmon fishery) on the Oregon coastal economy. Certain types of expenditures, such as those made on fishing equipment or boat equipment, may have been affected by the reduction in fishing time; such effects are not considered here. Long run effects resulting from the losses estimated above are not captured by the analysis. Such effects might include bankruptcies of businesses and other changes in the structure of the coastal economy. On the other hand, some of the losses highlighted in the analysis may have been recouped by increased participation in alternative coastal activities, for example, fishing for species other than salmon and whale-watching. In addition, some of the loss may have actually been a transfer from the coastal communities to the "inside" fishermen.

Net Economic Benefits

The reduction in net economic benefits experienced by recreational salmon fishermen as a result of the early closure of the coho season is an additional way of measuring the economic losses sustained by anglers. Anglers' "willingness-to-pay" over and above the costs associated with the fishing experience is used as a measure of the net benefits from salmon angling. (Because salmon angling is not a market commodity, willingness-to-pay above actual expenditures must be estimated indirectly. The measure used here is the average "consumer surplus" associated with an estimated demand equation for ocean salmon fishing.) Using information from Brown, the estimated average net benefits per fishing day are $39.18. This value times the 75,000 days of fishing that were not experienced yields an estimate of the loss in net economic benefits of $2,938,500.

Some of this reduction in net economic benefits may have been recouped through participation in other recreational fishing activities. No estimate of the degree to which switching to alternative recreational fisheries actually occurred is presently available.

Conclusion

This analysis has attempted to illustrate the economic impacts of the shortened fishing season on Oregon's coastal communities, as well as the net economic benefits lost by the sports fishermen. An estimated reduction in business activity of $3,755,636 occurred in Oregon coastal communities as a result of the early closure of the coho season. Fishermen also incurred a reduction in net economic benefits attributable to the lost fishing experience. This loss is estimated at $2,938,500.

IMPACT OF THE 1982 TROLL SALMON FISHERY ON SELECTED COUNTIES IN WASHINGTON, OREGON, AND CALIFORNIA

The commercial salmon industry generates economic activity in local coastal communities, coastal states, non-coastal states, and abroad. This economic activity affects employment, income, and the production of additional output. One method of estimating this effect is through the utilization of a regional input/output model. An input/output model consists of a matrix with economic sectors represented by an equal number of rows and columns. The economic linkages among sectors are represented by the dollar value of transactions among the economic sectors. Input/output models can be used to identify the total income effect, total jobs, and the economic sectors most likely to be affected by an increase or decrease in salmon landings and processing activity.

The models used in Socio-Economics of the Idaho, Washington, Oregon, and California Coho and Chinook Industries by OSU will be the basis for this analysis. This OSU study modified the previously created input/output models for Humboldt and Mendocino counties in California and for Tillamook and Clatsop Counties in Oregon. The structures of Humboldt County (1971 survey) and of Mendicino County (1965 survey) were assumed to be unchanged from the time of the input/output studies. In 1977, information was updated and/or verified by interviewing a sample of people in the salmon harvesting and processing sectors. Other sectors in these regions were updated by using secondary data. In Clatsop and Tillamook counties, a sample of people from all sectors in the economy were interviewed and thus the structure, as well as the expenditure pattern, in these two counties was estimated for 1977.

A Puget Sound model was also developed; however, it differs from the other models mentioned above in that households are treated exogenously i.e., payments to households are treated as payments out of the region. In Clatsop, Tillamook, Humboldt, and Mendocino counties, payments to households are within the model i.e., treated endogenously, and a proportionately greater economic impact therefore results. Because the results of the Puget Sound model are not comparable to the other models, results from the former will not be incorporated in this analysis.

For other counties not specifically modeled, it was possible to extrapolate the results from the studied counties by matching economies. The multipliers for the non-studied counties were thus assumed to be comparable to the multiplier for the studied counties with similar economic characteristics.

Whenever an analysis of this nature is undertaken, certain assumptions need to be clearly stated and their implications fully understood in order to avoid erroneous interpretation of the results. This study will not attempt to quantify the social benefits which fishermen derive from their nautical lifestyle although these social benefits may indeed be substantial.

The following assumptions were made in conducting this analysis:

1. The models of Humboldt, Mendocino, Tillamook, and Clatsop counties adequately reflect the economic activity in these counties.

2. The extrapolations made for the other coastal counties will approximate the actual situation which exists in these counties.

3. No salmon are imported from other counties into the county in question for processing.

4. All salmon processed in a given county is exported out of this county. This assumption is made to simplify the process of following the many marketing channels salmon pass through prior to reaching the consumer i.e., the final demand sector.

In addition to these general assumptions, certain specific assumptions are made for each county. These assumptions will be indicated in each of the tables which follow.

Because the accounting stance used is the county, the aggregated county impacts are not additive. Adding the numbers, in addition to being inappropriate, may result in some double counting.

Given these opening remarks, the actual study follows. County by county, 1982 landed values as reported by the respective state fishery agency were allocated to fishermen export and in-county processing, and adjusted for processing value added. The harvest output multiplier and the processor output multiplier were applied to obtain economic impact by county. The results derived from the counties in this analysis are presented in tables V-32 to V-45. A summary of the results can be found in table V-46.

Table V-32.

County: Clallum — State: Washington[a/]
Model Used: Clatsop — Ports: Cape Flattery

1. Total ex-vessel value of salmon: $1,159,712[b/]

2. Percentage sold out-of-county by fishermen: 20%
   (Based on survey)

3. Multiplier for all salmon fisherman: 2.4

4. Value of fish exported by fishermen: 20% x $1,159,712 = $231,942
   County impact from fishermen's exports: $231,942 x 2.4 = $556,662

5. Value of fish purchased by processors: $1,159,712 - $231,942 = $927,770

6. Processor markup from survey: 1.66

7. Multiplier for all salmon processors: 2.73

8. Value of processor export: $927,770 x 1.66 = $1,540,098

9. County impact from processors' export: $1,540,098 x 2.73 = $4,204,468

10. Aggregated county impact: $4,204,468 + $556,662 = $4,761,130

Table V-33.

County: Grays Harbor — State: Washington[a/]
Model Used: Humboldt — Ports: Grays Harbor

1. Total ex-vessel value of salmon: $1,952,050[b/]

2. Percentage sold out-of-county by fishermen: 5%
   (Based on survey)

3. Multiplier for all salmon fisherman: 3.11

4. Value of fish exported by fishermen: 5% x $1,952,050 = $97,602
   County impact from fishermen's exports: $97,602 x 3.11 = $303,542

5. Value of fish purchased by processors: $1,952,050 - $97,602 = $1,854,448

6. Processor markup from survey: 1.66

7. Multiplier for all salmon processors: 3.75

8. Value of processor export: $1,854,448 x 1.66 = $3,078,384

9. County impact from processors' export: $3,078,384 x 3.75 = $11,543,940

10. Aggregated county impact: $303,542 + $11,543,940 = $11,847,482

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a/ Includes Indian troll catch.
b/ Preliminary.

Table V-34.

County: Pacific — State: Washington[a/]
Model Used: Tillamook — Ports: Columbia River

1. Total ex-vessel value of salmon: $685,007[b/]
2. Percentage sold out of county by fishermen: 34%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.33
4. Value of fish exported by fishermen: 34% x $685,007 = $232,902
   County impact from fishermen's exports: $232,902 x 2.33 = $542,662
5. Value of fish purchased by processors: $685,007 - $232,902 = $452,105
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 2.39
8. Value of processor export: $452,105 x 1.66 = $750,494
9. County impact from processors' export: $750,494 x 2.39 = $1,793,681
10. Aggregated county impact: $1,793,681 + $542,662 = $2,336,343

Table V-35.

County: Clatsop — State: Oregon
Model Used: Clatsop — Ports: Astoria, Columbia River (zones 1, 2 & 3), Gearheart, Seaside, Cannon Beach

1. Total ex-vessel value of 1982 salmon: $2,695,154[b/]
2. Percentage sold out of county by fishermen: 20%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.4
4. Value of fish exported by fishermen: 20% x $2,695,154 = $539,031
   County impact from fishermen's exports: $539,031 x 2.4 = $1,293,674
5. Value of fish purchased by processors: $2,695,154 - $539,031 = $2,156,123
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 2.73
8. Value of processor export: $2,156,123 x 1.66 = $3,579,164
9. County impact from processors' export: $3,579,164 x 2.73 = $9,771,118
10. Aggregated county impact: $1,293,674 + $9,771,118 = $11,064,792

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a/ Includes Indian troll catch.
b/ Preliminary.

Table V-36.

County: Tillamook — State: Oregon
Model Used: Tillamook — Ports: Tillamook and Pacific City

1. Total ex-vessel value of 1982 salmon: $878,421[a/]
2. Percentage sold out of county by fishermen: 34%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.33
4. Value of fish exported by fishermen: 34% x $878,421 = $298,663
   County impact from fishermen's exports: $298,663 x 2.33 = $695,885
5. Value of fish purchased by processors: $878,421 - $298,663 = $579,758
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 2.39
8. Value of processor export: $579,758 x 1.66 = $962,398
9. County impact from processors' export: $962,398 x 2.39 = $2,300,132
10. Aggregated county impact: $2,300,132 + $695,885 = $2,996,017

Table V-37.

County: Lincoln — State: Oregon
Model Used: Clatsop — Ports: Depoe Bay & Newport

1. Total ex-vessel value of salmon: $1,765,926[a/]
2. Percentage sold out of county by fishermen: 20%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.4
4. Value of fish exported by fishermen: 20% x $1,765,926 = $353,185
   County impact from fishermen's exports: $353,185 x 2.4 = $847,644
5. Value of fish purchased by processors: $1,765,926 - $353,185 = $1,412,741
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 2.73
8. Value of processor export: $1,412,741 x 1.66 = $2,345,150
9. County impact from processors' export: $2,345,150 x 2.73 = $6,402,260
10. Aggregated county impact: $6,402,260 + $847,644 = $7,249,904

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a/ Preliminary.

Table V-38.

County: Lane — State: Oregon
Model Used: Tillamook — Ports: Florence

1. Total ex-vessel value of salmon: $287,879[a/]
2. Percentage sold out of county by fishermen: 34%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.33
4. Value of fish exported by fishermen: 34% x $287,879 = $97,879
   County impact from fishermen's exports: $97,879 x 2.33 = $228,058
5. Value of fish purchased by processors: $287,879 - $97,879 = $190,000
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 2.73
8. Value of processor export: $190,000 x 1.66 = $315,400
9. County impact from processors' export: $315,400 x 2.73 = $861,042
10. Aggregated county impact: $861,042 + $97,879 = $958,921

Table V-39.

County: Douglas — State: Oregon
Model Used: Mendocino — Ports: Winchester Bay

1. Total ex-vessel value of salmon: $1,062,154[a/]
2. Percentage sold out of county by fishermen: 5%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.88
4. Value of fish exported by fishermen: 5% x $1,062,154 = $53,107
   County impact from fishermen's exports: $53,107 x 2.88 = $152,950
5. Value of fish purchased by processors: $1,062,154 - $53,107 = $1,009,047
6. Processor markup from survey: 1.9
7. Multiplier for all salmon processors: 3.38
8. Value of processor export: $1,009,047 x 1.9 = $1,917,189
9. County impact from processors' export: $1,917,189 x 3.38 = $6,480,100
10. Aggregated county impact: $ 6,480,100 + $152,950 = $6,633,050

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a/ Preliminary.

Table V-40.

County: Coos — State: Oregon
Model Used: Humboldt — Ports: Coos Bay & Bandon

1. Total ex-vessel value of salmon: $3,164,987[a/]
2. Percentage sold out of county by fishermen: 5%
   (Based on survey)
3. Multiplier for all salmon fisherman: 3.11
4. Value of fish exported by fishermen: 5% x $3,164,987 = $158,249
   County impact from fishermen's exports: $158,249 x 3.11 = $492,155
5. Value of fish purchased by processors: $3,164,987 - $158,249 = $3,006,738
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 3.75
8. Value of processor export: $3,006,738 x 1.66 = $4,991,185
9. County impact from processors' export: $4,991,185 x 3.75 = $18,716,944
10. Aggregated county impact: $18,716,944 + $492,155 = $19,209,099

Table V-41.

County: Curry — State: Oregon
Model Used: Tillamook — Ports: Port Orford, Gold Beach, Brookings

1. Total ex-vessel value of salmon: $2,019,402[a/]
2. Percentage sold out of county by fishermen: 34%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.33
4. Value of fish exported by fishermen: 34% x $2,019,402 = $686,597
   County impact from fishermen's exports: $686,597 x 2.33 = $1,599,770
5. Value of fish purchased by processors: $2,019,402 - $686,597 = $1,332,805
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 2.39
8. Value of processor export: $1,332,805 x 1.66 = $2,212,456
9. County impact from processors' export: $2,212,456 x 2.39 = $5,287,770
10. Aggregated county impact: $5,287,770 + $1,599,770 = $6,887,540

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a/ Preliminary.

Table V-42.

County: Del Norte — State: California
Model Used: Tillamook — Ports: Crescent City

1. Total ex-vessel value of salmon: $1,669,666[a/]
2. Percentage sold out of county by fishermen: 34%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.33
4. Value of fish exported by fishermen: 34% x $1,669,666 = $567,686
   County impact from fishermen's exports: $567,686 x 2.33 = $1,322,708
5. Value of fish purchased by processors: $1,669,666 - $567,686 = $1,101,980
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 2.39
8. Value of processor export: $1,101,980 x 1.66 = $1,829,287
9. County impact from processors' export: $1,829,287 x 2.39 = $4,371,996
10. Aggregated county impact: $4,371,996 + $1,322,708 = $5694,7040

Table V-43.

County: Humboldt — State: California
Model Used: Humboldt — Ports: Eureka

1. Total ex-vessel value of salmon: $2,183,213[a/]
2. Percentage sold out of county by fishermen: 5%
   (Based on survey)
3. Multiplier for all salmon fisherman: 3.11
4. Value of fish exported by fishermen: 5% x $2,183,213 = $109,161
   County impact from fishermen's exports: $109,161 x 3.11 = $339,491
5. Value of fish purchased by processors: $2,183,213 - $109,161 = $2,074,052
6. Processor markup from survey: 1.66
7. Multiplier for all salmon processors: 3.75
8. Value of processor export: $2,074,052 x 1.66 = $3,442,926
9. County impact from processors' export: $3,442,926 x 3.75 = $12,910,973
10. Aggregated county impact: $12,910,973 + $339,491 = $13,250,464

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a/ Preliminary.

Table V-44.

County: Mendocino — State: California
Model Used: Mendocino — Ports: Ft. Bragg

1. Total ex-vessel value of salmon: $3,794,648[a/]
2. Percentage sold out of county by fishermen: 5%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.88
4. Value of fish exported by fishermen: 5% x $3,794,648 = $189,732
   County impact from fishermen's exports: $189,732 x 2.88 = $546,428
5. Value of fish purchased by processors: $3,794,648 - $189,732 = $3,604,916
6. Processor markup from survey: 1.9
7. Multiplier for all salmon processors: 3.38
8. Value of processor export: $3,604,916 x 1.9 = $6,849,340
9. County impact from processors' export: $6,849,340 x 3.38 = $23,150,769
10. Aggregated county impact: $23,150,769 + $546,428 = $23,697,197

Table 45.

County: Marin — State: California
Model Used: Mendocino — Ports: San Francisco

1. Total ex-vessel value of salmon: $6,045,688[a/]
2. Percentage sold out of county by fishermen: 5%
   (Based on survey)
3. Multiplier for all salmon fisherman: 2.88
4. Value of fish exported by fishermen: 5% x $6,045,688 = $302,284
   County impact from fishermen's exports: $302,284 x 2.88 = $870,578
5. Value of fish purchased by processors: $6,045,688 - $302,284 = $5,743,404
6. Processor markup from survey: 1.9
7. Multiplier for all salmon processors: 3.38
8. Value of processor export: $5,743,404 x 1.9 = $10,912,468
9. County impact from processors' export: $10,912,468 x 3.38 = $36,884,140
10. Aggregated county impact: $36,884,140 + $870,578 = $37,754,718

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a/ Preliminary.

Table V-46. Summary of impacts of the 1982 troll salmon fishery[a/].

State/County	Landed Value[b/] (Thou. $)	Harvester Output Multiplier	Processor Output Multiplier	Value of Harvester Export (Thou. $)	Value of Processor Export (Thou. $)	Multiplied Economic Impact (Thou. $)
Washington						
Clallum	$1,160	2.4	2.73	$ 232	$ 1,540	$ 4,761
Grays Harbor	1,952	3.11	3.75	98	3,078	11,847
Pacific	685	2.33	2.39	233	750	2,336
Oregon						
Clatsop	2,695	2.4	2.73	539	3,579	11,065
Tillamook	878	2.33	2.39	299	962	2,996
Lincoln	1,766	2.4	2.73	353	2,345	7,250
Lane	288	2.33	2.73	97	315	959
Douglas	1,062	2.88	3.38	53	1,917	6,633
Coos	3,165	3.11	3.75	158	4,991	19,209
Curry	2,019	2.33	2.39	686	2,212	6,888
California						
Del Norte	1,670	2.33	2.39	568	1,829	5,695
Humboldt	2,183	3.11	3.75	109	3,443	13,250
Mendocino	3,795	2.88	3.38	190	6,849	23,697
Marin	6,046	2.88	3.38	302	10,912	37,755

a/ These impacts are not additive.
b/ Preliminary.

THE IMPACT OF THE 1982 RECREATIONAL FISHERY ON THE STATES OF WASHINGTON, OREGON, AND CALIFORNIA

In 1980, the NMFS sponsored a Marine Recreational Fishery Statistics Survey in Washington, Oregon, and California and estimated the average per day expenditures by anglers while engaging in an ocean salmon angler fishing trip. The following items are included in these expenditures:

1. Fishing Equipment: purchase or rental of rods, reels, lines, lures, tackle, nets, traps, spearguns, knives, rod holders, bait containers, tackleboxes, etc.
2. Bait
3. Ice and ice chests
4. Clothing: hats, sunglasses, rain gear etc.
5. Sundries: suntan lotion, insect repellents, motion-sickness preparations, etc.
6. Food and beverages
7. Lodging: one night if from out of town.
8. Miscellaneous: Road and bridge tolls, parking fees, license fees (for marine fishing only), boat gas and oil and launching fees, and access fees.

Expenditures not included are: the cost of automobile gasoline for travel, cost of boat or engine, cost of repairs to boat or engine, cost of insurance, and cost of annual or monthly boat moorage rental.

Between May and August of 1980, 3,196 fishermen interviews were conducted. The preliminary results of these interviews have just become available, and a by-state and by-fishing mode summary follows:

	AREA		
Fishing Mode	Northern California[a/] (Average Cost, $)	Oregon (Average Cost, $)	Washington (Average Cost, $)
Pier or Dock	5.0	0	0
Jetty or Breakwater	11.6	0	5.2
Beach or Bank	11.4	5.8	0
Partly Boat[b/]	40.1	0	70.1
Charterboat[c/]	29.9	51.6	0
Private/Rental Boat	28.5	13.8	31.0
Average All Modes	$29.7	$22.1	$46.2

a/ Northern California = North of San Luis Obispo County.
b/ A party boat is defined in California as a boat rented by a group of fishermen. In Washington, party boat is synonomous with charterboat.
c/ A charterboat is defined as a boat with an operator who sells individual tickets to fishermen who wish to go angling on his vessel. There are usually set trip times associated with this operation.

Given these average expenditures, total expenditures per state can be calculated:

	Angler Average Expenditures ($) in 1982	Angler Trips in 1980	Total Expenditures by Anglers ($)
N. California	$29.60	$168,548	$4,309,772
Oregon	$22.10	289,652	5,514,974
Washington	$46.20	239,540	9,540,878
Total for all 3 States			$19,365,624

The total expenditures by anglers were initially in 1980 dollars. These figures have been adjusted to 1982 dollars by multiplying the 1980 figure by the ratio of the 1982 GNP deflator and the 1980 GNP deflator (207.2/178.6).

Using the Crutchfield and Schelle 1977 Washington Charterboat Study, average angler expenditures per category/sector can be determined. Applying the multipliers from the Tillamook County Input/Output Model (best available information) a total direct and indirect impact on each state's economy are be estimated in tables V-47-49.

The overall impact on the California, Oregon, and Washington coastal communities is estimated at $9,769,695, $10,777,352, and $21,627,932 respectively. The numbers are intended to give a general idea of the value of salmon recreational fishing to the coastal states. These are by no means absolute numbers, many variables may be unaccounted for and the models used may not exactly estimate the actual economy in each state. Nonetheless, it is an attempt, using the best information available to somewhat quantify the impact of the recreational salmon season on California, Oregon, and Washington economics.

Table V-47.

WASHINGTON

Category/Sector	% of Average Expenditures[a/]	Total Expenditures	Total Expenditures Per Sector	Industry Multiplier[c/]	Total Direct & Indirect Impact on Economy
Cafes and taverns	19%	$9,540,878	$1,812,767	2.187	$3,964,521
Retail & wholesale sales	11%	9,540,878	1,049,497	1.834	1,924,778
Campgrounds	5%	9,540,878	477,044	2.160	1,030,415
Tourism/lodging	8%	9,540,878	763,270	2.295	1,751,705
Sportfishing/marina	56%[b/]	9,540,878	5,342,892	2.425	12,627,932
TOTAL					$21,627,932

a/ Based on Crutchfield & Schelle, 1977.

b/ This percentage may be on the high side for Oregon & California because the data was derived from a Washington study. 75% of Washington's angler effort is expended in charterboat trips while only 50% and 25% of the angler effort in California and Oregon respectively is expended in charterboat fees.

c/ Tillamook Input/Output model.

Table V-48.

OREGON

Category/Sector	% of Average Expenditures[a/]	Total Expenditures	Total Expenditures Per Sector	Industry Multiplier[c/]	Total Direct & Indirect Impact on Economy
Cafes and taverns	19%	$5,514,974	$1,047,845	2.187	$2,291,637
Retail & wholesale sales	11%	5,514,974	606,647	1.834	1,112,591
Campgrounds	5%	5,514,974	275,749	2.160	595,618
Tourism/lodging	8%	5,514,974	441,198	2.295	1,012,550
Sportfishing/marina	56%[b/]	5,514,974	3,088,385	2.425	7,489,334
TOTAL					$12,501,730

a/ Based on Crutchfield & Schelle, 1977.

b/ This percentage may be on the high side for Oregon & California because the data was derived from a Washington study. 75% of Washington's angler effort is expended in charterboat trips while only 50% and 25% of the angler effort in California and Oregon respectively is expended in charterboat fees.

c/ Tillamook Input/Output model.

Table V-49.

CALIFORNIA

Category/Sector	% of Average Expenditures[a/]	Total Expenditures	Total Expenditures Per Sector	Industry Multiplier[c/]	Total Direct & Indirect Impact on Economy
Cafes and taverns	19%	$4,309,772	$818,857	2.187	$1,790,840
Retail & wholesale sales	11%	4,309,772	474,075	1.834	869,454
Campgrounds	5%	4,309,772	215,489	2.160	465,456
Tourism/lodging	8%	4,309,772	344,782	2.295	791,275
Sportfishing/marina	56%[b/]	4,309,772	2,413,472	2.425	5,852,670
TOTAL					$9,769,695

a/ Based on Crutchfield & Schelle, 1977.

b/ This percentage may be on the high side for Oregon & California because the data was derived from a Washington study. 75% of Washington's angler effort is expended in charterboat trips while only 50% and 25% of the angler effort in California and Oregon respectively is expended in charterboat fees.

c/ Tillamook Input/Output model.

POTENTIAL SOCIOECONOMIC IMPACTS OF PROPOSED MANAGEMENT MEASURES (REGULATORY IMPACT REVIEW/REGULATORY FLEXIBILITY ANALYSIS) (RIR/RFA)

Executive Order 12291 and the Regulatory Flexibility Act of 1980 (P.L. 96-354) require that the social and economic impacts of regulations, particularly on small businesses and other "small entities," be taken into consideration in management decisions. These laws further require that the benefits of management measures exceed their costs. In compliance with these laws, this section briefly analyzes each of the salmon troll and recreational options and compares them to the status quo, i.e., the continuation of 1982 management with 1983 quotas, Option 1 for both the troll and recreational fisheries.

This section does not deal with the biological impacts of management issues; these impacts are addressed in other parts of the Amendment.

Groups of People Affected by the Proposed Management Measures

For the purposes of this analysis, participants in the 1983 salmon fisheries were grouped into the categories presented in Table V-50. Most of these participants are small businesses or other small entities which could be directly or indirectly affected by the management measures proposed in this plan amendment.

The small entities that would be most directly impacted are the ocean trollers ocean charterboat businesses, and individual recreational fisherman. The numbers of entities in each of these categories in Washington, Oregon, and California are presented in Chapter II.

In addition, the following small entities may be indirectly affected by the 1983 Amendment:

- Treaty Indian fishermen, their families and other tribal members. For the 20 treaty tribes of Western Washington, this includes 18-19,000 tribal members, 2,000-2,200 of which are tribal fishermen. (Source: Northwest Indian Fisheries Commission, 1980.) There are also four treaty tribes fishing in the Columbia River system as well as three non-treaty tribes fishing on the Klamath River.

- Salmon gillnetters, purse seiners, and reefnetters in Washington and Oregon. (A preliminary estimate of the number of licenses and/or permits sold in these fisheries in 1982 is approximately 3,000. However, many fishermen have licenses to fish in several net fisheries, so this figure is an overestimate of the number of small entities involved in the net fisheries in 1982.)

- Salmon fishermen in Alaska.

- Harvesters of fish species other than salmon (coast-wide).

- Fish processing companies, wholesalers, retailers, brokers, and distributors.

- Marine trade industries (e.g., boat builders, electronics businesses, machine shops, marine supply stores, bait suppliers).

- Support industries (e.g., restaurants, bars, grocery stores, hotels, motels, campgrounds, gift shops, gas stations, banks).

Table V-50. Categories of 1983 salmon fishery participants:

1. Commercial participants
    - Trollers
        - Washington-based
        - Oregon-based
        - California-based
    - Net fishermen
        - Oregon Columbia River gillnetters
        - Washington Columbia River gillnetters
        - Willapa Bay and Grays Harbor gillnetters
        - Puget Sound gillnetters
        - Puget Sound reefnetters
        - Puget Sound purse seiners
    - Private aquaculturists
    - Processors, marketing agents and consumers: the marketing sector
2. Recreational participants
    - Ocean charterboat operators and anglers
        - Washington, Oregon and California fleets
    - Private ocean sport fishermen
        - Washington, Oregon and California-based
    - Inland sports fishermen
        - Washington, Oregon, California and Idaho-based
3. Indian participants
    - Treaty commercial fishermen
        - Net fishermen: Columbia River, Washington coastal rivers, Grays Harbor and Puget Sound
        - Trollers: Washington-based
    - Ceremonial and subsistence fishermen: Washington, Columbia River and Klamath River
4. Coastal communities
    - In Washington, Oregon and California
5. Other participants, including federal and state taxpayers

Estimates of the number of small entities in many of the above categories are not currently available.

Analytical Parameters

Although the management measures included in this 1983 Amendment to the Salmon Plan could affect any of the groups of people discussed above, data and time constraints require that this analysis focus on social and economic impacts on the ocean recreational and troll fisheries.

Analysis of recreational fishery management questions will focus on the following parameters:

- changes in angler effort levels and patterns;
- changes in the value of the ocean sport fisheries; and
- changes in gross revenues to the ocean charterboat fleets.

Analysis of troll fishery management questions will focus on the following parameters:

- changes in ex-vessel value/gross revenues to the troll fleets;
- distributional effects within the troll fleets (in cases where data are available).

Lack of information precludes analysis of changes in net income for both the troll and charterboat fleets. Furthermore, data are only generally available to analyze economic impacts on the fisheries as a whole while costs and benefits may be unevenly distributed. Changes in total costs and benefits may not reflect changes in costs and benefits to individuals.

In most cases, the depressed status of many salmon runs and the need to meet allocation and escapement requirements necessitate management options that are more restrictive than historic seasons. In order to achieve long-term objectives, these options will have negative short-term social and economic effects. Analyses in this chapter will attempt to estimate the magnitude of these short-term impacts.

Recreational Options

To facilitate comparison of economic impacts with biological impacts, the options have been paired in the following manner:

Option	A	B	C	D
Troll	1	2	3	4
Recreational	1	4	3	2

The 1982 season with the 1982 OPI quota and landings will be taken as the base case in this analysis. The estimated effect which each option will have on the troll and recreational fisheries of California north and south of Cape Vizcaino, Oregon, and Washington will then be compared to this base case. The biological data referred to in this evaluation can be found in the Salmon Plan Development Team's Impact Analysis (Appendix D).

OPTION A - RECREATIONAL 1 AND TROLL OPTION 1

Recreational Option 1

Recreational Option 1 has the same 1983 seasons as were adopted by the Council in 1982. If selected, the OPI quota for 1983 would be applied to the 1982 season. The season will be open for Memorial Day in all areas except between Cape Falcon and Leadbetter Point. The season may or may not run until Labor Day depending on the overall coho catch rate.

California - North of Cape Vizcaino

According to the Salmon Plan Development Plan, chinook landings will not change from last year's level. Coho landings will be greater due to the increase in the coho quota south of Cape Falcon (all coho quotas in the OPI area i.e., Leadbetter Point and south, are based on the 1962-78 sliding scale allocation system). This potentially will result in 15,000 additional coho being recreationally taken. Based on the average of 1978-1982 data, 11% of the coho harvest south of Cape Falcon will be taken in California.

Assuming this pattern holds for 1983, 1,650 additional coho will be available for recreational harvest and, of these, 89% (1978-82 data) or 1,468 fish will be taken north of Cape Vizcaino. Given an angler catch per day of .82 salmon (1978-82 average), an additional 1,790 angler trips will be taken. Of these trips, approximately 50% will be charter boat trips (895 trips). Based on a 1980 NMFS recreational survey (see The Impact of the 1982 Recreational Fishery on the states of Washington, Oregon, and California), $29.60 on the average will be spent per recreational trip on fishing equipment, bait, ice and ice chests, clothing, sundries, food and beverages, lodging, and miscellaneous; therefore, $52,984 will be spent in and around northern California's coastal communities with this option.

California - South of Cape Vizcaino

According to the Salmon Plan Development Team, chinook landings will not change from last year's level.

Coho landings will be greater due to the increase in the coho quota south of Cape Falcon (see recreational Option A California - north of Cape Vizcaino for further data information). This potentially will result in 15,000 additional coho being recreationally harvested. Based on the average of 1978-82 data, 11% of the coho harvested south of Cape Falcon will be taken in California. Therefore, 1,650 additional coho will be available and, of these, 11% (1978-82 average) or 182 fish will be taken south of Cape Vizcaino. Given an angler catch per day of .82 salmon (1978-82 average), an additional 222 angler trips will be taken. Of these trips, approximately 50% will be charter boat trips (111 trips). Based on a 1980 NMFS recreational survey, $29.60 on the average will be spent per recreational trip on fishing equipment, ect. (see Option A California - north of Cape Vizcaino for a further breakdown); therefore, $6,571 will be spent in and around Southern California's coastal communities with this option.

Oregon

An estimated 31% increase in chinook landings over 1982 levels will be observed with this option (recreational fishery south of Cape Falcon is modeled with a 22-inch minimum size limit; with no minimum size limit catches would increase 30% over changes shown.) This translates into 11,997 additional chinook. Coho landings will also show an increase due to increased quotas for both the Columbia River and for south of Cape Falcon (see Option A-California - North of Cape Vizcaino for further data information). South of Cape Falcon 15,000 additional coho are allocated to the recreational fishery. According to 1978-1982 figures, Oregon will harvest 89% of the coho allocated to this area. This converts to an additional 13,350 coho.

The Columbia River area will be allocated an additional 99,000 fish. During 1982, Oregon harvested 34% of these coho. This converts to an additional 33,660 coho.

When these numbers are summed, an additional 47,010 fish will be available for recreational harvest. Based on the 1978-1982 average catch per angler day of .75, 62,680 angler trips in excess of 1982 levels are anticipated. Of these trips, approximately 25% will be charter boat trips (15,670 trips).

Based on a 1980 NMFS recreational survey, $22.10 on the average will be paid per recreational trip on fishing equipment etc. (see Option A - California North of Cape Vizcaino for a further breakdown); therefore, $1,385,228 will be spent in and around Oregon's coastal communities with this option.

Washington

A 25% decrease in angler catch of chinook is forecasted for Washington with this option (this includes Oregon ctches north of Cape Falcon). This converts to 28,575 fewer chinook. Coho catch, however, will increase in the Columbia River area since the quota, determined by a sliding scale allocation, will allocate 99,000 additional coho to the recreational fishery. Of these, 66% will be taken by Washington fishermen based on 1982 statistics. This would result in an additional catch of 65,340 coho for the recreational fishermen. Coho allocations for the area north of Cape Falcon have not yet been determined. Based on these catch figures, 36,765 additional fish will be recreationally harvested. Given the 1982 catch data of 1.35 fish/angler day, 27,233 angler trips would result from this increase in available fish. Of these trips, approximately 75% will be charter boat trips (20,425). Based on a 1980 NMFS recreational survey, $46.20 on the average will be paid per recreational trip on fishing equipment etc. (see Option A - California north of Cape Vizcaino for a further breakdown); therefore, $1,258,165 will be spent in and around Washington's coastal communities with this option.

Troll Option 1

California - North of Cape Vizcaino

Troll harvest of chinook under this option would be comparable to 1982 levels. This is based on Klamath River fall chinook modeling and expanded by a factor of four to account for other stocks in the area.

The coho harvest will increase since the 1983 allocation to the troll fishery south of Cape Falcon is higher than the 1982 allocation. A 61,000 coho increase south of Cape Falcon will translate to a 9,150 (15% of total increase) coho increase in California based on 1979 - 1982 landing area data. Of the total California coho landings approximately 74% will take place north of Cape Vizcaino (6,771). An ex-vessel value can be placed on these landings by assuming the additional coho would be landed throughout the season and thus using average dressed weight per fish and average ex-vessel price figures:

6,771 coho X 5.1 lbs./coho X $1.36/lb. = $46,964 (ex-vessel value).

California - South of Cape Vizcaino

Troll harvest of chinook under this option would be comparable to 1982 levels (see Option A, Troll Option 1 California North of Cape Vizcaino for further data information).

The coho harvest will increase since the 1983 allocation to the troll fishery south of Cape Falcon is higher than the 1982 allocation. A 61,000 coho increase south of Cape Falcon will translate to a 9,150 coho increase in California based on 1979-1982 landing area data. Of the total California coho landings, approximately 26% will take place south of Cape Vizcaino (2,379 coho). An ex-vessel value can be placed on these landings by assuming the additional coho would be landed throughout the season, and thus using average dressed weight per fish and average ex-vessel price figures:

2,379 coho X 5.1 lbs./coho X $1.35/lb. = $16,379 (ex-vessel value)

Oregon

Troll harvest of chinook with this option will be comparable to 1982 levels. Coho harvest, however, will exceed 1982 levels. South of Cape Falcon an additional 61,000 coho will be available for commercial harvest. Assuming 1982 landing patterns, 85% of these fish will be landed in Oregon. This amounts to an additional 51,850 coho. In addition, the total allowable catch in the quota for the Columbia River area will be increased. Approximately 16,000 additional coho will be available for harvest by the commercial fishery. Using 1979-1982 information, 33% of these fish will be landed in Oregon thus resulting in an increase of 5,280 fish landed in that state. Therefore, 57,130 additional coho will be commercially sold by those trollers operating in Oregon. Assuming these additional fish will be landed throughout the season and using average dressed weight values and average price per pound figures an ex-vessel value can be generated:

57,130 coho X 5.1 lbs./coho X $1.40/lb. = $407,908 (ex-vessel value).

Washington

Troll landings of chinook would decrease 25% from 1982 landings (this includes Oregon catches north of Cape Falcon). This converts to a loss of 42,950 chinook. Using average dressed weight and average price per pound values, this number translates to a financial ex-vessel loss:

-42,950 chinook X 9.5 lbs./chinook X $2.31/lb. = -$942,538 (ex-vessel value)

Troll landings of coho will be greater in the Columbia River areas than in 1982. Using the last four years' landing figures, 67% (10,720 coho) of the additional 16,000 coho allocated to the troll fishery will be landed in Washington. This converts to an ex-vessel gain:

10,720 coho X 4.9 lbs./coho X $1.21/lb. = $63,559 (ex-vessel value)

Allocations for the area north of Cape Falcon have not yet been determined. These catch differences result in a loss of $878,979 in ex-vessel value.

OPTION B - TROLL OPTION 2 and RECREATIONAL OPTION 4

Recreational Option 4

This recreational option was the result of input from the Salmon Advisors and from Council members. It is the least restrictive of the four recreational options under evaluation and has a degree of flexibility built into it e.g., a fixed season is proposed for Oregon south of Cape Falcon, however, the closing date could be earlier south of Cape Blanco and the opening date could be later north of Cape Blanco in order to permit the recreational charters and the coastal communities to derive the maximum benefit from the recreational fishing season. However, without the safety of a coho quota it is difficult to determine whether coho escapement goals will be met for stocks found in this area. North of Cape Falcon, a coho quota is in effect, but the opening dates are designed to hopefully permit the fishery to run through Labor Day, so as to economically benefit the coastal communities and the charter boat operators.

California - North of Cape Vizcaino

The chinook sport catch will be 5% greater than 1982 levels. This converts to an additional 855 recreationally caught chinook.

Coho catch in the area south of Cape Falcon will increase by 15,000 fish; 11% (1,650) of these fish will be taken in the California recreational fishery. Of these, 89% (1,468 fish) will be taken north of Cape Vizcaino. The total increase in the number of recreational fish, chinook and coho, will be 2,323. Assuming a catch rate of .82 fish/angler day, approximately 2,833 additional angler trips will be taken under this option. Of these trips, approximately 50% will be on charter boats. Based on a 1980 NMFS recreational survey, $29.60, on the average, will be spent per recreational trip on fishing equipment etc. (see Option A - California North of Cape Vizcaino); therefore, $83,857 will be spent in and around northern California's coastal communities with this option.

California - South of Cape Vizcaino

A 3% chinook catch increase over 1982 levels will be observed with recreational Option 4. This amounts to an additional 3,669 chinook. The coho quota increase south of Cape Falcon which gives 2,250 extra coho to the California recreational fishery results in 182 additional coho south of Cape Vizcaino. The total increase in numbers of fish will be 3,851. With a .82 fish per angler day catch rate, 4,696 extra angler trips will take place. Of these, approximately 50% will be charter boat trips (2,343 trips). Approximately

$29.60 (NMFS 1980 recreational survey) on the average will be spent per recreational triip on fishing equipment etc. (see Option A - California North of Cape Vizcaino); therefore, $139,002 will be spent in and around southern California coastal communities.

Oregon

With this recreational option an increase of 29% chinook over 1982 levels will be noted; thus, 11,223 chinook will be available to the Oregon recreational fishery (see Oregon troll Option 1). The increased coho quota south of Falcon, 89% of which is taken in Oregon, results in 13,350 extra coho. An additional 32,670 coho will be taken in the Columbia River area since 33% of the 99,000 increase is expected to fall to Oregon. Overall, an increase of 57,243 salmon will result. Given an average catch, rate of .75 fish per angler day, an additional 76,324 angler trips will be taken. Of these trips, aproximately 25% will be charter boat trips (19,081 trips). Assuming $22.10, on the average, will be paid per recreational trip on fishing equipment, etc. (see Option A - California North to Cape Vizcaino); approximately $1,686,760 will be spent in and around Oregon's coastal communities with this option.

Washington

There will be a 65% decrease in the number of chinook taken in the Washington recreational fishery i.e., 74,295 fewer fish will be taken (this includes Oregon catches north of Cape Falcon). The Columbia river coho recreational allocation will increase by 16,000 fish of which approximately 66%, 10,560 coho, will be taken in Washington. The allocation for the area north of Cape Falcon has not yet been determined. However, given these figures, 63,735 fewer fish will be available for recreational harvest. Using an average catch per angler day figure of 1.35, this converts to 47,211 fewer angler trips. Of these trips, approximately 75% would have been charter boat trips (35,408). Assuming $46.20 (NMFS 1980 recreational survey), on the average, would have been paid per recreational trip on fishing equipment, etc. (see Option A - California - North of Cape Vizcaino), $2,181,148 will not be spent in and around Washington's coastal communities with this option.

Troll Option 2

California - North of Cape Vizcaino

The troll fishery north of Cape Vizcaino will land 21% fewer chinook given this option, i.e., 46,263 fewer fish (see troll Option 1). Using average price and poundage values, this converts to an ex-vessel loss of:

-46,263 chinook X 8.2 lbs./chinook X $2.51/lb. = -$952,185 (ex-vessel value)

The total coho quota for the troll fishery south of Cape Falcon will increase by 61,000 coho. It is estimated that 15% of these will be landed in California, and, of these, 74% will be landed north of Cape Vizcaino. The ex-vessel value of these coho will be:

6,771 coho X 5.1 lbs./coho X $1.36/lb. = $46,964 (ex-vessel value)

Adding this gain ($46,964) to the loss in chinook revenues (-$952,185) results in a loss of -$905,221.

It should be noted, however, that some of the loss attributed to the decrease in chinook landings may be recovered by a greater average weight of each coho and chinook and a resultant greater average price per fish, since the season will begin later with this option, i.e., in June and not May. The average weight per chinook and coho per month for 1982 was as follows:

California Troll Salmon Average Weight Per Month Per Species
(lbs., round wt.)

Port	A	M	J	J	A	S
Crescent City						
Chinook		9.9	10.4	11.2	11.2	10.8
Coho		4.8	5.4	7.0	7.5	7.5
Eureka						
Chinook	8.7	9.2	11.2	10.7	11.6	10.5
Coho		4.7	5.4	6.7	7.0	7.2

California - South of Cape Vizcaino

Chinook landings are anticipated to decrease by 12% with this option; therefore, 65,244 fewer chinook will be landed. The ex-vessel value of these fish would have been:

-65,244 chinook X 8.2 lbs./chinook X $2.57/lb. = - $1,374,952 (ex-vessel value)

Approximately 26% of California's coho landings occur south of Cape Vizcaino. The increase in the coho quota south of Cape Falcon is anticipated to result in 2,380 additional coho landed in southern California. The ex-vessel value of these fish will be:

2,379 coho X 5.1 lbs./coho X $1.35/lb. = $16,379 (ex-vessel value).

This gain, however, does not balance the loss in revenue from landing 43,496 fewer chinook. The total loss would be:

$16,379 - $1,374,952 = -$1,358,573 (ex-vessel value)

It should be noted, however, that some of the loss attributed to the decrease in chinook landings may be recovered by a greater average weight of each coho and chinook and a resultant greater average price per fish since the season will begin later with this option i.e., in July and not May. The average weight per chinook and coho per month for 1982 was as follows:

California 1982 Troll Salmon Average Weight Per Month, Per Species
(lbs., round wt.)

Port	A	M	J	J	A	S
Ft. Bragg						
Chinook	11.3	11.2	12.0	11.7	12.3	10.9
Coho		5.8	6.1	7.0	7.7	8.3
San Francisco						
Chinook	8.6	9.8	12.0	12.3	12.1	13.7
Coho		6.8	7.0	7.2	8.0	7.9
Monterey						
Chinook	7.5	10.6	12.1	12.9	12.9	13.5
Coho		5.1	7.2	8.6	9.2	8.3

Oregon

Approximately 25% fewer chinook will be landed with this option. This converts to 58,200 fewer chinook. The ex-vessel value of these fish would have been:

-58,200 chinook X 9.9 lbs./chinook X $2.59/lb. = -$1,492,306 (ex-vessel value)

Although the chinook would have been landed predominantly in August instead of throughout the summer, the average round weight is still 11.6 lbs. (9.9 lbs. dressed weight):

Oregon 1982 Troll Salmon Average Weight Per Month, Per Species
(lbs., round wt.)

Month	Chinook	Coho
May	10.6	
June	11.8	4.5
July	12.0	6.0
August	11.6	
September	10.1	
October	14.8	
Total Average	11.6	6.0

Coho harvest, however, will exceed 1982 levels. South of Cape Falcon an additional 61,000 coho will be available for commercial harvest. Assuming 1979-1982 landing patterns, 85% of these fish will be landed in Oregon. This amounts to an additional 51,850 coho. In addition, the quota for the Columbia River area will be increased. Approximately 16,000 additional coho will be available for harvest by the commercial fishery. Using 1979-1982 information,

33% of these fish will be landed in Oregon thus resulting in an increase of 5,280 fish landed in that state. Therefore, 57,130 additional coho will be commercially sold by those trollers operating in Oregon. Assuming these additional fish will be landed in August and using average poundage values for that month and average price per pound figures, an ex-vessel value can be generated:

57,130 coho X 6.5 lbs./coho (1981 August average) X $1.40/lb.= $519,883 (ex-vessel value)

This gain does not balance the loss attributed to decreased chinook landings. The total loss in ex-vessel revenues would be:

$519,883 - $1,492,306 = -$972,423 (ex-vessel value)

Washington

Chinook troll landings are expected to drop by 35% resulting in a decrease of 60,130 chinook (includes Oregon catches north of Cape Falcon). The ex-vessel value of this decreased landing of chinook, given 1982 prices, would be:

-60,130 X 9.5 lbs./chinook X $2.31/lb. = -$1,319,553 (ex-vessel value)

Troll landing of coho will be greater in the Columbia River areas than in 1982. Using the last four years' landing figures, 67% (10,720 coho) of the additional 16,000 coho allocated to the troll fishery will be landed in Washington. This converts to an ex-vessel gain of:

10,720 X 4.9 lbs./coho X $1.21/lb. = $63,559 (ex-vessel value)

Allocations for the area north of Cape Falcon have not yet been determined. These catch differences result in a loss of $1,255,994 in ex-vessel value.

However, beginning the chinook-only season one week later will increase the average value per chinook due to a greater average weight per fish. This may help towards offsetting this loss. Opening the all-species season later may also result in per-value fish gain associated with increased weight. Average weights per month for 1982 Washington salmon are as follows:

Washington 1982 Troll (Non-Indian)Salmon Average Weight Per Month, Per Species (lbs., round wt.)

	A	M	J	J	A
Chinook	10.4	11.0	12.7	12.8	15.6
Coho				5.1	4.8

Similar information can be presented per management area:

Washington 1982 Troll (Non-Indian) Salmon Average Weight
By Port Per Month, Per Species
(lbs., round wt.)

	A	M	J	J	A
Columbia River					
Chinook	10	10.35	12.1	12.8	
Coho				4.9	
Gray's Harbor					
Chinook	10.5	11.0	12.7	11.4	15.9
Coho				6.0	5.9
Quillayute					
Chinook		11.7	12.8	15.0	
Coho				5.8	
Cape Flattery					
Chinook		12.3	13.7	15.5	
Coho				5.8	6.6
Straits					
Chinook					16.2
Coho				6.1	4.7

OPTION C - TROLL OPTION 3 and RECREATIONAL OPTION 3

Recreational Option 3

With the exception of California, the recreational season will not open until mid-July or mid-August in an attempt to "guarantee" that the coho quota will not be met prior to Labor Day, so as to maximize the economic benefits which this fishery has on coastal communities and on the charter boat operators.

California - North of Cape Vizcaino

No change from 1982 chinook catch levels is expected with this option. The coho catch in the area south of Cape Falcon will increase by 15,000 fish; 11% (1,650) of these fish will be taken in the California recreational fishery. Of these, 89% (1,468 fish) will be taken north of Cape Vizcaino. The total increase in the number of angler trips resulting from the additional catch will be 1,790 assuming a catch rate of .82 fish per angler day. Of these trips, approximately 50% will be on charter boats. On the average, $29.60 will be spent per recreational trip on fishing equipment, etc. (see Option A - California North of Cape Vizcaino); therefore, $52,984 will be spent in and around Northern California's coastal communities with this option.

California - South of Cape Vizcaino

A 1% increase in the recreational harvest of chinook is expected with this option, this converts to an additional 1,223 chinook. The coho quota increase

south of Cape Falcon which gives 1,468 extra coho to the California recreational fishery results in 182 additional coho south of Cape Vizcaino. The total increase in number of fish will be 1,405. Based on a .82 fish per angler day catch rate, angler trips should increase by 1,713. Of these trips, approximately 50% (857 trips) will be taken on charter boats. Approximately $29.60 (NMFS recreational survey) will be spent per recreational trip on fishing equipment, etc. (see Option A - California North of Cape Vizcaino); therefore, $50,705 will be spent in and around Southern California's coastal communities.

Oregon

With this option chinook catch is expected to increase 21% and therefore 8,127 additional chinook would be available to the Oregon recreational fishery (see Oregon recreational Option 1). The increased coho quota south of Cape Falcon, 89% of which is taken in Oregon, results in 13,350 extra coho. An additional 32,670 coho will be taken in the Columbia River area since 33% of the 99,000 increase is expected to fall to Oregon. Overall, an increase of 54,147 salmon will result. Given an average catch rate of .75 fish per angler day, 72,196 additional angler trips will be taken. Of these trips, approximately 25% will be on charter boats (18,049). Assuming $22.10 will be paid per recreational trip on fishing equipment, etc. (see Option A - California North of Cape Vizcaino), approximately $1,595,532 will be spent in and around Oregon's coastal communities with this option.

Washington

A 65% decrease in the recreational harvesting of chinook is anticipated with this option (includes Oregon catches north of Cape Falcon). This converts to a decrease of 74,295 chinook. An increase in the recreational coho allocation in the Columbia River area will increase the overall allocation by 16,000 fish of which approximately 66%, 10,560 coho, will be taken in Washington. The allocation for the area north of Cape Falcon has not yet been determined. Given these figures, a decrease in recreational catch of 63,735 fish is expected. This, with a 1.35 fish per angler day catch rate, converts to a loss of 47,211 angler trips. Of these lost trips, 75% would have been charter boat trips (35,408 trips). Assuming $46.20 would have been paid per recreational trip on fishing equipment, etc., $2,181,148 will not be spent in and around Washington coastal communities with this option.

Troll Option 3

California - North of Cape Vizcaino

No increase in troll catch is anticipated with the option.

The total coho quota for the troll fishery south of Cape Falcon will increase by 61,000 coho. It is estimated that 15% of that will be landed in California and of these 74% will be landed north of Cape Vizcaino. The ex-vessel value of these coho will be:

6,771 coho X 5.1 lbs./coho X $1.36/lb. = $46,964 (ex-vessel value).

The gain from this option may be even more than is calculated here since the average weight per fish should be greater due to the later opening.

California - South of Cape Vizcaino

Chinook landings are expected to decrease by 6% with this option. This results in 32,622 fewer chinook being landed in California south of Cape Vizcaino. The loss in ex-vessel revenues is estimated at:

-32,622 chinook X 8.2 lbs./chinook X $1.35/lb. = -$361,126 (ex-vessel value)

Approximately 26% of California's coho landings occur south of Cape Vizcaino. The increase in the coho quota south of Cape Falcon is anticipated to result in 2,379 additional coho landed in southern California. The ex-vessel value of these fish will be:

2,379 coho X 5.1 lbs./coho X $1.35/lb. = $16,379 (ex-vessel value)

This gain, however, does not balance the loss in revenue from landing 16,311 fewer chinook. The total loss in ex-vessel revenues will be:

$16,379 - $361,126 = -$344,747 (ex-vessel value)

Oregon

Approximately 11% fewer chinook would be landed with this option. This amounts to 25,608 chinook and can be translated to a loss in ex-vessel revenues:

-25,608 chinook X $9.9 lbs./chinook X $2.59/lb. = -$656,615 (ex-vessel value)

The total coho quota for the troll fishery south of Cape Falcon will increase by 61,000 coho. Assuming 1979-1982 landing patterns, 85% of these fish will be landed in Oregon. This amounts to an additional 51,800 coho. In addition, the quota for the Columbia River area will be increased in 1983. Approximately 16,000 additional coho will be available for harvest by the commercial fishery. Using 1979-1982 information, 33% of these fish will be landed in Oregon, thus resulting in an increase of 5,280 fish landed in that state. Therefore, 57,080 additional coho will be commercially sold by those trollers operating in Oregon assuming these additional fish will be landed throughout the season and using average dressed weight values and average price per pound figures, an ex-vessel value can be generated:

57,080 coho X 5.1 lbs./coho X $1.4/lb. = $407,551 (ex-vessel value)

This gain does not balance the loss attributed to decreased chinook landings. The total loss in ex-vessel revenues would be:

$407,551 - $656,615 = -$249,064 (ex-vessel value)

Washington

A 40% decrease in troll chinook landings is expected with this option. This translates to 68,720 fewer chinook landed in Washington. The loss in revenues would be:

-68,720 chinook X 9.9 lbs./chinook X $2.31/lb. = - $1,571,558 (ex-vessel value)

Troll landing of coho will be greater in the Columbia River area than in 1982. Using the last four years' landing figures, 67% (10,720 coho) of the additional 16,000 coho allocated to the troll fishery will be landed in Washington. This converts to an ex-vessel gain of:

10,720 coho X 4.9 lbs./coho X $1.21/lb. = $63,559 (ex-vessel value)

Allocation for the area north of Cape Falcon have not yet been determined. These catch differences result in a loss of $1,507,999 in ex-vessel value. However, opening the all species season later may result in per value fish gain associated with increased weight. Average weights per month for 1982 Washington salmon are supplied in the analysis of troll Option 2.

OPTION D - TROLL OPTION 4 and RECREATIONAL OPTION 2

Recreational Option 2

With the exception of California all areas will begin their all-species season slightly later than with recreation Option 1 in an attempt to keep the season going through Labor Day.

California - North of Cape Vizcaino

A 1% decrease from the 1982 catch levels of chinook is expected with this option, this converts to 171 fewer chinook. The coho catch in the area south of Cape Falcon will increase by 15,000 fish; 11% (1,650) of these fish will be taken in the California recreational fishery. Of these, 89% (1,468 fish) will be taken north of Cape Vizcaino. The increase in the number of recreational fish will be 1,297. Assuming a catch rate of .82 fish/angler day, approximately 1,582 additional angler trips will be taken under this option. Of these trips, approximately 50% will be on charter boats (1,791 trips). On the average $29.60 will be spend per recreational trip on fishing equipment, etc; therefore, $46,827 will be spent in and around Northern California's coastal communities.

California - South of Cape Vizcaino

A 1% decrease in the recreational chinook harvest is expected with this option, this converts to 1,223 fewer chinook. The coho quota increase south of Cape Falcon which gives 1,468 extra coho to the California rcreational fishery results in 182 additional coho south of Cape Vizcaino. The total decrease in numbers of fish will be 1,041; assuming a .82 fish per angler day catch rate, 1,270 fewer angler trips will be taken. Of these trips, approximately 50% (635 trips) would have been taken on charter boats. Approximately

$29.60 (NMFS survey) would have been spent per recreational trip on fishing equipment, etc; therefore, $37,592 will not be spent in and around Southern California coastal communities with this option.

Oregon

With this recreational option, 30% more chinook will be available for recreational harvest (see Oregon recreational Option 1). This results in 11,610 additional chinook. The increased coho quota south of Cape Falcon, 89% of which is taken in Oregon, results in 13,350 extra coho. An additional 32,670 coho will be taken in the Columbia River area since 33% of the 99,000 increase is expected to fall to Oregon. Overall, an increase of 57,630 salmon will result. Given an average catch rate of .75 fish per angler day, 76,840 angler trips will be taken. Of these trips, approximately 25% will be charter boat trips (38,420 trips). Assuming $22.10 will be paid per recreational trip on fishing equipment, etc., approximately $1,698,164 will be spent in and around Oregon's coastal communities with this option.

Washington

There will be a 37% decrease in the number of chinook taken in the Washington recreational fishery i.e., 42,291 fewer fish will be taken (see troll Option 1). The Columbia River coho recreational allocation will increase by 16,000 fish of which 66%, 10,560 coho will be taken in Washington. The allocation for the area north of Cape Falcon has not yet been determined. However, given these figures, 31,731 fewer fish will be available for recreational harvest. Using an average catch per angler day figure of 1.35, 23,504 fewer angler trips will be taken. Of these lost trips, 75% would have been charter boat trips. Assuming $46.20 would have been paid per recreational trip on fishing equipment, etc., $1,085,885 will not be spent in and around Washington coastal communities.

Troll Option 4

California - North of Cape Vizcaino

The troll fishery north of Cape Vizcaino will land 4% more chinook with this option i.e., 8,812 additional chinook (see troll Option 1). This converts to an ex-vessel gain of:

8,812 chinook X 8.2 lbs./chinook X $2.51/lb. = $181,369 (ex-vessel value)

The total coho quota for the troll fishery south of Cape Falcon will increase by 61,000 coho. It is estimated that 15% of these will be landed in California, and, of these 74% will be landed north of Cape Vizcaino. The ex-vessel value of these coho will be:

6,771 coho X 5.1 lbs./coho X $1.36 lb. = $46,964 (ex-vessel value).

Adding this gain ($46,964) to the gain in chinook revenues ($181,369) results in a gain of $228,333.

California - South of Cape Vizcaino

Chinook landings are anticipated to decrease by 5% with this option; therefore 27,185 fewer chinook will be landed. The loss in ex-vessel value will be:

-27,185 chinook X 8.2 lbs./chinook X $2.57/lb. = -$572,897 (ex-vessel value)

Approximately 26% of California's coho landings occur south of Cape Vizcaino. The increase in the coho quota south of Cape Falcon is anticipated to result in 2,379 additional coho landed in California. The ex-vessel value of these fish will be:

2,379 coho X 5.1 lbs./coho X $1.35/lb. = $16,379 (ex-vessel value)

This gain however, does not balance the loss from decreased chinook landings. The total loss will be:

$16,379 - $572,897 = -$556,518 (ex-vessel value)

Oregon

No change in chinook landings is anticipated with this option. The total coho quota for the troll fishery south of Cape Falcon will increase by 61,000 coho. It is estimated that 85% of these fish will be landed in Oregon. This amounts to an additional 51,850 coho. In addition, the quota for the Columbia River area will be increased. Approximately 16,000 additional coho will be available for harvest by the commercial fishery. Using 1979-1982 information, 33% of these fish will be landed in Oregon resulting in an increase of 5,280 fish landed in that state. Therefore, 57,130 additional coho will be commercially sold by those trollers operating in Oregon. Assuming these additional fish will be landed throughout the season and using average poundage value and average price per pound figures, an ex-vessel value can be generated:

57,130 coho X 5.1 lbs./coho X $1.40/lb. = $407,908 (ex-vessel value)

Washington

A 5% increase in chinook landings is expected with this option (without the June 1-15 season an 11% decrease would occur). This results in the landing of an additional 8,590 chinook (see troll Option 1). The ex-vessel values of these fish would be:

8,590 chinook X 9.5 lbs./chinook X $2.31/lb. = $188,508 (ex-vessel value)

Coho harvest will exceed 1982 levels, as well, in the Columbia River area. Using the last four years' landing figures, 67% (10,720 coho) of the additional 16,000 coho allocated to the troll fishery will be landed in Washington. This converts to an ex-vessel gain of:

10,720 coho X 4.9 lbs./coho X $1.21/lb. = $63,559 (ex-vessel value)

Allocations for the area north of Cape Falcon have not yet been determined. These catch differences result in a gain of $252,067 in ex-vessel value.

Overview of Options - The impacts of each of the proposed recreational and troll options are summarized in Table V-51. These gains and losses are evaluated in the short term and do not take into account future gains which may result from rejuvenated salmon runs. Also, changes in revenue which may occur with effort shifts or from the substitution of other activities for salmon fishing are not estimated. Localized charter operators and small troll operators may be the most severely impacted by these regulations since they may not have the ability to travel far from their home ports in search of open seasons once nearby areas close to salmon fishing. Communities which rely heavily on the salmon fishery - commercial and/or recreational - for revenue may suffer economic losses from such area closures. This may occur to the greatest extent in Washington where the most severe decreases in catch are estimated to occur.

Cost vs. Benefits of Salmon Management - Table V-52 presents a preliminary estimate of the directed federal administrative and enforcement costs associated with salmon management. Additional costs are incurred by state and tribal fishery management agencies and by the public hatchery and research programs. The losses in revenue which would be experienced by salmon fishermen under management (see table V-51) are costs as well. In reference to this latter cost, the motivation behind management is to provide future long-term benefits and increase economic revenues by maintaining and rebuilding salmon stocks through reductions in present harvest levels. However, short-term reductions in revenue do result from these harvest reductions. A second motivation behind salmon management is to meet the requirements of legally mandated treaty obligations.

The direct and indirect impact on Washington, Oregon, and California from both the commercial and recreational salmon fisheries have been estimated for 1982 in earlier sections of this chapter. The benefits from commercial salmon harvesting were estimated for selected countries in these three states and are presented in tables V-32 - V-45 and are summarized in table V-46. The benefits from the recreational fishery were estimated on a state-wide basis for Washington, Oregon, and California. These results are presented in Tables V-47 - V-49. From these estimates, the salmon fisheries i.e., commercial and recreational, can be said to have a significant impact on the economies of the coastal states. The benefits of the salmon fishery are therefore greater than the cost of management. The continuation of proper management is needed to guarantee that these economic benefits exist in the future.

Table V-51. Summary of the Impacts of the Proposed Management Option.

	Option A	Option B	Option C	Option D
Troll Impacts[a/]				
California				
North of Cape Vizcaino	$46,964	$-905,221	$46,964	$228,333
South of Cape Vizcaino	16,379	-1,358,573	-344,747	-556,518
Oregon	407,908	-972,423	-249,064	407,908
Washington	878,979	-1,255,994	-1,507,999	252,067
Recreational Impacts[b/]				
California				
North of Cape Vizcaino	$52,984	$83,857	$52,984	$46,827
South of Cape Vizcaino	6,571	139,002	50,705	-37,592
Oregon	1,385,28	1,686,760	1,595,532	1,698,164
Washington	1,258,165	-2,181,148	-2,181,148	-1,085,885

a/ Estimated change in ex-vessel revenues.
b/ Estimated change in expenditures made by anglers.

Table V-52. Estimated federal costs of developing, administrating and enforcing the Salmon Plan ($000).

Management Unit	1978	1979	1980	1981	1982	1983
NMFS - Northwest Region						
Administration	70.0	70.0	70.0	70.0	110.0	101.0
Data Collection and Monitoring	50.0	50.0	50.0	239.4	218.6	293.0
Enforcement	144.0	140.0	177.0	171.0	195.0	205.0
NMFS - Southwest Region						
Administration	10.0	15.0	15.0	25.0	25.0	30.0
Data Collection and Monitoring	--	--	65.0	105.0	255.0	200.0
Enforcement	27.0	27.0	27.0	27.0	45.0	45.0
Pacific Council						
Administration	NA	NA	NA	70.0	120.0	262.0
Programmatic						
Planning and Development	132.8	109.4	131.3	147.0	101.0	156.0
Data Collection and Monitoring	43.0	103.2	80.7	98.5	68.0	83.0
Stock Distribution	--	44.0	141.3	138.3	81.0	131.0
Coast Guard						
Enforcement	NA	NA	NA	1,442.9*	1,262.6	2,505.0
TOTAL	476.8	558.6	757.3	2,534.1	2,481.2	4,011.0

*Revised estimate.

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