FINAL

ENVIRONMENTAL IMPACT STATEMENT

for the implementation of a

FISHERY MANAGEMENT PLAN

for

"Commercial and Recreational Salmon Fisheries Off

The Coasts of Washington, Oregon, and California"

U. S. Department of Commerce
National Oceanic and Atmospheric
Administration
National Marine Fisheries Service
1700 Westlake Avenue North
Seattle, Washington 98109

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

April, 1977

SUMMARY SHEET

Environmental Impact Statement/Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California

( ) Draft (XX) Final Environmental Statement

Responsible Agency: Pacific Fishery Management Council

1. Name of Action: (XX) Administrative ( ) Legislative

2. Description of Action: The proposed action is to adopt and implement a fishery management plan for commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California under provisions of the Fishery Conservation and Management Act of 1976 (PL 94-265). The Act extends jurisdiction over fishery resources and establishes a program for their management. The purpose of the plan is to manage salmon fisheries off the coasts of Washington, Oregon, and California for optimum yield and to allocate harvest between domestic fishermen. The plan recommends significantly more restrictive ocean salmon fishery regulations during 1977 for waters off the Washington coast and Columbia River mouth as compared to those which prevailed during 1976 and prior years. For Oregon and California ocean waters south of Tillamook Head, a regulatory pattern similar to that of 1976 is recommended for continuance during 1977.

The high mobility of commercial trollers plus the significant harvest of some Washington, Oregon, and Idaho chinook salmon stocks by the ocean fishery off Southeastern Alaska, will require effective management coordination with the North Pacific Fishery Management Council. Further, results from international fishery negotiations with foreign governments, particularly Canada, will have important impacts on domestic salmon fisheries of Washington, Oregon, California, Idaho, and Alaska.

3. Summary:

(a) Environmental Impacts - The major impact on the resource of chinook and coho salmon will be to provide a more orderly ocean-harvesting system, to try to ensure that adequate numbers and races survive fishing mortalities, and, considering the causes and extent of natural mortalities, to reproduce themselves in accord with the environment available for their growth and survival. No changes in the physical environment are expected as a result of the plan. The disposal of waste (salmon viscera) at sea is considered, but is believed to be inconsequential; it will be even less under the plan because of reduced ocean catches. Although reduced overall ocean fishing rates are recommended for waters off the Washington coast and Columbia River mouth, resultant fisheries will still contribute, on a short-term basis, to inadequate spawning escapements for some stocks and races of salmon. These include low cycles for Puget Sound, Oregon coastal, and Washington coastal native coho stocks, plus runs of early chinook salmon to the Snake, Satsop, Chehalis, Queets, and Hoh rivers. The additional escapement of salmon from ocean fisheries will increase the proportion of salmon reaching inshore waters, where Treaty Indian fisheries have been allocated increased catches of salmon by Federal Court decisions.

(b) Adverse Environmental Impacts - The adverse environmental impact involves reduced fishing times and catches for the ocean commercial troll fishery, resulting in adverse economic impact to them and to directly-associated supporting industries, processors and coastal fishing communities.

4. Alternatives: Three types of alternatives to the present action were proposed:

(a) Less restrictive ocean fishing controls off the Washington coast and Columbia River mouth, and

(b) More restrictive regulations in the same area.

(c) No action.

5. Comments Requested: Comments have been requested and received from the following:

Department of Interior
Department of State
Environmental Protection Agency
States of Washington, Oregon, California, Idaho, and Alaska
Northwest Indian Fisheries Commission
North Pacific Fishery Management Council

6. Hearings

February 19, 1977 -- Seattle, Washington
February 19, 1977 -- Boise, Idaho
February 20, 1977 -- Astoria, Oregon
February 21, 1977 -- Charleston, Oregon
February 24, 1977 -- Eureka, California
February 25, 1977 -- San Francisco, California

7. Draft Statement to CEQ February 4, 1977

8. Final Statement to CEQ April 21, 1977

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1.0 STATEMENT OF THE PROPOSED ACTION

The Fishery Conservation and Management Act of 1976 (Public Law 94-265) provides for the conservation and management of fishery resources of the United States by establishing a Fishery Conservation Zone within which the United States has exclusive fishery management authority. This document is a combined environmental impact statement/fishery management plan for the commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California. The proposed action is set forth in detail in Chapter 2 of this document.

1.1 Need for the Fishery Management and Conservation Act

The need for this legislation arose because:

1. The fish off the coasts of the United States constitute valuable and renewable natural resources. These fishery resources contribute to the food supply, recreational opportunities, economy, health and culture of the nation.

2. As a consequence of increased fishing pressure and because of the inadequacy of fishery conservation and management practices and controls (a) certain stocks of such fish have been overfished to the point where their survival is threatened, and (b) other such stocks have been so substantially reduced in number that they could become similarly threatened.

3. Commercial and recreational fishing constitute a major source of employment and contribute significantly to the economy of the nation. Many coastal areas are dependent upon fishing and related activities, and their economies have been severely damaged by the overfishing of fishery resources at an ever-increasing rate over the past decade. The activities of massive foreign fishing fleets in waters adjacent to such coastal areas have contributed to such damage, interfered with domestic fishing efforts, and caused destruction of the fishing gear of U.S. fishermen.

4. International fishery agreements have not been effective in preventing or terminating the overfishing of these valuable fishery resources. There is danger that irreversible effects from overfishing will take place before an effective international agreement on fishery management jurisdiction can be negotiated, signed, ratified, and implemented.

5. Fishery resources are finite but renewable. If placed under sound management before overfishing has caused irreversible effects, the fisheries can be conserved and maintained so as to provide optimum yields on a continuing basis.

6. A national program for the conservation and management of the fishery resources of the U.S. is necessary to prevent overfishing, to rebuild over-fished stocks, to insure conservation, and to realize the full potential of the nation's fishery resources.

7. A national program for the development of fisheries which are under-utilized by U.S. fishermen, including bottomfish off Alaska, is necessary to assure that our citizens benefit from the employment, food supply, and revenue which could be generated thereby.

1.2 Objectives of Legislation

The overall objectives of the legislation are:

1. To take immediate action to conserve and manage the fishery resources found off the coasts of the U.S., and the anadromous species and Continental Shelf fishery resources of the U.S., by establishing (a) a fishery conservation zone within which the U.S. will assume exclusive fishery management authority over all fish, except highly migratory species of tuna, and (b) exclusive fishery management authority beyond such zone over certain anadromous species and Continental Shelf fishery resources;

2. To establish Regional Fishery Management Councils to prepare, monitor, and revise fishery management plans under circumstances (a) which will enable the states, the fishing industry, consumer and environmental organizations, and other interested persons to participate in, and advise on, the establishment and administration of such plans, and (b) which takes into account the social and economic needs of the States;

3. To implement, in accordance with national standards, fishery management plans which will achieve and maintain, on a continuing basis, the optimum yield from each fishery;

4. To promote commercial and recreational fishing under sound conservation and management policies; and

5. To encourage the development of fisheries which are currently under-utilized or not utilized by U.S. fishermen, including bottomfish off Alaska.

1.3 Legislative Mandates

1.3.1 Fishery Conservation Zone. The "fishery conservation zone" of the U.S. extends from a line coterminous with seaward boundary of each of the coastal states to an outer boundary drawn in such a manner that each point on it is 200 nautical miles from which the territorial sea is measured.

1.3.2 Scope of Authority. The United States will exercise exclusive fishery management authority over

1. All fish within the fishery conservation zone except highly migratory species;

2. All anadromous species of fish spawned in the fresh or estuarine waters of the United States throughout their migratory range beyond the fishery conservation zone except that such management authority shall not extend to such species during the time they are found within any foreign nation's territorial sea or fishery conservation zone; and

3. All Continental Shelf fishery resources of the United States beyond the fishery conservation zone.

1.3.3 Fishery Management Programs. This legislation establishes a fishery management program for the United States which delegates responsibility to eight Regional Fisheries Management Councils to develop management plans for each fishery in their respective areas of concern. These fishery management plans must conform to specified national standards. Implementation and enforcement of these plans are the responsibility of the Federal Government.

1.3.3.1 Regional Council. The Pacific Council has assumed responsibility for preparation of the management plan for salmon fisheries off the coasts of Washington, Oregon, and California, recognizing that coordination with the North Pacific Fishery Management Council is required.

1.3.3.2 National Standards for Fishery Conservation and Management. Any fishery management plan prepared shall be consistent with the following national standards for fishery conservation and management:

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

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

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

4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (a) fair and equitable to all such fishermen; (b) reasonably calculated to promote conservation; and (c) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

5. Conservation and management measures shall, where practicable, promote efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

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

7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

1.3.3.3 Content of Fishery Management Plans. Any fishery management plan which is prepared by any Council shall:

1. Contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are

    a. Necessary and appropriate for the conservation and management of the fishery; and

    b. Consistent with the national standards;

2. Contain a description of the fishery, including, but not limited to, the number of vessels involved and their location, the costs likely to be incurred in management, the actual and potential revenues from the fishery, the recreational interests in the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any;

3. Assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery, and include a summary of the information utilized in making such specification;

4. Assess and specify:

   a. The capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3), and

   b. The portion of such optimum yield which, on an annual basis, will not be harvested by fishing vessels of the United States and can be made available for foreign fishing; and

5. Specify the pertinent data which shall be submitted to the Secretary with respect to the fishery, including but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, and number of hauls.

Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, may

1. Require a permit to be obtained from, and fees to be paid to, the Secretary with respect to any fishing vessel of the United States fishing, or wishing to fish, in the fishery conservation zone, or for anadromous species for Continental Shelf fishery resources beyond such zone;

2. Designate zones where, and periods when, fishing shall be permitted only by specified types of fishing vessels or with specified types and quantities of fishing gear;

3. Establish specified limitations on the catch of fish (based on area, species, size, number, weight, sex, incidental catch, total biomass, or other factors), which are necessary and appropriate for the conservation and management of the fishery;

4. Prohibit, limit, condition, or require the use of specified types and quantities of fishing gear, fishing vessels, or equipment for such vessels, including devices which may be required to facilitate enforcement of the provisions of this Act;

5. Incorporate the relevant fishery conservation and management measures of the coastal states nearest to the fishery;

6. Establish a system for limiting access to the fishery in order to achieve optimum yield; and

7. Prescribe such other measures, requirements, or conditions and restrictions as are determined to be necessary and appropriate for the conservation and management of the fishery.

2.0 FISHERY MANAGEMENT PLAN

This management plan for the ocean salmon fisheries off Washington, Oregon, and California is a direct response to the Fishery Conservation and Management Act of 1976 (U.S. Public Law 94-265). The Act extends U.S. fisheries jurisdiction and establishes an exclusive management authority. It mandates preparation of management plans for each individual fishery unit, and the ocean salmon fisheries off Washington, Oregon, and California constitute one such fishery unit.

This plan is an initial step in developing a comprehensive management regime for salmon fisheries throughout the range of Pacific Fishery Management Council jurisdiction. It is designed to insure that the Council implements adequate controls to meet allocation requirements mandated by recent court decisions and pressing conservation needs for Washington and Columbia River system salmon stocks. It is envisioned that the plan will be modified as needed.

The ocean salmon fisheries off Washington, Oregon, and California are important, both in their direct economic value and their effect upon the resource and other salmon fisheries. These fisheries have been conducted by U.S. and Canadian trollers since around the turn of the century and by substantial numbers of U.S. recreational anglers since World War II. In Washington, treaty Indians have fished commercially in recent years under individual tribal regulations. The commercial fishery provides fresh, frozen, and cured salmon, all relatively high-priced prime products, to a receptive market over an extended period of time and provides employment to many small, independent businessmen. The sport fishery provides valuable recreational benefits. Canada is the only foreign nation currently documented, in formalized catch and effort statistics, as catching significant numbers of Pacific Coast salmon in a target-species fishery (troll) on salmon stocks originating in Washington, Oregon, California, and Idaho rivers. Other foreign countries have also taken salmon, albeit primarily as incidental catches made during trawl fishing, but the massive nature of past foreign fishing efforts off the coasts of Washington, Oregon, and California create serious concerns for salmon resources.

Canada has passed legislation establishing a fishery zone off her coasts. This became effective January 1, 1977; consequently, U.S. jurisdiction over its anadromous fish will not extend into these areas in accordance with PL 94-265.

Many of the facts upon which this plan is based were taken from five key references, a preliminary management plan plus four documents which were prepared specifically to serve the function of providing detailed back-up information for the plan. These documents are:

National Marine Fisheries Service
1977. Final Environmental Impact Statement/Preliminary Fishery Management Plan. Troll Salmon Fishery of the Pacific Coast. U.S. Dept. Comm. NOAA. 128 pp (mimeo).

O'Brien, Patrick
1977. Status of California's commercial troll and ocean sport salmon fisheries in the mid-1970's. Calif. Dept. Fish & Game.

Oregon Department of Fish & Wildlife
1976. A history and current status of Oregon ocean salmon fisheries. Oreg. Dept. Fish & Wildl. 20 pp (mimeo).

Phinney, Lloyd A. and Marc C. Miller
1977. Status of Washington's ocean sport salmon fishery in the mid-1970's. Wash. Dept. Fish. Tech. Rept. 24. 72 pp.

Wright, Samuel G.
1976. Status of Washington's commercial troll salmon fishery in the mid-1970's. Wash. Dept. Fish. Tech. Rept. 21. 50 pp.

These are cited at this point to circumvent over-frequent reference to these papers. Other publications and explanations are noted specifically by numbers in the text and Section 9.0, References and Notes.

2.1 Description of the Fishery

2.1.1 Fishing Areas (Figure 1). The Pacific Coast salmon troll fishery is a mobile fishery which extends from mid-California to Middleton Island in the Gulf of Alaska. It is conducted on feeding salmon intermingled from many parent streams. Many of the larger vessels also participate in crab and albacore fisheries and these efforts often account for a substantial percentage of such fisherman's income.

The California troll fleet fishes mainly off its own coast, but a few boats have fished as far north as the southern coast of Washington.

Although most of the Oregon salmon troll fleet fishes primarily off the coast of Oregon, some vessels, particularly larger ones, follow the salmon runs from northern California to northern Washington.

The Washington troll fleet fishes waters from northern California to Southeastern Alaska. Most of the catches by this fleet, however, occur off coastal Washington. Prior to the late 1960's, U.S. fishermen made substantial landings of both chinook (Oncorhynchus tshawytscha) and coho (O. kisutch) from waters north of the Strait of Juan de Fuca. Such landings have declined greatly in recent years.

Most of the salmon caught by the Canadian troll fleet are taken off the British Columbia coast but some Canadian boats also fish off Washington. A bilateral agreement between the U.S. and Canada, first signed in 1970, permitted salmon fishing since 1973 by Canadian troll vessels within the 3- to 12-mile zone in an area off the Washington coast north of approximately 48°N latitude.

Recreational fishing vessels are far less mobile, limited almost entirely to 1-day trips out of the major coastal ports.

2.1.2 Salmon Stocks. Chinook and coho salmon 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.

2.1.2.1 Chinook Salmon. Young chinook salmon generally tend to migrate predominantly northward on their feeding migrations and southward as maturing fish. Consequently, chinook salmon from the Sacramento-San Joaquin River systems contribute substantially to ocean fisheries as far north as southern Washington; northern California coastal chinook stocks also contribute to these same areas and somewhat to the north because they tend to migrate slightly farther north.

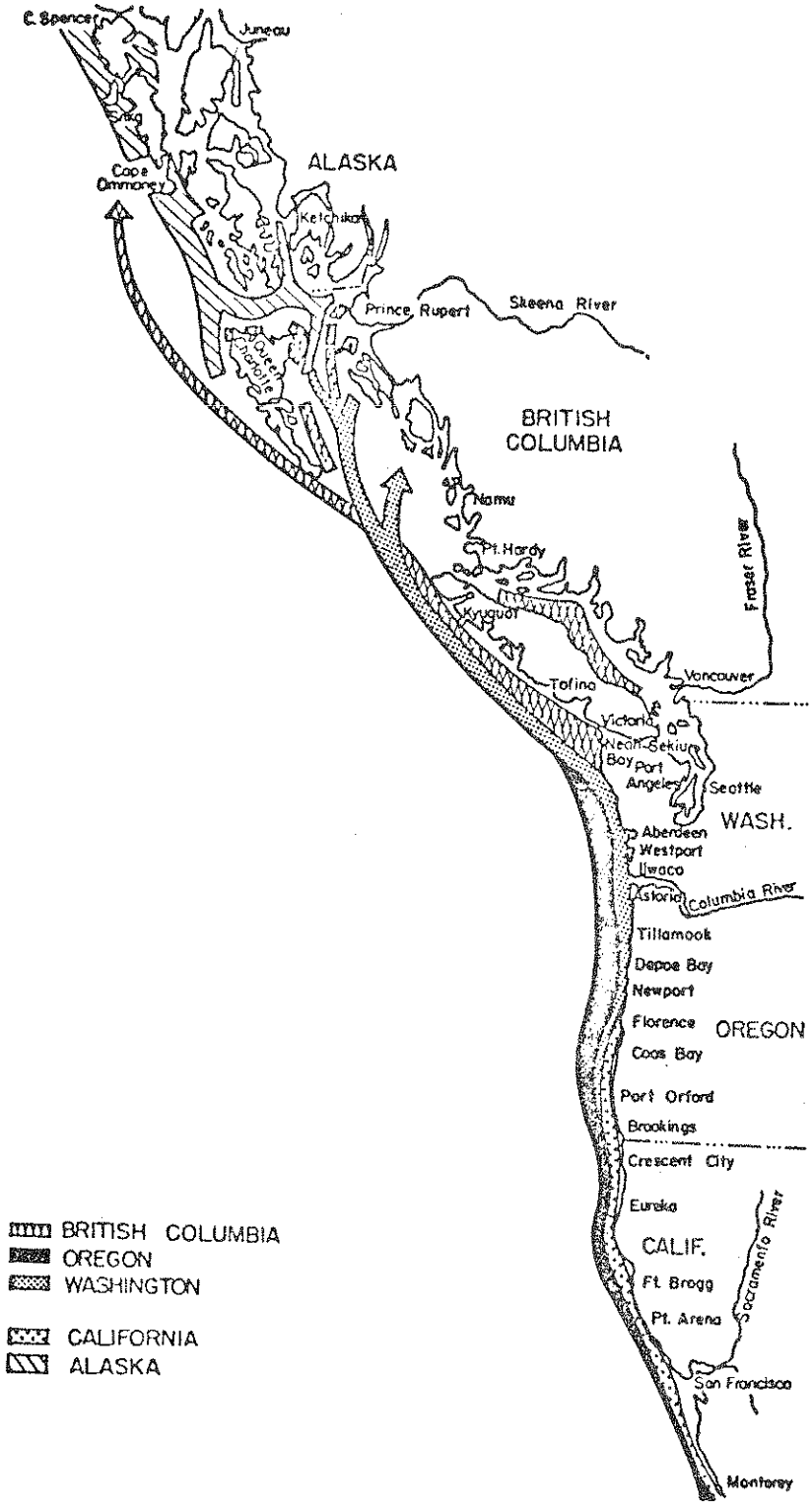

Figure 1. Generalized marine areas in which chinook and coho salmon originating in specified locations are taken in the ocean commercial troll and recreational fisheries.

The Columbia River chinook salmon stocks, particularly the lower river fall chinook, contribute heavily to the ocean fisheries off Washington and British Columbia. These lower river chinook do not migrate as far north as Alaska in any magnitude and thus do not appear in any substantial numbers in the Alaska troll catch. Other Columbia River chinook stocks, such as the spring, summer, and upper river fall runs, also contribute to the Washington ocean fishery and, to an even greater extent, to the British Columbia and Southeastern Alaska catches. It was the loss of upriver Columbia River chinook stocks (due to power dams) that had such an adverse effect on the troll catches off Southeastern Alaska. Some Columbia River chinook salmon also migrate southward on their feeding migrations and enter the Oregon and California ocean salmon fisheries.

Washington and Oregon coastal chinook stocks primarily contribute to the ocean fisheries off Washington, British Columbia, and Southeastern Alaska. A proportion of these runs are also harvested off Oregon and northern California.

Puget Sound chinook stocks exhibit the generally typical northward migration pattern, with minor exception; thus, these stocks contribute mainly to the ocean catches off British Columbia.

The Fraser River chinook stocks contribute much more heavily to the British Columbia and Southeastern Alaska ocean fisheries than they do to the Washington area fishery.

In terms of overall management area importance, the California ocean catch of chinook salmon comes mainly from California and Oregon coastal stocks. The Oregon ocean fishery operates mainly on Oregon coastal stocks, California stocks, and fish from the Columbia River. The Washington ocean chinook catches are mainly from Columbia River, Oregon coastal, Washington coastal, California, Puget Sound, and southern British Columbia stocks.

2.1.2.2 Coho Salmon. Coho salmon tend to be available as adults both northward and southward from their parent streams and tend to contribute most heavily to the more local fisheries. (1) Thus, California coho stocks are of minor importance to the ocean fishery north of Oregon. Columbia River and Oregon coastal coho stocks contribute mainly to the Oregon and California fisheries. The abundance of Oregon coastal coho stocks diminishes rapidly from south to north off the Washington coast. Although a sizable portion of the Columbia River coho stocks migrates southward from the Columbia as far as California on their feeding migration, Columbia River coho also contribute large numbers to the Washington ocean fishery. However, their abundance is relatively low north of Cape Flattery.

Washington coastal coho stocks seem to be found more to the north and contribute significantly to the fisheries off Washington and the west coast of Vancouver Island. A portion of these stocks migrate south and enter Oregon coastal fisheries. Puget Sound coho also contribute large numbers to the north coastal Washington and British Columbia ocean fisheries, with minor contribution to Oregon waters.

British Columbia stocks of coho, particularly from the Fraser River, contribute to the Washington ocean fisheries, but their abundance diminishes rapidly from north to south. They also contribute heavily to the British Columbia ocean catches.

Relative abundance of the various stocks shows that California ocean catches of coho salmon come primarily from Oregon coastal, Columbia River, and California stocks. The Oregon ocean catch is composed primarily of Columbia River, Oregon coastal, Washington coastal, and Puget Sound stocks. Coho salmon originating in Columbia River, coastal Washington, Puget Sound, southern British Columbia, and Oregon coastal streams are the primary contributors to the Washington ocean catch.

2.1.2.3 Pink Salmon. For pink salmon, the Fraser River stock, which is abundant in the odd-numbered years, has been the major contributor to the Washington, Oregon, and California ocean catches of pink salmon in recent years. Puget Sound pink salmon stocks occasionally make significant contributions to the ocean fishery.

2.1.3 Salmon Harvests and Values

2.1.3.1 Troll Fishery. The recent chinook catch by California trollers has shown some rather large fluctuations but there does not appear to be any definite trend in the landings. Since 1952, the catch has varied around 600,000 fish with a high of about 958,000 fish in 1956 and a low of 338,000 fish in 1967.

Coho troll landings in California averaged about 80,000 fish from 1952-57. The catch dropped to a low of only 13,000 coho in 1958 and stayed at a low level through 1960. Catches then began to rise steadily, due to increased Columbia River and Oregon coastal hatchery production, reaching 445,000 fish in 1966. Since 1966, the catch has shown some rather wide fluctuations from a low of 158,000 fish in 1972 to a high of 656,000 fish in 1974.

Pink salmon troll catches are very small in California, with the peak recorded catch of 30,000 fish occurring in 1967.

The catch of chinook salmon by the Oregon troll fleet was at its highest in the mid-50's. It then began to decline and reached its lowest level of 53,000 fish in 1962. Since then the trend of the catch has been upward and reached a peak of 363,000 fish in 1973.

The annual Oregon troll catch of coho salmon declined rapidly in the 1950's, and reached a low point of only 112,000 fish in 1960. Then the catch has increased markedly, especially after 1962, reflecting increased hatchery production. The Oregon catch reached a peak of 1.5 million coho in 1971, and subsequently fluctuated at a relatively high level.

Pink salmon are only caught in quantity by Oregon trollers in odd-numbered years, and even then the recorded catch is relatively small. The peak landing was 201,000 fish in 1967, with the next highest catch being 58,000 fish in 1969.

The catch of chinook salmon by the Washington troll fishery, although showing some rather large fluctuations, gradually increased from about 200,000 fish in 1935 to around 400,000 fish in the early 1950's. The catches then experienced a sharp decline to a low of only 96,000 fish in 1965. Since that time, the catches have been generally increasing and reached a recent peak of 353,000 fish in 1974. These statistics include a small (i.e., less than 2% of the

state's total troll landings) year-round tribal troll fishery by the Makah Indians centered in the vicinity of outer Juan de Fuca Strait.

The coho catch by Washington trollers is considerably more variable than the chinook catch. During the late 1930's and early 1940's the catches generally declined. They improved during the late 1940's and 1950's, fluctuating around 600,000 fish annnually. Since 1965, the overall trend of the catches has been generally upward with a record catch in 1971 of 1,264,000 coho salmon.

Pink salmon are caught by Washington troll fishermen primarily in the odd-numbered years. The catches began increasing in the early 1950's and reached a record catch of 630,000 fish in 1963. Following another good catch in 1967 of 381,000 fish, the catch has declined to less than 60,000 fish annually since 1967.

Not only have troll salmon catches been increasing, but the prices paid to fishermen also have risen dramatically. For chinook salmon, the average coast-wide price per pound increased from 25 cents in 1947 to 80 cents by 1972 and has continued to increase since that time. For example, average ex-vessel price for troll-caught chinook in Washington for 1975 was over $1.00 per pound, and final 1976 economic statistics will be even higher. For troll-caught coho salmon, from an ex-vessel price of 22 cents in 1947, the price increased to 68 cents per pound by 1972, and these coho prices also have continued to increase sharply since then. It should be pointed out that these prices are undoubtedly minimal since other factors such as bonuses, post-season settlements, etc., are not included.

While some of this price rise reflects price inflation in the national economy, troll salmon prices deflated by the wholesale price index rose, on the average, by over 2% per annum from the late 1940's to 1972.

2.1.3.2 Ocean Sport Fishery. In addition to extensive commercial troll salmon fisheries, there also are increasingly important ocean recreational fisheries harvesting stocks of Pacific Coast salmon. For example, the reported ocean sport catch of chinook in California increased from around 100,000 fish in the early 1960's to nearly 200,000 fish by the early 1970's. The California ocean sport catch of coho also has increased during this period, reaching a peak catch of about 77,000 fish in 1974.

In Oregon, the ocean sport fishery depends heavily on coho, with recent landings exceeding 300,000 fish in 1967, 1971, and 1974. Chinook catches were smaller averaging only about 43,000 fish per year in the last decade.

The ocean recreational catch of salmon in Washington has increased rapidly since 1952, sometimes exceeding the total marine sport salmon catch for all other Pacific Coast states and British Columbia combined. The ocean chinook catch has increased since 1952 at a rate of approximately 7,000 fish per year and reached a peak of 262,000 chinook in 1975 after a low of 38,000 fish in 1953. Washington's ocean coho fishery has increased from a low of 26,000 fish in 1952 to a high of 747,000 coho in 1971. The catches in 1972 through 1975 ranged from 471,000 to 594,000 coho.

Economists commonly evaluate sport fishing on the basis of value of the whole experience expressed as a dollar value per angler day for the average angler. Recent studies have indicated $22.00 to $28.00 (or higher) as the average value of an angler day in the Northwest salmon sport fishery.

Conversion to value per fish, required for management purposes, is not simply a matter of dividing days fished by fish caught. Empirical studies do not exist which permit making a completely reliable conversion.

2.1.4 Vessels and Gear Employed

2.1.4.1 Troll Fishery. Commercial salmon fishing in the ocean began as a hand line operation--a single line fished from a row boat. Power boats entered the fishery in the 1910's and these permitted more lines to be fished per boat. Power gurdies came into general use in the 1920's, allowing the use of steel fishing lines, heavier weights, and an increased number of lines. Aids to navigation, such as radio-telephones, direction finders, echo-sounders, automatic pilots, and radars, coupled with the larger, faster and more powerful vessels, have greatly increased the efficiency and mobility of the fleet.

Many of the present-day commercial vessels are combination boats which are used in more than one type of fishery (e.g., crab and albacore). Crab fishing normally occurs prior to or during the early portion of each salmon troll season. Fishing effort in each fishery is dependent upon the relative abundance and prices of salmon versus those for crab. The opportunity to take albacore normally commences in July and August, or subsequent to a substantial portion of the normal troll salmon season. Again, relative comparisons of abundance and prices influence the degree of fishing effort for each resource. The development of the albacore fishery was an important influence in shifting troll salmon fishing effort from late summer and fall to spring and early summer months.

There also has been a tendancy to build larger, more efficient vessels, particularly in the British Columbia fleet. However, there also has been a significant increase in the number of smaller vessels entering the troll fishery. Boats range in size from small 20-ft day boats to 60-ft-plus combination vessels capable of extended stays at sea. Large boats are frequently equipped with mechanical refrigeration. Most boats have two tall trolling poles which rise high above the mast, and two more may lie back from the bow. When fishing, these poles are dropped out and downwards, carrying stainless steel lines that are stretched almost straight down for 180 ft or more by large "cannon ball" weights of as much as 50 lb. Each line carries several lures, sometimes as many as 12 or more. When a fish strikes, the steel lines are reeled in on power-driven spools called "gurdies". The terminal gear used may be bait, plugs, spoons, or a combination of flashers and bait or plastic lures.

Today there are several thousand trollers fishing along the Pacific Coast, although it is difficult to get the exact numbers since licensing requirements vary with the different State management agencies. A number of boats are licensed in two or more states.

An estimated 1,300 boats were licensed by the State of Washington to troll for salmon in 1951. This increased to an estimated 1,722 vessels by 1964. From the mid-1960's through 1971, the fleet increased substantially, peaking at an estimated 5,600 boats in 1971. Unfortunately, this cannot be accurately documented since a vessel delivery permit was not automatically included with a troll license, being purchased separately. The total number of boats eligible to troll was less than the total for licenses plus permits since many individual boats purchased both. From 1972 on, a vessel delivery permit was automatically included with each troll license and the permit alone could be purchased separately. By this procedure, total boats eligible to troll equalled the sum of licenses plus separate permits. During the four seasons from 1972 through

1975, annual Washington boat totals were 3,518, 2,660, 3,260, and 3,136, respectively. Estimated number of days fished by this fleet ranged from 51,000 to 68,000 annually during the period of 1970 through 1975.

Oregon does not issue commercial fishing licenses for a particular type of fishery, so there is no accurate count on the number of Oregon trollers fishing. Nevertheless, the number of salmon landings by Oregon trollers increased markedly from 15,000 in 1965 to over 51,000 in 1974. Over 3,000 individual boats landed salmon in Oregon during 1975.

The number of troll salmon licenses for California is also not directly available, although the number of registered California commercial fishing vessels that landed salmon averaged around 2,000 in the late 1960's and then jumped from 2,865 in 1973 to 4,801 in 1975. A common measure of salmon fishing effort for California is the number of salmon landings. These have increased from 44,000 in 1965 to a peak of 56,000 in 1973.

The State of Washington presently has a moratorium on the issuance of new salmon licenses. Commencing in 1975, only those vessels which held a valid license during the period of January 1, 1970 and May 6, 1974, and which had caught and landed salmon during that period could be relicensed. Licenses, however, can be transferred from boat to boat or to new fishermen.

2.1.4.2 Ocean Sport Fishery. The sport fisheries off the Coasts of Washington, Oregon, and California are of a much more recent vintage, generally growing to significant, wide-ranging proportions only after World War II in ocean waters historically fished only by commercial fishermen. Prior to that time, sport catches generally occurred either in or just off various coastal river mouths during the period when runs of salmon were expected on their annual spawning migrations. The advent of larger, more seaworthy private boats with powerful, dependable engines, plus the rapid development of charter or party boat fleets, construction of small-boat basins, improvments in launching and moorage facilities, and increases in fishermen support industries, have combined to make recreational ocean fishing a major impact on salmon resources. Sophisticated navigational equipment and other electronic gear have been utilized by charter fishing craft as well as by commercial trollers and this, coupled with a distinct trend toward larger boats, has provided sportsmen with access to an ever-increasing percentage of the ocean waters inhabited by feeding chinook and coho salmon.

The fishing gear utilized by individual sport anglers varies widely, but generally consists of a single rod held by hand and/or rod holder with a single bait or artificial lure. (NOTE: California has no limit on the number of rods or gear during the commercial fishing season.) Two basic patterns of fishing are common, "mooching" and trolling. Mooching is fishing from a drifting craft, typically with bait, and is commonly practiced by many private craft and most larger charter boats. A variation is "motor mooching", where intermittent motor propulsion is utilized to improve the "action" of bait or lures. Trolling involves continual movement by individual craft at a somewhat constant rate of speed and is practiced by private craft as well as many smaller charter boats. This consistent gear movement within the water column necessitates use of much heavier weights and lines with various planing devices sometimes being employed to force the terminal gear downward. Accessories are often used which either release the heavy weights when a fish strikes or release the light fishing line from a heavier steel line utilized to carry the former to a desirable fishing depth.

Fishing effort is traditionally expressed in terms of angler participation as an "angler day" or "angler trip". Either term denotes a single day's sport fishing effort by one angler. Fishing success is commonly measured as catch per angler trip or day, and is the product of dividing the total salmon catch landed by the number of angler trips or days. For example, Oregon ocean sport fishermen averaged 337,000 angler trips per year during the 10-year period, 1966 through 1975. The overall fishery south of Tillamook Head averaged 0.81 salmon per trip during this period, while anglers fishing the Columbia River area averaged a higher 1.50 fish per trip for the same time span.

Formalized effort statistics are not normally maintained for actual numbers of individual private boats participating in the ocean recreational fisheries. Data on numbers of charter boats are generally available, however, due to various licensing or registration requirements within each individual state. For example, it is known that Oregon had at least 226 charter boats during 1975 and that the State of Washington licensed a total of 426 charter boats in 1976. A very high percentage of the latter operated from coastal fishing ports.

2.1.5 Impact of Foreign Fishery on Domestic Fishery Activities

2.1.5.1 Competition on Stocks. Canadian salmon fisheries, particularly commercial trolling, have a significant impact on domestic sport, treaty Indian, and commercial salmon fisheries. Stocks of U.S. salmon, in addition to being heavily exploited by Canadian trollers off the British Columbia coast and by Canadian seine and gill net fishermen in Juan de Fuca Strait, are also caught by Canadian trollers off the Washington coast where they *are* permitted to fish within the 3- to 12-mile area north of approximately 48°N latitude under a bilateral fishing agreement.

Canadian fishermen take over half of the total catch of ocean-migrant Puget Sound chinook salmon and about 40% of the total catch of Puget Sound coho. Also, Canadian trollers catch about one-third of the total catch of the fall chinook salmon reared in Columbia River hatcheries. Thus, the large catch by Canadian fleets has a tremendous impact on the fisheries of the U.S. All the escapement requirements have to be taken from that portion of the run returning to U.S. waters. In years of small runs, this requirement can sometimes eliminate any domestic fishing opportunity.

In areas off the U.S. coast, and to a limited degree off the Canadian coast, troll vessels from the two nations fish side by side. In these areas they directly compete for the salmon available. However, the catch by Canadian trollers off the U.S. coast is much greater than the catch off Canada by U.S. trollers. Furthermore, the catch off the U.S. coast by Canada has increased in recent years, whereas the catch off Canada by U.S. trollers has declined. For example, from 1960-62, a 3-year total of 120,000 chinook salmon, or 26% of the total catch of chinook salmon by U.S. trollers landing in the State of Washington, was caught off the west coast of Vancouver Island. By contrast, for the 3-year total of 1970-72, only 11,000 chinook were caught by U.S. trollers in these same areas and landed in the State of Washington. This amounted to less than 2% of the total Washington troll catch of chinook salmon. On the other hand, during 1960-62, Canadian trollers caught less than 1,000 chinook salmon off the Washington-Oregon coast; while from 1970-72, Canadian trollers caught a 3-year total of 163,000 chinook in the same area.

Coho catches by each country off the other nation's shores have shown a very similar trend, with Canadian troll salmon landings from the Washington and

Oregon coasts peaking at nearly 600,000 fish in 1970, and Washington catches off Canada gradually fading to insignificant proportions by the early 1970's. It should be noted that accuracy of catches discussed is dependent upon fishermen properly reporting their catch-origin areas to troll fish buyers.

The large catches of U.S. chinook and coho salmon by Canadians have made it increasingly difficult for some U.S. fisheries in inside waters to maintain any type of open season and still obtain the desired levels of spawning escapement. This problem is magnified even more by the obligation to allocate a proportion of the available catch to treaty Indian fisheries in line with recent U.S. Federal Court decisions.

Foreign trawling also has an impact on U.S. salmon stocks. Trawling, particularly by Soviet vessels, began off the Washington-Oregon-California coast in the mid-1960's. Other countries, including Japan, Poland, East Germany, West Germany, and Bulgaria, subsequently entered this fishery. The magnitude of foreign fishing depends on time of year, and it affects the salmon fishery in two ways. There is physical interaction of large foreign vessels competing for space in certain areas and during certain months with smaller U.S. salmon trollers. This occurs because hake, the primary target species of the foreign trawlers, and salmon often occur together apparently due to similarities in food habits. Some salmon are caught by the foreign trawl fishery. Specific effort by the foreign fleet to catch salmon has not been documented, but an incidental catch of both chinook and coho salmon is known to occur. Some incidental salmon catches were recorded by American observers on foreign vessels. Observations off Oregon of the number of salmon caught during 1975 and 1976 ranged from no salmon to 0.43 salmon per metric ton (2,205 lb.) of hake. Chinook was the principal salmon species caught by foreign trawlers. A rough approximation of salmon catches by foreign trawlers might be the mid-point of these observations (0.215 salmon per metric ton) times the recent average catch level of 200,000 metric tons annually. This would yield an incidental catch of 43,000 salmon per year off Washington, Oregon, and California. However, for 1977, the allowable hake catch for all foreign trawl fishermen will be substantially reduced from this 200,000 metric ton level and no retention of salmon will be permitted.

2.1.5.2 Implied Economic Consequences. The large catches of U.S. chinook and coho salmon by Canadian vessels has had serious economic impact on the fisheries of the U.S. in that they have greatly reduced the number of salmon available for capture by U.S. fishermen. These large catches of salmon by Canadian vessels, a substantial portion of the catches being hatchery fish produced at substantial cost to the U.S. taxpayer, have reduced the benefit/cost ratio (as it pertains to benefits to U.S. fishermen) for U.S. hatchery operations and consequently made it more difficult to gain public support for such operations. Nevertheless, resource enhancement in terms of artificial production and habitat improvement can still be conducted on a positive domestic benefit/cost ratio and is essential to the future well-being of U.S. domestic user groups, providing Canadian catches of U.S. salmon do not accelerate to an even higher level. Care must be exercised, however, in the selection of facility sites, release points, salmon stocks, juvenile size at liberation, and timing of releases in order to maximize benefits to U.S. domestic fisheries.

The broader implications of the salmon interception problem are summarized graphically in Figure 2.

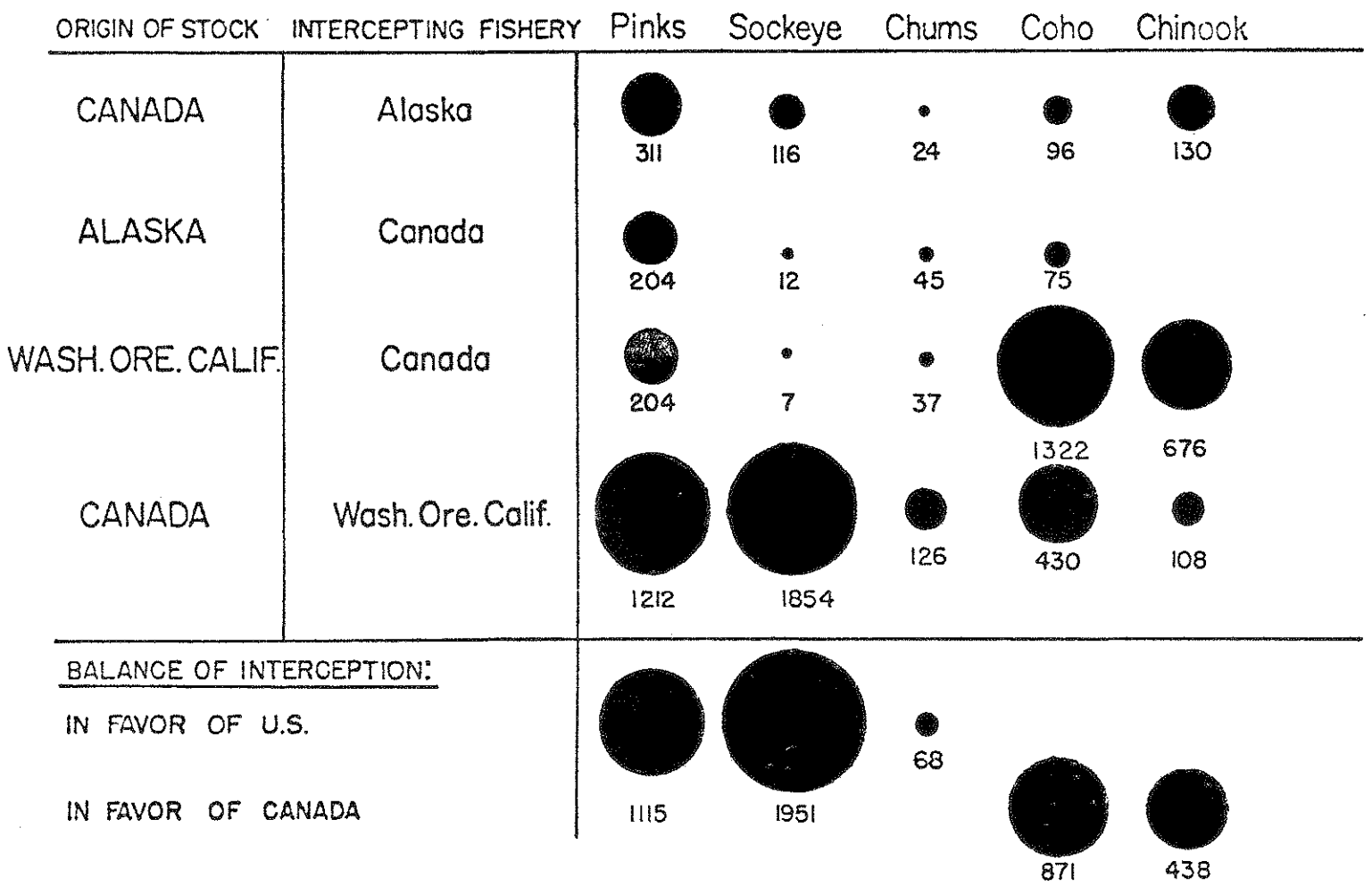

Figure 2. Interceptions of salmon by United States and Canadian fisheries. Average annual catches, 1964-1974 (1,000's of fish).

(Note: Average of U.S. and Canadian estimates and does not include salmon bound for streams which originate in Canada and flow through the Alaska Panhandle.)

2.1.6 Non-Target Species Mortalities. This is not a serious problem with the ocean salmon fishery. Although many other species, such as rockfish (genus Sebastes), lingcod (Ophiodon elongatus), and Pacific halibut (Hippoglossus stenolepis), may be caught by trollers and sport anglers, the magnitude of these catches, in most instances, is minor, both in relation to the ocean catch of salmon species as well as to the catch of the non-target species by other fisheries.

2.1.7 Fishery Management and Research

2.1.7.1 History. The earliest management involvement of Pacific Coast states was primarily in the form of documenting landings. Reliable statewide ocean salmon landing estimates were first published by California in 1916.

The first ocean salmon research that had significant management implications was not published until 1920. This work on salmon in Washington coastal waters demonstrated the rapid growth of "silvers" (coho) in their third summer and the advantage of delaying their capture until a larger size was reached.

Although tagging salmon at sea to study migration patterns was attempted in the early 1920's, it was not until the late 1930's and early 40's that significant information regarding ocean salmon movements was available.

Management agencies from the states of California, Oregon, and Washington have maintained specific and continuing research and management projects for the ocean salmon fishing since the 1940's. This work was solidified with the creation of the Pacific Marine Fisheries Commission (PMFC) in 1947 when the states of California, Oregon, and Washington entered into a compact with the consent of the 80th Congress of the United States.

One of the first undertakings of the Commission was the collection and publication of all available research data, statistics, and other facts pertinent to the marine fishing of the Pacific Coast states. Based on the data collected, the PMFC made recommendations for the regulation of the ocean troll fishery. These recommendations were subsequently adopted in substance by the member states.

The forum for coordinating both research efforts and ocean salmon fishery management has generally been the PMFC Salmon and Steelhead Committee. This Committee consists of knowledgeable project leaders and supervisors from each State agency.

Along with the tremendous increase in exploitation of ocean salmon stocks and as a result of continuing research by government agencies along the Pacific Coast, it became apparent that foreign fisheries created a tremendous impact upon U.S. salmon stocks. A prime example is the influence of Canadian troll catches on Puget Sound and Columbia River stocks.

There is a long history of cooperative research between the U.S. and Canada on salmon problems, as well as the exchange of statistical data. In the early 1960's, an Informal Committee on Chinook and Coho Salmon and a functional subunit--a technical working group--were established between the two countries and have provided a forum for planning and reviewing the results of the other country's research as well as an easily accessible route for the exchange of data.

2.1.7.2 Coordination with North Pacific Fishery Management Council. Significant numbers of chinook salmon originating in Washington, Oregon, and Idaho rivers are currently harvested by U.S. and Canadian commercial trollers operating in offshore waters adjacent to the coastline of Southeastern Alaska. Stocks involved include mainly those chinook salmon runs from the upper Columbia River system and Oregon and Washington coastal streams which still have significant numbers of 5-year-old fish in their spawning populations. The significant role of ocean fishing off Alaska on these stocks mandates close coordination between the North Pacific and Pacific Fishery Management Councils with respect to troll fishery chinook management. Further, changes in ocean fishery regulatory practices off either Alaska or off Washington, Oregon, and California would modify the coastwide distribution of troll fishing effort and must be carefully considered by both Councils.

Alaskan chinook and coho are not taken to any degree off Washington, Oregon, and California, and coho from these three southerly states are not present in any significant numbers off Alaska as adults.

2.1.7.3 Adjacent Waters Management. A close degree of coordination and general unity of purpose will be required in overall salmon resource management since the stocks involved commonly migrate across jurisdictional zones of domestic fishery management agencies as well as international boundaries. Specific and effective cooperation efforts by the Pacific Fishery Management Council must involve the following management authorities:

1. The International Pacific Salmon Fisheries Commission, Fisheries Service of Canada, State of Washington, and treaty Indian tribes for management of Puget Sound and southern British Columbia salmon stocks and fisheries.

2. The State of Washington and treaty Indian tribes for management of coastal Washington salmon stocks and fisheries.

3. The States of Washington, Oregon, and Idaho, treaty Indian tribes, and the Columbia River Compact for management of Columbia River system salmon stocks and fisheries.

4. The State of Oregon for management of coastal Oregon salmon stocks and fisheries.

5. The State of California for management of California salmon stocks and fisheries.

In all cases, coordinated management of salmon stocks must consider the habitat necessary to maintain and enhance the salmon resource on a continuing basis.

2.1.7.4 Regulation Evaluation. Proposed regulations will be evaluated by computerized analysis systems designed for that purpose. These are the Washington State Department of Fisheries-National Bureau of Standards Catch/Regulation Analysis Model (2) and the California Department of Fish & Game Salmon Fisheries Population Simulation Model.

Washington's operational management system has the capability to evaluate changes in ocean salmon fisheries by adjustments in seasons, size limits, fishing areas, effort levels, etc. Proposed changes presently can be contrasted with existing regulations for eight mixed stocks by area and fishery

in terms of numbers of fish taken, pounds landed, economic value of the catch, and fishing-related mortality losses. The computerized model presently contains 1975 recreational and commercial fishery economic data (3) as well as biological data on the following major stocks:

Puget Sound coho (4)
Columbia River coho (5)
Willapa Bay coho (6)
Grays Harbor coho (7)
Oregon coastal coho (8)
Southern British Columbia coho (9)
Lower Columbia River fall chinook (10)
Upper Columbia River fall chinook (11)

Biological data for each stock encompass estimates of ocean migration patterns (12), growth rates (13), age-class composition (14), maturation schedules (15), natural mortality rates (16), fishing-related mortality factors (17), and catch distributions (including average lengths and weights) and fishing rates by time, fishery, and geographical area (16).

This computerized model will soon be expanded to include other major salmon stocks such as Puget Sound chinook, Sacramento chinook, Oregon coastal chinook, upper Columbia and Snake River spring chinook, Fraser River chinook, and northern California coho.

The California model is oriented toward predicting the effects of regulation changes on catch and ocean escapement of chinook and coho. Biological data utilized include growth rates, age-class composition, natural mortality rates, fishing rates, fishing-related mortality factors, and catch by specified time intervals.

2.1.7.5 Provision of Basic Statistics. In order to provide the basic real time catch and effort data base necessary for achieving rational management of the ocean salmon fisheries, a coastwide data system will be achieved by expansion of the Washington Department of Fisheries' Auxiliary Fish Catch Record System (AFCRS). (19) This operational, on-line, computerized system successfully handled in-season catch and effort for all Washington salmon fisheries and the Oregon ocean sport fisheries during 1976. (20) Basic data are entered by common format from many agency sources to a central computer at the University of Washington and can be readily accessed in a variety of summary formats through the use of remote terminals. Data from the Oregon troll fishery as well as California and British Columbia ocean fisheries will be added to this system in 1977 as methods of providing real time catch and effort data are developed for each area. Remote terminal capabilities can be expanded to encompass any concerned fishery management agencies, and appropriate new summary formats will be developed as new management needs arise.

Specifically, the basic statistical data required are salmon catches (in numbers of fish by species, existing statistical catch area, time period, fishing gear, and user group) plus effort data (days fished or number landings for commercial fisheries, angler days for recreational fisheries).

2.1.7.6 Costs of Management. The high economic value and management complexities of salmon resources require that Pacific Coast fishery agencies expend significant portions of their resources for salmon management. For 1977, existing State and Federal programs can provide much of the work required for management needs. However, additional resources will be required for efficient management of the resources and the harvesting systems operating on them, especially for enforcement of the proposed regulations.

The expenses to date that have been incurred by the members of the planning team preparing this Ocean Salmon Fishery Management Plan, have totalled approximately $55,000. Direct expenses have been covered by a State-Federal Program contract with the Pacific Marine Fisheries Commission. Salaries for the members of the Team have been provided by their respective state and federal employing agencies.

The best estimate available at the present time of additional costs reasonably to enforce the Plan and its regulations is $450,000. This amount would support 248 Enforcement Agent-days, 660 hours of aircraft time for aerial patrols, and 120 vessel-days for surface patrols. Fishery enforcement personnel of the three coastal states and the National Marine Fisheries Service and personnel of the U.S. Coast Guard will cooperate in these patrol and enforcement actions. The specific contribution of each has not yet been established. These costs can be covered by (1) new appropriations, or (2) reprogramming of funds and efforts presently available. If additional funding cannot be provided from new money or reprogramming, then the level of enforcement will not be sufficient to handle adequately all of the anticipated problems.

No new domestic licenses, permits, or other forms of catch tax are proposed in the management plan above and beyond prevailing license and landing fee requirements of the individual states.

2.2 Status of Stocks

2.2.1 Condition of Salmon Resources

2.2.1.1 Chinook Salmon

The chinook salmon stocks in California have been severely depressed by changes in their freshwater environment (dams, water diversions, logging, pollution, road construction, etc.), and the stocks are at a much lower level of abundance than they were historically. There is some indication that the stocks are continuing to decline. For example, the average annual Sacramento River fall chinook escapement was estimated at 311,000 fish for the 5-year period 1953-57, and only 199,000 fish for the 5-year period 1965-69. For the same periods, escapements of the San Joaquin River fall run were 43,000 and 22,000 fish, respectively.

The Oregon coastal stocks of chinook also have been adversely affected by environmental changes (logging, fires, dams, pollution, etc.).

Many Columbia River chinook stocks are generally at a lower level of abundance than they were historically, and some of the upriver stocks have been lost completely because of dam construction. Furthermore, the spring and summer chinook runs to the Snake River have been declining since 1969. Escapement in 1974 and 1975 was dangerously low and below minimum escapement levels in most cases. This recent decline is attributed primarily to loss of juvenile salmon on their seaward migrations. The summer run escapements in recent years have been much lower than in the mid-1950's. The natural spawning upriver fall runs are down from earlier years and in some instances have not met escapement goals. Continuing efforts toward improved fish passage facilities, pollution control, and hatchery production give promise, however, of increasing chinook salmon runs in these areas as well as in the Willamette system and other lower Columbia River tributaries. Lower Columbia River stocks are already heavily augmented by hatchery production, and improved hatchery practices should

increase production of these fish even further.

A few coastal Washington chinook runs appear to be in fairly good condition. Increased fishing pressure and accelerated logging and industrial development have depressed many runs. Unless adequate steps are taken to protect the stream and estuary environment and to decrease ocean fishing mortality, continued declines can be expected. Certain races of fish, such as the early Satsop fall chinook and the spring and summer runs on the Queets and Hoh Rivers, are severely depleted.

For Puget Sound, the natural stocks of chinook are generally in a depressed state, whereas hatchery production continues to increase. Some continual degradation of the environment is to be expected although there are increasing efforts to minimize adverse effects on the stocks.

The chinook salmon stocks in British Columbia have not experienced the adverse effect on their environment to the same degree as the stocks to the south, but the escapement trend still appears to be slightly downward.

2.2.1.2 Coho Salmon

Annual coho production by California hatcheries is about 1 million yearlings. The majority of naturally-spawned coho are produced in streams north of San Francisco. California's north coast coho are secondary in importance when compared to that state's chinook run. Counts made at dams and weirs along the north coast show that coho escapement in recent years has been extremely variable.

For Oregon coastal coho stocks, production capacity, which declined as a result of early deterioration of watersheds, appears to have stabilized in most cases. Hatchery production is at a high level. Increased ocean fishing pressure stimulated by successful hatchery programs may have adversely affected some Oregon wild stocks.

For the Columbia River coho stocks, the escapement for the natural spawning early run fish is down, whereas the escapement to the hatcheries has increased. For late running coho, the trend of natural escapements is level to slightly down, with reduced escapements occurring in both 1973 and 1974.

The abundance of natural coho stocks in most Washington coastal and Puget Sound streams has decreased due to loss of spawning areas through logging, road building, gravel removal, dams, and pollution. Additionally, over-harvest has resulted in some natural runs not meeting escapement requirements in several recent years. Hatchery escapement and production have been increasing.

In general, coho salmon spawning areas in British Columbia continue to remain productive and stock levels relatively stable. Increased industrialization and pollution of the Fraser River could cause lower production.

2.2.1.3 Pink Salmon

Puget Sound pink salmon stocks are at a very low level of abundance and have been low since the large run in 1963. Fraser River pink salmon stocks experience rather wide fluctuations in abundance but have shown no significant trend, either upward or downward, in recent years.

2.2.1.4 Assessment of Future Status of the Resources

With prevention of further environmental degredation and overfishing, salmon stocks can be expected to continue producing sustained yields at or near the levels of recent years. Provision of improved spawning escapements for currently depressed stocks will aid in rebuilding them to harvestable levels and a modest incremental gain in total resource base can be expected. Large increases in future salmon abundance must, however, come from widespread habitat improvements to benefit natural production and/or major new artificial production facilities.

2.2.2 Estimated Maximum Sustainable Yield (MSY) and Optimum Yield (OY). Due to the annual variability experienced by salmon stocks, it is only possible to describe MSY for salmon as an average for a number of years. The normal management procedure is to set escapement goals by individual stock or aggregate of stocks for natural spawning and artificial production facilities. Management intent is then to permit any additional fish over and above these goals to be harvested. Pre-season predictions of expected run sizes subsequent to any ocean fishery interceptions are made for all major Washington and Columbia River salmon stocks to give fishermen and processors some idea of expected harvests and to provide fishery management agencies a basis for developing necessary regulatory controls. In practice, the ocean fisheries for chinook and coho salmon have never been actively managed in the context of either adjusting fishing rates up or down in response to similar fluctuations in salmon abundance or regulating the ocean fisheries to take a reasonably constant proportion of the fish actually available from year to year.

A good ocean catch can mean either a high abundance of salmon or a higher than normal fishing rate on an average run; an average catch can develop from a low catch rate on large runs, a high fishing rate on poor runs, or an average exploitation rate on average runs; and a poor ocean catch can result from a low catch rate on average runs or an average fishing rate on poor runs. The particular case for any specific year can only be evaluated after the fact when strengths of individual salmon runs returning to their respective streams of origin have been fully evaluated. With current technology, scientists lack a basis for accurately determining ocean fishing rates while the major ocean salmon fisheries are still in progress. Further, a high or low fishing rate on chinook salmon does not correlate with the same type of fishing rate on coho during a given season.

Since the entire methodology is imprecise, there is often considerable difference between pre-season run size predictions and actual stock abundance subsequent to ocean fishery interceptions. (21) For Washington and Columbia River salmon stocks, the highly efficient "inside" commercial net fisheries, plus a few river sport fisheries, have traditionally been closely monitored and regulated on a day-to-day basis to adequately harvest any levels of fish over and above needed escapement requirements. More recently, day-to-day management attention has been necessary for many of the new treaty Indian fisheries. The various "inside" fisheries have also borne virtually the entire brunt of restrictive measures deemed necessary to protect any depressed salmon runs. In some cases, there have not been enough fish reaching the spawning grounds to meet even minimum escapement requirements in spite of extensive closures of "inside" fisheries.

MSY for all individual chinook and coho salmon stocks found off the coasts of Washington, Oregon, and California at some time in their life history have not been calculated, but good approximations are available from the Washington State Department of Fisheries-National Bureau of Standards Catch/Regulation Analysis Model for most major stocks available as adults in the critical Washington coast-Columbia River mouth ocean management zone.

For example, Columbia River fall-run chinook (both upper and lower river) account for 70-75% of the ocean chinook catches made off Washington and these stocks currently provide an estimated average annual yield to all U.S. and Canadian salmon fisheries in all areas of 17.4 million pounds round weight, or nearly 1.3 million fish. Yields from all chinook salmon stocks found in this area would be about one and one-third times these amounts. An aggregate of five major coho stocks which account for over 95% of the ocean coho catch made off the Washington coast and Columbia River mouth currently yield an estimated 30.9 million pounds, or 4.8 million

fish, annually to all U.S. and Canadian salmon fisheries. These coho stocks are from Puget Sound, southern British Columbia, Washington coastal, Columbia River, and Oregon coastal streams. Yields from all coho stocks present would be slightly higher.

In the absence of all U.S. and Canadian ocean fishing, it is conservatively estimated that the same level of Columbia River fall-run chinook salmon resources could yield a harvest of 22.3 million pounds annually (1.1 million fish), or nearly 5 million pounds more than is presently achieved with the existing combination of all ocean and "inside" fisheries on these stocks. Further, it is conservatively estimated that the same five coho stocks listed above could produce 35.0 million pounds annually (4.3 million fish) in the absence of any domestic or Canadian ocean fishing in all areas or over 4 million pounds more than is now produced with the current distribution of overall catches. The "conservative" connotation is utilized in both instances since the statistics utilized for this analysis were conservative in the case of both hooking mortality rates and magnitude of ocean "shaker" catches (17) but relatively liberal with respect to natural mortality rates (16). Both biases in combination produce the most favorable possible evaluation of ocean fishery yields when contrasted to fishing for mature adults.

A noted Canadian scientist, Dr. W. E. Ricker, recently examined some of these same data and concluded that "the increase in weight of total catch from discontinuing ocean trolling for Columbia River chinook salmon and increasing river fishing correspondingly is estimated tentatively as between 63 and 98%". (22)

Regardless of the exact level of loss, fishery scientists generally agree that the "costs" of having major ocean fisheries on chinook and coho amount to millions of pounds of lost salmon production annually. (16)(22)(23) The ratio of loss to potential yield is substantially less in the case of coho since virtually all fish are harvested in their third (i.e., final) year and, in comparison to chinook, the average date of harvest for adults is closer to the times when maximum size is attained.

Achieving maximum yield levels in pounds would require elimination of ocean troll and sport fishing and the taking of all fish at or near river mouths. This action would be required because rate of growth exceeds rate of natural mortality in the ocean. This plan deviates from MSY by maintaining ocean troll and sport fisheries, but recommends reduced fishing rates to provide increased availability of fish to "inside" fisheries and spawning escapements.

Net effect of these recommendations on certain major salmon stocks provides an example of the effect of modifying MSY to reflect economic and social (including legal) factors to achieve OY. The plan projects optimum yields (OY) of 18.0 million pounds for Columbia River fall-run chinook (4.3 million pounds less than MSY) and 31.3 million pounds for the five coho stocks described previously (3.9 million pounds less than MSY). The reasons for proposing a harvest of less than MSY are reflected in (1) the high recreational values; and (2) the higher market value per pound for troll relative to net-caught Columbia River fall chinook (due to both real and perceived quality differences and different market channels). Values under the plan include an estimated $19.9 million for Columbia River fall-run chinook ($6.2 million more than the MSY value of $13.7 million) and $43.5 million for the five coho stocks ($8.8 million more than the MSY value of $34.7 million)(24).

Other considerations involved in preserving ocean troll and sport fisheries to achieve OY are:

1. Availability of salmon over a longer annual time period and in greater variety with a troll fishery.

2. Less dislocation and community impact than that which would follow immediate elimination of industries (troll fishery and charter boats) which form significant sectors of coastal employment alternatives.

3. Preservation of a life-style represented by troll fishing and charter boat operation; activities accessible with modest capital investments.

Factors justifying some significant transfer of fish to the inside fisheries and spawning escapements to achieve OY include:

1. Reduced catches of depleted fish stocks that will provide increased salmon production over the long-term.

2. Legal rulings that require certain quantities of fish to be provided for treaty Indian fisheries.

3. A reversal of past trends resulting in the brunt of conservation restrictions falling on inside fisheries in order to assure that adequate spawning escapements are provided.

Current technology and availability of data do not permit direct quantification of all these factors. Thus, final determination of OY reflects the professional judgments and experience of the working team who prepared the plan, the Scientific and Statistical Committee and the Council which also has been influenced by input from the Salmon Advisory Panel and the citizen input through public hearings. The concept of optimum yield recognizes explicitly the multiple objectives of fishery management that were included in the Fishery Conservation and Management Act of 1976. The Act requires that relevant biological, economic, and social factors must be considered in determining the "optimum" yield from a fishery which will provide the greatest overall benefit to the nation with particular reference to food production and recreational opportunities. The Act does not, however, specify precisely how various factors should be included or how they should be balanced against one another in the determination of optimum yield.

This fishery management plan represents OY for 1977 by recommending management policies that modify estimates of MSY and reflect all the criteria established by PL 94-265 to the extent that information is available and the state of the art permits.

2.3 Total Allowable Level of Foreign Fishing

The abundance of the stocks of U.S. Pacific Coast salmon that are available to the Washington, Oregon, and California ocean fisheries will vary considerably from year to year. At the highest conceivable level of present or future abundance they can be completely and adequately harvested by U.S. domestic fisheries.

Thus, there is no surplus of these stocks available for harvest by foreign fishermen. However, part of the fishery is affected by a reciprocal fisheries agreement between the Government of the United States and the Government of Canada. The agreement shall enter into force when both countries have notified the other that necessary internal procedures have been completed. This agreement provides that Canadian fishermen may continue to fish within a portion of the Fishery Conservation Zone until December 31, 1977. A 1973 reciprocal agreement, which expires by its own terms on April 24, 1977, is superceded upon the entry into force of the new Agreement. The terms specified in the new reciprocal agreement will apply to Canadian fishing in the U.S. Fishery Conservation Zone (see Appendix A).

2.4 Treaty Indian Fishing Rights

Treaties of the United States with a number of Pacific Northwest Indian tribes secure to the latter certain rights to take fish, including salmon, on their reservations and at their usual and accustomed fishing grounds outside those reservations. These treaties include the Treaty of Medicine Creek (10 Stat. 1132), Treaty of Point Elliott (12 Stat. 927), Treaty of Point No Point (12 Stat. 933), Treaty of Neah Bay (12 Stat. 939), Treaty of Olympia (12 Stat. 971), Treaty with the Yakimas (12 Stat. 951, Treaty with the Walla Walla et al. (12 Stat. 945), Treaty with the Nez Perces (12 Stat. 957), and Treaty with the Tribes of Middle Oregon (12 Stat. 963).

Indian tribes have management and regulatory jurisdiction over fisheries on their reservations. The Federal courts have also recognized certain degrees of tribal regulatory jurisdiction over their members' exercise of off-reservation treaty fisheries vis-a-vis the States in the Olympic Peninsula and Puget Sound drainage areas and adjacent offshore waters and in the Columbia River Basin.

PL 94-265 specifically requires that any fisheries management plan promulgated under that Act describe the nature and extent of Indian treaty fishing rights affected by the plan and be consistent with applicable law. The Indian treaties and the Federal court decisions construing them, including most particularly United States v. Washington, 384 F. Supp. 312 (W.D. Wash. 1974), affirmed 520 F.2d 676 (9th Cir. 1975), cert. denied 423 U.S. 1086 (1976), and Sohappy v. Smith and United States v. Oregon and Washington, 302 F.Supp. 899 (D.Or. (1969), 529 F.2d 570 (9th Cir. 1976), are "applicable law" of the United States within the meaning of section 303(a) of PL 94-265.

These treaty fishing rights apply to all stocks of salmon under U.S. control or jurisdiction (including jurisdiction exercised by the States) that, absent prior interception, would pass through or be available at any of the treaty tribes' usual and accustomed fishing grounds wherever located. Currently, the rights have been expressly held to apply to Washington salmon stocks originating from Grays Harbor northward (plus other salmon stocks passing through the usual and accustomed fishing areas) and to all Columbia River system salmon stocks originating above Bonneville Dam.

Some of the treaty tribes have usual and accustomed fishing places in the Pacific Ocean areas to which their treaty rights are directly applicable. Specific Federal court adjudications of such places have been made in U.S. v. Washington for the following:

Makah Tribe: Marine waters extending from the Strait of Juan de Fuca "out into the ocean to an area known as Swiftsure and then south along the Pacific Coast to an area intermediate to Ozette Village and the Quileute Reservation". (384 F.Supp. at 364)

Quileute and Hoh Tribes: Tidewater and saltwater areas adjacent to the coastal area that includes the Hoh, Quillayute, Queets and Quinault Rivers and Lake Ozette. (384 F.Supp. at 359, 372)

Quinault Tribe: "Ocean fisheries....in the waters adjacent to their territory" which for fishing purposes includes the area form the Clearwater-Queets River system to Grays Harbor. (384 F.Supp. at 374)

The above listing is the most explicit guidance available to the Council. This is not to be considered a complete inventory of such usual and accustomed fishing grounds, with a potential existing for further definition of such rights for treaty Indians.

The Court emphasized, however, that the treaty fishing rights extended to "all usual and accustomed grounds and stations....where members of a tribe customarily fished from time to time at or before treaty times, however distant from the then usual habitat of the tribe...." (384 F.Supp. at 332) It said that the Northwest Indians "harvested fish from the high seas, inland salt waters, rivers and lakes". (384 F.Supp. at 352) It found that no complete inventory of such places could be compiled today but that the Findings of Fact (from which the above tribal data were taken) describe "some" of the areas wherein those tribes "are entitled to exercise their treaty fishing rights today". (384 F.Supp. at 353, 402) The parties may invoke the continuing jurisdiction of the Court to determine the location of fishing grounds "not specifically determined previously". (384 F.Supp. at 419).

No Pacific Ocean fishing areas have been adjudicated for any Washington, Oregon, or Idaho treaty tribes other than the four named above, and the Indians of coastal California have no treaty fishing rights. However, the Indians of the Hoopa Valley Reservation in California have established by judicial action their on-reservation rights to fish in the Klamath-Trinity River system.

The implementation of treaty fishing rights of Columbia River Indians for the next five years has been recently approved and decreed by the U.S. District Court of Oregon in United States v. Oregon and Washington (see Appendix B).

The treaty Indian catch has increased considerably in recent years but still has not reached the level of their treaty entitlement. To date, the burden of regulatory constraints needed to secure the Indian treaty rights under recent Federal court decisions has fallen almost entirely on non-treaty commercial net fishermen in internal state waters. Continuation of the current division of non-treaty catch may require severe curtailment or elimination of the following non-treaty fisheries: the August gill net fishery in the lower Columbia River for upper Columbia River fall chinook (25), the Grays Harbor gill net fishery for chinook and coho (26), and the Puget Sound purse seine and gill net fisheries for Puget Sound-origin chinook and coho (27). Further, other non-treaty net fisheries such as those on chum salmon (which are not caught in the ocean) might have to be severely curtailed or eliminated in the future as "equitable adjustments" for heavy non-treaty ocean troll and sport harvest of chinook and coho. The Federal courts have approved the concept of such adjustments to compensate the Indians for loss of opportunity on other runs.

2.5 Domestic Fisheries

A comparison of all chinook and coho stocks found off the coasts of Washington, Oregon, and California with major domestic fisheries shows the following:

Salmon stock origin	Major domestic fisheries				
	Commercial troll	Sport	Commercial nets	Treaty Indian	Total
California chinook	X	X			2
California coho	X	X			2
Oregon coastal chinook	X	X			2
Oregon coastal coho	X	X			2
Lower Col. R. spring chinook	X	X	X		3
Lower Col. R. fall chinook	X	X	X		3
Lower Col. R. coho	X	X	X		3
Puget Sound chinook	X	X	X	X	4
Southern Canadian chinook	X	X	X	X	4
Wash. coastal chinook	X	X	X	X	4
Upper Col. R. spring chinook	X	X	X	X	4
Upper Col. R. summer chinook	X	X	X	X	4
Upper Col. R. fall chinook	X	X	X	X	4
Puget Sound coho	X	X	X	X	4
Southern Canadian coho	X	X	X	X	4
Washington coastal coho	X	X	X	X	4
Upper Col. R. coho	X	X	X	X	4

NOTE: Some of the first seven stocks listed above may be intercepted while passing through usual and accustomed marine fishing areas of treaty Indians.

It will not be possible for equal ocean harvest rates to be applied to all the salmon stocks listed above without overfishing some, underfishing others, and/or eliminating several viable "inside" non-Indian fisheries currently managed by the States. There are no "perfect" geographical points for separating stocks supporting only major ocean fisheries (e.g., California chinook) from those also supporting a major commercial net fishery or significant inside recreational fisheries (e.g., Snake River system spring chinook). Likewise, there is no ideal separation point in the ocean for dividing stocks which are not required to support a treaty Indian fishery (e.g., lower Columbia River fall chinook) from those that are required to sustain Indian fishermen (e.g., upper Columbia River fall chinook). The two best areas for any alternatives which might be designed to achieve some degree of differential ocean fishing rates are probably Tillamook Head for chinook regulation changes and the southern Washington coast in the case of coho fishery considerations. Present ocean fishing rates are justified for some salmon stocks originating south of Tillamook Head.

2.6 Transfers to Canadian Fisheries

A series of possible measures to reduce U.S. ocean fishing rates on chinook and coho salmon has been considered by State management agencies for several years. Virtually all of the alternatives which might be implemented to increase overall resource yields and/or transfer more salmon to internal state waters have one major

flaw--they also transfer varying but significant numbers of fish to Canadian salmon fisheries. In general, any new constraints on U.S. ocean fishermen will, in fact, result in a net transfer of salmon from the U.S. to Canada. A new treaty with Canada might provide methods for resolving these problems of salmon transfer between U.S. and Canadian fisheries.

2.7 Basis for Differential Domestic Harvest Options

The case for relatively high ocean fishing rates on California and Oregon coastal chinook and coho salmon stocks is certainly excellent since a large-scale reduction in ocean fishing off Oregon and California would produce an over-escapement in several major salmon runs due to an absence of major terminal fisheries capable of exerting the fishing rates required. (28)

In the case of Washington and Columbia River salmon runs, however, major stocks can be harvested by existing commercial, sport, and Indian fisheries operating in internal state waters. Specifically, these are commercial purse seine, gill net, and reef net fisheries in Puget Sound; gill net fisheries in Grays Harbor, Willapa Bay and the Columbia River below Bonneville Dam; freshwater recreational fisheries in rivers throughout the area; a marine sport fishery within Puget Sound; treaty Indian fisheries in all Washington waters from Grays Harbor northward; and treaty Indian fisheries above Bonneville Dam in the Columbia River system.

2.8 Recommended Ocean Salmon Fishery Regulatory Controls

2.8.1 Ocean Salmon Fishery Management Objectives

There is urgent need for action by the Fishery Management Council to control the ocean salmon fisheries in order to increase the ocean escapement of fish into many Washington, Oregon, and Idaho areas in 1977 for the following reasons:

1. Severe passage problems at mainstem Columbia River dams in conjunction with some ocean harvests are resulting in inadequate spawning escapements of Snake River spring and summer chinook salmon. (29) Certain Puget Sound (30) and coastal Washington (31) stocks are also severely depressed in spite of extensive closures applied to "inside" fisheries.

2. Current Federal court judicial interpretations have ordered the States of Oregon and Washington to provide treaty Indians with an opportunity to take 50% of the total U.S. harvest allowed on stocks of fish destined for treaty Indian usual and accustomed fishing areas.

In light of these considerations, limiting criteria of the present plan are:

1. The plan initially should be confined to management of chinook and coho salmon ocean fisheries.

2. Immediate regulation change considerations should be limited to ocean waters off Washington and Oregon north of Tillamook Head in order to comply with pressing judicial requirements mandating greater fishing opportunities to treaty Indian fishermen as well as the need to provide increased escapements of weakened stocks.

In view to the above, regulatory controls proposed in this ocean salmon fishery management plan should satisfy the following basic objectives:

1. Maintain optimum spawning stock escapements.

2. Reduce fishery-caused mortalities other than legal-sized fish caught and landed.

3. Fulfill Treaty-Indian fishery obligations

4. Provide for the fisheries specifically listed previously (Section 2.5) the continuing opportunity to harvest salmon.

The Council accepts the responsibility to allocate resources to meet these objectives.

Also, in meeting the primary objectives above, the following additional factors were considered:

1. Recognize that the yield of the salmon fishery includes food value, dollar value, recreational value, and certain sociological or cultural values and that all of these values must be considered in the regulation and management of the fisheries.

2. Optimize the sustained yield of chinook and coho salmon with due consideration of all these values.

3. Maximize the poundage yield to the commercial fishery by minimizing the taking in that fishery of chinook and coho salmon having significant remaining growth potential; however, recognize that desired yield to commercial fisheries requires not only a consideration of pounds produced, but also quality of the product as indicated by consumer demand and prices.

4. Recognize that the desired yield to the recreational fishery is primarily in the recreational value of the fishing experience, not solely in pounds produced, and therefore that optimum value does not necessarily require harvesting only mature fish. In addition, the recreation-motivated factors of the achievement of catching salmon, of providing salmon for the family table, and the basic use of the fish caught in the ocean recreational fishery for personal consumption were also considered.

2.8.2 Size Limits, Bag Limits, Fishing Season, Area Closures and Gear Restrictions

It is recognized that there is a considerable variability in pre-season forecasts of stock abundance, ocean fishing rates, and predicted impacts of new regulatory measures. Refinement of these pre-season expectations, such as through in-season analysis of catch and effort data, may indicate the need for emergency in-season changes in regulations. The authority of the Secretary of Commerce to enact such emergency regulations subsequent to appropriate Pacific Regional Fishery Management Council recommendations is authorized under this plan.

It is not known at this time if any emergency changes will be required during the 1977 ocean fishing season, but this additional management flexibility should be available to meet unforeseen circumstances. These might include the abnormally high ocean fishing rates on coho that occurred in 1976 (32), vulnerability of mature salmon to fishing in river-mouth areas because of low stream flows (33), further interpretation and clarification of presently undefined fishing rights of Treaty Indians, or Council recommendations for modification of fishing regulations.

Also, under this plan, fishing with nets for salmon would not be permitted in waters under Council jurisdiction. A specific regulation must be adopted to prohibit such action. Net fishing in the ocean has been banned since the late 1950's through an agreement between the government of the United States and the government of Canada.

2.8.2.1 Commercial Troll Fishery North of Tillamook Head. (Note: To be defined legally as a line due west, 270 degrees true, from Tillamook Rock Light.) The regular, all-species commercial troll fishery for salmon in this area should be set within the general framework of a July through mid-September fishing season. The primary species supporting this fishery are chinook and coho salmon, each requiring large expenditures for artificial production, habitat protection, and fishery management. In the case of chinook salmon, three categories of fish comprised about 90% of the commercial troll fishery landings from this area under past regulations (i.e., pre-1977). Their comparative size and growth in pounds round weight are as follows:

Chinook Salmon Average Round Weight

Month	Immature 3-year-old fall-run fish	Mature 3-year-old fall-run fish	Mature 4-year-old fall-run fish
April	5.1	7.7	14.1
May	6.1	9.2	15.9
June	7.1	10.7	17.8
July	8.1	12.3	19.6
August	9.1	13.8	21.5

From these basic facts, it is obvious that the first group (immature 3's) should not be harvested commercially. Most of these fish became the "smalls" (less than 8 lb. dressed weight) of past troll fishery landings but their retention could be substantially reduced by application of a 28-inch total length minimum size restriction. This change would also virtually eliminate any retention of immature spring- and summer-run chinook in their third year. The latter two fall-run groups (mature 3's and 4's) should be taken commercially but at a time when they approach a reasonable percentage of their maximum size. The earlier in the year their capture occurs in the ocean, the more potential yields from the overall resource are sacrificed. These fish should be harvested commercially mainly during the period from July through mid-September. After this period, most mature chinook have emigrated from ocean waters and all sizes of fish remaining to be caught run heavily to immatures. Historically, spring-and summer-run chinook stocks comprised a much greater proportion of the troll catch, and this provided some logical basis for a longer ocean troll season. By the early 1970's, however, fish with the "sub-2" scale type indicative of the 1 year of freshwater rearing (typical to these spring and summer stocks) had declined to only about 5% of the Washington and Columbia River mouth ocean catch on an annual basis.

Coho salmon present a similar problem. Off Washington and the Columbia River mouth the ocean catch is predominantly 3-year-old maturing fish. Average round weights for the past Washington troll fishery were as follows:

Coho Salmon Average Round Weight

Month	Average round weight
June	5.5
July	6.6
August	7.9
September	8.8

It does not make much sense to be imposing a heavy commercial fishery on this species during June when they still have considerable growth potential.

By mid-September, many of the coho have emigrated from ocean waters. This is particularly true for stocks of hatchery origin which can generally withstand a much higher overall fishing rate than native fish. In addition, many of the 2-year-old immature coho present in the ocean have grown to a large enough size to be hooked on normal troll gear, and the desirability of a commercial fishery at this time is further diminished. Historically, many trollers off the Washington coast concentrated on chinook salmon until mid- or late July, and the problem of taking large quantities of half-grown coho was not manifested. As chinook abundance declined in ocean waters, however, troll effort gradually shifted to coho in June and early July. A July troll opening for both species should reverse this process to some extent since initial July chinook abundance in the ocean would substantially exceed that which prevailed under the past April 15 season openings.

There would be serious problems associated with immediate adoption of the short troll season described above. Basically, large fishing, processing, and support industries have developed for several generations under much more liberal regulatory controls. In addition, many of the potential resource "savings" which might be achieved through unilateral adoption of more restrictive ocean fishing controls for U.S. domestic fisheries would be transferred to Canadian salmon fishermen. Obviously, there is some justification for not making any ocean fishery changes unless Canada does something of a similar nature. A further complication would be shifts in U.S. trolling effort to ocean waters with more liberal seasons (California, Oregon and/or Alaska) with the resultant greater impact on salmon stocks and fishermen in those areas. Finally, a major reduction in only the troll fishery would result in a transfer of salmon to the ocean recreational fishery if it continued unchecked by new regulatory constraints.

Several additional alternatives need consideration, at least in the context of short-range fishery management goals:

1. A June 15 season opening for both chinook and coho merits consideration, particularly if Canadian and Oregon coastal seasons for coho continue to begin on this same mid-June date. A June commercial coho fishery in the ocean would continue the harvest of fish with a high remaining growth potential and continue the "status quo" with respect to ocean fishing rates, but problems with shifts in commercial troll fishing effort and transfers to Canadian fishermen would be alleviated.

2. A troll chinook fishery of limited duration could be scheduled prior to either June 15 or July 1. This should occur no earlier than May 1 in order to protect maturing upper Columbia River spring chinook present in the ocean until about May 1 and to prevent any large-scale early season harvest of mixed chinook stocks with high remaining growth potentials.

   Continued early season commercial ocean fishing for chinook salmon is not, however, in the best long-term interest of the salmon resources. The chinook poundage yields which are sacrificed, plus hooking mortality losses on small chinook and coho, cannot be continually supported as sound resource management.

   In its strictest interpretation, "conservation" obviously applies to early season restrictions since additional protection would be afforded several depressed upper Columbia River and Washington coastal spring and summer chinook runs. Reductions in commercial troll fishing times

and the increased chinook size limit would be fully justified on this basis alone. In the "wise use" connotation or broader meaning of conservation, more restrictive regulations can be further justified since they would increase poundage yields from existing harvestable salmon resources.

3. Prior to the coho troll season opening, trollers should be required to use barbless single hooks on all terminal gear. Barbless hooks will improve the survival rate of "shaker" coho salmon taken incidentally yet still take chinook as efficiently as barbed hooks.

4. In spite of No. 3 above, substantial numbers of dead and badly wounded coho will still be brought to the surface on troll hooks during any early chinook season. An incidental pre-season landing allowance for coho, possibly expressed as a percentage of each troller's chinook poundage, might generate significant economic yields from this apparent loss.

5. If any troll fishery for chinook (or all species except coho) is allowed prior to either June 15 or July 1, all vessels could be inspected and certified in port prior to any regular season opening for coho salmon. This enforcement technique could effectively inhibit illegal ocean troll fishing for coho before the prescribed season opening date.

6. Subsequent to mid-September, a limited commercial troll fishery could be provided off the southern Washington coast and Columbia River mouth. In this area, the late season problem with "shakers" is not nearly as serious as commonly encountered in northern Washington waters. Further, substantial numbers of harvestable late-run Columbia River hatchery coho are still available off southern Washington subsequent to mid-September. The open area should be no further north than Point Grenville, however, to achieve some degree of protection for naturally spawning Washington coastal stocks.
7. Another option is small area closures of ocean waters in the immediate vicinity of river mouths. These localized closures have long been advocated as an effective means for protecting specific salmon stocks but in actual fact, chinook and coho salmon from each river system are taken in ocean fisheries over a wide range in both time and geographic area. River mouth closures can only protect each stock from a small fraction of the overall ocean fishing pressure but may still have viable management potential in some specific instances. An example would be protection of depressed Washington coastal chinook or coho stocks by late-season river mouth closures. In the case of ocean waters off the Columbia River mouth, a "sanctuary area" total closure would only impact the ocean recreational fishery to a significant degree, not most commercial trollers, and salmon runs to the Columbia would only be increased slightly. Closures surrounding the mouths of smaller Washington coastal rivers would also impact mainly recreational anglers, as well as a few small-boat trollers, depending on timing and areas.

8. A limited entry plan which would exclude a large number of troll vessels which did not land at least 1,000 lb. of salmon in one or more past seasons could be implemented. This would, however, affect only those boats which, in aggregate, land 5% of the total Washington coast and

Columbia River mouth troll salmon harvest. Up to 60% of all licensed boats would be eliminated but the overall impact would be slight since about half of this potential 5% "savings" would be caught by the remaining fleet.

Any of the above regulatory alternatives adopted should also be applied as minimum standards for any Canadian troll salmon fishery which might still be allowed to operate within U.S. jurisdiction.

Specific troll regulation proposals north of Tillamook Head for 1977 are:

1. An all-species commercial troll season from July 1 through September 15.

2. Required use of barbless, single hooks on all terminal troll gear during any early season chinook fishing prior to July 1.

3. A 28-inch total length minimum size limit for chinook salmon, 16-inch total length minimum size limit for coho (34), and no minimum size limit for other salmon species.

4. Mandatory vessel inspection and certification to begin in port within 48 hours prior to the July 1 all-species season opening, with the States of Oregon and Washington being responsible for implementation of this program in their respective jurisdictions.

plus

Option A

1. A 1-month early chinook season from May 1 through May 31.

2. No late season troll fishing after September 15.

or

Option B

1. A 1-1/2 month early chinook season from May 1 through June 14.

2. A late season all-species troll fishery from September 16 through October 31 south of Point Grenville on the Washington coast.

2.8.2.2 Commercial Troll Fishery South of Tillamook Head. Off Oregon and California, salmon stocks are harvested by commercial and recreational ocean fisheries. Except for a limited Indian on-reservation fishery on the Klamath-Trinity River system in California, there are no existing commercial salmon net fisheries south of the Columbia River. Thus, management options for taking any desired quantities of harvestable salmon escaping the ocean fisheries are quite limited. Further, for practical purposes, Oregon coastal and California salmon stocks are not involved in meeting court allocation requirements. Present ocean fishing rates are justified for some salmon stocks originating south of Tillamook Head. However, an assessment of appropriate harvest levels with respect to the importance and condition of wild salmon stocks and potential optimum yield of all salmon stocks originating south of Tillamook Head should be completed within one year.

For 1977, it is recommended that 1976 California and Oregon commercial troll fishery regulations be adopted for the ocean waters south of Tillamook Head.

Specific troll regulation proposals south of Tillamook Head for 1977 are:

	Waters off Oregon	Waters off California
Minimum size limits	26 inches for chinook, 16 inches for coho, None for other salmon	26 inches for chinook, 22 inches for coho, None for other salmon
Chinook season	May 1-Oct. 31	April 15-Sept. 30
Coho season	June 15-October 31	May 15-Sept. 30
Vessel certification (Note: See No. 4 of troll regulation proposals for north of Tillamook Head.)	None south of Tillamook Head	Beginning May 13

These short-term recommendations should not be construed as a total fulfillment of PL 94-265 through simple continuance of existing regulatory controls. Basic issues must be resolved, however, before more appropriate regulatory controls can be formally considered. These include:

1. The ability of trollers to avoid coho during early-season chinook fishing off northern California and southern Oregon, as well as the actual need for this chinook fishery.

2. Spawning escapement requirements for California and Oregon coastal streams.

3. The ability to "recapture" potential savings generated from various alternate ocean fishery regulatory controls.

4. Limited entry and/or a salmon license moratorium.

2.8.2.3 Recreational Salmon Fishery North of Tillamook Head. Regulations for sport anglers in this area should be viewed in the context of changes from 1975 season statutes since several more restrictive rules were adopted by the States of Washington and Oregon for the 1976 fishery.

For 1977, one option would be to delay the ocean sport fishing season until the Saturday nearest May 1, a change of 2-3 weeks from the 1975 opening on the second Saturday in April. This would provide protection for depressed upper Columbia River spring chinook runs. While these fish constitute only a small percentage of any early season ocean chinook catch, this delay would result in additional escapement of spring chinook into the Columbia River. Fishing pressure on depleted Columbia River summer chinook runs would also be reduced somewhat by this delay in season opening date.

Secondly, increasing the minimum size limit on chinook salmon from the 20-inch standard of 1975 and prior years to 24 inches total length would improve quality of ocean sport fishing. It should reduce fishing effort on schools of small, immature chinook, particularly in the vicinity of the Columbia River mouth. Under past regulations, substantial numbers of 20- to 24-inch fish were retained and even greater numbers of sub-20-inch fish were hooked and released. This resulted in a significant reduction in numbers of fish which would be available later at a larger size. This change would also reduce fishing pressure on depleted runs of Columbia River spring and summer stocks as well as depressed Washington early chinook runs.

For coho salmon, a minimum size limit reduction from 20 inches to the current troll fishery minimum of 16 inches in length would permit retention of virtually all adult coho taken in their third and final year of life. The past 20-inch limit resulted in "sorting" of coho during early weeks of the sport fishery and adult fish under 20 inches had to be released. This less-restrictive regulation would also allow anglers to keep mature 2-year-old "jack" coho taken during late summer and fall months. These fish are mainly between 16 and 20 inches in length.

Additional regulatory alternatives include the following:

1. A reduction in the daily bag limit from three to two salmon. Yields in the sport fishery are primarily the recreational benefits derived, not simply the fish caught. If there was no significant decline in angler satisfaction and participation levels with a two- versus three-fish daily bag limit, then the third fish allowed anglers in past seasons would prove to have been of relatively little real economic value. In this case, there would be some justification for "saving" these fish and transferring them to other fisheries, where a greater net economic benefit would be derived. If, however, a reduction in the daily bag limit from three to two fish resulted in a substantial decline in recreational benefits then, in fact, the third fish in each angler's daily bag limit becomes quite valuable. (35)

2. A delay in the ocean sport fishing season off Washington and the Columbia River mouth until early or mid-June has some merit with respect to the additional protection that could be afforded depressed upper Columbia River and Washington coastal spring and summer chinook stocks. Since yields are expressed in recreational opportunities and satisfactions, not total poundage, other valid arguments applicable to delaying the ocean commercial fishery do not readily apply.

3. River mouth closures or "sanctuary areas" would have some limited fishing management applications. They would, however, be subject to the same general constraints already described in Section 2.8.2.1.

4. An annual salmon bag limit restriction for sport anglers could produce some reduction in total sport catch. (36) These fish would then be made available to other sport, commercial, and Indian salmon fishermen or to spawning escapements of depressed stocks. To evaluate merit of such a proposal, a basic judgment must be made as to management objectives. Are fishery resources to be managed for the "average" sportsman, who commonly takes only a few fish fish per year, or for all sportsmen, including those with salmon angling as their primary avocation?

5. A moratorium on charter boat licenses should be considered if there is judged to be a need for limiting ocean sport effort for salmon. A moratorium of this type would not fully stabilize recreational fishing effort since the trend has been toward continually building larger boats capable of carrying more passengers. Further, such a moratorium would not check the growth of fishing effort by anglers in private craft.

6. A final option would be to impose a salmon fishing license in Washington. A "duck stamp" format (as opposed to a "normal" license) would minimize administrative costs. A modest license fee would probably not serve as an effective fishing effort deterrant. Progressively higher fees could be considered for the small percentage of anglers taking large quantities of salmon each season, or a license fee could apply only to individual wishing to take over a prescribed number of fish annually.

Specific ocean sport fishery regulation proposals north of Tillamook Head for 1977 are:

1. A general all-species season from the Saturday closest to May 1 (April 30 in 1977) through October 31.

2. A 24-inch total length minimum size limit for chinook salmon, a 16-inch total length minimum for coho, and no minimum size limit for other salmon species.

3. A gear limitation of one rod per fisherman.

4. Adoption of current possession limits, annual limits and gear restrictions of the States of Oregon and Washington, respectively.

plus

Option 1

Commercial troll fishery regulations for north of Tillamook Head as proposed in Option A (see troll regulation proposals for north of Tillamook Head)

and

A three-fish daily sport bag limit

or

Option 2

Commercial troll fishery regulations for north of Tillamook Head as proposed in Option B (see troll regulation proposals for north of Tillamook Head)

and

A three-fish daily sport bag limit

or

Option 3

Commercial troll fishery regulations for north of Tillamook Head as proposed in Option 2 (see troll regulation proposals for north of Tillamook Head)

and

A two-fish daily sport bag limit

2.8.2.4 Recreational Salmon Fishery South of Tillamook Head. Recreational fishing in this area is subject to many of the same factors applicable to the region's commercial troll fishery (see Section 2.8.2.2). For this reason, it is recommended that 1977 personal-use angling regulations for California and the Oregon coast south of Tillamook Head mirror those enacted by the respective State agencies for 1976 fisheries.

Specific ocean sport fishery regulation proposals south of Tillamook Head for 1977 are:

Season

Oregon: May 1-December 31

California: North of Tomales Point - all year

South of Tomales Point - Saturdays closest to the dates of February 15 through November 15

Size Limits (all species)

Oregon: No size limit

California: 22 inches (exception, see daily limit)

Gear

Oregon: One rod

California: In accordance with existing State regulations (including no limit on number of rods or gear during the commercial fishing season)

Daily Limit (applicable to waters both outside and inside the 3-mile limit)

Oregon: Three fish

California: Three fish (two must be greater than 22 inches; one may be between 20 and 22 inches)

2.8.3 Summary of Regulatory Options North of Tillamook Head

Option 1

Commercial Troll

1. An all-species commercial troll season from July 1 through September 15.

2. Required use of barbless, single hooks on all terminal troll gear during any early season chinook fishing prior to July 1.

3. A 28-inch total length minimum size limit for chinook salmon, 16-inch total length minimum size limit for coho (34), and no minimum size limit for other salmon species.

4. Mandatory vessel inspection and certification to begin in port within 48 hours prior to the July 1 all-species season opening, with the States of Oregon and Washington being responsible for implementation of this program in their respective jurisdictions.

5. A 1-month early chinook season from May 1 through May 31.

6. No late season troll fishing after September 15.

Ocean sport

1. A general all-species season from the Saturday closest to May 1 (April 30 in 1977) through October 31.

2. A 24-inch total length minimum size limit for chinook salmon, a 16-inch total length minimum for coho, and no minimum size limit for other salmon species.

3. A gear limitation of one rod per fisherman.

4. Adoption of current possession limits, annual limits and gear restrictions of the States of Oregon and Washington, respectively.

5. A three-fish daily sport bag limit.

Option 2

Commercial troll

1. An all-species commercial troll season from July 1 through September 15.

2. Required use of barbless, single hooks on all terminal troll gear during any early season chinook fishing prior to July 1.

3. A 28-inch total length minimum size limit for chinook salmon, 16-inch total length minimum size limit for coho (34), and no minimum size limit for other salmon species.

4. Mandatory vessel inspection and certification to begin in port within 48 hours prior to the July 1 all-species season opening, with the States of Oregon and Washington being responsible for implementation of this program in their respective jurisdictions.

5. A 1-1/2 month early chinook season from May 1 through June 14.

6. A late season all-species troll fishery from September 16 through October 31 south of Point Grenville on the Washington coast.

Ocean sport

1. A general all-species season from the Saturday closest to May 1 (April 30 in 1977) through October 31.

2. A 24-inch total length minimum size limit for chinook salmon, a 16-inch total length minimum for coho, and no minimum size limit for other salmon species.

3. A gear limitation of one rod per fisherman.

4. Adoption of current possession limits, annual limits and gear restrictions of the States of Oregon and Washington, respectively.

5. A three-fish daily sport bag limit.

Option 3

Commercial troll

1. An all-species commercial troll season from July 1 through September 15.

2. Required use of barbless, single hooks on all terminal troll gear during any early season chinook fishing prior to July 1.

3. A 28-inch total length minimum size limit for chinook salmon, 16-inch total length minimum size limit for coho (34), and no minimum size limit for other salmon species.

4. Mandatory vessel inspection and certification to begin in port within 48 hours prior to the July 1 all-species season opening, with the States of Oregon and Washington being responsible for implementation of this program in their respective jurisdictions.

5. A 1-1/2 month early chinook season from May 1 through June 14.

6. A late season all-species troll fishery from September 16 through October 31 south of Point Grenville on the Washington coast.

Ocean sport

1. A general all-species season from the Saturday closest to May 1 (April 30 in 1977) through October 31.

2. A 24-inch total length minimum size limit for chinook salmon, a 16-inch total length minimum for coho, and no minimum size limit for other salmon species.

3. A gear limitation of one rod per fisherman.

4. Adoption of current possession limits, annual limits and gear restrictions of the States of Oregon and Washington, respectively.

5. A two-fish daily sport bag limit.

2.9 Predicted Impacts of Potential Regulatory Options

To evaluate potential changes in overall salmon catch distributions and resource yields, predicted impacts on major stocks found in the critical Washington coastal-Columbia River mouth management area were examined via computer analysis techniques. The predominant Columbia River fall-run chinook stock, which comprises about 75% of ocean chinook catches made in this area, plus an aggregate of coho salmon stocks which account for over 95% of the coho catches, were examined by the Washington State Department of Fisheries-National Bureau of Standards Catch/Regulation Analysis Model. Predicted results for a number of alternate regulatory strategies were carefully reviewed prior to development of specific proposals for 1977.

Obviously, any such predictions should only be construed as an approximation of what might be expected to happen, on the average, over a period of time. Possible changes in fishing effort and seasonal fishing patterns are especially difficult to quantify in advance, particularly since the ocean salmon fisheries do not have a history of active management and associated technical data base. Several factors are inherent in all combinations of options examined and the following received serious consideration in decisions concerning regulatory proposals for 1977:

1. Any reduction in only the U.S. recreational or commercial ocean fishery will produce a transfer of salmon to the other fishery which will continue unchecked by new regulatory constraints.

2. Any meaningful overall restriction of U.S. ocean fisheries will provide additional salmon to Canada's ocean fisheries as well as increased returns to rivers of origin within the U.S. Some new limitations on Canadian salmon interceptions would be needed to prevent this transfer.

3. Effects of two or more regulatory changes are not additive but must be evaluated in terms of impact as a combination.

4. Transfers from domestic ocean fisheries to "inside" fisheries will nearly always increase total poundage yields from existing salmon resources.

5. Any differentials in coastwide ocean fishing seasons would produce redistributions in troll fishing effort and effects must be considered.

A detailed technical analysis of specific regulatory proposals for 1977 indicates the following expected changes from the average situation prevailing during the 5-year period, 1971-1975 (Note: Differences for Options 1, 2, and 3 of specific regulation proposals for 1977 are shown separately in parentheses.)

1. Harvestable numbers of fall chinook returning to the Columbia River system would increase by (Options 1 and 3 - 34%; Option 2 - 29%). Total run size (catch plus escapement) would increase by (Options 1 and 3 - 20%; Option 2 - 17%). These levels would permit fulfillment of treaty Indian fishing rights, and also permit the Columbia River Compact to provide a viable August non-Indian gill net fishery below Bonneville Dam on upper river stocks (Columbia River fall chinook are the dominant stock in the Washington coast-Columbia River mouth area where more restrictive ocean fishing measures are proposed for 1977).

2. Run size increases of similar magnitude would be expected for Washington coastal fall chinook, and the ban on April fishing would protect Columbia River spring chinook in their final year. The reduction in early season

commercial fishing time prior to July 1 (when most Columbia River summer chinook have entered the river) would amount to (Option 1 - 1-1/2 months; Options 2 and 3 - 1 month) or (Option 1 - 60% less fishing time; Options 2 and 3 - 40% less fishing time) than the 2-1/2 month troll season for 1975 and prior years. The significant reductions in both early and late season fishing time, plus increased minimum size limits, would also benefit several currently depressed Washington coastal early chinook stocks. In some of these stocks, the additional fish are needed to bolster spawning escapements, at least for a temporary period while they are rebuilding to harvestable levels.

3. Small reductions in ocean fishing rates on Canadian, Puget Sound, Oregon coastal and California chinook stocks would occur but these would have only a minimal effect on overall management of these resources. Any reduction in fishing rates off Washington for the latter two stocks would be counterbalanced to some extent by an expected increase in ocean fishing off Oregon and possibly California.

4. The U.S. commercial troll fishery north of Tillamook Head would sustain reductions of (Option 1 - 42%, 31%, and 28%; Option 2 - 36%, 24%, and 21%; Option 3 -35%, 23%, and 20%), respectively, for factors of numbers of chinook landed, pounds landed, and catch dollar value. Potential dollar loss would be less than either numbers of fish or pounds due to the higher price per pound paid for larger fish. Average size of individual fish landed would increase by approximately 19% (all options) and overall hooking mortality losses of "shakers" would be reduced by (Option 1 - 11%; Options 2 and 3 - 6%).

5. The ocean sport fishery north of Tillamook Head would sustain a (Options 1 and 2 - 22%; Option 3 - 31%) reduction in numbers of chinook caught, but the poundage loss would be less than that percentage due to a 1-1/2-pound increase in average size of sport chinook landed. Hooking mortality losses would change by (Options 1 and 2 - plus 9%; Option 3 - minus 9%).

6. Major coho salmon stocks contributing to ocean fishery catches in the Washington coast-Columbia River mouth area would show varying results from proposed 1977 regulatory controls. Harvestable numbers of Puget Sound coho reaching U.S. "inside" waters would increase by (Options 1 and 2 - 7%; Option 3 - 9%) with an emphasis toward later, natural spawning stocks due to the troll closure after mid-September. During low-run cycles, State management would be directed toward utilizing these additional fish for spawning escapement requirements. Southern British Columbia coho runs would increase in a similar manner with some of the ocean fishery "savings" being taken in northern Puget Sound commercial net fisheries. Washington coastal coho runs would show the largest percentage increases in returning harvestable numbers, averaging (Option 1 - 18%; Option 2 - 12%; Option 3 - 15%), but varying by area and run timing. Late-running native stocks from Grays Harbor tributaries and Olympic Peninsula rivers would receive the most protection. Again, some potential savings would be transferred to needed spawning escapements during low-run cycles. Harvestable coho runs to the Columbia River and Oregon coastal streams would increase by (Option 1 - 5% and 8%; Option 2 - 2% and 0%; Option 3 - 17% and 8%), respectively.

7. The U.S. commercial troll fishery north of Tillamook Head would sustain reductions in coho harvests amounting to (Option 1 - 20%, 18%, and 15%; Option 2 - 18%; 15% and 12%; Option 3 - 16%, 12% and 9%), respectively,

for the factors of numbers of fish, pounds landed, and dollar value of the catch. Again, potential dollar loss would be less than either of the other two factors because larger fish move through market channels with higher prices per pound. In the case of both chinook and coho, U.S. troll losses shown could be reduced by increasing fishing effort during remaining open fishing periods north of Tillamook Head or, in the case of individual boats, by shifting efforts to California, Oregon, and/or Alaska. This would increase fishing rates and yields in these areas although the opportunity to troll off Alaska would be confined to boats which qualify under that state's limited-entry program.

8. The ocean sport fishery coho salmon catches north of Tillamook Head would change by (Options 1 and 2 - plus 11%; Option 3 - minus 8%) with the new regulations proposed. These changes would result from the combination of expected shifts in sport fishing effort from chinook to coho due to the larger chinook minimum size limit, the greater abundance of coho available due to a delay in the troll season opening date, and, in the case of Option 3, the prevailing daily bag limit. The coho size limit reduction would be of secondary importance. For the combined ocean sport catch of chinook and coho, no change would be expected with Options 1 and 2 since the loss of small chinook would be counterbalanced by increased coho catches.

9. For all U.S. and Canadian fisheries harvesting salmon stocks that are present at some time off the Washington coast, the proposed ocean fishing regulatory changes north of Tillamook Head would result in a total poundage yield increase of (Option 1 - 1.3 million pounds; Option 2 - 1.0 million pounds; Option 3 - 1.4 million pounds) annually from existing levels of chinook and coho salmon resources. This occurs primarily because chinook and coho would be caught at a larger average size. Three types of catch shifts are involved: (a) from early to later in the ocean fishing season for maturing chinook and coho; (b) from immature chinook to mature fish taken one or two seasons later in the ocean; and (c) from ocean fisheries to "inside" fisheries. Additional benefits would be derived by increasing spawning escapements to begin rebuilding currently depressed native salmon stocks.

10. The aggregate of Canadian salmon fisheries participating in the harvest of these stocks will benefit from these increased yields even though one specific element, the troll fishery off the U.S. coast, will have to fish under somewhat more restrictive regulations than prevailed in the past.

A limited number of social and economic reports were available to the Council within the time frame available. It is the judgment of the Council that the best information available to the team was used, recognizing that the plan should be improved in this area as more socioeconomic information becomes available.

SUMMARY OF EXPECTED CHANGES FROM THE AVERAGE SITUATION PREVAILING DURING THE 5-YEAR PERIOD, 1971-1975, BY 1977 REGULATORY OPTIONS

Element	Option 1	Option 2	Option 3	Council Adopted CA
Chinook				
Returns to terminal areas				
Harvestable numbers of fall chinook returning to the Columbia River system	+34%	+29%	+34%	+23%
Total fall chinook run size to the Columbia River system	+20%	+17%	+20%	+14%
Commercial impact				
Early season commercial troll fishing time north of Tillamook Head prior to July 1	-60%	-40%	-40%	-60%
Numbers of chinook for troll fishery north of Tillamook Head	-42%	-36%	-35%	-23%
Pounds of chinook for troll fishery north of Tillamook Head	-31%	-24%	-23%	-20%
Catch value of chinook for troll fishery north of Tillamook Head	-28%	-21%	-20%	-18%
Average size of individual chinook for troll fishery north of Tillamook Head	+19%	+19%	+19%	+ 4%
Chinook hooking mortality losses for troll fishery north of Tillamook Head	-11%	- 6%	- 6%	-20%
Sport impact				
Number of chinook for sport fishery north of Tillamook Head	-22%	-22%	-31%	-23%
Chinook hooking mortality losses for sport fishery north of Tillamook Head	+ 9%	+ 9%	- 9%	+ 9%
Coho				
Returns to terminal areas				
Harvestable numbers of coho returning to Puget Sound	+ 7%	+7%	+ 9%	+ 7%
Harvestable numbers of coho returning to Washington coastal streams	+18%	+12%	+15%	+12%
Harvestable numbers of coho returning to the Columbia River system	+ 5%	+ 2%	+17%	+ 2%
Harvestable numbers of coho returning to Oregon coastal streams	+ 8%	No change	+ 8%	No change
Commercial impact				
Numbers of coho for troll fishery north of Tillamook Head	-20%	-18%	-16%	-18%
Pounds of coho for troll fishery north of Tillamook Head	-18%	-15%	-12%	-14%
Catch value of coho troll fishery north of Tillamook Head	-15%	-12%	- 9%	-12%
Sport impact				
Numbers of coho for sport fishery north of Tillamook Head	+11%	+11%	- 8%	+11%

2.10 PACIFIC FISHERY MANAGEMENT COUNCIL ACTION ON REGULATORY OPTIONS

The Pacific Fishery Management Council during public meetings on March 17-18, 1977, in Seattle, Washington considered and adopted this Environmental Impact Statement and Fishery Management Plan for "Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California."

A variety of specific regulatory provisions were considered. A summary of those adopted are as follows:

Regulations North of Tillamook Head

Commercial Troll

a. An all-species commercial troll season from July 1 through September 15.
b. Required use of barbless, single hooks on all terminal troll gear during any early season chinook fishing prior to July 1.
c. A 26-inch total length minimum size limit for chinook salmon, 16-inch total length minimum size limit for coho and no minimum size limit for other salmon species.
d. Mandatory vessel inspection and certification to begin in port within 48 hours prior to the July 1 all-species season opening, with the States of Oregon and Washington being responsible for implementation of this program in their respective jurisdictions.
e. A one-month early chinook season from May 1 through May 31.
f. A late season all-species troll fishery from September 16 through October 31 south of Point Grenville.
g. Unlawful to possess steelhead.

Ocean Sport

a. A general all-species season from the Saturday closest to May 1 (April 30 in 1977) through October 31.
b. A 24-inch total length minimum size limit for chinook salmon, a 16-inch total length minimum for coho, and no minimum size limit for other salmon species.
c. A gear limitation of one rod per fisherman.
d. Adoption of current possession limits, annual limits, and gear restrictions of the States of Oregon and Washington, respectively.
e. A three-fish daily sport bag limit.

Regulations South of Tillamook Head

Commercial Troll

	Waters off Oregon	Waters off California
Minimum size limits	26 inches for chinook, 16 inches for coho, None for other salmon	26 inches for chinook 22 inches for coho, None for other salmon
Chinook season	May 1 - Oct. 31	April 15 - Sept. 30
Coho season	June 15 - Oct. 31	May 15 - Sept. 30

Vessel certification (Note: See No. d of troll regulation proposals for north of Tillamook Head.)	None south of Tillamook Head	Beginning May 13
Steelhead	Unlawful to possess steelhead	

Ocean Sport

Season

Oregon: May 1 - December 31

California: North of Tomales Point - all year

South of Tomales Point - Saturdays closest to the dates of February 15 and November 15

Size Limits (all species)

Oregon: No size limit

California: 22 inches (exception, see daily limit)

Gear

Oregon: One rod

California: In accordance with existing State regulations (including no limit on number of rods or gear during the commercial fishing season)

Daily Limit

Oregon: Three fish

California: Three fish (two must be greater than 22 inches; one may be between 20 and 22 inches.

2.11 Data on Ocean Commercial and Recreational Salmon Fisheries to be Supplied to the Secretary

The pertinent data which shall be submitted to the Secretary with respect to the Ocean Salmon Fisheries shall include the following: Fishing gear involved, by type and quantity; Catches, by species, number and/or weight; Fishing effort expended, by gear-type, user-group and with respect to time and management areas (as defined in this plan); and such other information pertinent to the evaluation of the management plan in meeting the requirements of the Act. Such data will be furnished in accordance with regulations published by the Secretary as may be deemed necessary.

3.0 RELATIONSHIPS OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS

3.1 Relation of Proposed Action to Coastal Zone Management Programs and Land-Use Plans and Controls

Although administration of the Fishery Management Plan is effected outside the boundaries of California, Oregon, and Washington, the potential exists that the Plan could have direct affect on the coastal zones of the three states.

The Coastal Zone Management Act of 1972 requires Federally planned, conducted, or supported activities directly affecting the coastal zone of a state be consistent to maximum extent practicable with that state's Coastal Zone Management program if the program has been approved by the Department of Commerce. To date, only the State of Washington has an approved State Management Program. Each state with an approved program will be notified of the Plan at the earliest practicable time and will be consulted to determine whether the Plan is consistent with the approved Coastal Zone Management program.

3.2 Shoreline Uses

Salmon trollers require parking, boat moorage, service facilities, and fish receiving facilities. The offshore U.S. recreational fishery on salmon requires extensive automobile parking areas, boat launching and moorage facilities and customer service facilities such as motels and restaurants. Both groups require safe small-boat harbors. No additional facilities should be required because of this plan and no significant reduction or abandonment or alteration of existing facilities will be required. Neither rescue nor enforcement requirements are likely to result in any significant change in needs for land bases or facilities that would affect Washington's coastal zone management plan. No other impacts on coastal zone areas could be identified.

4.0 PROBABLE ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

4.1 Physical Effect

No change in impact on the physical environment is expected from continuing or modifying the existing ocean salmon fisheries. Ocean fishermen currently dress their catch at sea and salmon offal is discarded into offshore waters. This processing would continue under the plan. Most of this disposal, estimated at 1.5 million pounds of salmon viscera annually would be in an area off the U.S. coast inside or easterly of the 200-meter depth curve. This organic material rapidly re-enters the oceanic food chain.

4.2 Biological Effects

4.2.1 Fishing on Mixed Stocks. Chinook, coho, and pink salmon from various areas, including many U.S. streams, are harvested by ocean commercial troll and recreational salmon fisheries. It is not possible to protect totally some stocks and harvest others by regulating the U.S. domestic ocean fisheries alone. All of the escapement for spawning must come from that portion of the run returning to U.S. waters. In years of small runs, ocean harvests on mixed stocks can eliminate domestic fisheries in internal state waters, as well as result in a low abundance of spawning fish. This proposed action will reduce fishing effort on mixed stocks, and will help provide more fish to areas where management can better be conducted on the basis of discrete stocks and increase escapements and future production.

4.2.2 Size of Fish Harvested. The ocean salmon fishery harvests fish while they are still actively growing. Although regulations establish minimum size limits for the salmon, most fish are still harvested with significant remaining growth potential.

The catch and release of undersized or out-of-season fish also results in a "hooking mortality" loss. For the commercial troll fishery, this loss has been estimated by various agencies to be from 15% to 30% of the fish hooked and released. This loss further reduces the pounds of salmon that could be recovered from the resource if they were harvested when they reached full maturity.

4.3 Social and Economic Effects

There are major social and economic effects which may be expected to result from the proposed actions. They are as follows:

1. Due to the provision of an increase in harvestable numbers of fall chinook reaching the Columbia River system and the predicted increase in total run, the numbers of salmon from which to accommodate treaty Indian fishing rights will be increased.

2. The projected increase mentioned in No. 1 above should provide for a viable August gill net fishery below Bonneville Dam on upper Columbia River stocks. This will contribute to the maintenance of the social and economic systems involved in that fishery.

3. The proposed action may result in some temporary shifts of fishing effort and associated catches from the coast of Washington to the coasts of California and Oregon, and possibly to Alaska. This will have an impact on the local economies of these states, and on the communities whose fishermen may shift their geographical base.

4. The combined coho and chinook catch in the ocean recreational fishery north of Tillamook Head (Options 1 and 2 - would not significantly change; Option 3 - would be moderately reduced). For Options 1 and 2, this will preserve the existing viability of the recreational activities and enterprises.

5.0 UNAVOIDABLE ADVERSE EFFECTS

Regulatory alternatives that are available to accomplish the ocean salmon fishery management objectives described in Sections 1.1, 1.2, and 2.8.1 of this document will result in certain ocean fishery catch reductions. A detailed technical analysis, described in Sections 2.1.7.4 and 2.9 for Options 1, 2 and 3 of the specific regulatory proposals for 1977, as well as the plan actually adopted by the Council (CA), all four of which are summarized in the table on page 42, indicates that the following adverse effects to certain persons or groups, relative to a 1971-1975 base period, would be predicted.

1. Small reductions would occur in ocean fishing harvests on Canadian, Puget Sound, Oregon coastal, and California chinook stocks; reductions off Washington for the latter two stocks may be partially counter-balanced by increases off Oregon and California.

2. North of Tillamook Head ocean catch reductions of (Option 1 - 42%, 31%, and 28%; Option 2 - 36%, 24% and 21%; Option 3 - 35%, 23%, and 20%; CA - 23%, 20%, and 18%), respectively, in numbers of chinook landed, pounds landed, and dollar value would be experienced by commercial fishermen.

3. A reduction of (Options 1 and 2 - 22%; Option 3 - 31%, CA - 23%) in numbers of chinook caught in the ocean sport fishery north of Tillamook Head would occur, but poundage loss would not be as great due to the increase in size of fish landed. Hooking mortality losses for chinooks would change by (Options 1, 2, and CA - plus 9%; Option 3 - minus 9%).

4. Reductions in ocean coho harvests by the commercial troll fishery north of Tillamook Head amounting to (Option 1 - 20%, 18%, and 15%; Option 2 - 18%, 15%, and 12%; Option 3 - 16%, 12%, and 9%; CA - 18%, 14%, and 12%) respectively, in numbers of fish, pounds landed, and dollar value would occur.

5. In the case of Option 3, the ocean sport fishery north of Tillamook Head would experience a coho salmon catch reduction estimated at 8% annually.

The aforementioned reductions would initially result in adverse economic impacts on the fishermen, processors, and communities within which fishery-related industries reside. However, over the longer term, effects of improved management and conservation practices should rebuild the fishery stocks initially affected, to offset any losses incurred. The major benefits which offset these impacts have been previously described (Section 2.9).

Continuous monitoring and analyses of the salmon fisheries will be carried out to monitor total harvests and to determine the effects of the regulatory measures adopted. In the event that undue effects occur on any segment of the fishery or are greater than those currently predicted, the regulatory measures could be revised to compensate for such effects.

6.0 ALTERNATIVES TO THE PROPOSED ACTION

6.1 More Restrictive Ocean Salmon Fisheries

One alternative recommendation would be to prohibit ocean troll fishing prior to July 1 within U.S. jurisdiction off Washington and the Columbia River mouth.

This alternative would further increase the U.S. commercial net, treaty Indian, and freshwater recreational catches of salmon, as well as bolstering spawning escapements of depressed stocks. The increase would be the result of salmon "saved" by restricting domestic ocean salmon fishing. Some of these salmon, however, would migrate into Canadian waters and be caught there.

The disadvantage of this action is that the troll fishery off the Washington coast and Columbia River mouth would be drastically curtailed. Existing fishermen would lose a major portion of their source of livelihood or have to shift their efforts to Oregon, California, and Alaskan ocean waters. Additional fishing pressure on other salmon stocks would result. Large segments of the commercial buying, processing, and marketing industry would face elimination. Business for many commercial support industries would be severely curtailed or eliminated. The immediate imposition of this alternative would have such a drastic effect on the industry that it was not considered further at this time.

6.2 Less Restrictive Ocean Salmon Fisheries

A second alternative would be to increase the level of ocean fishing rates. Such actions would expand ocean fisheries off the U.S. coast at the expense of other U.S. "inside" fishermen and increase the potential for over-exploitation on specific major salmon stocks. Such action would, on balance, be inconsistent with the mandates of PL 94-265. This alternative was not considered further since some weaker stocks are already being over-fished and more liberal regulations would make it even more difficult to provide for proper conservation of the salmon resources.

6.3 No Action

Without some regulatory action by April 15, 1977, on the ocean salmon fisheries, it is likely that a regulatory void will exist in these fisheries. Such a void will have an adverse biological impact on the salmon stocks on which the ocean fisheries are based, and adverse economic and social impacts on the fisheries directed at the same stocks when they subsequently migrate into the territorial and inside waters of Oregon, Washington, and Idaho. Past experience with these fisheries indicates that, without a management plan, there is a potential for a disruptive fishery on these stocks, including the inability for managing agencies to provide for inshore fisheries and to ensure adequate escapements for spawning purposes.

Further, this action would probably result in continued or increased legal proceedings to compel either the Council or the States, or both, to insure fulfillment of Indian treaty obligations. There would be increased disruption of the

fisheries and violent clashes between fishermen and enforcement authorities resulting from such legal confrontations.

7.0 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE ENVIRONMENT AND MAINTENANCE OF LONG-TERM PRODUCTIVITY

The short-term effect of the proposed action is to permit increases in escapement of the affected salmon stocks to "inside" fisheries and spawning grounds. For the long term, assuming coordinated management by the "inside" entities having management jurisdiction, the action, if continued, should result in increased productivity.

8.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

No irreversible commitments of resources will result from the implementation of this management plan which has been set in motion by the passage of the Fishery Conservation and Management Act of 1976. The management plan basically outlines modifications to existing ocean salmon management procedures. Implicit in the implementation of this management plan is the periodic monitoring of the catch to provide data for management decisions. Short-term irretrievable commitments of public funds can be identified. Irretrievable commitments can be generally defined as the use or consumption of resources that are neither renewable nor recoverable for subsequent use.

Biological Resources - No loss of aquatic flora or fauna populations has been identified. Periodic monitoring of the catch is required and the current management plans are flexible and could be changed if adverse impacts appeared.

Land Resources - No irreversible or irretrievable commitments of land resources have been identified in the proposed management plan.

Water and Air Resources - No irreversible or irretrievable commitments of water or air have been identified.

9.0 REFERENCES AND NOTES

1. The ocean migrations of immature coho appear, however, to be much more extensive than indicated by the recovery of marked adult fish in the various fisheries. See: Loeffel, Robert E. and William O. Forster. 1970. Determination of movement and identity of stocks of coho salmon in the ocean using the radionuclide zinc-65. Oreg. Fish. Comm. Res. Pap., Vol. 2, No. 1: 15-27.

2. Johnson, Frederick C. 1975. A model for salmon fishery regulatory analysis. Second Interim Report. Nat. Bur. of Stand. Rept. 75745, NBS Proj. 2050571, 28 pp. (mimeo).

   An additional report is in preparation and will provide a detailed listing of basic data employed as well as actual examples of model analysis results.

3. The following average 1975 Washington ex-vessel commercial fish prices were utilized in the analysis:

	Price Per Pound, in Dollars			
District	Chinook salmon		Coho salmon	
Puget Sound	Nets: 0.92	Troll: 1.08	Nets: 1.02	Troll: 0.85
Grays Harbor	Nets: 0.94	Troll: 1.02	Nets: 1.04	Troll: 0.77
Willapa Harbor	Nets: 0.89	Troll: 0.99	Nets: 0.97	Troll: 0.76
Columbia River	Nets: 0.61	Troll: 0.93	Nets: 0.91	Troll: 0.76

Troll fishery prices were converted to a round weight basis, and catches in non-Washington fisheries were assigned prices of the nearest district.

Recreational fishery values were based on a $28.00 per-fish overall average weighted to reflect the higher observed value of larger fish in the following manner: $13.00, $24.00, $35.00, $45.00 and $56.00 per fish for 0-4 lb., 4-8 lb., 8-12 lb., 12-16 lb., and 16-100 lb. salmon, respectively.

4. Based on current stock size as applied to a composite of 11 marked 1964, 1965, and 1966 brood year experimental groups as recovered in the 1967, 1968, and 1969 fisheries and escapements.

5. Based on current stock size as applied to a composite of six marked 1965 and 1966 brood year experimental groups as recovered in the 1968 and 1969 fisheries and escapements.

6. Based on current stock size as applied to a composite of two marked 1965 and 1966 brood year experimental groups as recovered in the 1968 and 1969 fisheries and escapements.

7. Based on current stock size as applied to a composite of four marked 1964 and 1965 brood year experimental groups as recovered in the 1967 and 1968 fisheries and escapements.

8. Based on current stock size as applied to a composite of four marked 1965 and 1966 brood year experimental groups as recovered in the 1968 and 1969 fisheries and escapements.

9. Current stock size based on a 65:35 ratio of Puget Sound:southern British Columbia coho in the Strait of Juan de Fuca. Ocean catch distribution assumed to be equal to Puget Sound coho and terminal area catches based on actual catches of Canadian coho in U.S. northern Puget Sound fisheries and Canada's Fraser River commercial fishery.

10. Based on current stock size as applied to a composite of 16 marked 1961 through 1964 brood year experimental groups as recovered in the 1963 through 1969 fisheries and escapements.

11. Based on current stock size as applied to a mixture of 50% lower Columbia River fall chinook (see No. 10 above), and 50% of a composite of four marked 1961 through 1964 brood year Kalama River experimental groups as recovered in the 1963 through 1969 fisheries and escapements. No experimental data base for naturally spawning upper Columbia River fall chinook

were available but the age composition of these fish as returning adults is similar to the Kalama River stock. This implies a comparable ocean catch distribution pattern.

12. Based primarily on an analysis of adult fish tagging experiments in the ocean. To simulate a stock correctly, it is essential to properly evaluate the "sub-stocks"; e.g., Puget Sound coho moving northward and feeding off the west coast of Vancouver Island versus those moving southward to areas off the Washington coast. Each sub-stock is not equally available to all ocean fisheries harvesting the overall stock.

13. Growth is reflected in monthly average fork lengths in centimeters and is entered separately for each of the following groups: 3-year-old coho from each geographic area specified previously; 2-year-old immature chinook; 3-year-old immature chinook; 3-year-old mature chinook; 4-year-old immature chinook; 4-year-old mature chinook; and 5-year-old mature chinook.

14. All coho stocks were assumed to be harvested as 3-year-old maturing adults. Chinook age composition was based on actual catch and escapements of marked experimental groups as specified in Nos. 10 and 11.

15. Maturity by area and time based directly (Washington fisheries) or by extrapolation (non-Washington fisheries) from basic data provided in the following: Wright, S.G. and John Bernhardt. 1972. Maturity rates of ocean-caught chinook salmon. Pac. Mar. Fish. Comm. Bull. 8: 49-59.

16. For chinook salmon, an annual natural mortality rate of 0.342 was utilized for all age and maturity categories. This was derived from the average instantaneous rate (on a yearly basis) for nine studies cited in Table 25, page 48, of the following report: Cleaver, F.C. 1969. Effects of ocean fishing on 1961 brood fall chinook from Columbia River hatcheries. Fish. Comm. Oreg. Res. Rept. 1(1): 1-76.

    Natural mortality rates significantly higher than the 0.342 rate were tested in both the Washington and California models and could not reproduce the age class composition and sex ratios actually observed in catches and escapements. The natural mortality rate could, however, be significantly lower than 0.342, particularly in the case of larger fish. For coho salmon, an annual natural mortality rate of 0.30 was utilized for fish in their third and final year to reflect a 10% rate during their 4-month period of primary harvest. The actual rate could be significantly higher or lower

17. Numbers of salmon hooked and released were derived from estimates by the fishermen themselves through voluntary troll salmon logbook programs and field interviews of sport anglers. Hooking mortality rates recommended in the following report were utilized: Wright, Sam. 1972. A review of the subject of hooking mortalities in Pacific salmon (Oncorhynchus). 23rd Annual Report (1970). Pac. Mar. Fish. Comm., pp. 47-65.

    No additional losses were computed for fish taken by predators or unobserved losses of hooked fish.

18. Based on actual catches and escapements of marked fish experimental groups as specified in Nos. 4 through 11.

19. Pratt. David C. 1975. Anadromous fish catch record system (AFCRS). Wash. Dept. Fish. Prog. Rept., 35 pp. (mimeo)

20. Washington troll catch estimates by species are made on a weekly basis for five district-area categories (Puget Sound, La Push, Westport, Willapa, Columbia River) through field examination of "key buyer" landing records. Washington ocean sport effort data (angler trips) and catch estimates by species are made on a weekly basis for four ports (Neah Bay, La Push, Westport, and Ilwaco) by application of field sample data (anglers per boat for charter and private boats, catch by species per angler) to WDF and U.S. Coast Guard boat counts. Oregon ocean sport effort data (angler trips) and catch estimates by species are made on a bi-monthly basis for eight ports (Columbia River, Garibaldi, Depoe Bay, Newport, Florence, Winchester Bay, Coos Bay, Brookings) by application of field sample data (anglers per boat for charter, skiff and pleasure boats, catch by species per angler) to ODF&W and U.S. Coast Guard boat counts.

21. Pre-season run size predictions for individual areas are commonly "updated" through analysis of catch and effort during the early portion of each run, test fishing, dam counts, early escapement indices, and/or other technical management tools. At this point, only restrictions on the inside fisheries can achieve the proper balance between total catch and escapement.

22. Ricker, W.E. 1976. Review of the rate of growth and mortality of Pacific salmon in saltwater and noncatch mortality caused by fishing. J. Fish. Res. Bd. Can. 33: 1483-1524.

23. See also: Henry, K.A. 1971. Estimates of maturation and ocean mortality for Columbia River hatchery fall chinook salmon and the effect of no ocean fishery on yield. Oreg. Fish. Comm. Res. Rept. 3: 13-27.

    Henry, K.A. 1972. Ocean distribution, growth and effects of the troll fishery on yield of fall chinook salmon from Columbia River hatcheries. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 70: 431-445.

    Van Hyning, Jack M. 1973. Factors affecting the abundance of fall chinook salmon in the Columbia River. Oreg. Fish. Comm. Res. Rept. 4: 1-87.

24. Statistics cited are based on an analysis by the Washington State Department of Fisheries-National Bureau of Standards Catch/Regulation Analysis Model utilizing prevailing 1975 commercial ex-vessel prices and recreational fishery values. Value results shown are not, however, due entirely to economic factors. For example, 1975 average per pound prices for chinook salmon in the Columbia River were $0.84 for the non-treaty fishery below Bonneville Dam and $0.37 for the treaty Indian fishery above Bonneville Dam. The composite in-river price of $0.61 (see No. 3) is a reflection of actual catch distribution due to treaty Indian fishing rights, not economics.

25. The 1976 August gill net fishery in the Columbia River was shortest on record, with the catch of 28,000 chinook being only about one-quarter of both the 1975 catch (110,000 fish) and the recent 10-year (1965-1974) average of 104,000 chinook per year.

26. All commercial net, sport and treaty Indian fishing inside Grays Harbor was banned in 1976 from mid-August to late September to protect weak runs of early fall chinook. In addition, a combination of low stream flows, poor chinook and coho runs, and increased treaty Indian fishing resulted in the most restrictive non-treaty commercial net fishery on record. Resulting catches were only about one-half the recent 10-year mean for chinook salmon (7,000 fish versus a 12,000 average) and only one-quarter the 10-year mean for coho salmon (10,000 fish versus a 40,000 average).

27. Legal State-managed non-treaty commercial net fisheries specifically for Puget Sound-origin chinook and coho stocks in 1976 were limited to a single "target" species fishery for chinook in Bellingham Bay. No non-treaty commercial net fisheries for Puget Sound-origin coho were allowed in 1976 due to a combination of poor native coho runs requiring complete protection plus heavy prior non-treaty interceptions which precluded any further non-treaty fishing on harvestable hatchery stocks in terminal fishing areas.

28. An exception to this generalization would be Indian net fisheries on the Klamath and Trinity Rivers by the Yurok and Hoopa Tribes.

29. The drastic reductions that have been imposed on the inside Columbia River commercial fishery in order to achieve the necessary escapements of spring chinook can readily be seen in Figure 3.

The escapement goal established in 1963 of 80,000-90,000 spring chinook past all commercial fisheries has been adjusted upward in recent years. In 1972, the States of Washington, Oregon, and Idaho agreed that 40,000 fish is the desired number of spring chinook needed above the uppermost dam in the Snake River to provide enough fish for natural and artificial propagation and also a viable sport fishery. In 1975, with no commercial or sport fishing allowed on the run, total escapement was 104,100 fish, and the count of 17,600 spring chinook at Lower Granite Dam was well below the desired goal.

Spawning ground surveys in tributaries of the Snake River have been conducted annually to assess spawning success of wild escapement. In northeastern Oregon standard index streams, only 297 fish and 269 redds were observed; the lowest fish count since 1950 and the lowest redd count since 1958. In Idaho index streams, the redd count of 1,991 was second lowest in history. The lowest redd count occurred in 1974.

Of races of chinook salmon present in the Columbia River, status of summer chinook is most precarious. As can be seen by Figure 4, numbers of summer chinook entering the river have continuously declined since 1957. The 1974 run was lowest on record.

Escapement of summer chinook above all fisheries has declined in a manner similar to the run. Only twice since 1960 has escapement reached the desired goal of 80,000-90,000 fish.

As with upriver spring chinook, the commercial fishery on summer chinook in the Columbia River has been curtailed drastically to try to protect escapement. Commercial harvest of summer chinook has been historically important. From 1938 to 1956, seasons were open annually, and an average of 1.1 million lb. (56,200 fish) was landed. From 1957 to 1963, an average

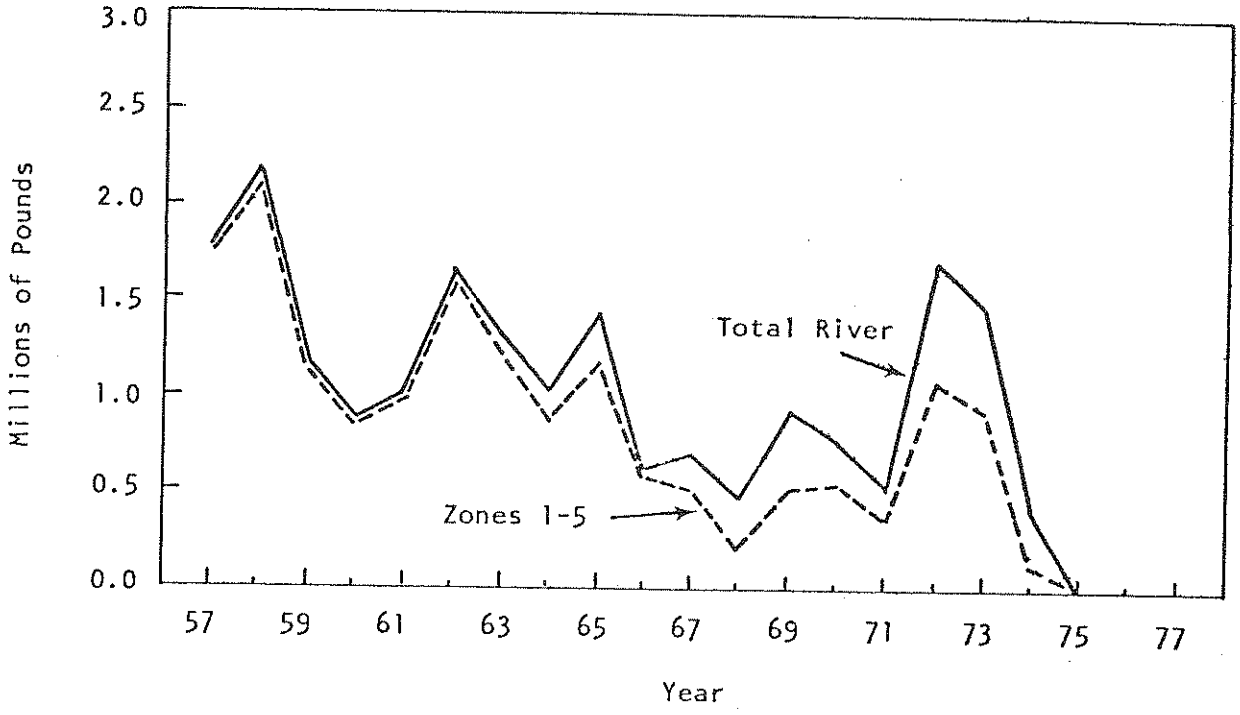

Figure 3. Columbia River spring season chinook landings, 1957-75.

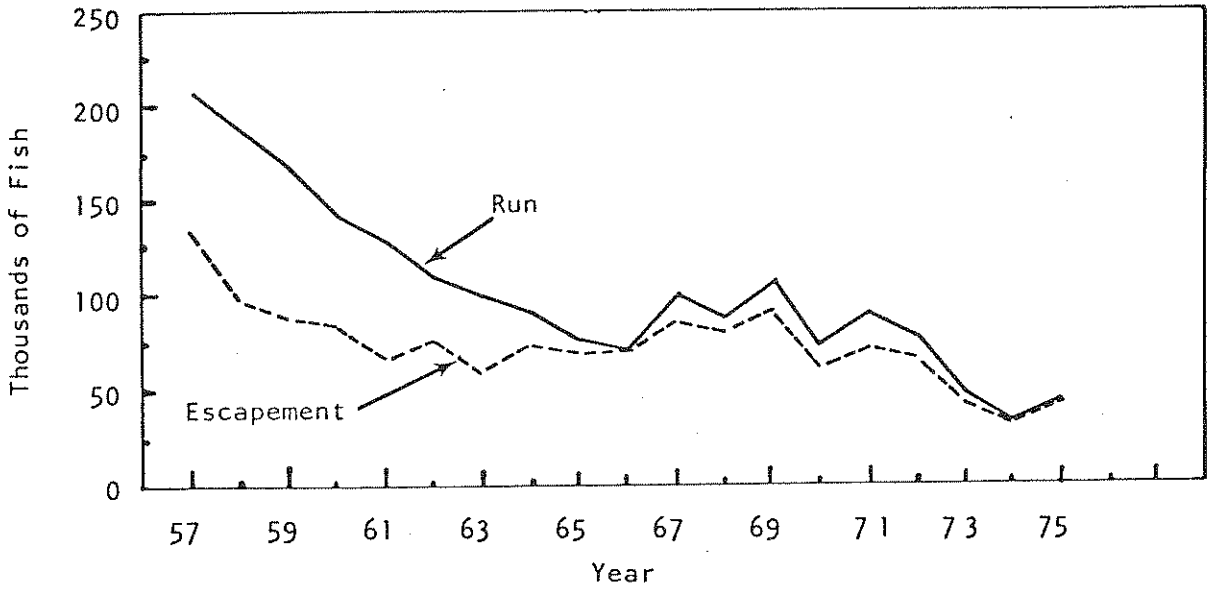

Figure 4. Estimated numbers of upper river summer chinook entering the Columbia River and escapement above the commercial fishery, 1957-75.

of 900,000 lb. (61,700) was landed commercially (Figure 5). However, run, escapement, and redd count values made it apparent that this race needed protection. When the 1964 run was predicted to fall below the escapement goal of 80,000-90,000 fish, the summer chinook season was closed. It has not re-opened since.

For additional facts on Columbia River salmon resources, see: Oregon Department of Fish and Wildlife, Washington Department of Fisheries. 1976. Status Report. Columbia River Fish Runs and Fisheries, 1957-1975. Vol. 2, No. 1: 74 pp.

Pacific Northwest Regional Commission. 1976. Columbia Basin Salmon and Steelhead Analysis. Summary Report, Sept. 1, 1976. 74 pp.

30. The following table documents Washington Department of Fisheries' spawning escapement goals and actual escapement projections in numbers of adult fish for naturally spawning coho salmon in Puget Sound during the 5-year period 1972-1976.

Production area	Spawning escapement goal	Actual escapements				
		1972	1973	1974	1975	1976[1/]
Nooksack	5,500	2,000	4,000	6,000	4,000	3,000
Samish	3,000	1,000	1,000	2,000	1,000	1,000
Skagit	27,000	13,000	13,000	22,000	10,000[2/]	5,000[2/]
Stillaguamish	16,000	6,000	8,000	12,000	4,000[2/]	4,000[2/]
Snohomish	40,500	21,000	36,000	44,000	43,000[2/]	39,000[2/]
Lake Washington	17,000	6,000	7,000	15,000	5,000[2/]	13,000[2/]
Green	8,000	2,000	1,000	3,000	2,000	3,000
Puyallup	14,500	3,000	3,000	5,000	2,000	4,000
Nisqually	2,500	2,000	2,000	1,000	2,000[2/]	1,000[2/]
S. Sound & E. Kitsap	17,660	1,000	4,000	14,000	5,000[2/]	7,000[2/]
Deschutes	2,500	500	1,000	2,000	3,000[2/]	2,000[2/]
Hood Canal	33,000	7,000	25,000	40,000	12,000[2/]	27,000[2/]
Straits	8,980	2,000	5,000	5,000	2,000[2/]	5,000[2/]
Total	196,140	64,500	110,000	170,000	95,000	114,000

1/ Preliminary.

2/ These stocks received complete protection inside Puget Sound by total closures of all treaty and non-treaty commercial net fisheries on major migration routes throughout the normal "target species" coho salmon management period.

From the above, it is obvious that spawning escapement goals are not being met for major native coho stocks in spite of widespread inside net fishery closures.

31. For Washington coastal rivers, fishery managers cite the following specific examples of natural spawning escapement problems in 1975 and 1976:

Queets system: The spring-summer chinook run in 1975 had an estimated escapement of only 300 fish. The Indian on-reservation catch was 333 fish and escapement goal for this run is 1,000. For 1976, estimated escapement and total on-reservation Indian harvest were similar. The 1975 fall chinook escapement to the Clearwater River, a

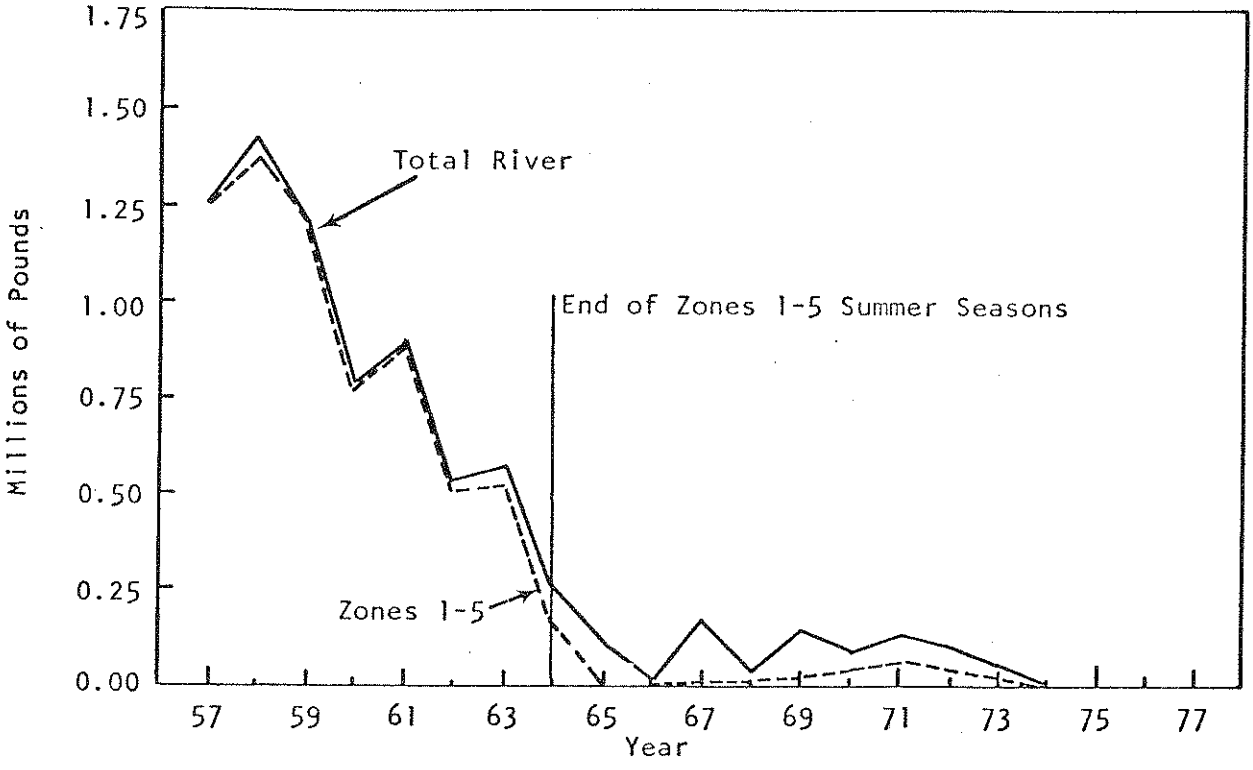

Figure 5. Columbia River summer season chinook landings, 1957-75.

Queets tributary, was estimated at 1,248 fish by the Fisheries Research Institute, University of Washington, while the escapement goal was 1,728. In 1976, the Clearwater River fall chinook escapement dropped to 984. Coho escapement in 1975 was only 630 fish, far below the escapement goal of 4,633. In 1976, coho escapement improved to 1,256 fish, but was still far less than that required for adequate seeding of juvenile coho rearing areas. Both the chinook and coho runs are fished by on-reservation Indian net fisheries. The coho run would have been well below escapement needs even without this additional impact.

Quillayute system: The 1975 native coho spawning escapement was estimated to be 8,000 fish, failing to meet the escapement goal of 11,000. Both on- and off-reservation Indian net fisheries harvested fish from this run. The native spring-summer chinook escapement was between 500 and 1,000 fish, also below the escapement goal of 2,100. Indian fishing took 300-400 fish from this stock. In 1976, native coho escapements improved only slightly over 1975 levels. The native spring-summer chinook run was comparable to 1975. Again, both on- and off-reservation Indian fisheries were conducted. Native chinook escapements would have been below desired levels even if river fisheries had not existed.

Chehalis system: Adequate escapements of early run fall chinook were achieved in 1975 only by complete closure of all commercial, Indian, and sport fisheries in the Grays Harbor region from mid-August to late September. Despite similar closures in 1976, escapement of this early fall chinook run was far below the needed level. Coho escapements to Grays Harbor tributaries were considerably below normal in both 1975 and 1976.

Hoh system: Spring and summer chincok runs in the Hoh River system have shown a drastic decline in recent years. Catches in 1975 and 1976, respectively, were approximately 450 and 700 chinook. This was approximately 1/2 to 1/3 of catches achieved by the Hoh River Indian fishery prior to a stock decline which commenced in 1973. Spawning ground escapements have fallen far short of the 1,400 fish escapement goal. Even adding Indian catch to escapement in the past 2 years would fail to bring total run size entering the Hoh River up to escapement needs.

Managers also report the following problems with Washington coastal artificial production programs:

a. Soleduck Hatchery (WDF), 1975: Took all available coho eggs (707,000) but was still far short of program needs. Filled remaining program needs with Dungeness Hatchery (WDF) eggs. Past history with transfers of Puget Sound eggs to coastal areas shows a substantially lower survival rate to adults. (Run subject to treaty Indian on- and off-reservation fisheries.)

b. Simpson Hatchery (WDF), 1975: Took 988,000 eggs and passed only 1,179 fish upstream for natural spawning. Filled remain-

ing program needs with Willapa Hatchery (WDF) fish. (Run subject to non-treaty and treaty Indian off-reservation fisheries.)

Simpson Hatchery (WDF), 1976: Took 2.9 million coho eggs (far short of the 4.8 million program need), and very few coho were passed upstream for natural spawning.

c. Cook Creek Hatchery (USFWS), 1975: Was short of coho eggs in 1975 and was supplied by Puget Sound hatcheries (see problem under a. above). (Run subject to treaty Indian reservation fishery.)

32. Record coho catches totaling 2.2 million fish were made by trollers and sport anglers off the Washington coast during 1976, yet coho returns to inside waters ranged from below average to record lows.

33. In the past, low stream flows have occasionally caused milling problems for maturing adults off coastal river mouths and in coastal estuaries. A prolonged dry spell in Washington during 1958 even resulted in adults being taken in the ocean fisheries which exhibited pronounced spawning colorations and well-developed secondary sexual characteristics.

34. Any establishment of a higher minimum size limit such as the 20- or 22-inch standards of the past would not be justified and has no biological basis. Coho between 16 and 22 inches in length are either small maturing 3-year-old adults or maturing 2-year-old male "jack salmon". See: Wright, Sam. 1970. Size, age, and maturity of coho salmon in Washington's ocean troll fishery. Wash. Dept. Fish. Res. Pap. 3(2): 63-71.

35. During the 1975 ocean fishing season, Washington Department of Fisheries personnel conducted random interviews of recreational anglers at coastal fishing ports to determine if they were "satisfied" or "dissatisfied" on a specific day with their fishing experience. Number of salmon actually taken by each fisherman was also recorded. Results were as follows:

	Expressed satisfaction		Expressed dissatisfaction		Total number interviewed
Salmon catch	No.	Percent	No.	Percent	
No fish	259	63	155	37	414
One fish	197	83	39	17	236
Two fish	174	95	10	5	184
Three fish	317	99	2	1	319
				Total	1,153

The small difference in satisfaction levels between anglers taking two fish (95%) versus those taking three fish (99%) indicates that potential effort reductions due to a reduced bag limit would probably be minimal.

A two-fish bag limit was actually in effect in the ocean sport fishery beginning on June 15, 1974, but lasted less than one week due to a successful legal challenge in State court. Some impact on the fishery was evident, however, since angler trips declined slightly during the latter half of June when they are normally accelerating. Pre-trial publicity, continuation of a three-fish daily-bag limit on the Oregon side of the Columbia

River and a serious national fuel shortage were three factors contributing to the observed decline.

36. During the 1975 sport salmon fisheries in Washington, statewide statistics show that an estimated 92,000 fish, or about 7% of the total catch of 1.4 million salmon, were taken by individual sport anglers who had previously taken at least 20 fish.

APPENDIX A

PERTINENT EXCERPTS ON OCEAN SALMON MANAGEMENT FROM "RECIPROCAL FISHERIES AGREEMENT BETWEEN THE GOVERNMENT OF THE UNITED STATES AND THE GOVERNMENT OF CANADA"

Article II, No. 3

"3. Fishing by nationals and vessels of each party in the zone of the other shall continue in accordance with existing patterns, with no expansion of effort nor initiation of new fisheries."

Article V

"1. On the Pacific Coast, there shall be no fishing for salmon by nationals and vessels of either party in the zone of the other, except salmon taken by trolling beyond 12 nautical miles of the coast and salmon taken by trolling between 3 and 12 nautical miles in the area west of a line joining Bonilla Point and Tatoosh Island; north of a line projected due west from Carroll Island (latitude 48 degrees 00.3 minutes North, longitude 124 degrees 43.3 minutes West) and south of a line projected from Bonilla Point to latitude 48 degrees 29.7 minutes North, longitude 125 degrees 00.7 minutes West.

"2. Each party shall have the right to limit such fishing for salmon in its zone by nationals and vessels of the other to the same time periods as its nationals and vessels are permitted such fishing for salmon in the zone of the other."

Article VIII (except second sentence of No. 2)

"1. The two parties recognize that each shall manage fisheries within its jurisdiction within the terms of its domestic laws. They agree that in the application of their domestic laws they shall be guided by the following principles:

"a. preserving existing patterns of their reciprocal fisheries in keeping with the provisions of Article II; and

"b. in the case of reciprocal salmon fisheries, the interest of the state of origin in salmon spawned in its rivers."

"2. Regulations affecting the size limits, seasons, areas, gear, and by-catch of existing fisheries established by the management entities of either party and pertaining to the taking or possession of fish in its zone shall apply equally to the nationals and vessels of both parties in the zone."

"3. If either party proposes to introduce or alter any such regulations during the term of this Agreement, it shall notify the other party of the proposed regulatory measure as far in advance of its application as possible. At the request of either party, consultations shall be held expeditiously in order to review the proposed measure. In such consultations the parties shall be guided by the principles referred to in paragraph 1 above. Consultations on regulations respecting reciprocal salmon fisheries shall take place at the technical and official levels during the process of preparing such regulations, and, prior to their final approval and application, at the Secretarial or Ministerial level upon request of either party.

"4. Fishery conservation and management regulations other than those referred to in paragraph 2 above and those required for the implementation of this Agreement, shall not be applied by either party to vessels and nationals of the other fishing in its zone pursuant to this Agreement."

Article XI

"Each party agrees to waive for nationals and vessels of the other party fishing in its zone pursuant to this Agreement, permit and licensing requirements set forth in the respective domestic fishery laws of each country as applicable to foreign fishermen, provided that each vessel shall be clearly and conspicuously marked to indicate its name, nationality and home port."

Article XII

"1. Recreational fishing by vessels of each party in all waters of the other shall continue.

"2. Recreational fishing under this Agreement shall be conducted in accordance with applicable regulations and permit and licensing requirements imposed by the competent state, provincial and federal authorities, except that requirements for permits and licenses under the Fishery Conservation and Management Act of 1976, in the case of the United States, and the Coastal Fisheries Protection Act, in the case of Canada, shall be waived."

Article XIII

"The two parties agree to exchange appropriate fishery statistics on a timely and regular basis where necessary to permit an accurate determination to be made of the time at which an allocation or catch level referred to in this Agreement is reached, and otherwise to ensure the effective implementation of this Agreement."

Article XIV

"Each party shall allow access to its customs ports for nationals and vessels of the other party for the purposes of purchasing bait, supplies, outfits, fuel, and effecting repairs, unless more favorable access provisions are provided in other agreements in force between the two parties. Access under this provision is subject to general requirements regarding advance notice of port entry, availability of facilities, and the needs of domestic fishermen and flag vessels."

Article XV

"The two parties agree that cooperative fishery research and the exchange of fishery biological data and statistical information through existing institutional arrangements should continue and, where appropriate, be expanded."

Article XVI

"The two parties undertake to consult as necessary to ensure the harmonious implementation of this Agreement."

APPENDIX B

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Attorneys for Defendants

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF OREGON

UNITED STATES OF AMERICA, Plaintiffs, vs. STATE OF OREGON, Defendant, and THE CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON; CONFEDERATED TRIBES & BANDS OF THE YAKIMA INDIAN NATION; CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION; and NEZ PERCE TRIBE OF IDAHO, Intervenors, and STATE OF WASHINGTON, Intervenor.	CIVIL NO. 68-513 MOTION

All parties hereby move this Court for an Order approving the Plan for Managing Fisheries on Stocks Originating from the Columbia River and its Tributaries Above Bonneville Dam, which is attached

Portland, Oregon 97201
Telephone 229-5725

hereto as Exhibit "A."

DATED February 28, 1977.

Respectfully submitted,

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Assistant Attorney General
Attorney for Oregon Fish and Wildlife Department

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James M. Johnson
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Sidney I. Lezak
United States Attorney
Of Attorneys for the United States of America

Douglas R. Nash
Attorney for Umatilla Tribe

IT IS SO ORDERED.

UNITED STATES DISTRICT JUDGE

Portland, Oregon 97201
Telephone 229-5725

A PLAN FOR MANAGING FISHERIES ON STOCKS ORIGINATING FROM THE COLUMBIA RIVER AND ITS TRIBUTARIES ABOVE BONNEVILLE DAM

The purpose of the plan shall be to maintain, perpetuate and enhance anadromous fish and other fish stocks originating in the Columbia River and tributaries above Bonneville Dam for the benefit of present and future generations, and to insure that the Nez Perce Tribe of Idaho, Confederated Tribes of the Umatilla Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakima Indian Nation, hereinafter called Tribes, having the right to fish based on a treaty with the United States are accorded the opportunity for their fair share of harvest, and to provide for a fair share of the harvest by nontreaty user groups.

This plan is based upon the unique circumstances relating to the Columbia River system and the parties hereto and does not necessarily have application in other fisheries.

The parties also recognize the substantial management problems resulting from the ocean harvest of mixed stocks of anadromous fish originating from the upper Columbia River and its tributaries and the wastage resulting from fishing on immature stocks. The parties will continue joint efforts to collect and gather data on this fishery and to reduce inefficient and wasteful harvest methods.

Due to environmental factors totally unrelated to the treaty or nontreaty fisheries, there has been a continual decline of some runs of anadromous fish in the Columbia River system. This trend could deprive not only the treaty Indians, but also other user groups of the opportunity to harvest anadromous fish. The parties pledge to work cooperatively to maintain the present production of each run, rehabilitate runs to their maximum potential and to work towards the enhancement and development of larger and additional runs where biologically and economically feasible.

(1) The managing fishery agencies shall make every effort to allocate the available harvest as prescribed in this agreement on an annual basis. However, because run size cannot always be accurately calculated until some lower fishery has taken place, annual adjustment of the sharing formulas for each species may be required to provide the appropriate shares between treaty and nontreaty users. If treaty and nontreaty users are not provided the opportunity to harvest their fair share of any given run as provided for in this plan, every effort shall be made to make up such deficiencies during the next succeeding run of the same race. Overall adjustments shall be made within a 5-year time frame.

(2) The treaty Indian tribes and state and federal agencies shall diligently pursue and promote through cooperative efforts the upriver maintenance and enhancement of fish

habitat and hatchery rearing programs, and so far as practicable, maintain present production of each run and to rehabilitate runs to their maximum potential.

(3) Hatchery salmon and steelhead released to maintain or restore runs above Bonneville Dam shall be shared pursuant to this plan.

(4) A technical advisory committee shall be established to develop and analyze data pertinent to this agreement, including but not limited to the following: calculated run size for all species of fish, ocean catches, escapement goals, catch allocation and adjustments, dam loss, habitat restoration, and hatchery rearing programs. Such a committee shall make recommendations to the managing fishery agencies to assure that the allocations in this agreement are realized. Members shall be qualified fishery scientists familiar with technical management problems on the Columbia River. The committee shall be comprised of representatives named by each of the three states, Oregon, Washington, Idaho, National Marine Fisheries Service, U. S. Fish and Wildlife Service and each of the Indian Tribes.

(5) Each party shall develop a catch record program that utilizes reliable statistical methods and effective enforcement procedures as developed by the committee. Indian tribes shall report on appropriate state forms for each species ceremonial, subsistence and any other catch not sold to state-licensed buyers. The states shall report and

make available to all interested parties treaty and nontreaty sport and commercial catch for each species. All the above reports shall be made within an agreed-upon time schedule.

(6) The states agree to enact or recommend for enactment by the Pacific Fisheries Management Council appropriate conservation regulations for the ocean fishery that will assure an efficient utilization of stocks and will provide for adequate escapement of mature fish into the Columbia River to achieve the goals and purposes of this plan. Marine regulations should attempt to harvest mature fish and reduce waste.

(7) Fish escapement totals, dam loss estimates, or other technical aspects of this agreement may be modified by mutual agreement to reflect current data. In the event that significant management problems arise from this agreement that cannot be resolved by mutual agreement, the parties agree to submit the issues to federal court for determination. In any event, the Court shall retain jurisdiction over the case of U. S. v. Oregon, Civil 68-513, (D.C. Or).

(8) The sharing formulas as set forth in this plan are based upon the premise that the marine area catches in U. S. controlled waters of fish originating above Bonneville Dam, other than fall chinook and coho runs, will be regulated by PFMC so as to be essentially de minimis portions of those runs. The parties acknowledge that if subsequent data should indicate that this premise is incorrect, these formulas may require revision.

(9) Regulations affecting treaty users which are enacted in conformity with this comprehensive plan shall be considered as complying with the court's decrees enunciated in U. S. v. Oregon, Civil No. 68-513, District of Oregon.

(10) Tribal members fishing pursuant to this agreement may employ only members of the Tribes, while exercising their treaty fishing rights.

(11) All fish numbers referred to in this agreement are adult fish.

(12) The sharing formulas contained herein for determining the treaty fishery share refer to those fish caught in the Columbia River below McNary Dam and any other inland off-reservation catch placed in commercial channels.

Except as provided in subparagraph 5 under Spring Chinook, neither treaty nor nontreaty non-commercial harvest in tributaries, or in the mainstem Columbia River above McNary Dam, shall be considered in the sharing formulas contained herein.

(13) Upon thirty days written notice by any party, after five years from date, this comprehensive plan may be withdrawn or may be renegotiated to assure that the terms set forth represent current facts, court decisions, and laws.

Fish Management Plans

A fish management plan has been adopted for those species of importance to assure future conservation of the resource and equitable sharing of the harvest between treaty Indians and nontreaty users. The formulas represent Available Fish for Harvest and may not reflect total catch if fishing effort is inadequate to harvest all available fish. All runs of fish described in this plan are those originating in the area of the Columbia River or its tributaries above Bonneville Dam.

Fall Chinook Salmon

The Columbia River fall chinook shall be managed under the following plan:

(1) Run size shall be determined by the number of fish entering the Columbia River which are destined to pass Bonneville Dam.

(2) Escapement of 100,000 fish above Bonneville Dam shall be subtracted from total in-river run size.

(3) Additional fish above ascapement are available for harvest and shall be shared 60% by treaty fishermen and 40% by nontreaty fishermen.

(4) The states' goal is to manage the fisheries to provide and maintain a minimum average harvestable run size of 200,000 upriver fall chinook to the Columbia River.

(5) The 60% treaty share shall include mainstem ceremonial, subsistence, and commercial harvest as allocated by the Indian tribes. The 40% nontreaty share shall include in-river commercial and sport harvest as allocated by the appropriate agencies.

Spring Chinook

The Columbia River spring chinook shall be managed under the following plan:

(1) Run size shall be determined by the number of fish entering the Columbia River destined to pass Bonneville Dam.

(2) Spawning escapement goals shall be a minimum of 120,000 and 30,000 fish above Bonneville and Lower Granite Dams respectively.

(3) The states' goal is to manage the fisheries to provide and maintain a minimum average run size of 250,000 upriver spring chinook to the Columbia River.

(4) Treaty ceremonial and subsistence catch shall have first priority. These fisheries shall not exceed a catch of 2,000 fish on a run size of less than 100,000 fish; 5,000 on

a run size of between 100,000 and 120,000 fish; and 7,500 fish on a run size of between 120,000 fish and 150,000 fish. Treaty ceremonial and subsistence fishing for spring chinook with gillnets as well as other normal gear may occur, but such gillnet fishing shall be subject to a notification system similar to that presently used for ceremonial fishing. All catches shall be monitored cooperatively for the purpose of ascertaining the amount of the catch.

(5) On a run size of between 120,000 and 150,000 fish passing Bonneville Dam, the nontreaty fisheries are limited to the Snake River system and may harvest fish which are in excess of the 30,000 spawning escapement passing Lower Granite Dam. (Under average river flow conditions, 120,000 fish at Bonneville Dam will generally provide 30,000 fish at Lower Granite Dam and 150,000 fish at Bonneville Dam will generally provide 37,500 fish at Lower Granite Dam.)

(6) On a run size of more than 150,000 fish passing Bonneville Dam, all allocations as provided for in items 4 and 5 shall occur. All additional fish available for harvest below McNary Dam shall be shared 40 percent for treaty fishermen and 60 percent for nontreaty fishermen. If river passage conditions improve so as to provide more than 40,000 fish at Lower Granite Dam on run sizes of 150,000 fish or less, the 40 percent and 60 percent allocation may occur on a run size of less than 150,000 fish at Bonneville Dam.

Summer Chinook Salmon

Summer chinook salmon runs are precariously low and do not warrant any fishery at the present time, with the exception of a treaty subsistence, ceremonial, and incidental catch not to exceed 2,000 fish during the months of June and July.

The parties agree that if the run size increases a formula for sharing of the available harvest above present escapement goals for this race shall be similar to spring chinook.

Summer Steelhead

(1) Run size shall be determined by the number of fish entering the Columbia River destined to pass Bonneville Dam.

(2) The escapement goal to spawning grounds above Lower Granite Dam shall be a minimum of 30,000 fish. A run size of 150,000 fish at Bonneville Dam will provide for 30,000 fish at Lower Granite Dam.

(3) The treaty Indian mainstem fishery shall be limited to ceremonial, subsistence and incidental catch to other commercial fisheries. A minimum mesh restriction of 8 inches will be utilized to limit incidental catch.

(4) The Indian tribes recognize the importance of the steelhead stocks to recreational users and agree to forgo a target commercial fishery.

Sockeye Salmon

Sockeye salmon runs are precariously low and do not warrant any fishery at the present time, with the exception of a treaty subsistence, ceremonial, and incidental catch not to exceed 2,000 fish.

The parties agree that if the run size increases so as to provide harvestable quantities, such harvest shall be shared equally between treaty and nontreaty fishermen.

The parties recognize the importance of protecting summer chinook and summer steelhead stocks during the harvest of sockeye salmon. Incidental catch of summer chinook and steelhead shall be minimized by providing appropriate restrictions to the sockeye fishery.

Coho Salmon

Coho stock are in the treaty fishing area simultaneously with other species which currently need protection from fishing effort. Parties agree to use their best efforts to develop methods to maximize coho harvest while protecting those other species.

Shad

Shad runs have been sufficiently large to allow for unlimited harvest. However, because shad fisheries can take stocks of

salmon and steelhead that are below harvestable levels, new catch methods shall be pursued particularly by the Indians above Bonneville Dam to assure a sufficient catch of shad while minimizing the catch of other species. If escapement goals and catch formula must be established in the future, the committee shall compile the required data and make recommendations to the managing fisheries agencies.

Sturgeon

The population of sturgeon in the Columbia River appears residual above Bonneville Dam. The parties agree that the Indian tribes shall have a commercial fishery regulated by sound principles of conservation and wise use. A sport harvest may occur simultaneously for sturgeon above Bonneville Dam.

Winter Season

The treaty fishermen shall be allowed a mainstem commercial fishery for any species of fish between February 1, and April 1.

This comprehensive plan for managing anadromous fisheries on stocks originating from the Columbia River and its tributaries above Bonneville Dam is adopted by the undersigned this 25th day of February, 1977.

ROBERT W. STRAUB
Governor of Oregon

DIXY LEE RAY
Governor of Washington

CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON

CONFEDERATED TRIBES & BANDS OF THE YAKIMA INDIAN NATION

UNITED STATES OF AMERICA

BY

JOHN HOUGH
Special Assistant to the
Secretary of the Interior

CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

RICHARD A. HALFMOON, CHAIRMAN
NEZ PERCE TRIBE OF IDAHO

ALTA A. GUZMAN, SECRETARY
NEZ PERCE TRIBE OF IDAHO

APPENDIX C

January 12, 1977
San Diego, CA

Report to the Council by the Scientific and Statistical Committee on Review of the Salmon Management Plan, Draft No. 2

The SSC has reviewed Draft No. 2 of the PMP prepared by the Salmon Management Plan Development Team. The Team was present for a discussion of the review. We find that the Team has done an excellent job of preparing this document. The draft plan should be considered as a primary step in an approach toward a finished product. There appears to be sufficient information in the Plan for the Council to proceed, but the Council should be aware that the plan is not complete. We have a number of comments and questions regarding Draft No. 2 which will be incorporated in our minutes and transmitted to the Council and the Team. We are optimistic that the Team will be able to perfect the draft in the near future.

The list that follows indicates the major elements in the plan that the SSC feels require further consideration:

1. There is a need for additional documentation in the form of references, tables and graphs.

2. Further explanation for the lack of commonality of recommended regulations for the three states is required. Some examples are: different season and size limits in the different areas; inconsistent treatment of the treaty Indian question for the three states; and varying treatment of gear limitation.

3. There should be a more comprehensive discussion of the interactions of the Canadian and U.S. salmon fisheries, including Alaska.

4. Improved quantification of the amount of transfers among the fisheries should be developed.

5. There is a need for an enlarged discussion and analysis of the proposal to prohibit ocean salmon net fishing.

6. The plan should contain recommended regulations for chinook salmon fisheries that occur off Alaska on fish which originate in the other Pacific states.

7. Reorganization of the Management Objectives section and re-definition of the objectives are needed.

While the issues identified above can be addressed by the Team, significant deficiencies in the Plan with respect to economic data and analysis suggest the need for input from a panel of economic experts. We recommend that such a panel be established to provide immediate input to Draft 3 of the Plan. In addition to George Tanonaka and Richard Johnston who have already been identified, Gardner Brown from the University of Washington and Jack Richards from the National Marine Fisheries Service are suggested as members of this Panel.

The SSC will comment on the appropriateness of the recommended regulations when the above points are resolved.

The SSC will continue to work with the Salmon Plan Development Team in developing Draft No. 3 in line with the above comments.

APPENDIX D

SALMON ADVISORY PANEL REPORT
on
Draft No. 2, EIS/FMP for Commercial Troll and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California

INTRODUCTION.

At its January 1977 meeting in San Diego, the Pacific Regional Fishery Management Council approved Draft No. 2 of the "Environmental Impact Statement/ Fishery Management Plan (for) Commercial Troll and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California." The Council instructed the salmon advisory panel to prepare an "Advisory Panel Report" containing their recommendations regarding Draft No. 2, to be attached to the draft plan and to be part of the hearing process procedure for public testimony.

The following pages outline *Areas of Consensus* among the 22 salmon advisory panel members, and *Dissenting Opinions* from members representing (1) consumers; (2) purse seiners, gillnetters, and processors; (3) treaty Indian tribes; (4) recreational interests; (5) inland sport fishery; and (6) trollers.

AREAS OF CONSENSUS - General.

1. Canadian Treaty Negotiations. Panel members agree that Canadian treaties have to be addressed in an ocean salmon management plan, to insure that fish saved through curtailment of the American fishery are not caught in the Canadian fishery.

2. "Emergency Changes." Panel members desire clarification of the term "emergency changes" in the draft document.

AREAS OF CONSENSUS - Regulations.

1. Area South of Tillamook Head. Panel members concur with regulations proposed for the area south of Tillamook Head, which are identical to regulations imposed in that area in the past.

2. Area North of Tillamook Head. Panel members concur on the following regulations for the area north of Tillamook Head. Regulations in disagreement with the specific 1977 regulations proposed by the Working Team in the draft Management Plan are indicated by an asterisk.

   a. *Mandatory use of barbless hooks until the beginning of the coho season* to reduce mortality of coho caught incidentally in the chinook fishery. If this restriction proves successful, advisors may recommend a similar regulation for the area south of Tillamook Head.

   b. *A May 1st opening for the commercial chinook season.* There were no problems with the May 1st opening last year.

   c. *The need for mandatory hold inspection prior to the season opening* to eliminate incidences of vessels (particularly freezer boats) taking coho prior to the season opening. This regulation has been in effect very successfully in California for the past two years, and advisors concur it should be enacted coastwide.

d. An October 31st closing for the commercial chinook season. This closing date was in effect last year and advisors see no reason for change.

*e. A closure of the area north of Umatilla Reef after September 15th, to allow greater coho escapement into Puget Sound.

*f. A commercial size limit of 26" for chinook. This size limit has been in effect for many years in California and Oregon, and is based on market conditions for fish of that size. Advisors feel there aren't enough data to justify a change in size limit from 26" to 28".

*g. A commercial size limit of 20" for coho. Presently there is no minimum size limit for coho in the Canadian troll fishery. By imposing a minimum size limit for coho on the U.S. fishery, there would be better grounds for negotiating a bilateral agreement on minimum size limitations in the Canadian troll fishery. This size limit would also protect against the taking of smaller fish that have lower market value.

*h. References to an 8 lb. troll dressed weight for determining if fish are undersize are impractical, and should be deleted from the plan.

*i. There is need for better coverage in the draft of water quality and habitat considerations and the council's role in trying to effect water and land use decisions which might impact on salmon resources and habitat.

DISSENTING OPINION NO. 1
Joe Kahle, Consumer Representative

Consumers see Draft No. 2 as only a harvest plan for 1977, and hope that eventually the council will come up with a comprehensive management plan.

Consumers should be involved in the planning process. There is absolutely no concern with consumer affairs expressed in either draft plans.

DISSENTING OPINION NO. 2
Paul L. Anderson, Purse Seine Vessel Owners Association
Robert Christensen, Puget Sound Gillnetters Association
Les Clark, Columbia River Fishermen's Protective Union
Ted A. Smits, Association of Pacific Fisheries

Panel members representing purse-seining, gill-netting and processing interests agree as a group with the following recommendations, all of which disagree with the specific 1977 proposed regulations presented by the Working Team in the draft Management Plan.

Commercial Regulations

1. A *two-week closure of the chinook season;* season to run from May 1st to June 15th, and from July 1st to October 31st.

2. A *five-mile radius closure around the mouth of the Columbia River* for protection of immature stocks.

Recreational Regulations

1. A *sport fishing season from May 27th to September 15th, without closure.* Realizing that such a season would give sport fishermen the opportunity to fish during a period when the commercial season was closed, the following restrictions are proposed:

   a. A two-fish bag limit.

   b. No minimum size limit. The first two fish caught would be kept, thus reducing wastage through mortality of fish caught and released.

DISSENTING OPINION NO. 3.
Guy McMinds, Quinault Tribal Office

The treaty Indian tribes support the specific regulation proposals for 1977 as outlined in the draft plan. It is recommended, however, that the salmon Working Team study the possibility of sanctuaries around the mouths of coastal Washington streams to provide a more adequate escapement to treaty Indian fisheries on the coast.

The treaty Indian tribes reserve the right to comment on other aspects of the plan.

DISSENTING OPINION NO. 4
Edward P. Manary, Washington State Charter Boat Association

Representatives of recreational interests in Washington, Oregon, Idaho and California concur with the sport fishing regulations outlined in the draft salmon management plan with the single exception of the opening date of the recreational fishery. They propose the season north of the California line open on the last Saturday in April (April 30) instead of the first Saturday in May (May 7).

Recreational representatives are also in favor of a moratorium on the number of charter boats licensed in Washington.

Recreational fishery interests are opposed to the following alternative regulations which have been proposed by other members of the advisory panel:

1. *Any reduction of the bag limit* (either a two fish per day or a 20 fish per year restriction). Such a regulation would be discriminatory against recreational fishermen.

2. A *delayed season opening*. This would also discriminate against the sportsman.

3. *Establishment of nursery areas*. There are not presently enough scientific data available to justify the establishment of nursery areas.

4. A *5-mile area closure around the mouth of the Columbia*. Such a closure would handicap small boat operators in getting to and from the fishing areas.

DISSENTING OPINION NO. 5
Norman Guth, Idaho Outfitters and Guides Association

Idaho sportsmen and commercial sport fishermen are basically in agreement with the regulations proposed in the draft ocean salmon management plan, and encourage adoption of the plan as soon as possible. They would also encourage regulation of the Columbia River fishery in such a way as to assure that those fish escaping the ocean fisheries will eventually make it to the spawning grounds in Washington, Oregon, and Idaho.

DISSENTING OPINION NO. 6
Bob Gay, Washington State Trollers
Zeke Grader, Pacific Coast Federation of Fishermens Associations

Trollers disagree that there is an "urgent need for action by the Fishery Management Council to control the ocean salmon fisheries" (Ref. draft plan. p. 23), and do not feel that major "native stocks are ... severely depressed." They would point out that curtailment of the troll fishery would result in more fish being caught in the Canadian troll and U.S. recreational fisheries, and that troll-caught fish are the most desirable on the market.

Trollers concur on the following recommendations, which disagree with the 1977 regulations proposed by the Working Team in the draft Management Plan.

1. A *chinook season from May 1st to October 31st with an area closure from Umatilla Reef north after September 15th*. California, Oregon, and Washington trollers are opposed to a June closure because (a) the facts do not justify such a closure, and (b) such a closure would create havoc in the commercial fishery.

2. A *coho season from June 15th, with an area closure from Umatilla Reef north after September 15th*. Oregon and Canadian seasons have opened on June 15th in the past. The area closure from Umatilla Reef north after September 15th would provide more escapement of coho into Puget Sound waters.

3. *Establishment of nursery areas* to protect against the take of undersize or immature fish.

4. A *moratorium on new vessels in Oregon and California, as well as Washington*. There are many more trollers in the fleet than there need to be, and this moratorium would gradually reduce the massive number.

The trollers expressed concern that sufficient time was not available to supply in-depth justifications for their recommendations.

APPENDIX E

SUMMARY OF WRITTEN AND ORAL COMMENTS AND RESPONSES TO COMMENTS

Introduction

Well over 200 separate letters were received offering comments on the Draft Environmental Impact Statement/Fishery Management Plan. In addition, numerous comments and specific recommendations were made orally at the six public hearings held on the Plan. In light of this tremendous volume of input, it was not feasible, within the timeframe required, to respond individually to each separate comment. Consequently, the major specific comments by individuals and organizations have been grouped into more general issues which cover the areas of concern of more than one individual and a response to each of these general concerns has been prepared. In many cases the comments offered have been incorporated into the final draft of the Plan and are now treated in more detail in that document. Emphasis in this Appendix is placed on those comments which are in opposition of Council action and which have not been treated in the text of the Plan.

A listing of all individuals submitting written and oral comments is included in this Appendix. The numbers of comments received on each of the 31 general issues by the five commenting categories of Trollers, Associated or Dependent Businesses, Recreational Fishery Interests, Indian Representatives, and Other, are shown in the table at the end of this Appendix.

Comments and Responses

1. COMMENT: Fishery enhancement is a better alternative than the proposed Plan. Enhancement includes increased artificial production, as well as restoration of the environment which has suffered degradation and is a major cause in the decline of certain stocks.

   RESPONSE: Increased enhancement by artificial production, as well as major efforts directed toward the multitude of environmental problems which beset the salmon resource, are certainly desirable goals, and the Council will consider this when developing a comprehensive salmon plan. However, fishery enhancement is a long-term and continuing effort while the proposed plan deals only with expected resource abundance in 1977. Additional fish from enhancement cannot be expected for at least three to five years and it may take ten years for significant gains in the overall resource base. In any event, the short-term objectives must be met by managing the fisheries in 1977 as proposed in this plan.

   One of the major needs for the proposed regulations, for example, is to rebuild depleted stocks and thus ensure future fish production. Enhancement to increase fish production and management programs to achieve the

best use of existing stocks deal with related, but separate and distinct issues. Increased production will require that management programs achieve optimum yield. The recommendations in this plan relate to managing these resources to achieve optimum yield for 1977. The issues considered in arriving at these recommendations will have to be dealt with even when production is increased. The proposed plan responds to these issues to the extent that information is available for 1977. Additional modifications will be needed in the future, including a comprehensive plan that will include evaluation of proposals for enhanced production. Enhancement programs will increase, not reduce, the need for appropriate management policies.

2. COMMENT: The proposed plan will cause severe economic hardship to the troll fishery. Loss of June fishing will result in serious loss of total revenue. Trolling is already regulated by weather and needs no further curtailment.

RESPONSE: The losses to the troll fishery estimated in this plan probably project the worst possible impact on the troll fishery. It is expected that a number of events will occur to substantially reduce the direct adverse economic impact on the troll fishery. During closed seasons in one area, it is expected that vessels will shift to other areas that remain open. Market prices in general may tend to be better due to reduction in supplies normally available from areas that will be closed to fishing, and due to the larger size of fish eventually harvested. Finally, an increase in the fishing effort during the open periods will probably occur.

Reductions in numbers of fish, pounds and market value to fishermen have been projected for the troll fishery. Individual losses may vary substantially from this general pattern. Many fishing costs (e.g. fuel) will not be incurred during closed seasons and other costs (e.g. gear depreciation) may be reduced, thus the impact on net earnings by trollers generally will be less than the values projected in the plan. Some trollers may also participate in other fisheries or in nonfishing employment activities.

An important negative impact on the income of trollers will result, however, in spite of the modifying factors. Even though this may be less than currently estimated, it will be important, and is a major undesirable, but unavoidable, economic impact of this plan.

3. COMMENT: The reduction in fishing time proposed in the plan would result in increased hazard to trollers trying to make up for lost fishing time by fishing when weather or ocean conditions normally would prevent fishing.

RESPONSE: This is a judgmental problem which must rest with the individual fishermen. These same circumstances are experienced during years when abnormally high fish prices or low fish availability encourage increased fishing effort.

4. COMMENT: Ocean commercial trolling and ocean recreational fishing should be regulated consistently with regards to open seasons, minimum size limits, and terminal gear.

RESPONSE: We do not support the contention that commercial and recreational fisheries should be managed by identical seasons, size limits and gear restrictions. Each fishery has its own needs, motivations, and values and each should be managed on its own respective merits. The product of the troll fishery is fish and income while the fishing experience, itself, is an important consideration in recreational fishing. All available research results on this issue support the view that the average fish landed in the recreational fishery is worth more than the average fish landed by commercial gear. All available information indicates that a far greater loss in total benefits to the Nation would occur from restricting recreational fishing time than would be gained due to increased fish size and availability later in the season. There is no reason to expect that optimum yield will increase if the time available to the recreational fishery is reduced beyond that proposed in this plan.

5. COMMENT: A viable troll fishery provides some specific benefits such as a high quality product readily available to the consumer over an extended period of time.

RESPONSE: The plan recognizes that the troll fishery does provide a unique product of high quality to the consumer, and one of the stated objectives is to continue an economically viable ocean commercial fishery (Sec.2.8.1, Para. No. 3) while at the same time increasing the production from the resource and meeting the other objectives cited.

6. COMMENT: Some sort of moratorium or limited entry program (either recreational or commercial) would be preferable to the regulations proposed in the plan.

RESPONSE: Control of total fishing effort may eventually be necessary to reduce potential ocean catch. However, there is presently not enough information available to evaluate the merit of this alternative.

7. COMMENT: The plan will impose economic hardships on businesses associated with the fishing industry.

RESPONSE: Some regional and business-category shifts in economic activity are likely as a result of the proposals in this plan. These have occurred in recent years as net fisheries were restricted to protect needed escapements to the spawning grounds. The impacts on employment and economic activity for coastal communities should be somewhat dampened in the future as total resource production is increased through improved management and subsequent enhancement. Little impact is likely in communities south of Tillamook Head as a result of the proposed plan.

8. COMMENT: Need more precise estimates on the shift of benefits to the recreational, "inside," and treaty-Indian fisheries.

RESPONSE: The estimates of shifts of benefits cannot be made precisely because of variability in magnitudes of salmon runs from year to year, and because it is not yet possible to predict run sizes precisely. Potential shifts from the troll fishery have been identified along with expected gains to ocean-recreational and "inside" non-Indian commercial and treaty-Indian fisheries. The actual reduction in troll catches may not be as serious as projected in the plan because of possible (1) shifts to other geographic areas when fishing is closed north of Tillamook Head; (2) additional fishing intensity when fishing is resumed north of Tillamook Head; and (3) increased effort from license holders who typically spend little time trolling for salmon. On the other hand, some trollers may shift to other fisheries as a result of this plan. The cited impact on projected total earnings by trollers is believed to be the worst possible situation the trollers might experience. The benefits to the inside, recreational, and treaty-Indian fisheries will be reduced to the extent that trollers are able to catch more fish than projected. The impact on the troll catch compared to that by other gear cannot be precisely predicted because of unknown, or only partially known, information. The proposed management plan has estimated these impacts to the extent that information is available. The plan also considers, in part, the fishery enhancement and management arrangements that have been made among various state, federal, and Indian Tribe entities; these arrangements have also, apparently, been developed in expectation that an ocean-fishery salmon management plan will be adopted by the Council.

9. COMMENT: The plan discriminates against the troll industry north of Tillamook Head.

RESPONSE: Section 2.7 of the plan presents basic reasons for different regulations north and south of Tillamook Head. The specific reasons for more restrictive regulations north of Tillamook Head, however, are given in Section 2.8.1.

Social and economic criteria have been considered in this management plan in the selection of the best regulatory options for the required adjustments in harvest rates between fisheries.

10. COMMENT: The emphasis in the plan on harvesting fish at larger sizes and/or in inside fisheries would disrupt established markets by causing changes in supply and price structures of troll-caught fish.

RESPONSE: Analysis of relevant market prices suggests that there will be no apparent loss due to reduced availability of smaller sized chinook salmon. This market demand will still be supplied by coho salmon and the smaller chinook that will continue to be available. Some processors may

have developed markets for smaller-sized salmon, but prices paid to fishermen do not reflect any advantage of small fish. The price advantage of larger fish suggests a greater market demand for this size which has not been met in the past.

11. COMMENT: A lack of documentation of effects of foreign fishing on the salmon resource, both in terms of catch and effects on forage organisms.

RESPONSE: The plan discusses estimates of previous exploitation levels by Canadian trollers and foreign trawlers in Section 2.1.5.1, including the problems associated with continued Canadian fishing on U.S. stocks under U.S./Canada fisheries agreements now in force. The Preliminary Management Plan (PM) for "Trawl Fishery of the Washington, Oregon and California Region," prepared by the National Marine Fisheries Service in January 1977, establishes permissable incidental salmon catch levels for foreign trawlers fishing within the 200-mile Fishery Conservation Zone at zero. No salmon caught can be kept. The PMP also prescribes a 20% observer level aboard foreign trawlers to monitor incidental catches. Fishing by foreign trawlers in the FCZ has been severely reduced in time, area, and level of catches.

We have no evidence that the foreign fishery affects levels of forage organisms in either a positive or negative manner relative to salmon, and at this time, do not consider this a problem with respect to the salmon resource.

12. COMMENT: The regulations proposed in the plan would result in a shift in troll effort from north of Tillamook Head to the south during the closed period in June.

RESPONSE: Undoubtedly, some shift of troll vessels to the south of Tillamook Head will occur in response to a June closure, but this accomplishes the stated purpose of the closure during this period - to remove effort from stocks of fish that are present primarily north of Tillamook Head. A large, long-term increase in fishing effort south of Tillamook Head, however, would be unacceptable and must be considered when the Council addresses management south of Tillamook Head.

13. COMMENT: There should be nursery area closures as a means of protecting immature fish.

RESPONSE: Concentrations of immature fish are known to occur in certain areas and at certain times. Unfortunately, in the area under consideration (north of Tillamook Head), the primary concentration of immature fish occurs right at the mouth of the Columbia River. Closure of this area would restrict sport fisheries almost exclusively. There are some management benefits derived from permitting this fishery to contunue.

14. COMMENT: Against requirement of barbless hooks.

RESPONSE: Studies have shown that barbless hooks will improve the survival rate of "shaker" coho salmon taken incidentally, yet will still take chinooks as efficiently as barbed hooks (Sec. 2.8.2) and (Sec. 9.0 reference 17).

15. COMMENT: Closures proposed in the Plan would "spread to other States."

RESPONSE: The fishery south of Tillamook Head will be examined during the coming year. It is expected that more restrictive regulations will be recommended, since several southern stocks of salmon appear to be in poor condition. Whether these regulations will be similar to those now proposed north of Tillamook Head is not known.

16. COMMENT: Reduced troll fishery is not consistent with Optimum Yield and the plan needs a better balance of biological, economic and sociological considerations.

RESPONSE: Optimum yield fishery management requires consideration of economic and sociological factors, as well as biological or technical objectives associated with conservation and productivity of the fish stocks. The proposed plan considers all of these factors on the basis of available information and recommends changes to achieve optimum yield and maximize benefits to the nation from these stocks.

17. COMMENT: Since part of the purpose of the Act is to protect U.S. fishermen from foreign fishing, it seems unfair for Canadians to get more fish and to continue to fish when U.S. fishermen cannot.

RESPONSE: One of the purposes of the Act is to develop "a national program for the conservation and management of fishery resources... to realize the full potential of the Nation's fishery resources." Thus, the total fishery resources of the Nation must be considered. The transfer to Canadians is an unfortunate local consequence of the regulations needed to achieve conservation and allocation objectives outlined in this salmon plan. Discussions are currently underway with Canada to resolve our mutual salmon problems and may provide better methods in the long run for resolving salmon transfers and other fishery problems between the two countries. The plan specifically stipulates that the Canadians observe the same regulations as U.S. fishermen when fishing in the U.S. zone. (Sec. 2.3, 2.6)

18. COMMENT: The Council should not allocate fish to the Treaty Indians in accordance with current directives.

RESPONSE: The Act specifically recognizes the need to account for Treaty Indian fishery rights in developing a management plan.

19. COMMENT: Changing the size limit of chinook from 26" to 28" unnecessary.

RESPONSE: The Council, in its action on the plan, decided not to increase the size limit of chinook north of Tillamook Head from 26" to 28".

20. COMMENT: Establish a 2-fish bag limit for recreational fishermen.

RESPONSE: Reducing the bag limit for recreational fishermen was considered under the plan as a method of shifting the impact of the needed management measures over more than one user group to achieve the desired objectives of the plan (Sec. 2.8.2.3., No.1). The Council decided not to reduce the bag limit.

21. COMMENT: The plan should include a landing allowance for incidentally-caught coho salmon during the early chinook season.

RESPONSE: This alternative is presented as number 4 under Section 2.8.2.1 of the plan. This alternative was not considered as a specific regulation option since it would not assist in meeting the stated objectives of the plan, particularly in view of abuses which have historically occurred with regulations of this type.

22. COMMENT: Plan should cover the entire range of the species.

RESPONSE: In view of the time constraint and the need to achieve certain short term objectives, the Council restricted this plan to the ocean salmon fisheries. Obviously, an overall management strategy must be developed before the resource is managed adequately. This plan is considered a first step toward the development of such a comprehensive plan.

In addition, the jurisdictional authority of the Council is limited, by the Fishery Conservation and Management Act of 1976, to the ocean areas seaward of the States' boundaries.

23. COMMENT: Numerous and various alternative regulations were recommended, including: (1) status quo (1976 regulations); (2) return to 1975 regulations; (3) no or shorter closed periods; (4) less restrictive terminal-gear requirements; and others.

RESPONSE: The reasons outlined in the Plan fully support a need for reduced ocean harvesting rates and preclude returning to past or less restrictive regulation patterns.

24. COMMENT: Numerous comments were received from Indian organizations and individuals concerning the need for the Council and its Plan to recognize Treaty Indian fishing rights and permit Treaty Indians to fish under regulations somewhat different from non-Indians.

RESPONSE: The Indian fishing rights issue has been the subject of extensive litigation in Federal Courts in the Pacific Northwest. Many of the complex issues have been considered by the Courts. These decisions and actions have guided the drafters of the Plan. Many issues remain unresolved.

The FMP recognizes that Indian Treaty fishing rights are affected by this Plan. The Pacific Council and Department of Commerce believe that the implementation of such rights remains a matter for further consideration.

25. COMMENT: The Plan is incomplete or is based on inadequate or inaccurate data. For example, the Scientific & Statistical Committee refused to comment on the Plan because it was incomplete.

RESPONSE: The Plan is based on the most reliable scientific and statistical information available. In some cases, more recent data are not included in the Plan, since comparable data for all categories were not available. The Plan is complete to the extent that information is available and that management decisions for the ocean salmon fisheries fall within the jurisdiction of the Pacific Fishery Management Council. The Scientific and Statistical Committee has commented on the adequacy of the proposed Plan.

26. COMMENT: A greater reduction of the early ocean fishing season would permit more chinook to reach upper river areas.

RESPONSE: The 60% reduction in the troll fishing season prior to July 1 was considered adequate at this time for protection of upriver (spring and summer) chinook salmon, consistent with a rational harvest in the ocean.

27. COMMENT: The Washington troll fishery catches relatively few salmon bound for Puget Sound spawning areas, and thus the plan will have little effect on required re-allocation of catches to Treaty Indians.

RESPONSE: The closure of waters north of Pt. Grenville after September 15 will provide some protection for Washington coastal river and Puget Sound coho stocks, thus increasing the proportions of these stocks that reach inside fishing waters and spawning grounds. Since many coastal river stocks are harvested by Treaty Indians in the Boldt Decision-case area, the reduction in ocean harvests of these stocks should increase fishing opportunities for Treaty Indians.

28. COMMENT: The recommendations in this Plan represent allocation of the catch among users and do not constitute fishery management.

RESPONSE: Fishery Management under the concept of optimum yield requires consideration of social and economic criteria. Consequently, fishery management and allocation of allowable catches among different users must be considered.

29. COMMENT: Plan favors part-time fishermen

RESPONSE: Most of the fishermen affected by this Plan are part-time salmon fishermen, in that they do not obtain their total earnings from salmon trolling. Additional income is usually derived either from other fishing or non-fishing activities. The proposed regulations in the Plan were not designed to favor part-time fishermen. All fishermen, whether part-time or full-time, will be faced with identical regulations.

30. COMMENT: The objectives of this Plan are inconsistent with other government programs such as the Capital Construction Fund.

RESPONSE: The troll salmon fisheries have been declared a conditional fishery with respect to the application of the Capital Construction Fund. As such, trollers may deposit monies in the fund, but restrictions are placed on the use of vessels constructed or purchased through these programs. Such restrictions on the use of the Capital Construction Fund and other NMFS financial assistance programs as they apply to conditional fisheries will not stimulate new or greater effort.

Accordingly, these programs do not appear to be inconsistent with the Plan's objective of reducing salmon effort.

31. COMMENT: The Plan will result in monopolistic market conditions, and destroy free enterprise and small business firms.

RESPONSE: The Plan will likely result in some shift among areas of activity of fishing firms and support industries. There is no reason, however, to expect that the market strength of the firms that gain will differ greatly from those that lose. There is no expected impact on the competitive or free enterprise nature of the firms or industries involved.

APPENDIX E

List of Individuals and Organizations Submitting Written Comments
(Names May Be Misspelled Due To Difficulties In Deciphering Signatures)

Aaker, Arnold C.
Abbott, David A.
Allen, Walter R. & JoAnn
Alstadt, John
Amos, Tom L.
Anderson, Leif
Anderson, M. G.
Andreani, Ronald
Applegate, Mille
Armstrong, Calvin
Aston, Diane

Bales, William
Barker, Charles
Bates, Ken
Beam, Chas. L.
Beasley, Dale
Beauchamp, Janice
Belgard, T. F.
Benton, James T.
Blakey, B. H.
Brandley, Donald
Breiwick, Lester
Brown, G. R.
Brown, Gary
Buffington, Milton J.
Bunkowski, D. D.
Buschi, Craig

Cadwell, David R.
Caldwell, Francis E.
Carpenter, Earl
Catching, John
Catterall, Richard
Chapman, David
Charlton, A. F.
Chera, Arlene
Claplanho, Ed
Clark, Les
Claypool, Mr. & Mrs. Henry
Claypool, Jonathan
Claypool, Marilyn
Cole, Bob
Cox, Larry R.
Curtis, Richard J.

Daniel, Richard
Deeter, Stanley B.
DeLaCruz, Joseph
DeLeo, Jean C.
DenHerder, Robert
Doney, Glenn P.
Dysart, George D.

Eaton, Clark
Elend, Raymond J.
Elmore, Bill
Elmore, Susan
Elwood, Greg & Sharon
Englesen, G. H.
Esarey, John E.
Esarey, Vickie
Esarey, Jon D.
Estabrook, Raymond E.
Evans, Gov. John V.

Finley, Carl M.
Fitzhugh, Mel
Flanagan, Pat
Fornan, Jackie
Forsythe, James W. & Edna
Francis, Richard
Frank, Victor R.
Fry, Howard

Galloway, Dale S.
Gay, Robert F.
Ghera, Marian A.
Ghera, Roy H.
Gibson, Jack
Glavich, Ray
Gormley, W.
Gowdy, Lloyd
Grader, Zeke
Grauberger, David

Hager, Vernon
Halterman, John
Hamilton, Ben
Harper, Calvin
Haugen, Richard F.
Haugland, Richard L.
Hautala, Patricia
Haw, Frank

Hegg, Fred
Hinderer, Wallace H.
Hines, W. H.
Holland, Bert F.
Hopkins, Jackson D.
Horner, Charles R.
Hovis, Cockrill & Roy (Tim Weaver)
Hussey, Harvey
Hvatum, Ted

Ides, John

Jangord, Arnold O.
Jensen, Mrs. E. H.
Jensen, Harold R.
Johnes, Samuel A.
Judd, Russell E.

Kartak, Nancy
Kash Kash, Sam
Keller, Charles E.
Kelly, Harriet M.
Kimmel, Gail
Kimzey, Warren
Klopfenstein, Don
Klopfenstein, Inez
Knudsen, P. C.

Lamerson, Vince
Ledford, George
Lordahl, Mildred
Lundgren, Bob
Lyons, Ralph E.

Maahs, W.
MacDonald, Ann
MacKenzie, George
MacKenzie, Minerva
Manary, Edward P.
Martins, Frank
Mathews, Francis B.
Matlick, Thelma
Mawhorter, Richard
Mayhorn, Wm. L.
McDonald, Gerald
McMullen, George
Mead, Joseph A.
Meuret, Forrest L.
Miller, William R.
Mohler, Clifford E.
Moody, R. E.
Morrison, G. M.
Mulvihill, Daniel F.
Murphy, J. C.
Murtha, W. J.

Nikula, Robert W.
Noble, Richard E.
Norwood, N. Stephen

Oakes, Rex O.
Ohaks, Sonja
Oliver, Mr. & Mrs. Ronald
Ongstad, Harold S.

Pacific Coast Federation of Fishermen Association, Inc.
Pacific Coast Trailer Park Owners Assoc.
Pavelek, Henry
Peters, Glen O.
Peters, Keith D.
Peters, Larry W.
Peterson, Milton
Phelan, Myrtle
Platt, Charles
Polityka, Charles S.
Polom, Michael, Mrs.
Preston, N. A.
Pullen, Ronald

Rains, George R.
Reid, John
Richmond, Marilyn
Ritz, Ellen
Ritz, Offord C.
Ross, Robert L.
Rovdahl, Milton J.

Salmi, Elmer
Salmon Trollers Marketing Association
Santa Barbara Commercial Fisheries Assoc.
Schubert, Capt.
Seanborough, J. D.
Sears, Fred
Shore, Robert C.
Sheldon, R. N.
Silva, Michael K.
Skauge, Olaf

Smallsreed, Mr. & Mrs. C. J.
Smith, Alexandra
Smith, Mariellen
Smith, Ralph W.
Smith, Wm. L.
Sommers, Dorothy
Sommers, Harold
Sommers, Glenn W.
Sorensen, E. C.
Spangler, David E.
Spleen, Steve
Stair, Dan
Stampfli, K. A.
Steele, Bob
Stein, Earl
Stimson, Ralph R.
Strang, Capt. Duane
Swanson, Robert A.
Swithenbank, Joe

Teeters, A. R.
Thompson, A. H.
Thompson, Harvey E.
Todenhoft, Art
Turner, Ed
Turner, George J.

Vanderslik, John T.
Van Eeckhout, Tom
Vincent, Frederic

Wagar, Paul
Walker, Geoffrey
Wenner, Davis
White, Lyle A.
Wilson, Benjamin O.
Wood, Paul
Wood, Stan
Writer, Jerry D.
Wyatt, Russell

Yingst, John H.

Zucker, M.

List of Individuals Making Comments at Public Hearings

(Names may be misspelled due to transcription phonetics)

Hearings: (San Francisco)

Mr. Celieno
Mr. Wood
Mr. Carpenter
Mr. Mel Grimes
Mr. F. Martin
Mr. P. Flanagan
Mr. Larry Hansen
Mr. D. Abbott
Mr. R. Hagel
Mr. P. Batsford
Mr. Z. Grader
Mr. M. Wickliffe
Mr. Dick Hubbard
Mr. Bob Steel
Mr. Claude Appleton
Mr. Joe Rychetnik
Mr. Bill Grader
Mr. Lou Ferrari
Mr. Bert Hollins
Mr. Oscar Knudson
Mr. Kenneth Stever

Hearings: (Eureka)

Hugh Emanuel
Capt. Olie SKauge
Eddie O. Ritz
Ellery A. Marsh
Mark Winthers
George Turner
Ross Bragdon
Tom Peters
Richard Senger
John Gallow
John Hokman
Don Bradley
H.N. Christensen
Richard A. Lundblad
Judith C. Hokman
Mel Fitzhugh
John B. Mallory
Henry Claypool
John Hoine
Roger Adkins

Hearings: (Eureka) cont'd .

John Wolf
Mr. Van Arsdall
Vern Hager
Bill Maahs
Nelson Rossig
Mr. Bergani (phon.)
Murry Lion
Mr. Troyner (phon.)
Mr. Drake
Lawrie Lazio

Hearings: (Seattle)

Arthur Martin
Frank Haw
Jack Cotant
Robert Gay
Joseph L. Guedon
Mary Lu Engman
Guy McMinds
Oran Conklin
David N. Nelson
Archie Graham
Floyd A. Patnode
Charles Raleigh
Ed Manary
Mason D. Morisset
Richard Haugen
Sonja Ohaks
D. W. Potter
Randall Kary
John McCallum
George Lachner
Louis Dodd
Ed Rydman
Paul Thomas
John M. Ides
David Germain
David Cadwell
Ken Short
Roger Shearer
Jack Steen
Dale Beasley
A. J. VanDeventer
Dave Milholland
Bill Fleenor

Hearings: (Astoria)

Gerald Simmons
Ed Manary
Jack Marincovich
Walt Marchel
Ernie Summers
Dawn Fowler
Harold A. Sommers
Jon Englund
Dave Johnson
Walt Receconi
Russ Bristow
David R. Cadwell
Dennis Rydman
Ros Putman
Sam Devereaux
Ed Claplanho
Roger Shearer
Forrest L. Meuret
W. William Puustinen
Rober Finzer
Joe Burt
Clarence Crach

Hearings: (Boise)

Kelly Pearce
Allen Slickpoo
Norman H. Guth
Robert C. Strom

Hearings: (Charleston)

Dan Campbell
Ms. NaOma Aeder
Mr. Bob Hudson
Mr. Larry Tardaewether
Mr. Donald L. Root
Mr. Harold Wornath
Mr. Roger Pryce
Mr. Dick D'Archangel
Mr. Zaccariah
Mrs. Kathy Geddings
Mr. Bob Frazell
Mr. Sam Myers
Mr. Duane Leafdahl
Mr. Rod Nourse
Mr. Randall Pullin
Mr. Phil Cope

	TROLLERS	ASSOCIATED OR DEPENDENT BUSINESSES	RECREATIONAL FISHERIES	INDIANS	OTHER (Includes Unknown)	TOTAL
1	83	7	5	1	15	111
2	88	7			5	100
3	2					2
4	33	3	1	2		39
5	24	2	1		4	31
6	23	6	4	4	1	38
7	15	31	1		2	49
8	7			2	1	10
9	61	11	9	1	3	85
10	6	2				8
11	44	3		1	1	49
12	13	2				15
13	4		3	3	1	11
14	22	1			2	25
15	5					5
16	7	1			3	11
17	42	3	4	3		52
18	21				1	22
19	19	3	1	4	6	33
20	3	1	6	4	1	15
21	1					1
22	24	2	1		5	32
23	55	12	7	6	13	93
24				21	1	22
25	42	4		2	5	53
26			1	4		5
27	1					1
28				1		1
29	2	1				3
30	28				2	30
31	6				1	7
						959