APPENDIX B

DESCRIPTION OF THE OCEAN SALMON FISHERY AND ITS SOCIAL AND ECONOMIC CHARACTERISTICS

AMENDMENT 14 TO THE PACIFIC COAST SALMON PLAN

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August 1999

ACKNOWLEDGMENTS

The primary drafting of this document was accomplished by Mr. Jim Seger, Council Economic Analysis Coordinator. Final compilation and editing were done by Ms. Renee Heyden, Ms. Sandra Krause, and Ms. Kerry Aden.

This document is published by the Pacific Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award Number NA07FC0026.

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LIST OF ACRONYMS AND ABBREVIATIONS

BIA	Bureau of Indian Affairs
CDFG	California Department of Fish and Game
CPFV	Commercial Passenger Fishing Vessel
CRITFC	Columbia River Inter-Tribal Fish Commission
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FMP	fishery management plan
KFMC	Klamath Fishery Management Council
KMZ	Klamath Management Zone
NOAA	National Oceanic and Atmospheric Administration
NRC	Natural Resource Consultants
NWIFC	Northwest Indian Fisheries Commission
ODFW	Oregon Department of Fish and Wildlife
PacFIN	Pacific Fishery Information Network
PFMC	Pacific Fishery Management Council
PSC	Pacific Salmon Commission
STT	Salmon Technical Team
USCG	U.S. Coast Guard
WDFW	Washington Department of Fish and Wildlife

INTRODUCTION

This appendix provides an economic and social description of the West Coast ocean salmon fishery in the context of local and world markets, the West Coast fishing industries and communities, and the larger management regime of which the West Coast ocean salmon fishery is only one part. It serves as a description of the fishery for the salmon fishery management plan (FMP) and a description of the human environment for the environmental impact statement (EIS).

Chinook, or king salmon (*Oncorhynchus tshawytscha*), and coho, or silver salmon (*O. kisutch*), are the main species caught in PFMC-managed ocean salmon fisheries. In odd-numbered years, catches of pink salmon (*O. gorbuscha*) can also be significant, primarily off Washington and Oregon (Salmon Technical Team [STT] 1998a). Therefore, while all species of salmon fall under PFMC's jurisdiction, the primary focus of management is on chinook, coho, pink (odd-numbered years only), and any salmon species listed under the Endangered Species Act (ESA) that is measurably impacted by PFMC fisheries. To the extent practicable, PFMC has partitioned this coastwide aggregate of chinook, coho, and pink salmon into various stock components with specific conservation objectives. A detailed listing of the individual stocks or stock complexes managed by PFMC, along with pertinent stock information and conservation objectives, is provided in Chapter 3.

In this appendix, where inflation-adjusted economic information is provided, the gross domestic product implicit price deflator, developed by the Bureau of Economic Analysis, has been used to adjust nominal to real values (Table B-1).

1.0 MARKETS

1.1 COMMERCIAL

1.1.1 The World Market and Production

West Coast salmon products compete in a global salmon market. Chinook and coho off the West Coast compete not only with the same species produced in other regions of the world, but also with other salmon species such as sockeye, chum, pink, and Atlantic. Nonsalmon fish species and other meat protein sources also compete with salmon and act as substitutes in the market place. One such example particularly relevant to the West Coast is sablefish. Studies have shown a relationship between sablefish prices and salmon prices in the Tokyo central wholesale market (Hastie, 1989 and Jacobson 1982 as cited by Hastie 1989). Japan is the world's largest importer of fish, and Japanese demand for salmon drives much of the trade patterns in the world salmon market (Wessells and Wilen, 1992). Rainbow trout (*Oncorhynchus mykiss)* might be considered another example (Anon., 1998). This fish is not included in most of the quantitative information below on world salmon production, though it has recently been reclassified as a salmon species.

With the introduction of farm-raised salmon, and most recently trout, world salmon markets have undergone rapid changes in recent years. World salmon supply has tripled since 1980 (based on estimated production for 1997, Figure B-1a). The estimated 1997 world harvest of salmon from commercial fisheries is near the 1980-1997 average while farmed production continues to increase. The farmed salmon share of the market has gone from one percent in 1980 to 59% in 1997 (Figure B-1b). Increasing production of farmed salmon has had major impacts on salmon prices and is likely responsible for a continuing slump in West Coast chinook and coho prices (Figure B-2). Rainbow trout pen culture has been slower to take off than the culture of other salmon species though recent growth in this activity has been rapid. In 1997, farmed rainbow trout production was about one fifth the size of farmed salmon production (Anon., 1998).

The West Coast ocean salmon fisheries contribute chinook, coho, and pink salmon to North American salmon production. The West Coast chinook harvest is comparable to Alaskan and Canadian production (Table B-2). West Coast coho and pink salmon harvests are less than Canadas and minor compared to Alaska (Table B-3 and Table B-4).

In fisheries such as the salmon fishery, where there is a brief harvest period followed by a longer marketing period during which product is sold out of inventories, there are two types of markets operating. One market distributes all its product during or shortly after the harvest period and determines what product form the raw fish will go to (e.g., fresh, frozen, canned, or cured). It is this market that also establishes the exvessel price that fishers will receive. The other market operates during the remainder of the year and determines the rate at which product flow into wholesale and retail markets over time (Wessels and Wilen, 1992). Salmon cannot be held in cold storage for much longer than a year, thus U.S. cold storage holdings fluctuate widely (Figure B-3). Since the mid-1990s peak inventories of salmon have been generally been higher than what was observed in the late 1980s and early 1990s. The generally higher U.S. cold storage holdings correlate with a period of increased world supply, increased U.S. salmon consumption rates, and decreased exvessel prices.

1.1.2 Trade

In 1997, the U.S. went from being a net exporter of fresh and frozen salmon to being a net importer on a dollar-value basis (Table B-5). This was primarily the result of a decline in sockeye exports and a corresponding increase in Atlantic salmon imports. The U.S. is a net exporter of fresh and frozen coho and a net importer of fresh and frozen chinook.

1.1.2.1 Imports

Fresh and frozen salmon comprise about 95% of the U.S. salmon imports as measured by value (Table B-5). U.S. imports of fresh and frozen chinook and coho declined from 17% of all fresh and frozen salmon imports by value in 1993 to between 10% and 13% from 1994 to 1996, and then down to about five percent in 1997.

The decline is due primarily to an increase in the volume of imports of other species of salmon and some reduction in chinook imports (Figure B-4 and Figure B-5). The value and volume of fresh and frozen chinook imports is generally substantially greater than the value and volume of fresh and frozen coho imports. The Atlantic salmon proportion of the total value of fresh and frozen salmon imports has risen steadily from 69% in 1993 to 86% in 1997. The U.S. has imported salmon products of all types from 65 different countries over the last five years. Many of the countries from which the U.S. imports small amount of salmon are locations for intermediate handlers of the salmon. In these intermediary countries, salmon may undergo additional processing before being re-exported to the U.S. From 1993 to 1997, Canada, Chile, Norway, and the United Kingdom, accounted for 96% of the value of U.S. salmon imports (Table B-6).

1.1.2.2 Exports

About 65% of the U.S. salmon exports are fresh and frozen (on a dollar value basis), though that ratio declined to 60% in 1997 (Table B-5). From 1993 to 1997, U.S. exports of chinook and coho accounted for between 8% and 13% of the value of all exports of fresh and frozen exports (Figure B-6 and B-7). The value of the coho exports has been generally greater than the value of chinook exports though the ratios have evened out more in recent years. In 1993, sockeye accounted for 75% of the value of U.S. fresh and frozen salmon exports. The sockeye contribution to export values has been on a downward trend, and in 1997 sockeye contributed only 65% of the value of U.S. fresh and frozen salmon exports. The U.S. has exported salmon products of all types to 93 different countries over the last five years. From 1993-1997, Japan, Canada, the United Kingdom, and France received 90% of the value of U.S. salmon imports (Table B-7).

In 1997, even with the drop in sockeye production and exports, the U.S. supplied nearly one-third of the dollar value of Japan's salmon imports. Of that one-third, 88% of the U.S. supply to Japan was fresh and frozen sockeye (Table B-8). The U.S. export of all other salmon species combined amounts to only four percent of the Japanese imports of all salmon. The main market for West Coast salmon has been domestic with some chinook going to the smoking market in Europe (Radtke and Jensen, 1991).

1.1.3 Domestic Demand

From 1910 through the early 1970s, per-capita fish consumption in the U.S. generally ran between 10 and 12 pounds, except during the depression and World War II, at which times consumption dropped. In the early 1970s, per-capita consumption increased to a 12 to 13 pound range. In the mid 1980s, it shifted upward again to the 15 to 16 pound range it has been in since 1985 (U.S. Department of Commerce, 1996). Consumption of salmon has steadily increased over the last 18 years. Per-capita consumption of salmon in 1996 is 3.65 times what it was in 1979, while the U.S. population has increased 18% (Figure B-8 and Table B-9). Most of the increased demand is for fresh and frozen salmon as opposed to canned salmon.

1.1.4 Exvessel Prices

Exvessel prices for West Coast ocean-caught non-Indian chinook and coho have been on a steady downward trend in the 1990s (Figure B-2). In real terms, 1996-1997 chinook and coho prices are less than half what they were at the start of the decade. Within the year, West Coast exvessel prices appear to dip when harvest increases (Figures B-9 and B-10). West Coast exvessel prices are generally lowest in July and August. Given the small size of the West Coast harvest relative to world production, the cause of this correlation between West Coast harvest and exvessel prices is uncertain. It might be a function of localized markets or a correlation of West Coast harvest with harvest in other parts of the world.

1.1.5 Exprocessor and Wholesale Prices

Information on the exprocessor values of salmon products is very limited. A Natural Resource Consultants (NRC) report from 1986 estimated that the wholesale value of salmon products in Washington was twice the exvessel value (NRC, 1986). Some more recent information for a broader geographic area is available from the NMFS processed products survey and Urner Barry Publications, Inc.

Usefulness of the processed product survey information for purposes here is limited, because response to the survey by processors is relatively low; the processed products covered include fish from Canada, Alaska,

and other nonWest Coast sources; and the product forms for which there are the best response rates in the survey tend to be in general categories (e.g., "salmon chinook dressed") as opposed to more specific categories (e.g., "salmon chinook dressed head-on"). This makes it difficult to interpret price trends and difficult to compare exprocessor and exvessel prices. Table B-10 shows exprocessor prices for products for which the number of processors and pounds on which prices are reported in the processed product survey are substantial. Prices appear to be lower in recent years, though there are exceptions.

Urner Barry Publications, Inc. reports wholesale market prices for certain categories of salmon. The only wild salmon for which Urner Barry reports prices are chum. However, price trends for farm raised salmon may be indicative of the market situation for wild salmon as well. In general, Urner Barry wholesale prices indicate a downward trend in recent years for wild chums and farmed Atlantic salmon (Table B-11). While prices for Canadian farmed chinook prices also exhibit a downward trend they appear to be a little more stable in recent years. This relative price stability may reflect decreased supply due to falling production since Canadian farmed chinook production reached a peak in 1991.

CanadaFarmed Chinook Production (mt)

1990	1991	1992	1993	1994	1995	1996
10,396	14,245	13,409	8,295	7,148	8,068	7,194

(Salmon Market Information Service, 1998)

1.2 RECREATIONAL

Just as the West Coast supply of salmon for food markets is only one segment of a broader food market, the supply of salmon for recreational harvest opportunities is only one segment of a broader recreational market. The substitutes for marine recreational ocean salmon fishing experiences are not as accessible and of greater difference in quality than substitutes in the food markets. For example, substituting an alternative ocean salmon harvest experience for a West Coast experience (e.g., traveling to Alaska or Canada for such an experience) involves a much greater increase in time and money expenditures than substituting an Alaska caught salmon for a West Coast caught salmon at the supermarket. At the same time, for northern areas of the coast in particular, newspaper advertising reveals that there is a real competition with the British Columbia recreational industry for the dollars of West Coast (U.S.) marine recreational anglers. Alaska and British Columbia tend to offer longer more stable ocean seasons than have been offered north of Horse Mountain California under the restrictive seasons of recent years, (Tables B-12 and B-13).

Other types of marine recreational angler trips, fresh water angling, and other recreational activities are, to varying degrees, potential substitutes in the market place for ocean salmon fishing. West Coast salmon angling opportunities, including those in marine fisheries such as Puget Sound and the Columbia River Buoy-10 fishery are discussed in more detail in Section 3.4.

Demand for recreational trips and measures of the breadth of social and economic impacts related to the salmon fishery are related to numbers of anglers. Data is not available on the number of salmon anglers on the West Coast. However, data is available on the number of saltwater anglers. In the U.S., 9.4 million anglers took part in 86.5 million saltwater fishing trips in 1996. The following are the numbers of marine anglers by West Coast state and number of marine angling trips (USFWS, 1997).

1996	Marine Anglers (Thousands)				Marine Trips (Thousands)			
	Total	Resident	NonResident	Percent NonResident	Total	Resident	NonResident	Percent NonResident
Washington	378	316	62	16	2,134	1,773	361	17
Oregon	162	129	33	20	870	818	53	6
California	1,049	937	112	11	7,302	6,992	310	4

2.0 THE SALMON FISHERIES MANAGEMENT SYSTEM

PFMC is responsible only for the West Coast ocean area commercial and recreational salmon harvests. Non-Indian commercial salmon fisheries also occur in Puget Sound, Grays Harbor, Willapa Bay, and the Columbia River. Nonocean Indian commercial salmon fisheries occur in the same areas (except Willapa Bay) as well as the Klamath River, Quinault River, Queets River, Hoh River, and Quillayute River. Nonocean recreational salmon fisheries occur in Puget Sound and other coastal and inland rivers, streams and estuaries including the Columbia River and Klamath River Basins. PFMC manages the ocean fisheries for ocean and expected spawning escapement, taking into account expected abundances and inside harvests. Expected abundances for north migrating fish are affected by harvests in Alaska and Canadian waters, which in some years have been negotiated under the Pacific Salmon Treaty.

2.1 HARVEST MANAGERS AND MANAGEMENT FORUMS

Because of the transboundary migratory nature of salmon, numerous U.S. management agencies take part in a number of different forums for the coordinated management of West Coast salmon stocks.

2.1.1 The Harvest Managers

The parties that implement management regulations affecting the West Coast ocean salmon fisheries include California, Oregon, Washington, Idaho, Alaska, Canada, NMFS, and the tribes. The California tribes involved in management and harvest of salmon are the Hoopa and Yurok. The Columbia River tribes involved in management and harvest of salmon are the Yakima, Warm Springs, Umatilla, Nez Perce, and Shoshone-Bannock tribes. The states of Oregon, Washington, and the Columbia River tribes manage according to court orders and plans arising from U.S. v. Oregon. The western Washington tribes involved in management and harvest of salmon are the Hoh, Jamestown S'Klallam, Lower Elwha Klallam, Port Gamble S'Klallam, Lummi, Makah, Muckleshoot, Nisqually, Nooksack, Puyallup, Quileute, Quinault, Sauk-Suiattle, Skokomish, Squaxin Island, Stillaquamish, Suquamish, Swinomish, Tulalip, and Upper Skagit. In Western Washington, the State of Washington and tribes are co-managers according to court orders arising from U.S. v. Washington and Hoh v. Baldrige utilizing the Puget Sound Salmon Management Plan and the Hoh v. Baldrige Framework Management Plan to guide annual management planning activities. Other tribes in the northwest also fish for salmon, but do not have fishery rights adjudicated under a treaty.

2.1.2 Northwest Tribal Management Organizations

The treaty tribes of the northwest utilize the services of two technical service organizations. These are the Columbia River Inter-Tribal Fish Commission (CRITFC) and the Northwest Indian Fisheries Commission (NWIFC).

2.1.2.1 Columbia River Inter-Tribal Fish Commission

The CRITFC was formed in 1977 by resolutions of the Yakama, Warm Springs, Umatilla, and Nez Perce tribes-Columbia Basin Indian tribes that signed treaties in 1855 securing to them certain reserved rights to take fish in the Columbia River and its tributaries. The CRITFC is composed of the fish and wildlife committees of its member tribes and supplies technical expertise and enforcement resources. CRITFC provides support to the tribal governments during their negotiation on fish issues with the relevant state governments.[1/]

1/ The Shoshone-Bannock tribe has fishery rights established under a separate treaty and is not a member of the CRITFC.

2.1.2.2 Northwest Indian Fisheries Commission

The NWIFC was established to coordinate the activities of the tribes for implementation of orders arising from U.S. v. Washington. It is composed of 19 of the tribes in western Washington that are party to the U.S. v. Washington litigation: Jamestown S'Klallam, Lower Elwha S'Klallam, Port Gamble S'Klallam, Lummi Makah, Muckleshoot, Nisqually, Nooksack, Puyallup, Quileute, Quinault, Sauk-Suiattle, Skokomish, Squaxin Island, Stillaquamish, Suquamish, Swinomish, Tulalip, and Upper Skagit. Members' tribes manage their own fisheries and negotiate directly with the state. The NWIFC provides technical support to Puget Sound and coastal tribes and assists in intertribal coordination on harvest policy.

2.1.3 Pacific Salmon Treaty and Pacific Salmon Commission

Allowable impact levels established under agreements made within the Pacific Salmon Commission (PSC) or, in the absence of such agreements, independently by Canada affect the amount of fish available for harvest and spawning in U.S. waters. The PSC was established under the Pacific Salmon Treaty.

Canada and the U.S. signed the Pacific Salmon Treaty in 1985, after 15 years of negotiation. The Treaty was negotiated to ensure conservation and an equitable harvest of salmon stocks. It covers five species of Pacific salmon and steelhead; and applies to fisheries in southeast Alaska, British Columbia, Washington, and Oregon.

The treaty recognizes that each country is most interested in the conservation and harvest of salmon stocks that originate in its own waters. However, it also recognizes that salmon migrate through the waters of both countries and are inevitably intercepted in large numbers by each country's fisheries. The treaty was designed, therefore, to establish a forum for consultation and negotiation between Canada and the U.S. on Pacific salmon issues and to facilitate co-operation on research and enhancement of Pacific salmon stocks.

The two principles on which the treaty rests are conservation and equity.

- The conservation principle obliges the two parties to prevent overfishing and provide for optimum production.
- The equity principle provides for each country to receive benefits equivalent to the production of salmon from its own rivers.

Representatives from the two countries meet annually to review the past year's fishery and to negotiate fishing regimes for future years. Negotiations on implementation of the equity principle within the Pacific Salmon Commission as well as U.S.-government-to-Canadian-government negotiations on the issue have been unsuccessful. Since 1994, U.S. and Canadian negotiators have been unable to agree on catch limits.

2.1.4 Pacific Fishery Management Council

Each year PFMC[2/] follows a specified preseason management process to develop the annual salmon management recommendations. Public involvement in the process begins in late February with the release of reports documenting the previous ocean salmon fishing season and providing estimates of the expected salmon abundance for the coming season. The reports are followed by a Council meeting in early March to propose season options for public comment, public hearings on the options in late March, and an early April Council meeting to adopt the final recommendations on time for implementation on May 1.

2.1.5 Columbia River Compact

The U.S. congress ratified a compact agreement between Oregon and Washington in 1918 (the Compact). The Compact's charge is to manage commercial fishing seasons for salmon, sturgeon and other commercial food fish caught in the Columbia River. The Columbia River Compact is made up of delegates from the Oregon and Washington fish and wildlife commissions. The Columbia River treaty tribes have authority to regulate Treaty-Indian ceremonial and subsistence fisheries. All commercial fisheries regulations are established by the Compact. In developing commercial seasons, the Compact considers the effect of the commercial fishery on escapement, treaty rights and sports fisheries for species such as salmon, steehead and shad. Options for management of the commercial Treaty fisheries are developed in consultation with the tribes in a co-management process. While the Compact has no authority to adopt sport regulations, allocation between sport, commercial and tribal users is considered an inherent part of the Compact's responsibility. Additionally, particular attention is paid to conservation of species listed under the ESA. Hearings are held periodically to adopt or review seasonal commercial regulation (Columbia River Compact, 1997 and 1998).

2.1.6 North of Cape Falcon Forum

The North of Cape Falcon Forum provides an opportunity for co-managers of the ocean and inside fisheries and representatives of commercial and recreational harvesting groups to resolve complex management issues which constrain management of the ocean and inside salmon fisheries north of Cape Falcon, Oregon. Co-managers participating in the forum include the states of Oregon and Washington, the Columbia River tribes, the Puget Sound and Washington coastal tribes and NMFS. The fishing groups represented include Oregon and Washington inside and ocean recreational fishers, Oregon and Washington non-Indian Columbia River, Willapa Bay and Grays Harbor gillnetters, Oregon and Washington non-Indian trollers, and Puget Sound non-Indian commercial fishers. In this forum, participants try to reach harvest agreements taking into account conservation needs, anticipated impacts from fish passing through Alaska and Canadian fisheries, court orders and harvest sharing between Indian and non-Indian users, harvest sharing between inside and outside fisheries, and harvest sharing and formal allocations between non-Indian commercial and recreational fishers.

In the Puget Sound and the Washington coastal areas, the entire package of pre-terminal and terminal fishing agreements are not always fully completed in the North of Cape Falcon Forum. In the event this occurs, the affected co-managers continue negotiations utilizing court orders and plans arising from the U.S.

2/ PFMC is one of eight regional fishery management councils in the nation, all with similar missions, but covering different areas. Congress created councils when it passed the Magnuson-Stevens Fishery Conservation and Management Act in 1976. Fish and fishers often move between the waters of different states and between federal and state waters. Consequently, a regional management body can more easily control harvests of all fishers throughout the range of the fish. Councils prepare, monitor, and revise FMPs for fisheries requiring conservation and management, such as this salmon FMP. Councils are not federal agencies, but a combination of federal, state, and private interests. Councils are planning bodies that make recommendations, but have no rule making authority. The U.S. Secretary of Commerce is the federal rule making authority for fishery management. The Secretary approves/disapproves and implements PFMC plans and regulations.

v. Washington and Hoh v. Baldrige litigation including the Puget Sound Salmon Management Plan and the Hoh v. Baldrige Framework Management Plan.

2.1.7 Klamath River Fishery Management Council

The Klamath Fishery Management Council (KFMC) was created by Congress under the Klamath Basin Restoration Act in October 1986 (PL 99-552, 1986). The Klamath Basin Restoration Act created an 11 member KFMC to supercede a management group originally convened under the auspices of PFMC. The KFMC is comprised of representatives of California Department of Fish and Game (CDFG), Oregon Department of Fish and Wildlife (ODFW), PFMC, NMFS, the Department of Interior, the Yurok and Hoopa Tribes, California and Oregon commercial fishers, California ocean recreational fishers, and inland recreational fishers. The KFMC's advisory function is to make harvest management recommendations to the various management agencies including PFMC. All recommendations passed forward to agencies or to PFMC must be with the consensus of all members.

2.2 ACCESS TO THE COMMERCIAL AND RECREATIONAL SALMON FISHERIES

How our society determines who should be allowed access to the salmon fishery reflects social, political, and economic attitudes about the salmon resource. For example, the license limitation programs for the commercial fishery firmly establishes the resource is publicly owned, while at the same time establishing what is often construed as a private (tradable) right to access. The characteristics of this system and how it was established reflect attitudes about the fishery and fish resource and our relationship to it. License requirements and fees for recreational angling also reflect values placed on the opportunity to participate in the fishery, as do rules that provide exemptions for veterans, handicapped individuals, and senior citizens.

This section documents the commercial license limitation programs established by the states, including how they were established, and licensing requirements for recreational fisheries. The emphasis on the license limitation programs is particularly relevant given the recent federal funding of salmon license buyback programs in Washington and the potential for future buyback programs as a response to diminishing harvest opportunities. Information included on license fees may become out-dated over a relatively short period of time. It is included here to document and provide a baseline for the costs of access as of this moment in time. This section does not cover tribal rules for member access to tribal fisheries.

2.2.1 Commercial and Charter Vessels

State license limitation programs are used to control participation in the West Coast salmon fisheries. The non-Indian commercial salmon fisheries in all three states are operated under license limitation programs, and there is a license limitation program in effect in Washington for salmon recreational charter operations.

In August 1978, PFMC adopted a resolution encouraging the coastal states to implement moratoria on new participation in the ocean salmon troll and charter boat fleets. This action was taken in lieu of establishing a Federal permit, in recognition that the coastal states had existing vessel licensing programs and could most efficiently implement their own moratoria, responsive to the needs of the states and industry. The following are the general principles the states were encouraged to follow (1) cap not only participation, but also total effort; (2) use 1974-1977 as a base period for qualifying; (3) adhere as closely as possible to definitions of "active vessel participation," "contracted for construction," etc., as adopted and publicized by PFMC; (4) establish appeals boards; (5) recognize the regional nature of fisheries, but do not discriminate among fishers of the states within the region; (6) seek to ultimately maintain approximately the number of vessels in the 1977 fishery (or less) recognizing that the qualifying period may result in an initial increase in number of participants.

2.2.1.1 California

Ocean Commercial Troll

In California, ocean troll salmon vessel limited entry permits were first required for participation in the ocean troll salmon fishery beginning in 1982. There is no recipricol recognition of the salmon limited entry permits of other states.

Initial Qualification

California implemented its first moratorium on new entry to the salmon fishery in 1980 (SB 755, 1979). California's first moratorium was based on the individual rather than the vessel. The two-year moratorium required licensed fishers hold a personal salmon permit when fishing commercially for salmon. The permit was in the form of a stamp to be affixed to the commercial fishing license. A person with a salmon stamp could fish for salmon from any commercially licensed vessel. To acquire a stamp, the person (1) needed a commercial fish dealer receipt showing that he or she had sold at last one salmon in at least one year from 1974 through 1979; or (2) needed to show that he or she had a commercial license and while acting under that license had assisted in the capture and sale of at least one salmon from 1974 through 1979; or (3) needed to show proof of investment in becoming a commercial salmon fisherman such as by having a vessel under construction or contract for purchase prior to December 16, 1977. A notarized statement signed by the applicant and providing the registration number of the vessel delivering the fish was sufficient demonstration that the second of the listed requirements was met. To qualify based on investment, applications had to be reviewed by an appeals board dominated by commercial salmon fishers. Fishers in Oregon and Washington that qualified under the limited entry laws in those states were qualified to purchase a commercial license and salmon stamp in California. Because the limited entry programs in other states were vessel based rather than crew based, out of state vessels were allowed to use out of state crew without having commercial licenses for those crew. The initial moratorium permits were nontransferable except that they could be transferred to a different individual for one 15-day period during the calendar year. The fees for the stamp and salmon validation fee were $15. The initial moratorium was in place through the end of 1981.

In 1982, the fisher based moratorium was modified to a vessel owner based license limitation system. Permits were issued to (1) owners of vessels that had been used to take salmon commercially from 1980 through August 11, 1982, (2) to natural persons with personal salmon permits under the moratorium who had constructed or purchased a vessel prior to August 11, 1982 in anticipation of entering the salmon fishery, (3) natural persons owning a commercial vessel with salmon landings who due to a personal illness, disability, or other circumstance outside their control were unable to fish from 1980-1982, (4) individuals licensed to fish commercially for at least 20 years who had participated in the salmon fishery in at least one of those 20 years (Senate Bill 1917, 1982).[3/] New permits could only go to natural persons who did not already own a commercial salmon fishing permit.[4/] The vessel based moratorium did not provide recipricol recognition for Oregon and Washington salmon limited entry permits. This moratorium was initially set to expire at the end of 1986, unless renewed (SB 1917). After a series of renewals, the moratoreum became a permanent license limitation system in 1988 (Assembly Bill 2366).

Numbers of Permits and Provisions for Expanding the Number of Permits

The California legislation establishing a permanent salmon license limitation program authorized the issuance of new permits only when the total number of permits falls below 2,500. When the total number of permits falls below 2,500, CDFG is to consult with the review board to determine the number and vessel

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3/ If new permits were to be issued, they were first issued as interim permits. Interim permits had to be used in two consecutive seasons before a permanent permit could be issued.

4/ Permits were transferable with, but not separable from, the vessel except in the case of a lost, destroyed, or retired vessel. An owner could replace a lost, destroyed, or retired vessel within one year with a vessel found by the review board to be of equal or lessor capacity.

classification for the new permits to be issued. New permits would be issued by a drawing. There have been fewer than 2,500 California permits since 1994; however, because of the depressed condition of the resource, to date, no additional permits have been issued. The number of permits issued was highest in 1984 at 5,964. In 1997, there were 2,069 vessels with California permits.

Permit Transferability and Vessel Capacity Limitation

Permits are issued to the vessel owner and may only be transferred to a new owner with the vessel. The owner may transfer the permit to a replacement vessel that has the same or less fishing potential than the vessel being replaced, however, the owner must own the permitted boat at least 18 months before the permit can be transferred to a new vessel. Permits may be transferred to new vessels if the vessel was accidentally lost and the necessary steps to secure a replacement are taken within one year of the loss. There is a $200 fee for transferring a permit to a different vessel. If a permitted vessel has a lien holder or mortgage holder, the lien or mortgage holder must approve the transfer of the permit to a different vessel.

Fishing vessel potential is evaluated by a commercial salmon review board. In considering the capacity of permits, the review board first groups vessels into two groups: vessels less than 25 feet, and vessels more than 25 feet. The following seven factors are evaluated by the board in determining vessel capacity (they are listed here in order of importance), (1) the vessel's size in terms of length, beam, and depth; (2) the vessel's "seakeeping ability" as determined by the size and design of the hull; (3) the new vessel's ability to function as a salmon troller in comparison to the vessel being replaced; (4) previous use of the vessel; (5) fish holding capacity; (6) hull shape (open deck, closed deck, displacement, semidisplacement, and planing) and materials (wood, fiberglass, aluminum, steel, other); (7) propulsion. Seakeeping ability is the board's assessment of the ability of the vessel to stay at sea and continue to fish during inclement weather. Amounts of salmon landed may be considered as part of the boards evaluation of the vessel's capacity. The boards final determination is based on its aggregate assessment of these factors. For vessels less than 25 feet in length the size of the vessels is not compared. Where one or both vessels involved in the transfer are greater than 25 feet all seven factors are considered. (CDFG, Guidelines for Commercial Salmon Vessel Permit Transfers, March 18, 1997).

Permit Renewal and Revocation

Salmon permits must be renewed prior to April 1 each year and will become void if not renewed. The fee for renewing the salmon permit is $30 (Bennett, 1998). Permits not renewed by April 1, may be renewed prior to the end of April with payment of a $100 late fee. Salmon landings are not required for renewal of the permit. The permits can only be reinstated if an extenuating circumstance prevented renewal and there was not a reasonable opportunity for an agent to renew the permit on behalf of the owner. Permits will be voided if a vessel is purposefully sunk prior to the transfer of the permit from the vessel or if a vessel was accidentally lost but not replaced within one year (Fish and Game Code, Article 4.5).

Other State Permits Required for Participation in the Commercial Salmon Fishery

In California, all commercial fishing vessels are required to have a commercial fishing vessel registration. Additionally, salmon conservation stamps are required for anyone on the vessel assisting in the salmon harvest. As of 1998, the fee for the vessel registration was $200 for residents and $400 for nonresidents. Everyone working on board the vessel must hold a commercial license to which the salmon conservation stamps are affixed. The 1998 fees for the commercial licenses were $50 for crew members, $90 for operators, and $400 for nonresidents. The vessel may hold a permit for one crew member that may be assigned to any crew member working on the vessel. The fee for the salmon conservation stamps fluctuate between $85 and $285 on an annual basis, depending on the total tonnage of salmon landed in the state in the previous year. For 1998 the fee was $260 (Bennett,1998).

Commercial fishers who wish to sell to the public or directly to restaurants and retail outlets must acquire special licenses. To sell to restaurants and retail outlets a commercial fish receivers license is required, the fee for which is $400 for 1998. To sell directly to the public a commercial fish retailers license is required, the fee for which is $50 for 1998 (CDFG, 1998b).

Recreational Charter Vessels

There is no license limitation system for California commercial passenger fishing vessels charter vessels. Such vessels are required to obtain commercial passenger fishing vessel licenses from CDFG for $200 ($150 if the vessel has a commercial salmon vessel permit). These vessels must also hold commercial boat registrations from the California Department of Motor Vehicles. In addition, north of Point Arguello, charter vessels participating in the salmon fishery must hold commercial fishing salmon stamps for the operator and an additional salmon stamp for each crew member required to be on board under USCG rules (CDFG, 1998).

Limited Entry Permit Buyback Programs

There have been no buyback programs for California ocean troll permits.

2.2.1.2 Oregon

Ocean Commercial Troll

Ocean troll salmon limited entry permits were first required for participation in the ocean troll salmon fishery beginning in 1980 (ORS 508.801). In an emergency and with the approval of ODFW, ocean troll salmon may be landed by vessels without limited entry permits if a single delivery license is purchased for the vessel. Vessels operating under the California salmon license limitation program may land in Oregon using such a single delivery permit.

Initial Qualification

Initial issuance of the ocean troll salmon limited entry permits was based on vessel history. In order to qualify, a vessel must have been commercially licensed and have landed in Oregon at least one ocean troll caught salmon from 1974-1978, or, during 1974-1978 must have been under construction or a contract for construction as a commercial fishing vessel designed to be used in the ocean troll salmon fishery. No applications for new permits were accepted after May 15, 1989.

Numbers of Permits and Provisions for Expanding the Number of Permits

ODFW is required to issue a minimum of 1,200 limited entry ocean troll salmon permits. If the number of renewed permits falls below this level then a lottery may be used to achieve the minimum. The Oregon Fish and Wildlife Commission is allowed to suspend the lottery for up to two years if it determines the action appropriate in consideration of the condition of the resource. When the program was first established the minimum was set at the number of vessels participating in the ocean troll salmon fishery during the calendar year 1978 (3,158 vessels). Since initially establishing the program, the state legislature has reduced this minimum on several occasions. A lottery has never been held to issue more permits. The greatest number of permits issued was 4,314 in 1980. In 1997 there were 1,286 permits issued.

Permit Transferability and Vessel Capacity Limitation

Limited entry troll permits may be transferred to new owners with the transfer of the vessel. Such permits may also be transferred to a replacement vessel of the holder of the permit or, if authorized by ODFW, to a different vessel owned by a different individual. The language of the initial legislation placed some limits

on the transfers based on vessel "capability".[5/ 6/] The replacement vessels could not be of greater capability than the vessel from which the permit was being transferred with three exceptions. The permit could go to a greater capability vessel if (1) prior to August 8, 1983 the person owning the vessel to which the permit was being transferred also owned a limited entry troll permit; (2) prior to August 8, 1983 there was a limited entry troll permit issued for the vessel to which the permit was being transferred; or (3) the vessel was newly constructed and had never been used in any commercial fishery. The agency issued rules giving this legislation the following interpretation: all vessels less than or equal to 30 feet in length were considered to have the same capability; and the limit on transfer to vessels of "greater capability" was interpreted as a limit on transferring a permit to a vessel more than 5 feet longer than the vessel from which the permit was being transferred (where the vessel to which the permit was being transferred was longer than 30 feet). Through a series of transfers, permits could be moved to progressively longer vessels without limit, except permits could be transferred only once per year. In 1995, legislation abandoned the "capability" language and specified transfer restrictions in terms of length. The rules were liberalized to remove all capability limitations for permit transfers where both vessels involved were in the same length class. Three length classes were established, (1) less than 30 feet,[7/] (2) greater than 30 feet and less than or equal to 42 feet, and (3) greater than 42 feet. Additionally, permits could be moved between vessels in different categories so long as the change in length was no greater than 5 feet.

A vessel operating under a permit must land more than 100 pounds of salmon in the year prior to a transfer if the permit is to be transferred to a vessel longer than 30 feet owned by a different person. The required salmon landings may be made in any West Coast or Alaska ocean troll fishery. This requirement to land 100 pounds in order to transfer the permit will not be effective in a calendar year in which the number of permits issued is less than 1,200.

Permits may be transferred only once per year unless the Commercial Fishery Permit Review Board finds that such a restriction would create undue hardship. In response to an appeal, the board may waive eligibility requirements for transfer of permits if the board finds the individual fails to meet the requirements as the result of illness, accident, or other circumstances beyond the individual's control.

There are no fees for the transfer of a permit.

Permit Renewal and Revocation

Limited entry permits must be renewed each year prior to the end of the year. A limited entry permit will expire and not be renewed if the permit holder fails to apply and pay the required fees for the limited entry permit prior to the end of the calendar year or fails to acquire the state's general boat license for commercial harvest prior to the end of the calendar year, except in the following situations:

- A person who permanently loses a vessel through capsizing, fire, or collision has a period of two years from the date of the loss to replace the vessel without losing eligibility to renew the limited entry permit.

- Renewal requirements are waived if in the year prior to the renewal application there was no federally established salmon season of 20 or more days in length between May 1 and July 31 off the Oregon port in which the vessel lands; and if, during the three most recent years in which there was a season of 20 or more days off that Oregon port, the vessel has landed troll-caught salmon in at least one of those years and did not land salmon in any other port during those three years.

5/ Oregon regulations use the word "capability" rather than "capacity".

6/ During the early phase of the program, legislation authorized consideration of the following factors in determining vessel capability. Vessel size, horsepower, ability to operate under adverse weather, electronic and other gear with which the vessel is equipped, and fish hold capacity.

7/ Based on the previous rules and the pattern established by the remaining categories, it was probably intended that the bottom category be vessels less than **or equal to** 30 feet.

As of 1998, the renewal fee for a salmon troll permit was $75 (including a $65 surcharge in place for 1998 through 2003). Permit fees may be refunded for vessels qualifying for the exemption from renewal specified in the second bullet. When the program was first established, in addition to keeping the permit up-to-date (renewed prior to the end of the calendar year) sometime during the year the vessel had to have landed salmon in Alaska, Washington, Oregon, or California in order to be eligible to have its permit renewed in a subsequent year. This provision was eliminated, effective in 1988.

If issuance of a permit is denied because of failure to renew, the denial may be appealed to the Commercial Fishery Permit Review Board. The board may waive eligibility requirements for renewal of permits if the board finds the individual fails to meet the requirements as the result of illness, accident, or other circumstances beyond the individual's control.

Permits may be revoked by the Commercial Fishery Permit Review Board on conviction of violation of the state's commercial fishing or game fishing laws or rules or on forfeiture of bail on account of such an offense. Additionally, permits may be revoked based on convictions in the State of Washington on an offense in violation of Columbia River commercial fishing rules adopted pursuant to the Columbia River Compact, provided the action on which the conviction was based would have also been considered an offense subject to permit revocation in the State of Oregon. After a first revocation, a permit may be revoked for up to two years for the commission of a second offense.

Columbia River Commercial Gill Net

Columbia River commercial gill net permits are required to participate in the Columbia River troll gill net fishery and land fish in Oregon (ORS 508.775). Vessels with permits for this fishery licensed by Washington are also allowed to make landings in Oregon.

Initial Qualification

The initial qualifying requirements for the Columbia River gill net permits (landings and construction) were similar to those for the troll fishery except with respect to the fishery in which participation was required (the Columbia River gill net fishery) and the years of the qualifying period (1977-1978).

Numbers of Permits and Provisions for Expanding the Number of Permits

Similar to the troll permit system, there is a minimum number of gill net permits that ODFW is required to issue and if necessary, that minimum number may be maintained through a lottery. However, the lottery may be delayed for two years for resource conservation reasons. Since 1995, the minimum number has been 200.

Permit Transferability and Vessel Capacity Limitation

Limited entry gill net permits may be transferred to new owners with the transfer of the vessel. Such permits may also be transferred to a replacement vessel of the holder of the permit or, if authorized by ODFW, to a different vessel owned by a different individual. There are no vessel capacity restrictions on the transfer of Columbia River gill net permits. Until 1995, there was a provision specifying that if a permit was not used during a calendar year and a waiver of renewal requirements was issued (see below), it could not be transferred for two years.

Permit Renewal and Revocation

Permit renewal requirements and revocation provisions are similar to those described for the troll permit system. Through mid-1995, in addition to keeping the permit up-to-date (renewed prior to the end of the calendar year) the vessel operating under the permit must have made at least one landing in the Columbia River gill net fishery during the calendar year. The renewal requirement can be waived if the Commercial

Fishery Permit Board finds that (1) the individual, for personal or economic reasons, chose to actively commercially fish in some other fishery during the Columbia River gill net salmon seasons, or (2) the individual failed to meet the requirements as a result of illness, accident, or other circumstances beyond the individuals control. These exceptions also applied to the use requirement when it was in place.

As of 1998, the renewal fee for the permits was $75 (including a $74 surcharge in place for 1998 through 2003).

Commercial Fishery Permit Board

The Commercial Fishery Permit Board is comprised of representatives of the fishing industry. Additionally, two members are appointed to represent the public. Members of the board serve without compensation (with the exception of travel and other expenses incurred as part of their official duties).

Other State Permits Required for Participation in the Commercial Salmon Fishery

The owner or operator of any boat harvesting fish or shellfish for commercial use must hold a boat license for the vessel (ORS 507.260). These licenses constitute registration for the purpose of Section 306(a) of the Magnuson-Stevens Fishery Conservation and Management Act. Such registration gives the state authority to regulate the fishing vessel outside the boundaries of the state so long as there is no FMP or other applicable federal fishing regulations, or so long as the state's laws and regulations are consistent with such FMPs or other federal fishing regulations. Vessel licenses cost $200 for residents and $400 for nonresidents.

Crew members assisting in the fish harvest must hold licenses. The crewmember fees are $50 for residents over 18, $25 for residents 18 and younger, and $100 for nonresidents. The vessel may purchase "Commercial Crewmember Fishing Licenses" for $85 and assign such licenses to the individuals working on the vessel.

Recreational Charter Vessels

There is no license limitation system for Oregon recreational charter vessels. Such vessels are required to obtain permits from the state Marine Board. The current permit fees for residents are $50 for an Oregon titled vessel and $100 for a United States Coast Guard (USCG) documented vessel. For nonresidents the fees are $50 for Alaska residents, $250 for California residents, $550 for Washington residents, and $100 for residents of other states. In addition to the vessel licensing requirements, the vessel operator must have a vessel operators license from the USCG. Outfitter guides may also take recreational fishers out for hire, however, they may not go further than three miles out without a charter vessel license (Oregon State Marine Board, 1998).

Limited Entry Permit Buyback Programs

There has not been a buyback program for Oregon troll vessel permits, however, there has been such a program for Columbia River gill net vessels. The Salmon and Steelhead Conservation Act of 1980 provided guidance on fleet reduction in the Washington conservation area, including the Columbia River gill net salmon fishery. A separate public law authorized a National Oceanic and Atmospheric Administration (NOAA) grant to the Washington Department of Fisheries in 1981 for fleet reduction in the Washington conservation area. This appropriation included a provision for funding an Oregon Columbia River fleet reduction program. The Oregon program began in April 1983, operating with federal grant funds made available through a cooperative agreement with Washington. The program ended with the end of federal funding in December of 1986. Permits were purchased in four rounds under a reverse auction bidding procedure. In each round, offers to sell were solicited from permit holders. The offers were placed in order from lowest to highest, and the Oregon Fish and Wildlife Commission determined how many of the permits they would buy, buying the lowest offers first (Carter, 1998). During the program, 133 gill net permits were purchased for $645,000. Between attrition and the buyback program, the number of permits declined from 572 in 1980 to 355 in 1986. The administrative costs of the program were $71,000.

2.2.1.3 Washington

Ocean Commercial Troll and Other Washington Commercial Salmon Fisheries

The ocean troll salmon limited entry program was created as part of a program that created commercial licenses for all of Washington's commercial salmon fisheries. The first legislation creating this system was passed in 1974. Washington recognizes Oregon Columbia River gill net permits, but does not provide recipricol recognition for the troll limited entry licenses issued by other states.

Initial Qualification

Initial issuance of the ocean troll salmon limited entry licenses and delivery permits was based on vessel history. In order to qualify, a vessel must have been commercially licensed for salmon and landed at least one ocean troll caught salmon between January 1, 1970 and May 6, 1974. The licenses issued were specific to the gear type and area in which the vessel fished.[8/] Additionally, commercial fishing vessels under construction or purchased in good faith between April 16, 1973 and May 6, 1974 were eligible for licenses. A provision in the law would have allowed recreational charter vessels to be licensed for commercial trolling if it were found that the charter industry was suffering economic hardship due to the national fuel crisis. However, the fuel crisis provision was never invoked (Edie, 1998). As a result of the consideration of the moratorium law, many individuals applied for licenses early in 1974. However, because most fishing seasons did not start until after May 6, 1974 and landings were required prior to that date, these permits were not eligible for renewal in 1975. Extenuating hardship circumstances did not play a role in the initial permit issuance criteria.

An advisory review board was convened to hear disputes on the issuance of permits. The board was comprised of three members nominated by the commercial salmon fishing industry.

The initial program was set to expire at the end of 1977. In 1977 the commercial troll program was extended through 1980 and in 1979 it was made permanent.

Numbers of Permits and Provisions for Expanding the Number of Permits

Unlike Oregon and California, there was no minimum set on the number of permits to be issued. A committee, convened to evaluate the moratorium, was in consensus agreement the number of vessels in the fishery should not be increased, but there was not an agreement on whether or not a decrease was warranted (Benson and Longman, 1980). In 1978, 3,291 permits were issued. The number of permits issued declined to 323 in 1997.

Permit Transferability and Vessel Capacity Limitation

Washington commercial salmon limited entry permits are transferable between vessels. There has never been a limit on the size or capacity of the vessels to which the permits can be transferred. There is nothing in the program that restricts the transfer of permits from lost vessels. The fee to transfer a permit is $50.

The permit off any vessel which is subject to a government confiscation may be transferred to the individual named on the permit with the approval of the director of Washington Department of Fish and Wildlife (WDFW).

8/ The fishing area/gear type combinations for which permits were issued were Puget Sound purse seine, Puget Sound gill net, Willapa Bay gill net, Grays Harbor gill net, Columbia River gill net, Ocean troll, and Puget Sound reef net.

Permit Renewal and Revocation

The annual fee for renewing a salmon troll license is $380 for Washington residents and $685 for nonresidents. There is an additional $100 enhancement surcharge which must be paid. The WDFW directory may wave renewal requirements or refund permit renewal fees if there is no salmon season in a particular year (Edie, 1998).

Beginning in 1979, salmon limited entry permits could be renewed so long as the permit had been renewed in the previous year, and the vessel with which the permit had been registered was used to take food fish. Previous to 1979, permit renewal was contingent only on a vessel having met the original qualifying requirements. Some vessels did not renew their permit every year or had not applied for a permit. The requirement a permit be held in the previous year in order to acquire a permit in a subsequent year resulted in an increase in the number of permits issued in 1978. Beginning in 1994, the provision was dropped that required the vessel to have been used to take food fish in order to renew. Beginning in April 1997, a provision was created that allowed permit holder's to declare an intent not to renew their permit for the year, but reserve the right to renew the permit in a future year. Such declarations must be made by May 1, and the standard enhancement surcharge must be paid along with a $15 handling fee (RCW 75.28.110, Edie, 1998). Extenuating circumstances beyond the control of the vessel owner may be considered by an administrative hearings officer if someone fails to renew their permit. However, because permit holders have until the end of the year to renew a permit, the circumstances under which hardship exceptions are granted have been quite limited.

The director may revoke a permit for up to one year for violation of state fishing laws. Such revocation is allowed in response to two or more gross misdemeanors within a 5-year period or one Class C felony (RCW 75.10.120).

Other State Permits Required for Participation in the Commercial Salmon Fishery

In Washington, licenses for all commercial fisheries are species and gear specific. No vessel licenses are required from the state other than a salmon limited entry or delivery permit. Each permit allows the designation of one of the vessel owners as a primary vessel operator. If someone else is to operate the vessel, they must acquire an alternative operator license for $35. The operator license is a one-time license assigned to the individual that may be used by that person on any vessel. Licenses are not required for crew members.

Recreational Charter Vessels

A moratorium on the entry of new recreational salmon charter vessels was imposed on May 28, 1977. Oregon permits are recognized for Oregon charter vessels fishing as far north as Point Leadbetter Washington, so long as Oregon extends similar reciprocity to Washington charter vessels.

Initial Qualification

To qualify under the initial moratorium, a charter vessel had to have been licensed in at least one year from 1974 to 1976 (RCW 75.28.095, 1975). The charter licenses required were not specific to salmon. In addition, licenses were issued to any vessel under construction or purchased in good faith between April 15, 1976 and May 28, 1977. The initial moratorium was set to expire at the end of 1980 (SB 2104). Recreational charter vessel licenses are not area specific (vessels may make trips in the ocean as well as interior marine waters such as Puget Sound [Edie, 1998]). Extenuating hardship circumstances did not play a role in the initial permit issuance criteria.

In 1979, the moratorium was revised and renewed through the end of 1981, and it was established as a permanent program in 1981. The 1979 revisions included the addition of a requirement for "yearly angler permits," in addition to the charter vessel permit. The yearly angler permit specified the maximum number of anglers that may fish from a charter vessel at any one time. The maximum number of anglers that could be carried was based on vessel size as specified in a USCG certificate of inspection. The schedule for

number of anglers started out at 8 for a 31.5' vessel and ended at 34 for a 64.5' vessel. Vessels without USCG inspection documents were issued permits for 6 passengers. Vessels with hulls substantially wider than conventional hulls were issued permits to carry up to 25 anglers (Benson and Longman, 1979; RCW 75.30, 1980).

An advisory review board was convened to hear disputes on the issuance of permits. The board was comprised of three members nominated by the charter industry.

Numbers of Permits and Provisions for Expanding the Number of Permits

No provisions have been made to allow an expansion in the number of permits or yearly angler permits issued if the fleet size or number of yearly angler permits falls below a certain threshold.

Permit Transferability and Vessel Capacity Limitation

All charter vessel licenses are transferrable between owners and among vessels. There is a $50 fee for the transfer of a license. Angler permits are also transferable and may be transferred in single angler units, so the authorized carrying capacity of any vessel may be increased or decreased with the purchase or sale of additional angler permits. There is a $10 fee for the transfer of angler permits. The fee is paid by all parties in the transfer (both "sellers" and "buyers"). There must be at least one angler permit left with the vessel license. If all angler permits are transferred from the vessel license then the vessel license expires.

Permit Renewal and Revocation

A license for which no application was made or which is not renewed in any given year is considered to have expired. Angler permits expire if the charter permits are not renewed. The permit renewal fee is $380 for residents and $685 for nonresidents. There is an additional $100 enhancement surcharge which must be paid. The WDFW directory may wave renewal requirements or refund permit renewal fees if there is no salmon season in a particular year (Edie, 1998). The rules for considering hardship and permit revocation are similar to those discussed above for the commercial fishery.

Other State Permits Required for Participation in the Commercial Salmon Fishery

There are no state permits required for charter vessel operations, other than the limited entry license. Vessel operators are required to have the proper USCG certification, no additional state licenses are required. There are no licensing requirements for crew members.

Limited Entry Permit Buyback Programs

Laws creating a buyback program for the Washington fleet were implemented in 1975. The funds for the program were federal, and the initial funds were used for the purchase of Puget Sound commercial permits and vessels. Vessels bought out were not allowed to participate in any Washington fisheries. The buyback program was changed in 1979 to include recreational charter, ocean troll vessels, and gill net vessels in Grays Harbor, Willapa Bay, and the Columbia River. First priority was given to those who wanted to sell their permit only and second priority to those willing to sell both their permits and vessels. Within these two categories a ranking system was developed based on length of time in the fishery, with higher priority going to those with a longer history. A random drawing was held among those within a similar category for length of participation. In 1980 the program was modified to allow only the purchase of licenses (not vessels). In October 1981, the program was modified to allow the purchase of the license or the license and a promise not to participate in Washington fisheries for ten years (WDFW, 1991) . Prices were based on a set offer from the state.

In 1978, there were 3,291 ocean troll permits and 535 recreational charter permits. The number of troll and charter vessels purchased under the buyback program were as follows:

Number of permits bought back.

	1975-1978	1979	1980	1981	1982	1983	1984	1985	1986	Total
Troll	0	213	215	15	44	39	162	324	143	1,155
Charter	0	0	16	3	25	19	21	19	15	118

Since 1986 no funds have been available for this program. In 1987, due to the buyback program and attrition, there were 1,401 troll permits and 280 charter permits.

In 1994, the federal government declared a fishery disaster for West Coast salmon fisheries off northern California, Oregon, and Washington. Disaster relief funds were used to fund a buyback program in 1995 and 1996. In 1995, the lowest bids were purchased first and program rules prohibited acceptance of bids over $100,000. In 1996, offers to sell permits were ranked based on the salmon decline impact ratio. The salmon decline impact was calculated as the vessel's best year of salmon-related revenue from 1986 through 1991 minus the vessel's worst year of salmon related revenue from 1991 through 1995 multiplied by 2.5. The ratio was the permit holders offering price divided by the salmon decline impact. Maximum payments were limited to the lessor of the salmon decline impact and $75,000 in 1996. Those selling their permits had to agree not to purchase or operate a commercially licensed vessel in any of the fisheries under the buyback program for ten years beginning January 1, 1997. Over the two years of the program, $4.0 million was spent buying troll permits and $800,000 on recreational charter permits (WDFW, 1997). Washington gill net permits for Grays Harbor, Willapa Bay, and the Columbia River were also purchased. The following are the number of permits purchased in 1995 and 1996.

Number of permits bought back.

	1995	1996	Total
Ocean Troll	190	72	262
Charter	23	18	41

Following on the buyback program funded under the fishery disaster declaration, a second program was funded using a federal appropriation of disaster relief funds made in response to the 1996-1997 winter floods. The second program required state matching funds. In 1998, the Washington legislature appropriated $1.7 million as 25% matching funds. This most recent buyback program will cover Puget Sound fisheries in addition to the coastal and Columbia River fisheries covered under the 1995-1996 program. The new buyback program will pay the same amount for all permits.

2.2.2 Recreational Fisher Licensing

2.2.2.1 California

In California, anyone over the age of 16 participating in recreational fishing in ocean waters is required to have a license. However, no license is required for pier fishing in ocean waters, including, but not limited to, San Francisco and San Pablo Bays. Licenses may be lifetime, annual, or short term (10-day or daily). Recreational licenses in California fall into different classes. There are general fishing licenses covering all areas, ocean fishing licenses, and ocean finfish licenses. The annual licenses are general fishing licenses except that residents may acquire Pacific-Ocean-only licenses. In 1998, the annual licenses cost $27.05 for residents, $16 for resident Pacific-Ocean-only licenses and $73 for nonresidents (there is no nonresident Pacific-Ocean-only license). Ten-day nonresident general licenses can be acquired for $27.05 and one-day resident and nonresident general licenses for $9.70. One-day Pacific Ocean finfish only licenses run $6.05 for residents and nonresidents. For those fishing south of Point Arguello, an additional $0.50 must be paid for an ocean enhancement stamp. Salmon fishers in the ocean north of Point Delgada or in the Klamath

River system must also acquire salmon punch cards for $1.05. Lifetime permits can be acquired for fees which range from $300 to $495 depending on the age of the applicant. Reduced fee and free annual permits are available to disabled veterans and the elderly poor. Free licenses are available to those with mobility restricting disabilities, low-income American Indians, wards of the state residing in state hospitals, and certain developmentally disabled individuals (California, 1998)

2.2.2.2 Oregon

In Oregon, anyone recreational fishing over the age of 13 is required to have an Oregon fishing license with the exception of those taking smelt or shellfish and Washington residents fishing in the ocean under a Washington license between Cape Falcon, Oregon and Point Leadbetter, Washington. In 1998, annual licenses for residents were $20.50 for adults and $6.25 for juveniles age 14-17. The fee for an annual license for nonresidents is $48 for all ages required to have licenses. In addition to the general fishing license, salmon tags must be held for each salmon landed. These tags cost $10.50 each. Single-day and seven-day general fishing licenses include salmon tags and may be purchased for $8.75 and $34.25, respectively. For no charge or a small fee; the blind, wheelchair bound, disabled war veterans, senior citizens over 70 years old, and 50-year residents over 65 years old may acquire permanent licenses. Annual fishing licenses may also be purchased together with hunting privileges for $32.50 or as part of a $101 "Sportpak License" (ODFW, 1998).

2.2.2.3 Washington

For 1998, a Washington recreational fishing license is required for recreational fishing by any resident over the age of 14 and any nonresident. There are "Food Fish," "Game Fish," "Steelhead," and "Shellfish/Seaweed" licenses. A "Food Fish" license is required to fish for salmon. These licenses are $8.00 for residents and $20.00 for nonresidents. Catch record cards for salmon, halibut, and sturgeon are provided with the license. A maximum of 15 salmon may be landed on each salmon catch record card. Three- day licenses for residents and nonresidents are $5.00. A "Puget Sound Enhancement License" must be purchased to fish for any marine species in Puget Sound. Annual enhancement licenses run $10.00 and three-day enhancement licenses are $5.00. Beginning in 1999, the license structure will change, and there will be licenses for saltwater, freshwater, and shellfish/seawead. The charge for marine water licenses will be $18.00 for residents and $36.00 for nonresidents. Enhancement fees are included in the license fees. There are, and will be, reduced fee licenses for individuals over 70 and free licenses for certain handicapped, blind, developmentally, and otherwise disabled fishers. Washington recognizes Oregon fishing permits for anglers fishing in Washington waters when the fishing trips depart from and return to Oregon ports. There are no lifetime permits available in Washington (WDFW, 1998a and 1998b).

2.3 LANDINGS TAXES FOR COMMERCIAL SALMON

2.3.1 California

Fees for the landing of salmon are generally paid by the fish processor, but may be paid by the vessel if the vessel sells its fish under commercial fish receivers or a fish retailers licenses. The California fish and game code is silent on the treatment of take-home fish. Beginning in 1998, a policy was implemented to require that fish taken home for personal use be recorded on the official state fishticket of a commercial fish business, licensed fish receiver, or licensed fish retailer. These licensed fish recipients would then be responsible for paying the taxes. The landings fees total $0.05 per pound with $0.02 of the amount going to the state Salmon Council (a salmon marketing board) and the remainder going to CDFG. Fees must be paid on all salmon landed, included that taken by the commercial fishers for personal use. (Blakely, 1998)

2.3.2 Oregon

There are two components to landings fees for salmon landed in Oregon. One is an ad valorem fee of 3.15% of the landed value; the second is a $0.05 per-pound (round weight equivalent) surcharge that goes to the Fish Restoration and Enhancement Program. The processor pays the fee in most cases. The exception is for those fishermen who have limited salmon fish seller licenses (limited to 40 per year) who

sell directly to consumers from their vessel. They would submit fishtickets and pay the landings fee. (Note: the ad valorem rate for other species is 1.09%.) Fishers who wish to take salmon home must first sell it to a licensed fish receiver then buy it back at an agreed upon price (e.g., the exvessel price plus the fees paid by the processor [Carter, 1998]).

2.3.3 Washington

Excise taxes are paid on salmon by the first fish buyer. Washington legislation specifically authorized the buyer to deduct one half the excise tax from the price paid for the raw product. The excise tax is based on the value of the fish landed and is 0.0525% for chinook coho and chum salmon, and 0.0315% for pink and sockeye salmon (RCW 82.27). Fish taken home by the fishers are supposed to be recorded on fishtickets along with a zero price. Tickets are recorded as "Takehome," and no landings taxes are paid.

3.0 THE SALMON HARVEST AND HARVESTERS

3.1 ALASKA AND CANADA

West Coast salmon stocks are among those harvested in Alaska and Canadian salmon fisheries. The amount of fish available for harvest in PFMC management areas depends, in part, on harvest in Canada and Alaska. In turn, management of West Coast fisheries affects the amount of West Coast production and amount of fish available in these northern fisheries. For some chinook stocks, the impacts of PFMC fisheries are significant as well as those of Alaska and/or Canada (e.g., Stayton Pond fall chinook on the Columbia River, Table B-14). For other stocks the level of PFMC impacts rounds to zero and most of the impacts occur in Alaska and Canada (e.g., Queets fall fingerlings). Information on the impacts of fisheries in different areas, for example coho stocks, is provided in Table B-15. Production from Alaskan and Canadian commercial fisheries is discussed in Section 2 of this appendix.

3.2 WEST COAST INDIAN FISHERIES

West Coast harvest is allocated between Indian and non-Indian fishers in accordance with judicial interpretations of U. S. treaty obligations. These obligations are reviewed in Chapter 5 of the FMP. Tribal harvest is taken in commercial fisheries and in ceremonial and substance fisheries. This section covers tribes with federally recognized harvest rights. Not included are tribes that harvest salmon, but do not have federally recognized fishing rights, such as the Karuks on the Klamath River.

3.2.1 Tribal Ceremonial and Subsistence Fisheries

The amounts of salmon used for ceremonial and subsistence purposes are documented in Appendix B of the PFMC's annual *Review of Ocean Salmon Fisheries*.

The following reflects some of the tribal perspective on the cultural importance of salmon to tribes:

> The First Salmon Ceremony is general to tribes throughout Northwest Indian Country, from the Pacific Coast to Puget Sound to the Inland Northwest. It is a rite to ensure the continued return of salmon and it has been performed for thousands of years. The symbolic acts, attitudes of respect and reverence, and concern for the salmon reflect a conception of the interdependence and relatedness of all living things which is a dominant feature of Indian world view.
>
> The importance of the First Salmon Ceremony has to do with the celebration of life, of the salmon as subsistence. The annual celebration is an appreciation that the salmon are returning. It is the natural law; the cycle of life.
>
> As an example of ceremony, the Washat service, the longhouse and the Seven Drums are all part of the traditional religion of the Columbia River tribes. Before tribal celebrations, commemorative or memorial services, Washat prayers are offered. Water is the most essential part of all longhouse rituals and has a deep symbolic significance for tribal people. One of the most important services is the First Food Feast. This ceremony must occur before hunting, fishing, root digging, or gathering can take place. Salmon are also used in naming and burial ceremonies.
>
> Designated subsistence fisheries provide food for a fisherman's family, and often for many other tribal members. All of the subsistence fisheries count against the yearly tribal allocation of fish.

(Provided by Stuart Ellis, NWIFC)

3.2.1.1 Washington Coast and Puget Sound Tribes

Washington Coast-Ocean Fishery

Indian regulations have restricted ceremonial and subsistence harvest since 1983. Since 1989, treaty Indian troll regulations for the Quinault, Quileute, and Hoh tribes have restricted ceremonial and subsistence harvest to no more than two chinook over 24 inches per day per person with no limit on smaller fish. Since 1985, no more than eight fixed lines have been allowed per boat, with the additional restriction for the Makah tribe there be no more than four hand-held lines (PFMC, 1998).

Washington Coast-Inside Fisheries

There are ceremonial and subsistence fisheries in most drainages from the Grays Harbor system north. The Quinault Nation has ceremonial and subsistence fisheries in the Grays Harbor system and its tributaries as well as the Quinault and Queets River systems. The Hoh tribe has ceremonial and subsistence fisheries in the Hoh River system. The Quileute tribe has ceremonial and subsistence fisheries in the Quillayute River and its tributaries. The Makah tribe has ceremonial and subsistence fisheries in the Soooes River. These fisheries use primarily gill nets, but other gears can be used, as regulated by the tribe. These fisheries can occur at any time year round when harvestable fish are present. Tribes consider it desirable to have subsistence opportunity throughout the year. Catch limits on the fisheries are determined by the status of the individual run and are typically one or two fish per day of a certain size (Ellis, 1998).

Puget Sound

Regulations for the harvest of ceremonial and subsistence fish generally allow fishing year round. Under such regulations fishers are usually allowed to take one or two fish per day of a certain size. Harvest under these regulations tends to be more for substance purposes. Ceremonial salmon are generally taken in special fisheries that allow a certain number of salmon (e.g., 50) to be taken by a group for use in a particular ceremony (Ellis, 1998)

On the White River, the Muckleshoot have a traditional fish drive and ceremonial and subsistence hook-and-line fishing for spring chinook. There is a ceremonial and subsistence hook-and-line fishery for seniors to catch coho, chum, and steelhead.

3.2.1.2 Columbia River Tribes

Treaty Indian fisheries on the Columbia River are managed under the Columbia River Fish Management Plan adopted by the federal district court as part of its continuing jurisdiction under U.S. v. Oregon. The tribes adopt regulations for their fisheries. The states of Oregon and Washington also adopt fishing regulations for the tribal fisheries as part of the co-management process. The Nez Perce tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakima Indian Nation are the only tribes in the Columbia Basin to have adjudicated reserved rights to anadromous fish pursuant to 1,855 treaties with the United States. These are the tribes that are members of CRITFC. The Shoshone-Bannock tribe has asserted tribal fishing rights under a separate treaty. The Shoshone-Bannock Tribe harvests spring and summer chinook, on which the PFMC fisheries have little impact. The Coville and Spokane tribes have also asserted such rights, however, dams prevent salmon from returning to the usual and accustomed fishing areas for these tribes.

Subsistence fish are generally taken with dipnets, hoopnets, setnets, and hook-and-line gear from platforms primarily in the areas below the Dalles at Lone Pine and above Bonneville in the Cascade Locks area. Spears and gaffs are also used in specific tributary areas. Fish taken from platforms can be used personally or sold or traded to other Indians, but may not be sold or traded to non-Indians. The subsistence platform fishery is generally open year round, however the harvest is monitored and must remain within catch guidelines. Harvest controls of subsistence fisheries sometimes include restrictions on the amount of gear

used. Ceremonial and some subsistence fish are taken under tribal permits using gill nets in the spring and fall (Lumley, 1998; WDFW/ODFW, 1997).

3.2.1.3 Siletz Tribe

The Confederated Tribes of Siletz Indians have harvest rights agreed to in 1980 with the State of Oregon and the United States. These rights allow the harvest of 200 salmon for cultural fishery purposes only at sites on the Siletz River and its tributaries. Dipnets, spears, and gaffhooks are used in these fisheries at specific sites in October and November (Oregon, 1997).

3.2.1.4 Klamath River Basin Tribes

The Hoopa and Yurok tribes have federally recognized fishery rights on the Klamath River Basin. Members of the Karuk tribe also fish salmon in the basin. The following excerpt reflects one tribal perspective on the importance of salmon to the tribes:

> The Native People of the Klamath River Basin have depended on the salmon of the River since time immemorial. The awesome cyclical nature of the salmon's yearly migrations over the centuries influenced almost every aspect of their lives. Religion, lore, law, and technology all evolved from the Indian's relationship with the salmon and other fish of the Basin. The Supreme Court recognized the importance of salmon to the Northwest Tribes such as these, when it concluded that access to the fisheries was "not much less necessary to the existence of the Indians than the air they breathed." (Pierce, 1998)

Hoopa Valley and Yurok tribal subsistence and ceremonial fisheries are prosecuted under the regulatory authority of each respective tribe. Each respective tribe determines the level of fishing opportunity that will be provided to its respective tribal members based on estimates of preseason abundance.

Traditional fishing methods for salmon fishing have included the use of gill nets, dipnets, triggernets, spears, and communal fish dams. Currently the primary gears used are gill nets, dipnets, and triggernets. Construction of temporary communal fishing dams was at one time used to ensure adequate subsistence for all tribal members (Pierce, 1998). Such dams are still used on occasion (Orcutt, 1998). Fishing sites were, and to some extent still are, considered privately owned (Pierce, 1998). Indian fishers in the Klamath River fish steelhead from November through the spring, spring chinook as early as late March and April and continuing to mid-July and early August, fall chinook from July through November, and coho beginning in mid-September and peaking in October (Orcutt, 1998).

3.2.2 Tribal Commercial Fisheries

Historically, the tribal commercial fish harvest was exchanged through barter and trade. In the modern tribal commercial fishery, fish are generally sold to processors. Puget Sound, Washington coastal, and Columbia River Indian commercial fishery harvest of chinook, coho, and pink salmon, as recorded on state fishtickets is reported in (Tables B-16 through B-21). The fishticket data on which these tables are based do not include Klamath River Indian commercial harvest or direct sales by Indian fishers to consumers. It has been reported that on the Columbia River there are fairly substantial sales of Indian salmon directly to consumers.

3.2.2.1 Washington Coast-Ocean Troll Fishery

In the ocean fisheries along the Washington coast (Areas 2, 3, 3N, 4, and 4A), troll gear is used by the Quinault, Quileute, Hoh, and Makah tribes. In the ocean areas out to 200 miles, tribal regulations generally allow all-except-coho fisheries in May and June and all-salmon fisheries for portions of the summer, depending on stock abundance, since 1983. The duration of the summer all-salmon fisheries has varied from 12 days to 92 days with most years running between 20 days and 42 days. From 1977 through 1983, the seasons were open for all salmon from May through October.

In Area 4B, the Makah and S'Kallam tribes have troll fisheries. The Area 4B Indian troll fisheries are considered part of the ocean fisheries from May through October. The Area 4B fisheries generally ran for more than 300 days through 1990 and were open for all salmon species. Chinook-only openings became a regular feature of the fishery beginning in 1991 (May and June of each year). In the mid 1990s ocean fisheries were reduced due to stock status. The precice timing of fisheries is variable and is determined each year in responce to the status of various stocks. Beginning in 1995, chinook-only fishing regulations dominated the season with coho retention allowed only in August, September, and December. All Area 4B catch is counted as ocean catch in Tables B-16 through B-21.

3.2.2.2 Washington Coast-Inside Fisheries

In Grays Harbor, the Quinault Nation fishes primarily with gill nets on fall chinook and coho in late summer through early winter. Additionally, the Chehalis Tribe uses gill nets to take fall chinook that pass through its reservation.

On the Quinault and Queets Rivers, the Quinault Nation fishes primarily with gill nets on spring, summer, and fall chinook, chum, sockeye, and coho. The fisheries generally occur in spring through early winter.

The Hoh tribe on the Hoh River and the Quileute tribe on the Quillayute River take coho and spring, summer, and fall chinook in commercial gill net fisheries. These fisheries typically occur in spring through early winter.

The precise timing and harvest levels of these fisheries vary and are determined by the status of the stocks and through agreements with the State of Washington.

3.2.2.3 Puget Sound Area-Strait of Juan de Fuca

In Puget Sound, the Strait of Juan de Fuca, Hood Canal, and related terminal areas, the primary means of harvest by Indian fishers are drift gill net, marine setnet, stakenet, purse seine, troll, and beach seine. Gears typically vary by tribe and location. In the Strait of Juan de Fuca the primary species targeted are sockeye, coho, chum, chinook, and pink salmon. In the north Puget Sound, the primary species targeted are sockeye, chum, and pink salmon. In central Puget Sound, south Puget Sound, and the Hood Canal the primary target species are coho, chum, and chinook. The tribes fish in Puget Sound primarily from summer through late fall, but in the Strait of Juan de Fuca fisheries can extend through the winter months. In freshwater and terminal areas, fisheries can occur in any month year round when harvestable salmon are present. Timing and duration of fisheries change according to the status of impacted stocks. In some cases fisheries change according to inseason updates. Each tribe regulates its fisheries, including allowable gears and locations, individually within its usual and accustomed area. In many cases these areas partially overlap the usual and accustomed areas of other tribes, and a coordinated management approach is dictated. A detailed listing of agreed to treaty and non-treaty fisheries including dates, areas, and target species is published annually by the NWIFC and the WDFW.

3.2.2.4 Columbia River Tribal Fisheries

Prior to 1957, the primary Indian fishery occurring in Zone 6 (the area from above Bonneville Dam to McNary Dam) was the Indian platform-dipnet fishery located at Celilo Falls. This area was permanently inundated in 1957 by the Dalles Dam and fishing switched to other gears and areas regulated under tribal authority. The Columbia River Fish Management Plan establishes commercial fisheries in Zone 6 exclusively for the Indians. The treaty Indian commercial fishery is now conducted primarily with set gill nets in the main stem of the Columbia. In recent years, treaty Indian commercial seasons in Zone 6 above Bonneville Dam have opened in February and March, then again from mid-August through mid-October. The current tribal February-March fishery is primarily for sturgeon and steelhead (WDFW/ODFW, 1997). In the fall fishery, fall chinook and steelhead dominate the catch, however, the catch can include substantial numbers of

sturgeon and coho. In recent years, the sale of sturgeon during fall commercial fisheries has been prohibited. Gill net mesh size regulations, time of the fishery, and zoning have been used to keep wild steelhead harvest rates down and to increase escapement of some runs (Columbia River Compact, 1998).

Falling processor/wholesale prices for commercially caught salmon have spurred efforts by Columbia River tribes to increase their direct sales to the public. These direct sales to the public are included in catch estimates, but not reported on the state fishtickets used to produce Tables B-16 through B-21. In the 1980s, over $2.00 per pound was received for bright fall chinook. In 1996, the wholesale price was only about $0.30 per pound. In 1996 about one-third of the commercial fall chinook harvest and one-half of the steelhead harvest went home with the tribal fishers or was sold to the general public. The estimated total value of sales to the general public is $330,000 (WDFW/ODFW, 1997). Part way through 1997, it was reported about half the Indian chinook caught were sold to the public at an average price of about $1.75 per pound. On this basis it was estimated that total sales would run about $1,375. If the 1996 price to buyers/processors had been received, the total sale value would have been only about $585,000 (CRITFC, 1998).

3.2.2.5 Klamath River Basin Tribal Fisheries

Since the late 1980s, Yurok and Hoopa Valley tribal commercial fisheries have been prosecuted under the regulatory authority of each respective tribe. From 1934-1976, there were no Indian commercial or subsistence fisheries on the lower 20 miles of the Klamath River. In 1977, the Bureau of Indian Affairs (BIA) reopened the fishery for one year. It was then closed again until restablished in 1987 pursuant to the settlement of People v. McCovey. Members of the Hoopa Valley and Yurok tribes participated in commercial harvests of fall chinook in 1987, 1988, 1989, and 1996 (PFMC, 1998 and Pierce, 1998). The Hoopa Valley tribe also had some minor commercial fisheries in 1990 and 1991 (Orcutt, 1998). There have been some commercial test fisheries on spring chinook. Gill nets are the primary gears used in the commercial fisheries. There was no commercial Indian gill net fishery in the Klamath River in 1997. The 1996 Yurok harvest was 43,277 chinook. The value at first sale for the harvest is estimated at $525,000. The average weight of fish landed was 13.5 pounds. The 1989 Yurok harvest of 27,504 chinook had an average weight of 15.4 pounds and was sold for $852,000 (the equivalent of $1.1 million in 1997 dollars; PFMC, 1998).

3.3 All Citizens Commercial Fisheries

3.3.1 Ocean Troll Fishery

In the ocean fishery only salmon taken with commercial troll gear may be retained and sold. Salmon taken under special permits in the trawl whiting fishery may be retained for donation to charity, but may not be sold.

Season maps reveal increasing restrictions in the ocean troll fisheries (Tables B-22 through B-26). Some of the major changes in seasons in recent years as compared to the 1980s include the elimination of coho fishing south of Cape Falcon and increasing closures in the Klamath management zone (KMZ). Season maps for recent years also show increasing closures in the south of Cape Falcon fisheries close to the KMZ as compared to those further away. North of Cape Falcon, the change in season durations is not very apparent when season maps are compared, however, season length has decreased by close to 50%, comparing the last three years to 1981-1988.

The following discussion and accompanying tables refer to the non-Indian commercial troll fishery in PFMC management areas and associated state territorial ocean area waters.

3.3.1.1 Trends in Aggregate Harvest Volume and Value

The total value of the ocean commercial salmon harvest is affected by trends in prices, number of salmon caught, and average weight of salmon caught. In general, the value of commercial harvest has been at depressed levels for most of the 1990s (Figure B-13 and Table B-27). Fishing opportunity in the ocean commercial salmon fisheries has declined resulting in decreased harvests, both in terms of total number of

fish harvested and pounds of harvest (Figure B-14 and Tables B-16, B-18, and B-20). At the same time exvessel prices have been on a downward trend. Average weight per fish has varied (Table B-28). In the most recent five years (1993-1997) total exvessel value has averaged about $10.3 million, adjusted for inflation. This is 79% below the 1976-1992 average of $48.5 million and below the depressed values associated with the 1983-1984 *El Niño* years.

3.3.1.2 Geographic Distribution of Harvest

By State

The 1997 California commercial troll catch was 64% below its 1976-1996 average exvessel value, the 1997 value for the Oregon commercial troll catch was 81% below the 1976-1996 average, and the 1997 value for the Washington non-Indian ocean commercial troll catch was 98% below the 1976-1996 average (all values adjusted for inflation, Tables B-29, B-30, and B-31).

By Management Area and Community

In the 1990s, due to declining fisheries in the north, there has been southward shift in harvest concentration by area of harvest (Table B-27).

In 1997, about 75% of the coastwide chinook harvest (by weight) was landed in California, from the San Francisco area south, as compared to 59% in 1996 (Table B-32, B-33, and B-34). Landings in the San Francisco and Monterey areas increased substantially from 1996 levels while decreases were observed in Crescent City, Eureka, and Fort Bragg. In Oregon, chinook landings were down coastwide (by weight), with the bulk of the landings continuing to come into Newport. In Washington, there are generally some small landings of chinook from other areas of the coast every year. However, 1997 was the first year in which there was a chinook directed non-Indian commercial troll fishery of some significance since 1993. The amounts landed were substantially below the levels of previous chinook fisheries (nearly 80% below the 1993 landings). Coho have not been landed south of Cape Falcon in any significant quantities since 1992.

3.3.1.3 The Ocean Troll Fleet

Numbers of Participants

Coastwide, 1,286 vessels participated in the 1997 salmon troll fishery, down about 14% to from 1996 and about 75% below the average number of vessels participating from 1986-1990.[9/] The active fleet in Oregon decreased by 22 vessels (five percent), the active fleet in Washington decreased by 39 vessels (43%), and the active fleet in California decreased by 153 vessels (16%), all comparisons to 1996. Coastwide, the number of salmon limited entry permits issued decreased by 254 (six percent) to 3,678 permits. From 1995 to 1997, a federally funded permit buyback program purchased 262 Washington troll licenses and delivery permits. There had been 667 Washington non-Indian ocean troll permits issued in 1993, and 323 such permits were issued in 1997. Thirty-six percent of all permits made salmon landings in 1997 (Tables B-35).

Average Vessel Harvest and Concentration of Harvest

Average per vessel exvessel value increased 29% in 1997, as compared to 1996 (adjusted for inflation), to approximately $7,700. Per vessel average exvessel values increased in California and Washington, while decreasing in Oregon (Table B-35). The averages are generally at the higher end of the typical range seen over the last 15 years. However, caution needs to be exercised in interpreting the average. The averages may increase as much from small producers dropping out at a higher rate relative to larger producers as from an increase in revenue earned by remaining vessels.

9/ Based on state fishtickets submitted to Pacific Fishery Information Network (PacFIN). The vessel counts listed in Table B-35 sum to more than 1,286 vessels, because of the double counting of vessels participating in more than one state.

Geographic Distribution of Participants

In recent years the majority of the commercial salmon fleet participated in fisheries south of Point Arena, California. The other area in which harvesters concentrate is off the central Oregon coast (Cape Falcon to Cape Blanco). Restricted seasons have resulted in more dramatic declines in the numbers of vessels participating in other areas (Table B-36).

Bycatch in the Salmon Troll Fishery

Salmon fishers may retain any species of fish caught on their gear, subject to the harvest limits governing those species, except steelhead and halibut. For halibut, regulations have been established to allow salmon trollers to choose between participation in a directed halibut fishery or taking halibut as bycatch in the ocean troll fishery. Retained bycatch rates for halibut taken in the troll fishery are subject to a ratio limit that specifies a number of salmon which must be harvested for every halibut taken as bycatch. For most other species, troll vessels do not typically have bycatch that exceed the landing limits for those species.

3.3.1.4 Other Ocean Fisheries Taking Salmon as Bycatch

Trawlers are the primary group encountering salmon as bycatch. Other groundfish and shrimp trawl gear types do not have substantial salmon bycatch (NMFS, 1992). In 1992, NMFS estimated that 6,000 to 9,000 chinook would be taken annually in the bottom trawl fishery and a comparable number in the midwater trawl fishery. Trawl vessels participating under special permits in the whiting fishery are allowed to land salmon bycatch, however, this bycatch may not be sold and is donated to food charities. These bycatch levels will have changed with declining groundfish harvests and declining salmon abundance. In the Eureka and Monterey areas, salmon bycatch in the whiting fishery declined from between about 3,000 and 6,000 fish from 1988 to 1991 to 100 or less in 1992 and 1993 (PFMC, 1994).

3.3.2 Inside Commercial Fisheries

Inside commercial fisheries occur in Puget Sound, the Washington Coast (Grays Harbor and Willapa Bay), and the Columbia River. Gill nets are used in Grays Harbor, Willapa Bay, and the Columbia River. In Puget Sound, gill nets and purse sein and reef nets are used in the non-Indian commercial fisheries. Total non-Indian salmon revenue from these fisheries is provided in Table B-27. Numbers of vessels participating in these fisheries is provided in Table B-36.

3.4 ALL CITIZEN FISHERIES RECREATIONAL FISHERIES

Season maps reveal increasing restrictions in the ocean recreational fisheries (Tables B-37 though B-41). In the recent period the seasons in northern areas have been reduced substantially more than in southern areas. For the north of Cape Falcon area, the 1984 and 1988 example years do not illustrate well the range of seasons observed during early and mid 1980s. The number of days in the 1984 and 1988 seasons are within the range and below the average for the 1993 through 1997 period, with the exception of Neah Bay. However, in the 1993 through 1997 recent period the average season durations have declined between one third and two thirds compared to 1981 through 1988.[10/]

3.4.1 Ocean

Ocean recreational anglers use poles and generally troll or mooch for salmon from vessels. Recreational salmon fishing takes place primarily in one of two modes, (1) anglers fishing from privately owned pleasure crafts and (2) anglers employing the services of the charter boat fleet. In general, success rates on charter

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10/ Off Neah Bay, Area 4B is considered part of the ocean area when ocean fisheries are open, but is managed under separate state regulations when the ocean fishery is closed. State managed seasons provided to Area 4B are not reflected in this discussion.

vessels tend to be higher than success rates on private vessels. In marine areas, there are small amounts of shore based effort directed toward salmon, primarily fishing occurring off jetties and piers.

3.4.1.1 Harvest and Effort

In general, the recreational fishery has tended to have a more stable harvest than the troll fishery (in both absolute and relative terms); the majority of the annual variation in available ocean harvest is usually taken up in the troll fishery (Figures B-14 and B-15). However, like the troll fishery, the recreational fishery has suffered substantial declines in recent years, the effects of which are amplified when specific geographic areas are considered.

From 1979 through 1990, total angler effort on the West Coast ranged from about 500,000 to 750,000 trips. After a decline from 1990 to 1992, total angler effort appears to have leveled off with effort in four out of the last six years of between about 300,000 and 400,000 trips.

Number of West Coast charter and private vessel recreational angler trips (thousands).

	'81-'85	'86-'90	'79	'80	'81	'82	'83	'84	'85	'86'	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97
Chart	217	206	373	342	289	255	222	116	201	188	220	197	227	199	153	116	120	74	175	106	119
Priv	336	389	363	384	381	361	340	241	355	304	406	366	409	459	347	272	245	143	287	203	173
TOT	552	595	736	726	670	616	562	357	556	492	625	563	636	658	500	388	364	217	462	308	292

From 1983-1996 the proportion of trips taken on charter vessels varied between 30% and 40%. In 1997 and prior to 1983, more than 40% of the trips were taken on charter vessels.

3.4.1.2 Geographic Distribution

Effort in California has remained relatively high compared to historic levels while season restrictions have caused declines in effort in Oregon and Washington (Figure B-16). The areas of the coast experiencing the greatest reduction are north of Cape Falcon and the KMZ. The reduction in seasons on the central Oregon coast has not been as severe as in the areas directly to the north and south, however, the prohibition of coho retention has significantly reduced angler retained catch rates.

The proportion of trips taken on charter vessels has declined in Washington and Oregon, while remaining relatively stable in California (Figure B-16).

3.4.1.3 The Charter Vessel Fleet

The historic charter vessel counts available for each state are different in terms of what is counted. The count for Washington is a count of charter vessels licensed for salmon (including vessels that operate in Puget Sound), the count for Oregon is a count of all ocean recreational charter vessel regardless of whether or not they target on salmon in a particular year, the count for California is a count of only those vessels that are licensed and participate in the ocean salmon fishery each year (Table B-43).

An attempt was made to characterize the recent charter fleet by area based on information obtained from state sampling programs and the California commercial passenger fishing vessel (CPFV) logbooks. The information provided for each state is for a different recent period.

In central and northern California, 92 charter vessels fished for salmon, rockfish/lingcod, nearshore species, and offshore species in the 1995-1997 period. Tables B-44 and B-45 show the various targeting strategies of charter vessels by region. Over 85% of the charter vessels in central and northern California target on salmon. In central California, 50% of the trips targeted on salmon and in northern California, 40% of the trips targeted on salmon.

In Oregon, 83 charter vessels operated in 1998. Table B-46 shows the various targeting strategies of charter vessels. Vessels which land salmon predominate the charter vessel fleet in Astoria and Newport.

Those with a strategy that includes bottomfish predominate in Garibaldi and Depoe Bay. Brookings vessels combine salmon and bottom fish while Gold Beach vessels target only on salmon.

In Washington, a total of 70 charter vessels operated in 1995-1996 out of 3 major ports: Ilwaco, Neah Bay, and Westport. The most common fishing strategy is fishing for a combination of salmon, bottomfish, halibut, and tuna. Table B-47 shows the different strategies by charter vessels by port.

3.4.2 Inside

The same stocks caught in the ocean are also subject to recreational harvest in inside marine and freshwater salmon fisheries. These fisheries occur in estuaries and rivers along the coast and Puget Sound as well as major river basins such as the Columbia, Klamath, and Sacramento River Basins. In addition to the West Coast states, some freshwater salmon fishing occurs in Idaho. Two of the larger inside marine recreational fisheries for salmon are those in Puget Sound and the Columbia River estuary (Table B-48).

4.0 PROCESSORS/BUYERS

A relatively small number of large processor/buyer firms handle most of the ocean salmon catch on the West Coast. There were 1,927 firms with state processor/buyer licenses for the period of this descriptive analysis (1995-1997).[11/] These firms include both operators of processing plants and buyers that may do little more than hold the fish prior to their shipment to a processor or market. In some cases, the buyers may be owners of vessels who also own licenses allowing them to sell fish directly to the public or retail markets. Of these processor/buyers (here after referred to as "buyers"), 442 received salmon from the West Coast Indian and non-Indian ocean troll fisheries (including vessels that acted as "buyers," receiving the fish from themselves, Table B-49). The top 24 state licensed buyer firms each received over $3,000,000 worth of fish (exvessel value) from West Coast fisheries. These 24 firms handled 50% of the exvessel value of all West Coast fishery landings and 50% of the exvessel value of all landings of ocean caught salmon. Top ocean caught salmon buying firms include some firms that are not among the top fish buyers when all species are counted. The top 5% of the salmon buying firms (top 22 firms) buy 73% of all ocean caught salmon in terms of exvessel value. The bottom 80% of these firms buy 6.4% of all ocean caught salmon (Table B-50). Larger processing firms are more likely to handle ocean caught salmon than smaller firms. Of the top 24 fish buyers (all species) 80% handled salmon (19 of 24). The proportion of smaller buyers handling salmon was substantially less, about 20% for buyers purchasing less than $500,000 of product (Table B-51).

There are many small buyers that specialize in salmon, only handle small amounts of product, and receive product from two or fewer vessels. Ocean caught salmon comprised more than 95% of all purchases for about 25% of all salmon buyers. The vast majority of those expending more than 95% of their fish purchases on salmon are small operations handling less than $10,000 exvessel value (Table B-49). It is likely that most of these buyers are vessels that also have licenses allowing them to sell directly to the public or other retail outlets (e.g., restaurants). Sixty-three percent of all buyers of ocean caught salmon received deliveries from an average of two or fewer vessels and handled 4.1% of the exvessel value of the ocean catch (Table B-52). Four percent of all such buyers received deliveries from over 64 vessels and handled 65% of the exvessel value of all ocean caught salmon.

Most larger salmon buying firms acquire fish from sites in more than one port (Table B-53). The largest salmon buyers tend buy salmon from over 64 vessels landing and buy fish in 4-8 ports. Of the 199 processors that bought fish in only one port, 174 received salmon from only one or two vessels (Table B-54). Instances where a buyer purchases from one to two vessels, but buys fish at over eight ports, are explained as either large firms with buying stations in multiple ports that acquire only a few salmon at one or two of their locations, or as vessels with buyer licenses that take fish to different ports to sell.

11/ This estimate was developed using cross ownership of processing plant information from Radtke and Davis (1997) and an exact match of names from processor/buyer license files containing 15,611 records (individual person names were excluded from the match). Ownership of processing plants changes frequently, therefore, analysis based on ownership information collected at a point in time may not be applicable over a longer period of time. The results presented here should be considered an approximation for the period of the descriptive analysis (1995-1997). Exact name matches will tend to miss matches between licenses held by the same firm when the firm's name differs between the license records due to typographical errors or data entry choices (e.g., entering "&" or "and"). It is also likely that Radtke and Davis (1997) did not detect all instances of cross ownership between firms with different names. For these reasons, the actual number of processors/buyers is likely to be lower, and the concentration of processing/buying activities greater than represented in this analysis.

5.0 WEST COAST HATCHERIES AND SALMON AQUACULTURE

5.1 HATCHERIES

Hatchery production plays a significant role in West Coast salmon management. Fish are released from hatcheries to rear in the ocean and return to be harvested by recreational and commercial fishers. Many of the hatchery programs were created to mitigate for lost production due to the construction of dams. The mass marking of hatchery salmon to allow harvesters to retain hatchery salmon and release wild salmon is one of the most recent developments in salmon management and one of the subjects of Amendment 14 to the salmon FMP.

5.2 RANCHING

Salmon ranching is an acquaculture practice similar to that of hatcheries except that fish are harvested when they return to the hatcheries rather than in fisheries. Salmon ranching has not proven to be an economically successful way of producing salmon.

5.3 PENS

Salmon pens are used to produce fish directly for food markets, for enhancement of fisheries, and for preservation of genetic material for endangered species. Pen culture depends on hatcheries for rearing stock. Salmon reared in pens are never released to the wild. In Puget Sound about six million pounds a year of Atlantic salmon have been produced for direct marketing for the last three or four years. Salmon are raised in pens to enhance commercial fisheries in Willapa Bay and at two locations in the Columbia River estuary. Pen operations to preserve the genetic material of endangered species are occurring in south Puget Sound (for White River spring chinook).

6.0 COMMUNITIES

Communities are affected by most aspects of salmon harvest and management. Fishers, processors, association employees, fishery managers, fishery data collectors, and hatchery workers live and spend money in communities which, because of the presence of these individuals, are in one manner or another and to varying degrees, dependent on the salmon fishery. Most general economic data available on ports is county level data. Table B-55 lists ports in which salmon were landed from 1995-1997 and the corresponding county.

6.1 LOCAL LEVEL COMMERCIAL AND RECREATIONAL FISHERY DATA

Information on commercial harvest by port area is provided in Tables B-32 through B-34. Numbers of vessels landing salmon and total number of vessels landing by county are provided in Table B-56. Recreational effort levels for charter and private vessel salmon trips is provided by port area in Tables B-57 through B-59. Charter vessel counts by port area (geographic region for California) are provided in Tables B-43 through B-47.

6.2 INCOME IMPACTS

Coastal community impacts are presented in order to address concerns about the effects of regulations on local economies and small businesses. Income impact estimates per commercial pound and per recreational day were generated using the Fishery Economic Assessment Model. Reference information on the model is available from PFMC.

6.2.1 Interpretation of State and Coastal Community Income Impacts

Estimated state and community income impacts of commercial and recreational ocean salmon fisheries and selected state-managed fisheries are shown in Tables B-60 through B-62. The impacts presented are estimates of total personal income associated with activity in the commercial and recreational salmon fisheries in counties and states. Income impact estimates are based on the landings in the area, an inventory of the fleet and processors, estimates of fleet and processor expenditures, surveys of the expenditure patterns of recreational fishers, and income coefficients from the U.S. Forest Service IMPLAN model. Commercial ocean harvest not landed in the coastal areas (e.g., landed in Puget Sound ports) is not included in the estimates of coastal community impacts, but is included in the estimate of state impacts.

The numbers presented here are estimates of annual trends and the possible redirection of money between nonfishing-dependent and fishing-dependent sectors; they are likely an upper bounds on the local community and state income impacts which may have been generated by West Coast ocean salmon fisheries as well as some selected inside fisheries. All income impact estimates in this review are reported in real (inflation adjusted) 1997 dollars.

6.2.2 West Coast Ocean Fishery Income Impacts

From 1976-1996 the total state level income impact associated with the recreational and troll ocean fisheries for all three states combined averaged $138.1 million (adjusted for inflation). In 1997 state level impacts were $50.5 million, up five percent compared to 1996, but still 63% below the 1976-1996 average (adjusted for inflation). State level income impacts related to the commercial troll fishery were up nine percent compared to 1996, but were still 73% below the 1976-1996 average; and those impacts related to the recreational fishery were up one percent, but were 45% below the 1976-1996 average (all comparisons are adjusted for inflation). These coastwide values, while low compared to historic averages, do not reveal the greater reductions which have occurred in particular communities such as those in the KMZ (Eureka, Crescent City, and Brookings) and north of Cape Falcon (Astoria, Ilwaco, Westport, La Push, and Neah Bay).

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TABLE B-1. Price index and Canadian to U.S. dollar exchange rate.[a/]

Year	Price Index	$Candian: $U.S.[b/]
1960	20.7	
1961	20.9	
1962	21.2	
1963	21.5	
1964	21.8	
1965	22.2	
1966	22.8	
1967	23.6	
1968	24.6	
1969	25.7	
1970	27.1	
1971	28.5	
1972	29.7	
1973	31.4	
1974	34.2	
1975	37.4	
1976	39.6	
1977	42.2	
1978	45.3	
1979	49.1	
1980	53.7	
1981	58.7	1.19
1982	62.4	1.23
1983	65.1	1.24
1984	67.5	1.32
1985	69.9	1.40
1986	71.7	1.39
1987	73.9	1.33
1988	76.6	1.23
1989	79.8	1.18
1990	83.3	1.17
1991	86.6	1.15
1992	89.0	1.21
1993	91.3	1.29
1994	93.5	1.35
1995	95.9	1.37
1996	98.1	1.36
1997	100.0	1.38

a/ Based on gross domestic product implicit price deflator.

b/ Rates for 1981 through 1984 from *World Currency Yearbook* published by International Currency Analysis, rates for 1986 through 1997 from U.S. Bank, July 6, 1998.

TABLE B-2. North American commercial **chinook** salmon landings (pounds and value) by major harvest area, 1981-1997.

Year	Puget Sound	Inside Washington Coast	Columbia River	West Coast Ocean	U.S. West Coast Total[a/]	Alaska[b/c/]	U.S. Total	Canada[d/]	North America Total
				Thousands of Round Pounds					
1981	3,016	759	1,748	9,600	15,124	15,738	30,862	N/A	30,862
1982	2,988	722	3,051	13,143	19,905	16,904	36,809	N/A	36,809
1983	2,235	324	1,049	4,045	7,654	15,684	23,338	10,440	33,778
1984	2,731	353	2,069	3,859	9,012	12,524	21,536	12,120	33,656
1985	3,315	543	2,661	8,127	14,647	13,477	28,124	10,670	38,794
1986	2,916	664	4,764	13,012	21,356	11,712	33,068	9,750	42,818
1987	2,639	1,250	9,087	17,348	30,325	13,282	43,607	10,040	53,647
1988	2,392	1,610	10,617	23,022	37,642	10,913	48,555	11,330	59,885
1989	2,555	2,006	6,363	11,428	22,351	11,314	33,666	10,230	43,896
1990	2,896	1,365	3,291	8,043	15,596	11,482	27,078	10,120	37,198
1991	1,571	1,146	2,169	5,126	10,013	10,728	20,741	9,890	30,631
1992	1,160	1,290	1,108	3,873	7,431	10,763	18,194	10,220	28,414
1993	926	1,087	896	4,453	7,362	11,070	18,432	9,300	27,732
1994	1,127	912	766	3,970	6,775	11,790	18,565	6,880	25,445
1995	890	932	613	9,989	12,424	12,862	25,286	2,910	28,196
1996	903	1,074	1,030	7,064	10,071	9,350	19,421	990	20,411
1997	1,077	613	958	8,027	10,675	11,580	22,255	N/A	N/A
				Nominal Exvessel Value (Thousands of U.S. Dollars)					
1981	5,124	1,156	1,853	21,626	29,759	23,700	53,459	N/A	53,459
1982	4,898	867	2,731	29,550	38,046	27,000	65,046	N/A	65,046
1983	2,474	397	1,167	7,092	11,130	18,200	29,330	8,392	37,722
1984	4,741	518	2,767	9,320	17,347	21,800	39,147	9,175	48,322
1985	4,306	453	2,871	17,931	25,561	20,800	46,361	7,638	53,999
1986	3,466	494	4,203	22,113	30,276	17,800	48,076	14,151	62,227
1987	4,309	1,877	13,449	41,123	60,758	26,800	87,558	23,029	110,587
1988	5,324	2,885	20,621	58,894	87,724	29,600	117,324	35,595	152,920
1989	2,655	1,670	5,392	23,085	32,801	20,848	53,650	17,034	70,684
1990	3,724	1,655	4,788	18,802	28,969	21,526	50,495	17,557	68,051
1991	1,732	1,376	2,525	11,323	16,957	22,167	39,124	17,145	56,269
1992	1,418	1,651	1,379	8,580	13,028	24,579	37,607	20,238	57,845
1993	914	1,082	724	8,543	11,262	18,037	29,299	11,314	40,614
1994	1,270	1,161	663	7,257	10,352	15,800	26,152	9,660	35,811
1995	777	851	231	15,158	17,017	18,021	35,038	3,753	38,791
1996	756	906	355	9,094	11,111	13,350	24,461	895	25,356
1997	944	589	476	9,991	12,001	17,990	29,991	N/A	N/A

a/ All West Coast data are derived from PacFIN vessel summary files.
b/ Alaska values for 1996 and 1997 are preliminary.
c/ Historic data are from the Salmon Market Information Service (1994), and preliminary data are from the Alaska Department of Fish and Game Blue Sheet.
d/ Canadian data from Canadian Department of Fisheries and Oceans web page.

TABLE B-3. North American commercial **coho** salmon landings (pounds and value) by major harvest area, 1981-1997.

Year	Puget Sound	Inside Washington Coast	Columbia River	West Coast Ocean	U.S. West Coast Total[a/]	Alaska[b/c/]	U.S. Total	Canada[d/]	North America Total
				Thousands of Round Pounds					
1981	4,267	765	477	6,407	11,916	25,847	37,763	N/A	N/A
1982	7,621	1,399	1,604	6,142	16,766	46,541	63,307	N/A	N/A
1983	5,059	286	48	1,907	7,300	26,793	34,093	20,230	54,323
1984	4,062	851	1,619	879	7,411	44,515	51,926	19,360	71,286
1985	7,524	648	1,674	1,956	11,802	47,263	59,065	17,570	76,635
1986	7,848	1,838	6,927	3,195	19,808	46,603	66,411	25,720	92,131
1987	9,976	1,592	1,314	3,181	16,064	25,312	41,376	16,220	57,596
1988	6,582	869	2,721	4,555	14,728	35,455	50,183	13,570	63,753
1989	5,602	938	2,710	3,347	12,597	33,177	45,774	16,980	62,754
1990	6,320	1,091	512	2,262	10,184	40,022	50,206	20,330	70,536
1991	3,277	2,319	2,752	2,899	11,246	43,827	55,073	19,250	74,323
1992	1,918	379	305	640	3,242	53,759	57,002	14,040	71,042
1993	763	491	275	404	1,932	36,620	38,553	8,300	46,853
1994	2,414	315	520	0	3,249	75,241	78,490	14,910	93,400
1995	1,582	1,020	200	296	3,097	47,239	50,336	9,260	59,596
1996	772	1,533	235	189	2,729	46,420	49,149	7,380	56,529
1997	630	115	162	65	972	22,830	23,802	N/A	N/A
				Nominal Exvessel Value (Thousands of U.S. Dollars)					
1981	4,930	862	525	8,996	15,313	23,700	39,013	N/A	N/A
1982	6,421	1,097	1,379	7,492	16,390	40,000	56,390	N/A	N/A
1983	4,413	308	51	1,680	6,451	16,200	22,651	16,262	38,913
1984	4,095	1,017	1,871	1,308	8,291	42,700	50,991	14,656	65,647
1985	6,621	456	1,392	2,310	10,780	42,600	53,380	12,577	65,957
1986	8,394	1,809	6,870	2,979	20,052	42,000	62,052	28,259	90,311
1987	18,614	3,059	2,501	4,803	28,976	28,800	57,776	25,458	83,234
1988	14,997	1,770	5,974	9,088	31,828	61,800	93,628	30,630	124,258
1989	5,719	972	2,409	3,367	12,466	27,091	39,558	16,341	55,899
1990	8,180	1,438	612	3,128	13,357	40,413	53,769	24,063	77,833
1991	2,846	1,850	2,194	2,790	9,679	34,527	44,207	22,060	66,267
1992	1,922	335	275	688	3,220	49,350	52,570	17,060	69,630
1993	620	419	223	376	1,638	32,454	34,092	8,461	42,552
1994	1,776	267	423	0	2,466	66,252	68,718	15,677	84,395
1995	964	610	123	215	1,912	29,519	31,431	9,269	40,700
1996	398	897	144	148	1,586	N/A	N/A	7,042	8,628
1997	394	89	118	56	658	N/A	N/A	N/A	N/A

a/ All West Coast data are derived from PacFIN vessel summary files.
b/ Alaska values for 1996 and 1997 are preliminary.
c/ Historic data are from the Salmon Market Information Service (1994), and preliminary data are from the Alaska Department of Fish and Game Blue Sheet.
d/ Canadian data from Canadian Department of Fisheries and Oceans web page.

TABLE B-4. North American commercial **pink** salmon landings (pounds and value) by major harvest area, 1981-1997.

Year	Puget Sound	Inside Washington Coast	Columbia River	West Coast Ocean	U.S. West Coast Total[a/]	Alaska[b/c/]	U.S. Total	Canada[d/]	North America Total
				Thousands of Round Pounds					
1981	18,834	0	0	1,481	20,314	244,970	265,285	N/A	N/A
1982	0	0	0	0	1	219,149	219,150	N/A	N/A
1983	7,958	0	0	448	8,407	194,083	202,489	85,370	287,859
1984	0	0	0	0	0	276,684	276,684	25,780	302,464
1985	21,437	0	0	968	22,405	304,261	326,666	80,570	407,236
1986	0	0	0	0	1	259,257	259,258	64,520	323,778
1987	9,518	0	0	198	9,716	164,813	174,529	57,020	231,549
1988	0	0	0	0	1	177,904	177,904	69,370	247,274
1989	14,962	0	0	247	15,208	331,469	346,677	65,240	411,917
1990	1	0	0	0	2	271,909	271,911	56,470	328,381
1991	13,313	0	0	198	13,512	338,845	352,357	75,240	427,597
1992	1	0	0	0	1	203,402	203,402	32,110	235,512
1993	8,150	0	0	23	8,173	335,233	343,406	33,790	377,196
1994	1	0	0	0	1	364,683	364,684	7,220	371,904
1995	10,009	0	0	169	10,179	431,701	441,880	41,510	483,390
1996	0	0	0	0	1	325,160	325,161	18,080	343,240
1997	7,057	0	0	7	7,064	271,530	285,658	N/A	N/A
				Nominal Exvessel Value (Thousands of U.S. Dollars)					
1981	8,779	0	0	973	9,753	106,000	115,753	N/A	N/A
1982	0	0	0	0	0	47,500	47,500	N/A	N/A
1983	2,725	0	0	204	2,930	48,000	50,930	68,625	119,555
1984	0	0	0	0	0	70,500	70,500	19,516	90,016
1985	5,508	0	0	508	6,016	71,900	77,916	57,674	135,590
1986	0	0	0	0	0	62,000	62,000	18,491	80,492
1987	4,705	0	0	119	4,824	69,100	73,924	25,255	99,179
1988	0	0	0	0	0	141,300	141,300	40,065	181,365
1989	5,947	0	0	145	6,092	144,599	150,691	28,289	178,980
1990	0	0	0	0	1	90,807	90,808	23,129	113,937
1991	2,683	0	0	80	2,763	49,413	52,177	26,163	78,340
1992	0	0	0	0	0	41,658	41,658	8,948	50,606
1993	1,310	0	0	9	1,319	54,301	55,620	8,949	64,570
1994	0	0	0	0	0	70,281	70,281	1,776	72,058
1995	1,718	0	0	39	1,757	80,031	81,788	10,005	91,793
1996	0	0	0	0	0	31,620	31,620	3,624	35,244
1997	1,291	0	0	2	1,293	36,630	37,923	N/A	N/A

a/ All West Coast data are derived from PacFIN vessel summary files.
b/ Alaska values for 1996 and 1997 are preliminary.
c/ Historic data are from the Salmon Market Information Service (1994), and preliminary data are from the Alaska Department of Fish and Game Blue Sheet.
d/ Canadian data from Canadian Department of Fisheries and Oceans web page.

TABLE B-5. U.S. salmon trade, proportions fresh and frozen and export/import balance.

	1993	1994	1995	1996	1997
Imports					
Fresh and Frozen	$249,467,463	$260,258,209	$339,042,725	$392,503,642	$503,549,473
All Salmon Products	$266,310,980	$277,911,756	$359,084,988	$411,813,956	$522,279,670
Percent Fresh and Frozen	94%	94%	94%	95%	96%
Exports					
Fresh and Frozen	$583,059,930	$518,482,529	$545,283,012	$462,981,812	$300,021,421
All Salmon Products	$867,664,718	$797,693,669	$850,162,050	$715,003,751	$499,693,017
Percent Fresh and Frozen	67%	65%	64%	65%	60%
Exports/Imports Ratio					
Fresh and Frozen	2.34	1.99	1.61	1.18	0.60
All Salmon Products	3.26	2.87	2.37	1.74	0.96

TABLE B-6. Value of imported salmon from top 15 countries (U.S., millions).

	1993	1994	1995	1996	1997	Average	Cumulative Percent[a/]
Canada	162.7	182.9	206.2	204.6	274.2	206.1	56.1%
Chile	65.7	57.4	111.3	161.6	192.9	117.8	88.1%
Norway	17.8	18.6	22.8	17.6	17.5	18.9	93.3%
United Kingdom	4.5	7.5	9.5	13.5	13.5	9.7	95.9%
Iceland	4.8	4.6	2.9	5.8	5.0	4.6	97.2%
Denmark	2.8	2.7	2.7	1.1	2.8	2.4	97.8%
Faroe Is.	4.1	1.1	0.1	1.6	3.7	2.1	98.4%
Japan	0.6	0.1	0.2	0.1	7.0	1.6	98.8%
Russia	0.7	0.5	0.5	2.1	0.5	0.9	99.1%
New Zealand	0.1	0.4	0.7	0.8	0.4	0.5	99.2%
Ireland	1.0	0.3	0.2	0.2	0.2	0.4	99.3%
Australia	0.6	0.6	0.2	0.1	0.0	0.3	99.4%
China	0.0	0.1	0.1	0.2	0.9	0.3	99.5%
Netherlands	0.0	0.1	0.1	0.4	0.4	0.2	99.5%
Sweden	0.2	0.2	0.2	0.3	0.0	0.2	99.6%
Ecuador	0.1	0.0	0.0	0.0	0.8	0.2	99.6%
Total (all countries)	266.3	277.9	359.1	411.8	522.3	367.5	100%

a/ Cumulative percent based on 1993-1997 average.

TABLE B-7. Value of salmon exported to top 25 recipients of U.S. salmon ($U.S. millions).

	1993	1994	1995	1996	1997	Average	Cumulative Percent[a/]
Japan	604.2	543.1	543.1	437.5	265.1	478.6	64.2%
Canada	81.8	83.2	122.0	113.2	77.9	95.6	77.0%
United Kingdom	93.7	80.8	89.5	75.4	69.0	81.7	87.9%
France	26.1	18.4	21.3	13.1	14.5	18.7	90.4%
Australia	14.9	17.4	15.5	18.1	18.4	16.9	92.7%
Netherlands	11.7	17.9	14.9	11.5	11.4	13.5	94.5%
Belgium	6.2	6.0	7.8	7.2	6.6	6.8	95.4%
Denmark	5.0	5.6	5.3	6.2	4.1	5.3	96.1%
Germany	3.4	4.0	3.7	3.9	4.1	3.8	96.6%
Sweden	4.2	3.6	3.3	3.5	1.5	3.2	97.0%
Taiwan	0.6	1.5	3.7	4.5	3.4	2.7	97.4%
China	0.8	2.1	4.3	3.3	2.6	2.6	97.8%
Spain	2.0	0.9	3.0	1.8	3.2	2.2	98.0%
South Korea	2.1	2.8	1.4	2.3	1.2	1.9	98.3%
New Zealand	1.7	0.9	1.1	0.9	2.1	1.3	98.5%
Mexico	1.2	2.2	0.5	0.5	1.8	1.2	98.7%
Italy	0.6	0.8	1.6	1.1	2.0	1.2	98.8%
Switzerland	1.0	0.7	1.2	1.0	1.1	1.0	98.9%
Ireland	1.0	1.2	1.2	1.0	0.7	1.0	99.1%
Israel	0.3	0.4	0.5	1.5	2.1	1.0	99.2%
Hong Kong	1.0	0.7	0.6	1.4	0.7	0.9	99.3%
South Africa	0.5	0.4	1.4	1.0	0.7	0.8	99.4%
Russia	0.0	0.1	0.1	0.6	1.6	0.5	99.5%
Thailand	1.0	0.3	0.1	0.3	0.1	0.3	99.5%
Portugal	0.2	0.3	0.1	0.1	0.7	0.3	99.6%
Total (all countries)	867.7	797.7	850.2	715.0	499.7	746.0	100%

a/ Cumulative percent based on 1993-1997 average.

TABLE B-8. Japanese salmon imports from the U.S.

	Value ($U.S.)	Percent of Japanese Imports
Japanese Salmon Imports	$796,745,317	100%
Salmon Imports from the U.S.	$260,000,726	33%
Sockeye Imports from the U.S.	$228,562,478	29%
Other Salmon Imports from the U.S.	$31,438,248	4%

TABLE B-9. U.S. per capita consumption (pounds per person) and population.[a/]

	Fresh & Frozen	Canned	Total	US Population (millions)
1979	0.39	0.44	0.84	223
1980	0.52	0.56	1.08	226
1981	0.18	0.66	0.85	228
1982	0.21	0.31	0.52	230
1983	0.23	0.55	0.77	232
1984	0.32	0.56	0.88	234
1985	0.34	0.53	0.87	236
1986	0.39	0.52	0.91	238
1987	0.31	0.44	0.75	241
1988	0.36	0.29	0.64	243
1989	0.49	0.30	0.79	245
1990	0.50	0.44	0.94	248
1991	0.79	0.54	1.33	251
1992	0.63	0.49	1.11	254
1993	0.81	0.51	1.32	256
1994	0.97	0.47	1.44	259
1995	1.15	0.52	1.67	261
1996	1.43	0.62	2.05	264

a/ Data from the Salmon Market Information Service, 1997.

TABLE B-10. Exprocessor prices (nominal) for selected West Coast salmon products together with number of processors and total pounds on which the prices are based (from the NMFS Processed Product Survey).

Product Group		1991	1992	1993	1994	1995	1996
Chinook				**Average Prices**			
Salmon Chinook Dressed	Fresh	$2.41	$2.66	$2.37	$2.57	$2.05	$1.83
	Frozen	$3.20	$3.20	$1.83	$2.28	$1.74	$1.76
Salmon Chinook Fillet	Fresh	$3.61	$3.53	$3.63	$3.94	$3.71	$3.42
	Frozen	$4.83	$3.58	$3.57	$3.74	$2.23	$3.97
Salmon Chinook Head on	Fresh	$2.56	$2.76	$2.36	$2.28	$2.38	$2.16
Salmon Chinook Smoked	Cured	$6.51	$5.84	$7.74	$8.87	$7.07	$8.42
Coho							
Salmon Coho Dressed	Fresh	$1.87	$2.01	$1.84	$1.78	$1.43	$2.08
	Frozen	$1.96	$2.01	$0.91	$1.63	$1.32	$1.25
Salmon Coho Fillet	Fresh	$4.42	$3.94	$3.89	$3.07	$2.91	$3.09
				Number of Processors Reporting Price			
Chinook							
Salmon Chinook Dressed	Fresh	44	36	25	14	10	6
	Frozen	81	68	12	11	13	11
Salmon Chinook Fillet	Fresh	12	9	10	7	7	5
	Frozen	6	6	4	3	3	7
Salmon Chinook Head on	Fresh	15	13	12	8	5	4
Salmon Chinook Smoked	Cured	13	13	12	9	10	10
Coho							
Salmon Coho Dressed	Fresh	38	34	23	13	9	6
	Frozen	76	61	14	11	11	10
Salmon Coho Fillet	Frozen	4	6	3	5	5	6
				Total Pounds for Which Price Was Reported			
Chinook							
Salmon Chinook Dressed	Fresh	2,704,533	1,357,639	942,682	422,967	545,301	453,988
	Frozen	5,074,068	4,379,066	1,513,989	1,124,553	1,155,324	1,797,697
Salmon Chinook Fillet	Fresh	574,883	492,807	327,347	347,245	217,579	172,127
	Frozen	202,930	370,865	359,147	410,000	99,821	351,045
Salmon Chinook Head on	Fresh	1,315,518	1,350,007	474,683	516,524	437,288	869,991
Salmon Chinook Smoked	Cured	337,497	142,313	83,625	142,850	188,928	65,860
Coho							
Salmon Coho Dressed	Fresh	3,157,259	2,124,198	660,437	531,113	675,851	618,209
	Frozen	16,853,211	25,278,830	3,870,284	4,847,136	4,909,645	1,857,838
Salmon Coho Fillet	Frozen	359,465	319,931	175,200	294,338	883,202	1,510,759

TABLE B-11. Annual wholesale market price trends for selected salmon products (nominal dollars per pound).[a/]

Product	Year						
	1989	1990	1991	1992	1993	1994	1995
Chum, Seattle	-	-	1.50	1.43	1.13	1.00	0.86
West Coast Atlantic, Seattle, 10-12 Pounds	-	-	-	3.39	3.00	2.86	2.53
West Coast Atlantic, Seattle, 8-10 Pounds	-	-	-	3.23	2.91	2.74	2.43
West Coast Atlantic, Seattle, 6-8 Pounds	-	-	-	3.06	2.70	2.57	2.35
Canadian Farmed King, Fresh, Seattle, 4-6 Pounds	2.22	2.37	2.52	2.63	2.42	2.33	2.43
Canadian Farmed King, Fresh, FOB Seattle, 4-6 Pounds	2.22	2.37	2.52	2.67	2.61	-	-
Canadian Farmed King, Fresh, Seattle, 4-6 Pounds	3.31	3.36	2.91	2.98	2.62	2.53	2.51

a/ As reported by Urner Barry Publications, Inc.

TABLE B-12. Generalized summary of Canadian recreational salt water regulations for chinook, coho, chum, pink, and sockeye salmon.[a/]

Species	Fishing Season[b/]	Daily Limits[c/d/]	Possession Limit	Yearly Limits
Chinook	Year-round w/ partial summer & early fall month closures.	2	4	from: 15-30
Sockeye	Year-round w/ partial summer & early fall month closures.	4	8	None
Pink	Year-round w/ partial summer & early fall month closures.	4	8	None
Chum	Year-round w/ partial summer & early fall month closures.	4	8	None
Coho	Non-retention of coho	N/A	N/A	N/A

a/ Based on information from BC Online Tidal Waters Sport Fishing Guide 1998/99 (July 21, 1998)
b/ Salmon closure times in the North Coast, for most salmon, fall between June 29 and Aug. 27. Salmon closure times in the South Coast, for most salmon, fall between July 1 to Oct. 15.
c/ Minimum size limit ranges from 30 in. to 62 in.
d/ Aggregate daily limit for all species of Pacific salmon from tidal and non-tidal waters combined is 4.

TABLE B-13. Generalized summary of Alaskan salt water regulations for king, coho, chum, pink, and sockeye salmon.[a/]

Species	Fishing Season	Daily Limits	Possession Limits	Yearly Limits
Chinook	Year-round	From: 2-3 daily w/ minimum of 2 fish greater than 28 inches.	2-3 in possession (2 must be a minimum of 28 inches)	• 4 fish yearly limit for fish 28 inches or larger for non-residents only between Cape Suckling and the Int'l Boundary at Dixon entrance. • No yearly limits for resident and non-resident in Alaska Peninsula, Aleutian Islands & Kodiak. • 5 fish yearly limit in Bristol Bay area for residents & non-residents.
Coho, Chum, Pink, and Sockeye	Year-round	From: 5-6 daily w/ size limits for areas between Cape Suckling and the International Boundary at Dixon entrance.	• Kodiak, Alaska Pen., Aleutian Is., & Bristol bay: 5 in possession w/ no size limits. • Between Cape Suckling & the Int'l Boundary at Dixon Entrance: 12 of each species in possession.	None

a/ Based on information in 1998 Sport Fishing Regulations Summary from Alaska's Department of Fish and Game.

TABLE B-14. Distribution of total average chinook mortalities for selected stocks, 1984-1994 in adult equivalent impacts.

		Fisheries with Ceilings				Other Fisheries				
Location	Stock	All Alaska	All North/Central British Columbia	West Coast Vancouver Island Troll	All Strait of Georgia	Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport
Puget Sound	Stillaguamish Fall Fingerling	3.9%	2.6%	29.8%	22.7%	2.2%	2.9%	6.1%	2.7%	22.2%
Puget Sound	South Puget Sound Fall Fingerling	0.3%	1.0%	27.0%	14.8%	1.4%	0.7%	11.7%	11.3%	31.2%
Washington Coast	Queets Fall Fingerling	21.1%	41.8%	25.6%	0.0%	0.0%	0.0%	0.0%	4.8%	1.9%
Columbia River	Stayton Pond Tule	0.0%	1.1%	47.5%	2.5%	0.4%	0.7%	28.1%	2.7%	16.2%
Columbia River	Columbia River Upriver Bright	29.8%	22.3%	26.1%	0.0%	0.1%	0.4%	2.5%	13.6%	5.1%
Columbia River	Lyons Ferry	12.5%	12.6%	24.8%	0.3%	2.1%	0.8%	12.6%	28.8%	5.3%

TABLE B-15. Base fishery (1979-1981) coho impacts for selected stocks by fishery area.

Region	Nooksack-Samish	Stillaguamish-Snohomish	Hood Canal	Grays Harbor	Columbia River Early	Columbia River Late	Robertson Creek	Fraser River
Alaska	0	0	0	331	105	0	378	0
W. Coast Ocean	36,564	94,331	55,853	39,425	435,813	181,610	3,971	8,352
Puget Sound	140,125	176,527	91,552	210	649	1,932	192	19,143
Canada	224,203	293,770	134,731	77,237	16,424	18,317	243,594	195,190
Total	400,892	564,628	282,145	117,227	454,039	202,349	248,135	222,685
Alaska	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.2%	0.0%
W Coast Ocean	9.1%	16.7%	19.8%	33.6%	96.0%	89.8%	1.6%	3.8%
Puget Sound	35.0%	31.3%	32.4%	0.2%	0.1%	1.0%	0.1%	8.6%
Canada	55.9%	52.0%	47.8%	65.9%	3.6%	9.1%	98.2%	87.7%

TABLE B-16. Commercial non-Indian and Indian **chinook** salmon landings **(thousands of round pounds)** by major **West Coast** harvest area, 1981-1997.[a/]

Year	Puget Sound [b/]	Washington Inside Coast	Columbia River	West Coast Ocean	U.S. West Coast
			Non-Indian		
1981	1,086	368	773	9,370	11,597
1982	1,241	274	1,938	12,791	16,244
1983	613	46	635	3,790	5,084
1984	890	95	1,212	3,734	5,930
1985	1,097	182	1,308	7,925	10,512
1986	1,137	233	2,752	12,783	16,905
1987	899	232	6,215	16,998	24,343
1988	580	869	7,233	22,546	31,228
1989	671	794	3,265	11,010	15,740
1990	734	586	1,301	7,656	10,276
1991	273	653	1,000	4,880	6,806
1992	247	833	430	3,628	5,138
1993	254	662	344	4,181	5,441
1994	328	470	64	3,910	4,772
1995	94	581	12	9,891	10,578
1996	120	712	283	6,947	8,062
1997	350	296	189	7,903	8,739
			Indian		
1981	1,930	391	975	231	3,527
1982	1,747	449	1,113	352	3,660
1983	1,622	278	414	255	2,570
1984	1,841	258	857	125	3,081
1985	2,218	361	1,353	203	4,135
1986	1,779	431	2,012	229	4,452
1987	1,740	1,018	2,872	351	5,982
1988	1,812	741	3,384	477	6,414
1989	1,884	1,211	3,098	418	6,612
1990	2,163	779	1,990	387	5,319
1991	1,298	493	1,169	246	3,207
1992	913	457	677	245	2,293
1993	672	425	552	271	1,921
1994	799	443	702	60	2,003
1995	796	351	602	98	1,847
1996	782	362	747	117	2,008
1997	727	317	768	123	1,936

a/ All West Coast data is derived from PacFIN vessel summary files.
b/ All Area 4B catch is included with the West Coast ocean harvest.

TABLE B-17. Commercial non-Indian and Indian **chinook** salmon landings **(exvessel values, thousands of dollars)** by major **West Coast** harvest area, 1981-1997.[a/]

Year	Puget Sound [b/]	Washington Inside Coast	Columbia River	West Coast Ocean	U.S. West Coast
			Non-Indian		
1981	1,799	659	1,054	21,123	24,635
1982	2,122	375	1,968	28,837	33,302
1983	675	65	808	6,574	8,121
1984	1,596	171	1,760	9,029	12,556
1985	1,524	201	1,700	17,515	20,939
1986	1,360	233	2,544	21,684	25,821
1987	1,579	463	8,856	40,301	51,199
1988	1,312	1,972	14,042	57,546	74,872
1989	700	689	2,920	22,245	26,553
1990	990	857	2,273	17,976	22,096
1991	314	838	1,590	10,860	13,602
1992	315	1,100	638	8,170	10,223
1993	256	670	365	8,114	9,406
1994	427	641	145	7,142	8,355
1995	100	538	19	15,018	15,675
1996	111	638	124	8,933	9,806
1997	322	291	154	9,873	10,639
			Indian		
1981	3,325	497	799	503	5,124
1982	2,776	492	763	713	4,744
1983	1,799	332	360	518	3,008
1984	3,145	347	1,008	291	4,791
1985	2,783	253	1,171	415	4,622
1986	2,105	261	1,659	429	4,455
1987	2,730	1,414	4,592	823	9,559
1988	4,012	913	6,579	1,348	12,852
1989	1,955	981	2,472	840	6,248
1990	2,734	798	2,515	826	6,873
1991	1,418	538	935	463	3,355
1992	1,103	550	742	410	2,805
1993	657	412	359	429	1,857
1994	843	521	518	115	1,997
1995	677	313	212	140	1,343
1996	645	268	231	161	1,305
1997	622	299	322	118	1,361

a/ All West Coast data is derived from PacFIN vessel summary files.
b/ All Area 4B catch is included with the West Coast ocean harvest.

TABLE B-18. Commercial non-Indian and Indian **coho** salmon landings (**thousands of round pounds**) by major **West Coast** harvest area, 1981-1997.[a/]

Year	Puget Sound [b/]	Washington Inside Coast	Columbia River	West Coast Ocean	U.S. West Coast
			Non-Indian		
1981	1,560	273	465	6,219	8,518
1982	2,551	770	1,577	5,280	10,179
1983	1,814	90	47	1,690	3,640
1984	1,516	471	1,610	602	4,200
1985	2,808	304	1,628	1,348	6,088
1986	2,869	1,005	6,703	2,799	13,376
1987	3,737	726	1,298	2,732	8,493
1988	2,486	435	2,641	4,232	9,795
1989	2,049	527	2,668	2,846	8,089
1990	2,444	414	494	1,667	5,019
1991	1,120	1,142	2,676	2,486	7,423
1992	498	73	300	335	1,206
1993	115	183	264	89	651
1994	129	120	498	0	747
1995	126	387	190	128	831
1996	109	450	230	81	870
1997	43	14	158	2	217
			Indian		
1981	2,707	492	11	187	3,398
1982	5,070	629	26	862	6,587
1983	3,246	197	1	216	3,660
1984	2,546	380	9	277	3,211
1985	4,717	344	46	607	5,714
1986	4,979	833	224	396	6,431
1987	6,239	866	17	450	7,571
1988	4,096	434	80	323	4,933
1989	3,553	411	42	501	4,508
1990	3,876	677	18	595	5,165
1991	2,157	1,177	77	413	3,823
1992	1,420	306	5	305	2,036
1993	648	308	10	315	1,281
1994	2,285	196	21	0	2,502
1995	1,455	632	10	168	2,266
1996	663	1,083	6	108	1,859
1997	588	101	3	63	756

a/ All West Coast data is derived from PacFIN vessel summary files.
b/ All Area 4B catch is included with the West Coast ocean harvest.

TABLE B-19. Commercial non-Indian and Indian **coho** salmon landings (exvessel values, **thousands of dollars**) by major **West Coast** harvest area, 1981-1997.[a/]

Year	Puget Sound [b/]	Washington Inside Coast	Columbia River	West Coast Ocean	U.S. West Coast
			Non-Indian		
1981	1,818	287	513	8,755	11,372
1982	2,256	634	1,355	6,455	10,700
1983	1,607	99	50	1,486	3,242
1984	1,585	606	1,863	988	5,041
1985	2,611	241	1,358	1,653	5,863
1986	3,265	1,099	6,708	2,595	13,668
1987	7,434	1,537	2,478	4,150	15,599
1988	5,853	956	5,839	8,380	21,029
1989	2,158	544	2,379	2,847	7,928
1990	3,281	513	594	2,401	6,790
1991	1,038	1,007	2,148	2,424	6,617
1992	526	67	271	339	1,204
1993	91	156	216	79	543
1994	101	103	413	0	618
1995	82	255	120	95	552
1996	60	267	142	63	532
1997	27	11	117	7	162
			Indian		
1981	3,113	575	12	241	3,940
1982	4,165	463	24	1,037	5,690
1983	2,805	209	1	194	3,210
1984	2,510	411	9	320	3,250
1985	4,010	215	34	657	4,917
1986	5,129	710	161	384	6,385
1987	11,180	1,522	22	653	13,376
1988	9,143	814	135	708	10,799
1989	3,561	428	30	520	4,539
1990	4,898	925	17	726	6,567
1991	1,808	843	46	366	3,063
1992	1,396	267	4	349	2,016
1993	529	263	7	296	1,095
1994	1,674	163	10	0	1,848
1995	882	355	3	120	1,360
1996	338	631	2	84	1,055
1997	367	79	1	49	496

a/ All West Coast data is derived from PacFIN vessel summary files.
b/ All Area 4B catch is included with the West Coast ocean harvest.

TABLE B-20. Commercial non-Indian and Indian **pink** salmon landings (**thousands of round pounds**) by major **West Coast** harvest area, 1981-1997.[a/]

Year	Puget Sound [b/]	Washington Inside Coast	Columbia River	West Coast Ocean	U.S. West Coast
			Non-Indian		
1981	13,176	0	0	1,453	14,629
1982	0	0	0	0	0
1983	4,531	0	0	349	4,881
1984	0	0	0	0	0
1985	10,409	0	0	874	11,283
1986	0	0	0	0	0
1987	4,436	0	0	117	4,553
1988	0	0	0	0	0
1989	6,857	0	0	177	7,034
1990	0	0	0	0	0
1991	6,376	0	0	175	6,551
1992	0	0	0	0	0
1993	3,831	0	0	10	3,841
1994	0	0	0	0	0
1995	5,029	0	0	116	5,145
1996	0	0	0	0	0
1997	3,246	0	0	0	3,246
			Indian		
1981	5,658	0	0	27	5,686
1982	0	0	0	0	0
1983	3,427	0	0	99	3,526
1984	0	0	0	0	0
1985	11,028	0	0	94	11,122
1986	0	0	0	0	0
1987	5,081	0	0	81	5,163
1988	0	0	0	0	0
1989	8,105	0	0	69	8,174
1990	1	0	0	0	1
1991	6,937	0	0	23	6,961
1992	0	0	0	0	0
1993	4,319	0	0	13	4,332
1994	1	0	0	0	1
1995	4,980	0	0	53	5,034
1996	0	0	0	0	0
1997	3,811	0	0	7	3,818

a/ All West Coast data is derived from PacFIN vessel summary files.
b/ All Area 4B catch is included with the West Coast ocean harvest.

TABLE B-21. Commercial non-Indian and Indian **pink** salmon landings (**exvessel values, thousands of dollars**) by major **West Coast** harvest area, 1981-1997.[a/]

Year	Puget Sound [b/]	Washington Inside Coast	Columbia River	West Coast Ocean	U.S. West Coast
			Non-Indian		
1981	6,182	0	0	958	7,139
1982	0	0	0	0	0
1983	1,511	0	0	162	1,672
1984	0	0	0	0	0
1985	2,710	0	0	472	3,181
1986	0	0	0	0	0
1987	2,221	0	0	78	2,299
1988	0	0	0	0	0
1989	2,781	0	0	109	2,891
1990	0	0	0	0	0
1991	1,290	0	0	73	1,363
1992	0	0	0	0	0
1993	639	0	0	5	644
1994	0	0	0	0	0
1995	844	0	0	27	871
1996	0	0	0	0	0
1997	625	0	0	0	625
			Indian		
1981	2,598	0	0	16	2,613
1982	0	0	0	0	0
1983	1,215	0	0	43	1,257
1984	0	0	0	0	0
1985	2,798	0	0	37	2,835
1986	0	0	0	0	0
1987	2,484	0	0	41	2,525
1988	0	0	0	0	0
1989	3,166	0	0	35	3,201
1990	0	0	0	0	0
1991	1,393	0	0	7	1,400
1992	0	0	0	0	0
1993	671	0	0	4	675
1994	0	0	0	0	0
1995	874	0	0	12	886
1996	0	0	0	0	0
1997	667	0	0	2	668

a/ All West Coast data is derived from PacFIN vessel summary files.
b/ All Area 4B catch is included with the West Coast ocean harvest.

TABLE B-22. Geographic outline of West Coast commercial ocean troll seasons, 1978.

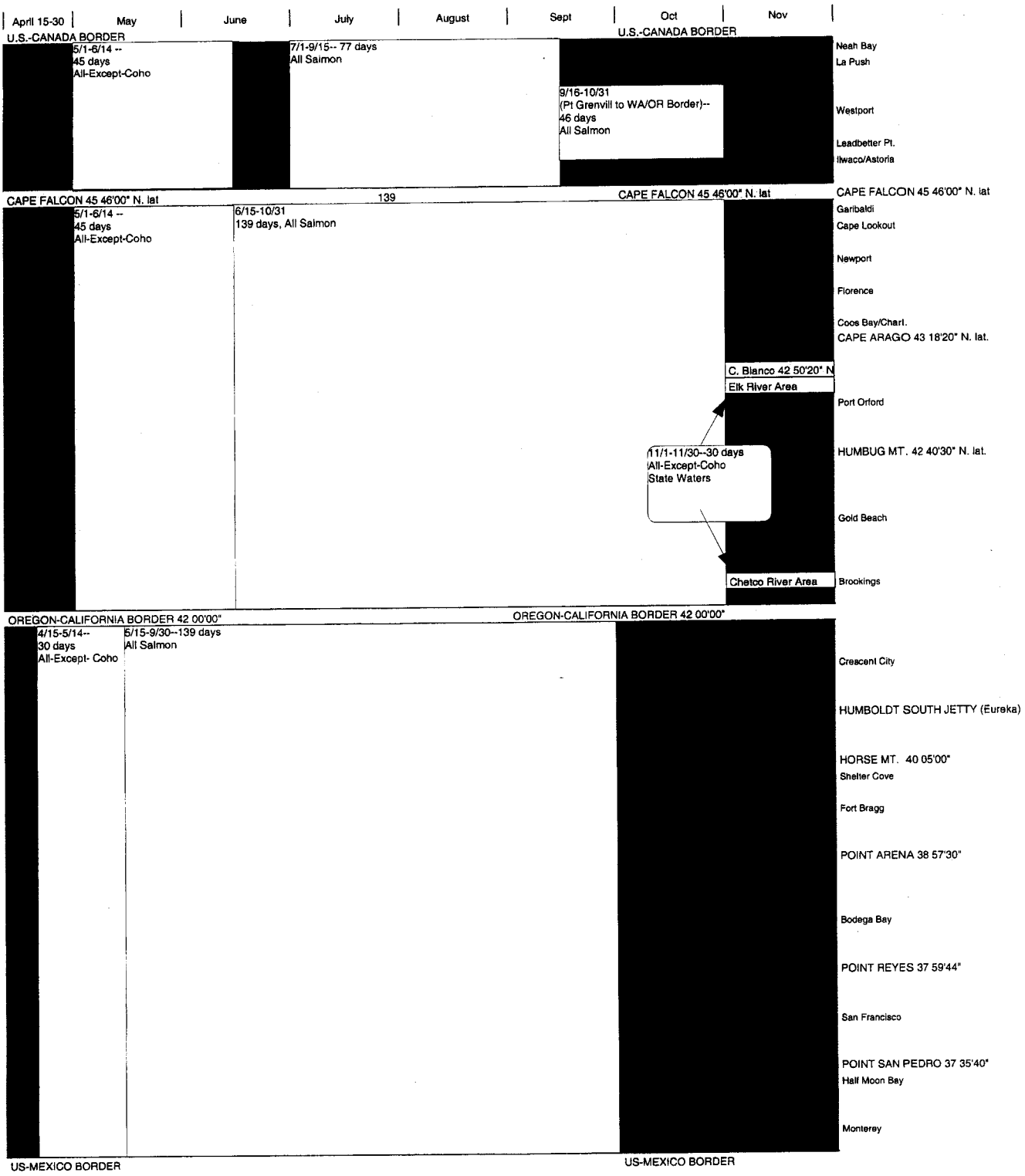


TABLE B-23. Geographic outline of West Coast commercial ocean troll seasons, 1984.

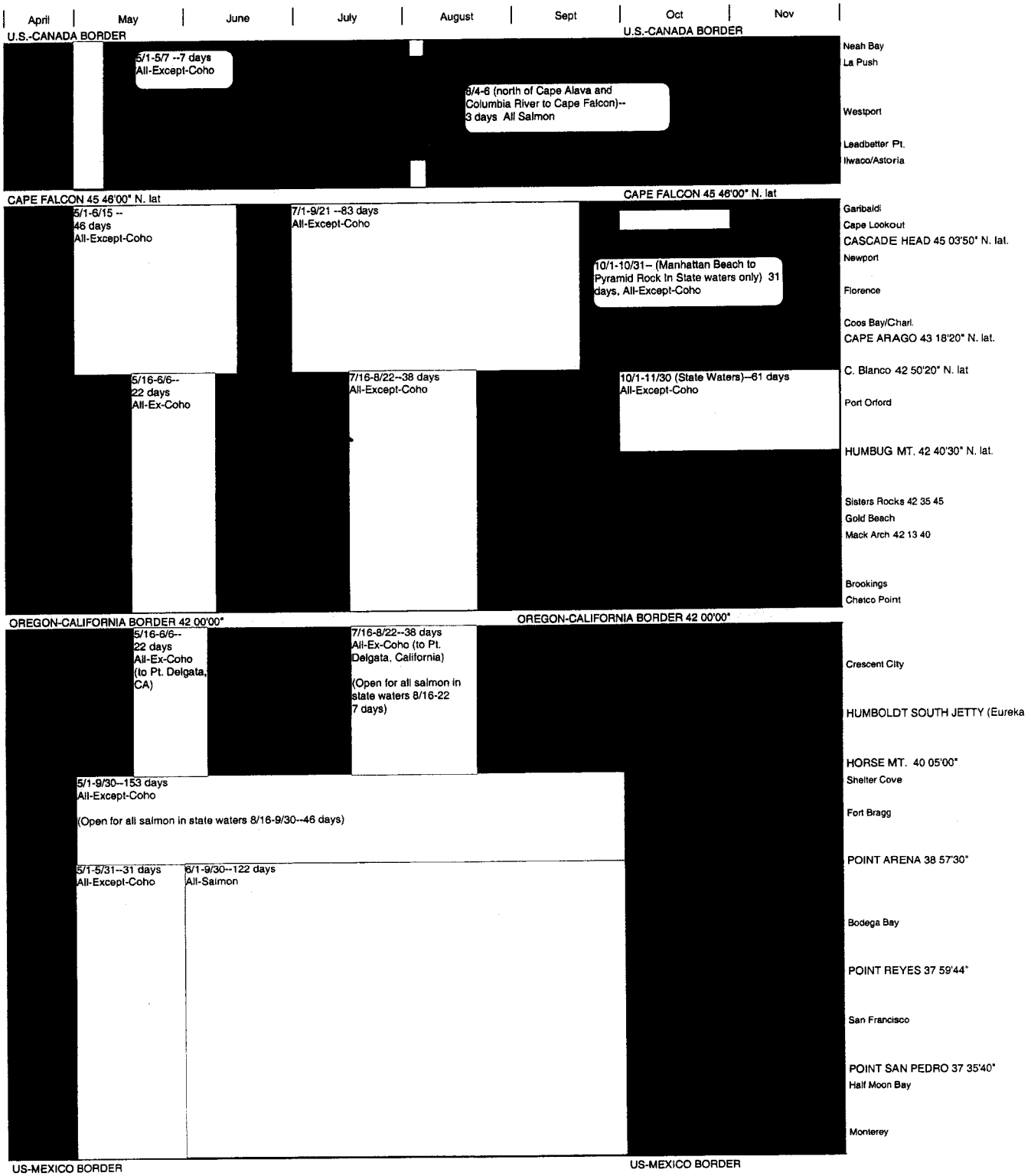


TABLE B-24. Geographic outline of West Coast commercial ocean troll seasons, 1988.

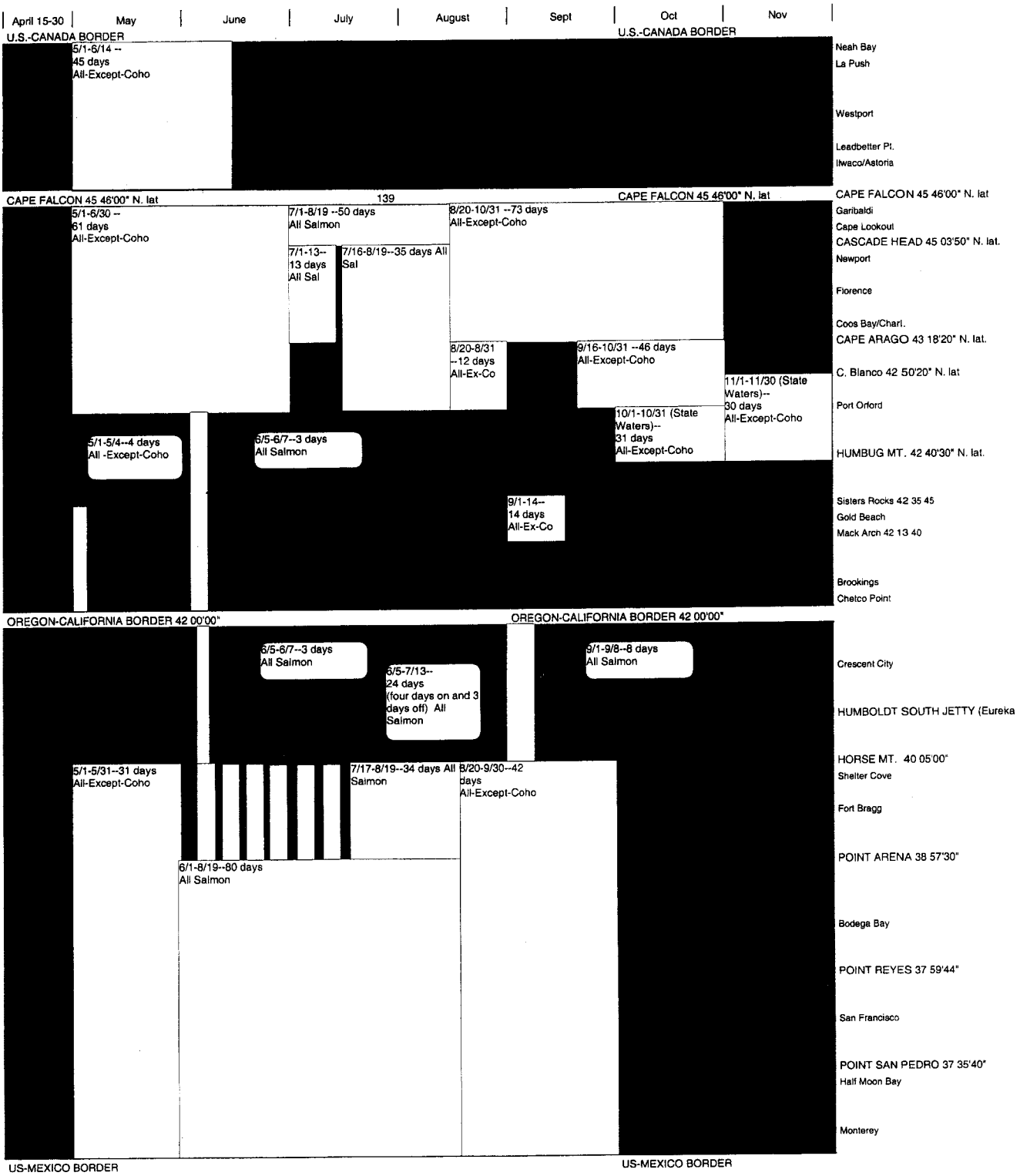


TABLE B-25. Geographic outline of West Coast commercial ocean troll seasons, 1994.

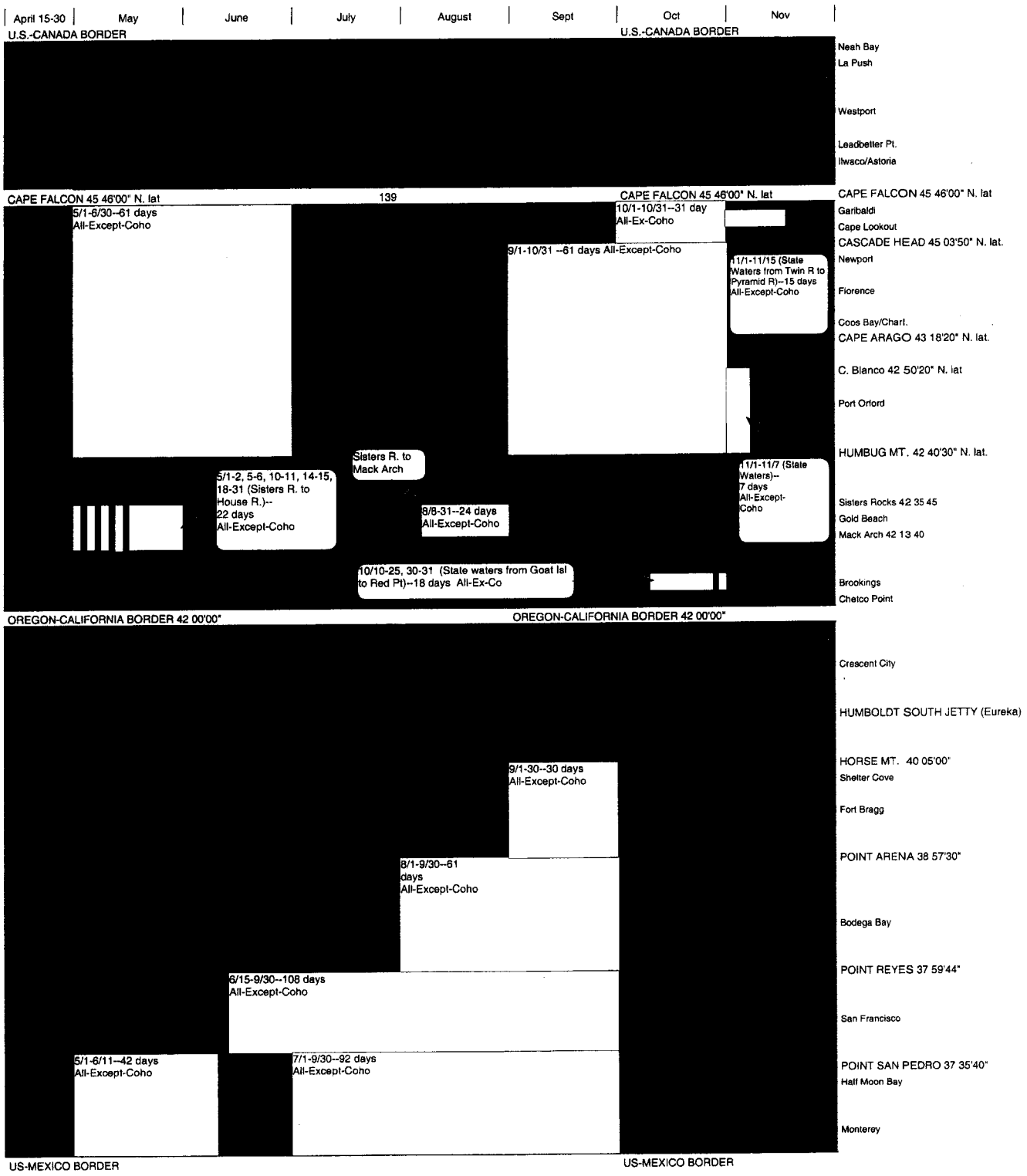
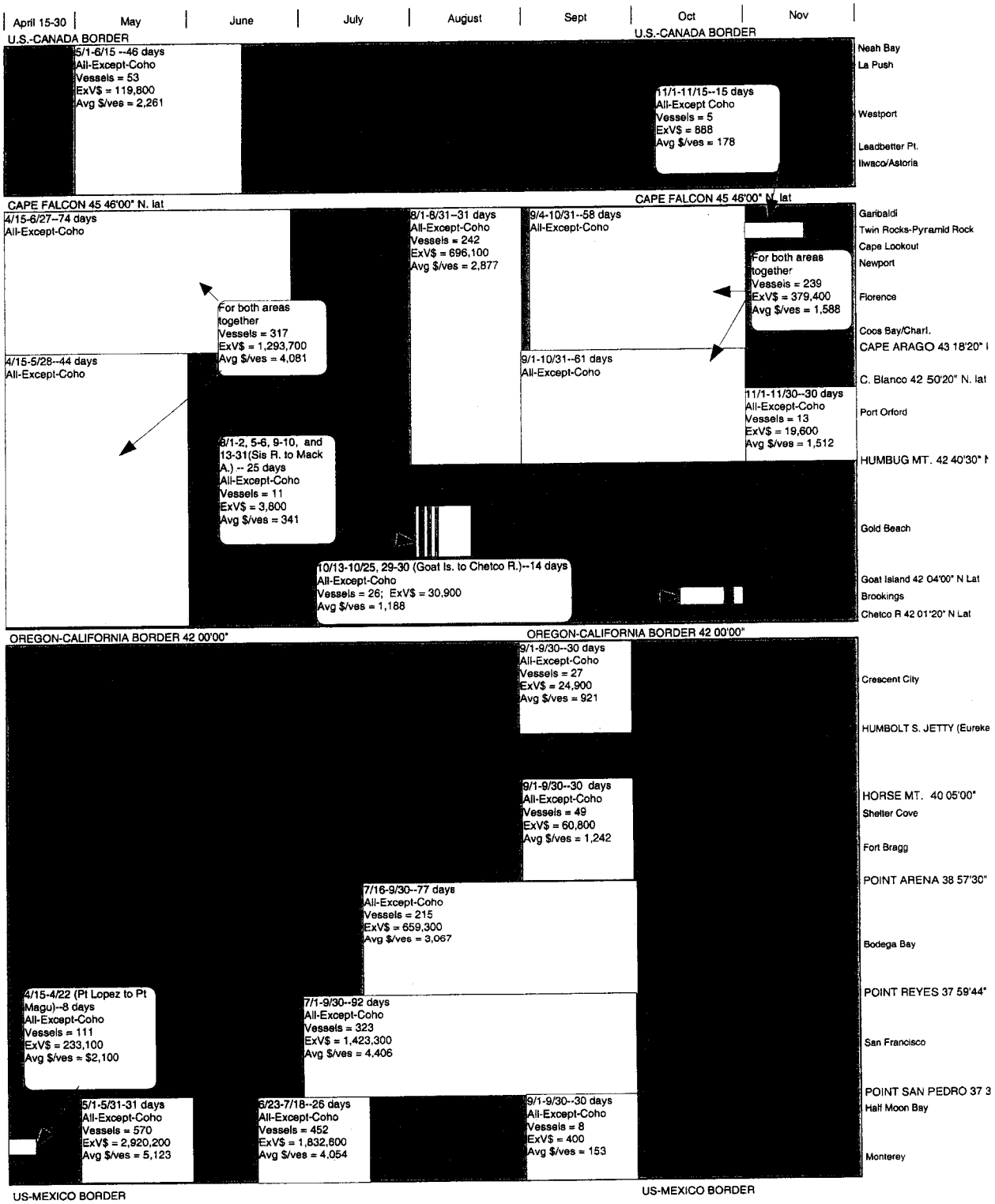


TABLE B-26. Geographic outline of West Coast commercial ocean troll seasons, 1997. [a/] [b/]



a/ The information source for this table is state fish ticket data maintained in the redefined PacFIN database. The data were retrieved January 13, 1998 and may vary somewhat from summary information presented elsewhere in the review. Catch area recorded on tickets is sometimes based on the point of landing. When there is no opening in an area for which catch is reported it was assumed that landings made during a closure came from the nearest open area.

b/ Excludes information on 53,900 pounds of landings for which West Coast catch area was unknown. Total revenue for these landings was $79,500.

TABLE B-27. Exvessel revenue (thousands of dollars, not adjusted for inflation) by management area of catch (non-tribal) all species of salmon.

	Inside Fisheries			Ocean Fisheries				
	Puget Sound	Washington Coast	Columbia River	North of Cape Falcon[a/]	Cape Falcon to Cape Blanco	Cape Blanco to Horse Mountain	Horse Mountain to Point Arena	South of Point Arena
1981	18,693	1,132	1,579	6,253	5,917	6,606	3,034	7,540
1982	19,730	1,574	3,334	5,985	6,376	6,043	4,893	10,852
1983	6,470	582	859	1,393	1,524	1,492	798	2,747
1984	12,595	1,040	3,672	605	766	1,188	1,216	5,980
1985	20,552	540	3,188	2,549	4,647	313	3,770	6,921
1986	21,299	1,523	9,267	1,470	6,528	2,036	3,553	9,899
1987	29,213	2,907	11,515	2,211	14,909	4,294	7,076	14,176
1988	21,078	4,258	20,019	2,361	20,326	3,284	10,724	27,457
1989	21,462	1,381	5,307	1,559	9,194	1,239	2,736	9,654
1990	19,199	1,414	2,873	1,837	6,281	507	1,741	9,560
1991	11,700	2,022	3,740	1,334	2,910	228	1,218	7,604
1992	7,195	1,435	911	1,371	2,619	2	55	4,434
1993	10,664	891	581	821	1,604	28	457	5,236
1994	10,416	753	559	0	637	62	174	6,244
1995	3,316	810	140	119	3,118	121	229	11,406
1996	1,604	909	266	61	2,737	368	377	5,310
1997	5,612	302	271	110	2,337	113	92	7,155

a/ Includes all catch from Area 4B.

TABLE B-28. Troll chinook and coho average dressed weights (pounds) by area of landing (PFMC, 1998).

	Chinook			Coho		
Year	California	Oregon	Washington	California	Oregon	Washington
1981	9.4	9.8	11.4	5.7	5.4	4.3
1982	9.7	10.1	11.2	6.0	5.2	5.0
1983	7.3	8.2	10.5	4.4	3.4	4.2
1984	8.7	8.5	9.4	7.4	5.1	4.5
1985	12.3	9.4	10.4	7.3	5.8	4.6
1986	9.0	8.4	10.2	5.5	4.3	4.1
1987	10.3	9.8	9.5	5.6	5.4	4.3
1988	11.0	10.1	10.6	6.3	5.4	-
1989	10.3	10.0	10.6	5.5	4.4	3.9
1990	9.7	9.4	11.1	5.1	5.2	5.6
1991	11.0	9.3	10.6	5.6	4.6	5.1
1992	10.0	9.2	11.6	4.5	4.2	4.1
1993	9.1	9.3	11.0	-	5.4	4.8
1994	10.5	11.3	9.3	-	-	-
1995	9.8	9.0	8.4	-	-	4.4
1996	10.8	10.9	12.4	-	-	4.0
1997	10.7	10.3	10.6	-	-	-

TABLE B-29. **Troll** salmon landed in **California**, estimates of **exvessel value and average price** (dollars per dressed pound).

	Chinook				Coho				Total[a/]	
Year	Nominal Value (thousands of dollars)	Real Value[b/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[b/] (dollars)	Nominal Value (thousands of dollars)	Real Value[b/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[b/] (dollars)	Nominal Value (thousands of dollars)	Real Value[b/] (thousands of dollars)
1979	17,356	35,334	2.53	5.15	2,303	4,689	2.19	4.46	19,659	40,023
1980	12,741	23,746	2.27	4.23	408	760	1.36	2.53	13,149	24,506
1981	13,417	22,854	2.25	3.83	905	1,542	1.94	3.30	14,322	24,396
1982	18,754	30,051	2.55	4.09	735	1,178	1.36	2.18	19,489	31,229
1983	4,290	6,593	2.09	3.21	318	489	1.25	1.92	4,608	7,082
1984	6,875	10,182	2.67	3.95	687	1,017	1.99	2.95	7,562	11,200
1985	11,390	16,308	2.56	3.67	125	179	1.57	2.25	11,515	16,487
1986	14,874	20,755	2.01	2.80	238	332	1.18	1.65	15,112	21,087
1987	25,130	34,019	2.78	3.76	493	667	2.00	2.71	25,623	34,686
1988	41,221	53,838	2.86	3.74	706	922	2.21	2.89	41,927	54,760
1989	13,095	16,411	2.39	3.00	390	489	1.69	2.12	13,485	16,900
1990	11,434	13,735	2.77	3.33	622	747	1.98	2.38	12,056	14,483
1991	8,351	9,648	2.58	2.98	696	804	1.52	1.76	9,047	10,453
1992	4,487	5,045	2.74	3.08	18	20	1.63	1.83	4,505	5,065
1993	5,707	6,252	2.25	2.46	-	-	-	-	5,707	6,252
1994	6,437	6,887	2.07	2.21	-	-	-	-	6,437	6,887
1995	11,693	12,201	1.76	1.84	-	-	-	-	11,693	12,201
1996	5,984	6,105	1.44	1.47	-	-	-	-	5,984	6,105
1997[c/]	7,200	7,200	1.38	1.38	-	-	-	-	7,200	7,200

a/ Does not include pink landings.
b/ Expressed in 1997 dollars.
c/ Preliminary.

TABLE B-30. **Troll** salmon landed in **Oregon**, estimates of **exvessel value and average price** (dollars per dressed pound).

Year	Chinook				Coho				Total[a/]	
	Nominal Value (thousands of dollars)	Real Value[b/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[b/] (dollars)	Nominal Value (thousands of dollars)	Real Value[b/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[b/] (dollars)	Nominal Value (thousands of dollars)	Real Value[b/] (thousands of dollars)
1971-1975	2,036	6,157	0.89	2.74	3,658	11,331	0.64	1.95	5,694	17,488
1976-1980	5,366	11,732	2.16	4.71	6,407	14,430	1.51	3.29	11,773	26,162
1981	4,039	6,880	2.57	4.38	5,534	9,426	1.66	2.83	9,573	16,306
1982	6,094	9,765	2.59	4.15	3,801	6,091	1.40	2.24	9,895	15,856
1983	1,244	1,912	1.90	2.92	1,052	1,617	0.96	1.48	2,296	3,529
1984	1,477	2,187	2.74	4.06	118	175	1.66	2.46	1,595	2,362
1985	5,045	7,223	2.48	3.55	729	1,044	1.51	2.16	5,774	8,267
1986	5,976	8,339	1.77	2.47	1,978	2,760	1.04	1.45	7,954	11,099
1987	13,467	18,231	2.60	3.52	3,296	4,462	1.72	2.33	16,763	22,692
1988	13,940	18,207	3.19	4.17	7,596	9,921	2.28	2.98	21,536	28,128
1989	7,894	9,893	2.23	2.79	2,131	2,671	1.07	1.34	10,025	12,564
1990	5,627	6,760	2.58	3.10	1,014	1,218	1.60	1.92	6,641	7,978
1991	1,721	1,988	2.47	2.85	1,399	1,616	0.99	1.14	3,120	3,605
1992	2,490	2,800	2.46	2.77	222	250	1.08	1.21	2,712	3,049
1993	1,661	1,820	2.18	2.39	10	11	1.13	1.24	1,671	1,831
1994	690	738	2.40	2.57	-	-	-	-	690	738
1995	3,294	3,437	1.70	1.77	-	-	-	-	3,294	3,437
1996	3,007	3,068	1.56	1.59	-	-	-	-	3,007	3,068
1997[c/]	2,469	2,469	1.60	1.60	-	-	-	-	2,469	2,469

a/ Does not include pink landings.
b/ Expressed in 1997 dollars.
c/ Preliminary.

TABLE B-31. **Non-Indian troll** salmon landed in **Washington**, estimates of **exvessel value and average price** (dollars per dressed pound).[a/]

Year or Average	Chinook				Coho				Total[b/]	
	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[c/] (dollars)	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)	Nominal Price Per Pound (dollars)	Real Price Per Pound[c/] (dollars)	Nominal Value (thousands of dollars)	Real Value[c/] (thousands of dollars)
1971-1975	2,714	8,313	0.89	2.74	3,060	9,395	0.66	2.04	5,775	17,708
1976-1980	5,313	11,851	2.39	5.17	6,086	13,541	1.67	3.62	11,399	25,391
1981	3,279	5,585	2.66	4.53	2,642	4,500	1.52	2.59	5,921	10,086
1982	4,246	6,804	2.57	4.12	2,484	3,980	1.34	2.15	6,730	10,784
1983	1,152	1,771	1.72	2.64	313	481	0.93	1.43	1,465	2,252
1984	255	378	2.78	4.12	155	230	1.48	2.19	410	607
1985	837	1,198	2.57	3.68	764	1,094	1.32	1.89	1,601[d/]	2,292
1986	808	1,127	2.35	3.28	367	512	1.16	1.62	1,175	1,640
1987	1,606	2,173	2.97	4.02	354	480	1.67	2.26	1,960[e/]	2,653
1988	2,289	2,990	2.95	3.85	48[f/]	63	2.45	3.20	2,337	3,052
1989	955	1,197	2.22	2.78	275	345	1.31	1.64	1,230[g/]	1,541
1990	890	1,069	2.57	3.09	758	911	1.52	1.83	1,648	1,980
1991	783	905	2.54	2.93	343	396	1.13	1.31	1,126[h/]	1,301
1992	1,200	1,349	2.41	2.71	99	111	1.33	1.50	1,299	1,461
1993	728	798	2.21	2.42	67	73	1.02	1.12	795[i/]	871
1994	j/	j/	j/	j/	-	-	-	-	j/	j/
1995	j/	j/	j/	j/	91	95	0.83	0.87	91[k/]	95
1996	j/	j/	j/	j/	59	60	0.86	0.88	59	60
1997	125	125	1.55	1.55	-	-	-	-	125[l/]	125

a/ All values in this table are based on preliminary information available at the start of each year's salmon review.
b/ Does not include pink landings.
c/ Expressed in 1997 dollars.
d/ Pink landings nominal exvessel value was $308,000. Nominal pink price per pound was $0.55.
e/ Pink landings nominal exvessel value was $6,500. Nominal pink price per pound was $0.62.
f/ There was no legal coho fishery in 1988. This value is for landings of fish caught south of Cape Falcon and seizures of illegal fish.
g/ Pink landings nominal exvessel value was $91,000. Nominal pink price per pound was $0.70.
h/ Pink landings nominal exvessel value was $69,600. Nominal pink price per pound was $0.47.
i/ Pink landings nominal exvessel value was $4,700. Nominal pink price per pound was $0.54.
j/ Chinook were caught off Oregon and landed in Washington. Value information is not provided in order to preserve confidentiality.
k/ Pink landings nominal exvessel value was $26,000. Nominal pink price per pound was $0.20.
l/ Pink landings nominal exvessel value was $3. Nominal pink price per pound was $0.31.

TABLE B-32. **Pounds** of salmon **landed** by the commercial **troll** ocean fishery for major **California** port areas.[a/]

Year or Average	Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	State Total
			CHINOOK (thousands of pounds)			
1976-1980	393	1,403	1,449	1,733	889	5,867
1981-1985	350	428	1,128	1,806	742	4,454
1986	151	457	2,147	2,751	1,891	7,397
1987	313	656	3,115	3,874	1,090	9,047
1988	188	557	4,201	7,177	2,307	14,431
1989	103	220	1,359	2,545	1,263	5,490
1990	20	133	671	1,892	1,407	4,122
1991	4	79	467	1,685	1,004	3,238
1992	b/	1	21	996	613	1,632
1993	3	11	220	1,316	987	2,537
1994	b/	6	77	2,189	831	3,103
1995	5	26	130	3,277	3,197	6,633
1996	3	92	278	1,695	2,046	4,113
1997[c/]	1	16	54	2,644	2,485	5,200
			COHO (thousands of pounds)			
1976-1980	360	391	277	109	48	1,184
1981-1985	89	104	89	54	9	345
1986	30	30	103	30	8	202
1987	32	67	140	7	1	246
1988	19	78	174	46	2	320
1989	29	24	137	38	3	231
1990	-	15	125	142	32	314
1991	1	19	55	270	115	459
1992	-	b/	b/	10	1	11
1993	-	-	-	-	-	-
1994	-	-	-	-	-	-
1995	-	-	-	-	-	-
1996	-	-	-	-	-	-
1997	-	-	-	-	-	-

a/ The major port areas listed include the following ports: Crescent City includes only Crescent City; Eureka also includes Trinidad and Humboldt Bay locations; Fort Bragg also includes Shelter Cove, Noyo Harbor, Mendocino, and Pt. Arena; San Francisco also includes Bodega Bay, San Francisco Bay, and Half Moon Bay; Monterey also includes Santa Cruz, Moss Landing, Monterey, Morro Bay, and Santa Barbara.

b/ Less than 500 pounds.

c/ Preliminary.

TABLE B-33. **Pounds** of salmon **landed** by the commercial **troll** ocean salmon fishery for major **Oregon** port areas.[a/]

Year or Average	Astoria	Tillamook	Newport	Coos Bay	Brookings	State Total
			CHINOOK (thousands of pounds)			
1976-1980	171	118	530	908	700	2,427
1981-1985	92	45	271	638	386	1,432
1986	61	119	751	1,990	449	3,370
1987	83	419	997	2,997	685	5,182
1988	37	341	1,231	2,198	580	4,387
1989	50	302	777	1,945	449	3,532
1990	28	139	388	1,452	174	2,181
1991	9	110	267	292	18	695
1992	17	108	676	206	7	1,013
1993	5	86	460	182	28	761
1994	b/	29	165	45	47	287
1995	6	96	1,330	453	55	1,941
1996	21	125	1,219	417	142	1,926
1997[c/]	3	32	1,053	381	73	1,542
			COHO (thousands of pounds)			
1976-1980	385	660	1,190	1,661	357	4,252
1981-1985	133	293	451	550	111	1,537
1986	109	418	885	393	101	1,905
1987	57	380	517	894	67	1,916
1988	17	766	1,375	1,087	91	3,336
1989	115	530	615	672	63	1,996
1990	69	272	73	197	24	634
1991	69	431	440	464	7	1,411
1992	6	33	112	55	b/	206
1993	8	1	-	-	-	9
1994	-	-	-	-	-	-
1995	-	-	-	-	-	-
1996	-	-	-	-	-	-
1997	-	-	-	-	-	-

a/ The port areas listed include landings in the following ports: Astoria also includes Gearhart/Seaside and Cannon Beach; Tillamook also includes Garibaldi, Netarts, Pacific City, and Nehalem Bay; Newport also includes Depoe Bay, Siletz Bay, Salmon River, and Waldport; Coos Bay also includes Florence, Winchester Bay, Charleston, and Bandon; Brookings also includes Port Orford and Gold Beach.

b/ Less than 500.

c/ Preliminary.

TABLE B-34. **Pounds** of salmon **landed** by the **non-Indian commercial troll** ocean salmon fishery for major **Washington** port areas.[a/b/]

Year	Neah Bay	La Push	Westport	Ilwaco	Coastal Community Total	Puget Sound	State Total
			CHINOOK (thousands of pounds)				
1976-1980	288	421	919	261	1,889	426	1,543
1981-1985	88	32	370	74	564	124	689
1986	50	21	141	75	286	55	342
1987	42	20	367	65	494	51	545
1988	94	30	250	57	430	348	778
1989	20	2	277	28	327	124	451
1990	149	15	135	17	315	34	349
1991	128	7	127	14	276	32	308
1992	160	46	232	10	447	58	507
1993	122	35	132	2	291	41	332
1994[c/]	-	-	-	-	-	7	7
1995[c/]	-	-	3	-	3	12	15
1996[c/]	-	-	4	1	5	13	19
1997	20	d/	45	0	66	15	80
			COHO (thousands of pounds)				
1976-1980	600	786	1,066	678	3,130	496	3,626
1981-1985	133	63	277	142	616	128	744
1986	58	30	118	72	279	38	317
1987	9	15	135	47	206	7	213
1988	1	0	2	8	11	9	20
1989	121	2	19	79	221	24	245
1990	159	46	214	61	480	20	501
1991	87	16	126	45	274	31	304
1992	25	13	21	4	63	12	75
1993	11	7	43	2	63	3	66
1994	-	-	-	-	-	-	-
1995	84	18	7	-	109	2	111
1996	45	1	23	0	68	d/	68
1997	-	-	-	-	-	-	-

a/ All values in this table are based on preliminary information available at the start of each year's review.

b/ The major port areas listed may include smaller ports as follows: Neah Bay includes only Neah Bay; La Push also includes Kalaloch; Westport also includes Aberdeen, Bay City, Copalis Beach, Hoquiam, Moclips, Taholah, Bay Center, Grayland Beach, Raymond, South Bend, and Tokeland; Ilwaco also includes Long Beach, Nahcotta, Naselle, and all Columbia River Ports; Puget Sound includes all Puget Sound ports east of Neah Bay.

c/ There was no ocean commercial fishery for chinook north of Cape Falcon, however, chinook were caught off Oregon and landed in Washington.

d/ Less than 500.

TABLE B-35. West Coast troll salmon landings[a/] in dressed weight, value of landings and number of registered vessels making commercial salmon landings, by state.[b/]

	California				Oregon				Washington			
Year	Vessels Landing Salmon	Vessels with Permits	Nominal Average Exvessel Value/Vessel (dollars)	Real Average Exvessel Value/Vessel (dollars)[c/]	Vessels Landing Salmon	Vessels with Permits	Nominal Average Exvessel Value/Vessel (dollars)	Real Average Exvessel Value/Vessel (dollars)	Vessels Landing Salmon	Vessels with Permits	Nominal Average Exvessel Value/Vessel (dollars)	Real Average Exvessel Value/Vessel (dollars)
1974	3,185	-	2,516	7,353	2,253	-	3,523	10,297				
1975	3,150	-	2,213	5,913	2,304	-	2,521	6,734				
1976	3,526	-	3,037	7,664	2,770	-	5,368	13,547				
1977	3,797	-	3,180	7,538	3,108	-	3,695	8,760				
1978	4,919	-	2,236	4,941	3,158	-	2,324	5,135	3,041	3,291	3,297	7,284
1979	4,593	-	4,280	8,714	3,114[d/]	-	5,456	11,107	2,778	3,068	5,432	11,059
1980	4,738	-	2,775	5,172	3,875[d/]	4,314	2,112	3,937	2,626	2,797	2,709	5,049
1981	4,102	-	3,491	5,947	3,615	3,926	2,648	4,511	2,439	2,603	2,428	4,135
1982	4,013	5,964	4,856	7,782	3,269	3,646	3,027	4,850	2,253	2,512	2,987	4,787
1983	3,223	4,617	1,430	2,197	2,951	3,439[e/]	778	1,196	2,045	2,328[f/]	716	1,101
1984	2,569	4,180	2,944	4,360	771	3,203[g/]	2,069	3,064	381	2,071[h/]	1,076	1,594
1985	2,308	3,869	4,989	7,144	2,050	2,993	2,817	4,033	1,259	1,650	1,272	1,821
1986	2,582	3,753	5,853	8,167	2,288	2,739	3,476	4,851	1,252	1,531	938	1,310
1987	2,442	3,533	10,493	14,204	2,111	2,626	7,941	10,750	883	1,401	2,220	3,005
1988	2,571	3,493	16,308	21,299	2,061	2,597	10,449	13,648	650	1,337	3,596	4,696
1989	2,534	3,464	5,322	6,669	1,937	2,569	5,176	6,486	883	1,306	1,393	1,746
1990	2,115	3,372	5,700	6,848	1,557	2,528[i/]	4,265	5,124	897	1,170	1,837	2,207
1991	1,769	3,242	5,114	5,909	1,217	2,044	2,564	2,962	811	1,013	1,388	1,604
1992	1,085	2,974	4,152	4,669	649	2,111	4,179	4,699	604	806	2,151	2,418
1993	1,240	2,740	4,602	5,042	612	1,814	2,735	2,991	474	668[j/]	1,677	1,837
1994	1,024	2,470	6,286	6,726	371	1,569	1,859	1,990	1	7[k/]	f/	f/
1995	1,104	2,333	10,591	11,051	476	1,465	6,920	7,221	96	435	948	989
1996	985	2,222	6,075	6,198	455	1,377	6,609	6,743	90	333	943	963
1997[l/]	832	2,069	8,654	8,654	433	1,286	5,701	5,701	51	323[m/]	2,470	2,470

a/ Includes only chinook and coho salmon landings.
b/ Derived from vessel registrations and fish landing tickets.
c/ Expressed in 1997 dollars.
d/ The establishment of a restricted vessel permit system drew a number of historically active vessels back into the fishery in 1980.
e/ Vessels were not required to land one salmon in 1984 to be eligible for a permit in 1985. The Oregon Fish and Wildlife Commission waived this requirement, because of the elimination of the coho fishery south of Cape Falcon.
f/ 312 licenses and delivery permits purchased by buyback program.
g/ Vessels traditionally landing salmon south of Cape Blanco and north of Cape Falcon were not required to land one salmon in 1985 to be eligible for a permit in 1986. The Oregon Fish and Wildlife Commission waived this requirement, because of the complete salmon closure south of Cape Blanco and a limited one-day coho season between the Columbia River and Cape Blanco.
h/ 118 licenses and delivery permits purchased by buyback program.
i/ Legislation passed during the 1991 season of the Oregon Legislature **waived** the requirement that troll permit holders must buy a 1991 permit to be able to renew for 1992. This was a **one-time** exemption for 1991 only.
j/ Vessels were not required to purchase a permit in 1994 to maintain their eligibility for a permit in 1995.
k/ 190 licenses and delivery permits purchased by buyback program.
l/ Preliminary.
m/ 72 licenses and delivery permits purchased by buyback program at the end of 1996 and early 1997.

TABLE B-36. Number of commercial salmon vessels by fishery area.[a/]

	Inside Fisheries			Ocean Fisheries					
Year	Puget Sound	Washington Coast	Columbia River	North of Cape Falcon	Cape Falcon to Cape Blanco	Cape Blanco to Horse Mountain	Horse Mountain to Point Arena	South of Point Arena	All Ocean Fisheries[b/]
1981	1,868	366	825	2,812	2,706	1,916	906	2,260	9,037
1982	1,812	370	806	2,464	2,567	1,818	1,064	2,345	8,539
1983	1,746	328	746	2,224	2,312	1,317	620	1,848	7,492
1984	1,532	289	750	572	488	800	519	1,689	3,447
1985	1,645	251	621	1,713	1,808	204	749	1,706	5,379
1986	1,519	234	669	1,618	1,975	893	769	1,653	5,665
1987	1,567	302	755	1,032	1,980	753	832	1,646	4,920
1988	1,619	315	856	684	2,001	723	849	1,830	4,710
1989	1,514	258	695	1,009	1,849	644	789	1,943	4,921
1990	1,482	266	640	1,024	1,466	300	560	1,631	4,216
1991	1,392	265	655	1,056	1,153	176	444	1,494	3,601
1992	1,241	273	519	678	629	6	41	1,065	2,261
1993	1,277	273	463	521	587	29	225	1,110	2,226
1994	1,024	218	390	-	348	54	151	934	1,346
1995	809	189	227	93	455	75	118	1,106	1,683
1996	518	196	230	86	427	125	129	881	1,477
1997	719	164	196	57	404	75	58	788	1,286

a/ Based on PacFIN annual vessel summary files retrieved from system July 9, 1998.
b/ Vessels with unspecified West Coast ocean catch areas are excluded from this total.

TABLE B-37. Geographic outline of West Coast recreational ocean seasons, 1978.

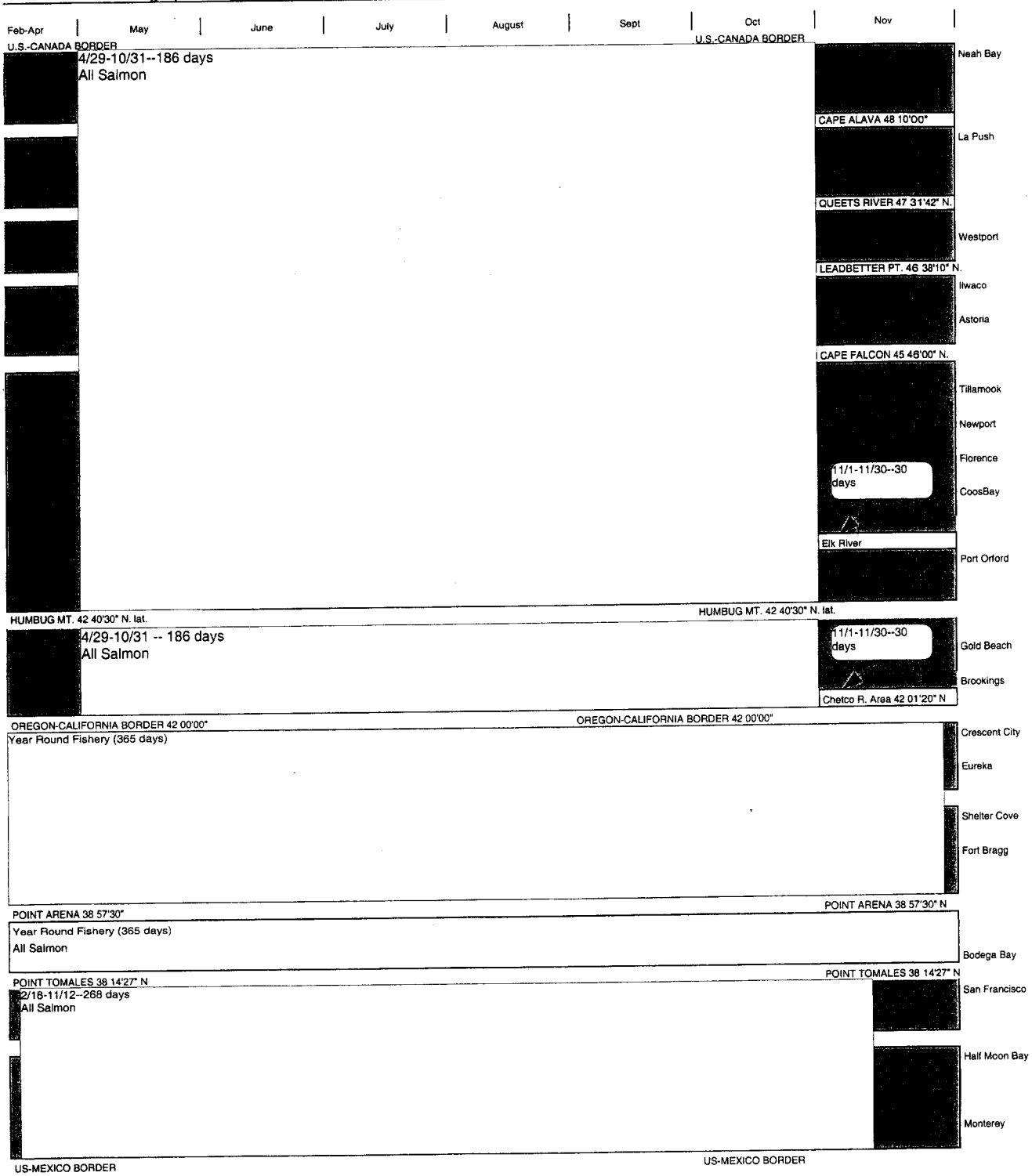


TABLE B-38. Geographic outline of West Coast recreational ocean seasons, 1984.

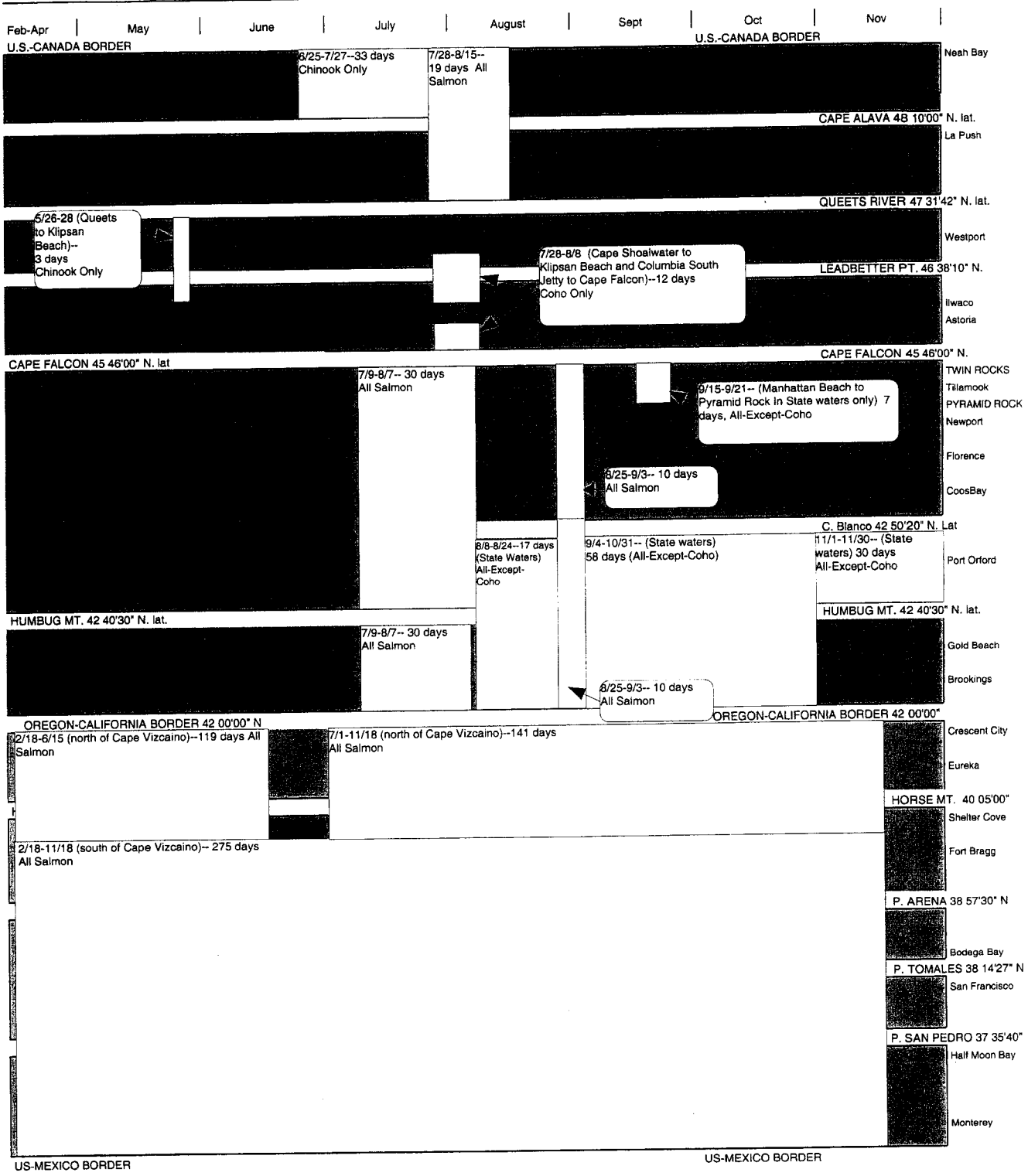


TABLE B-39. Geographic outline of West Coast recreational ocean seasons, 1988.

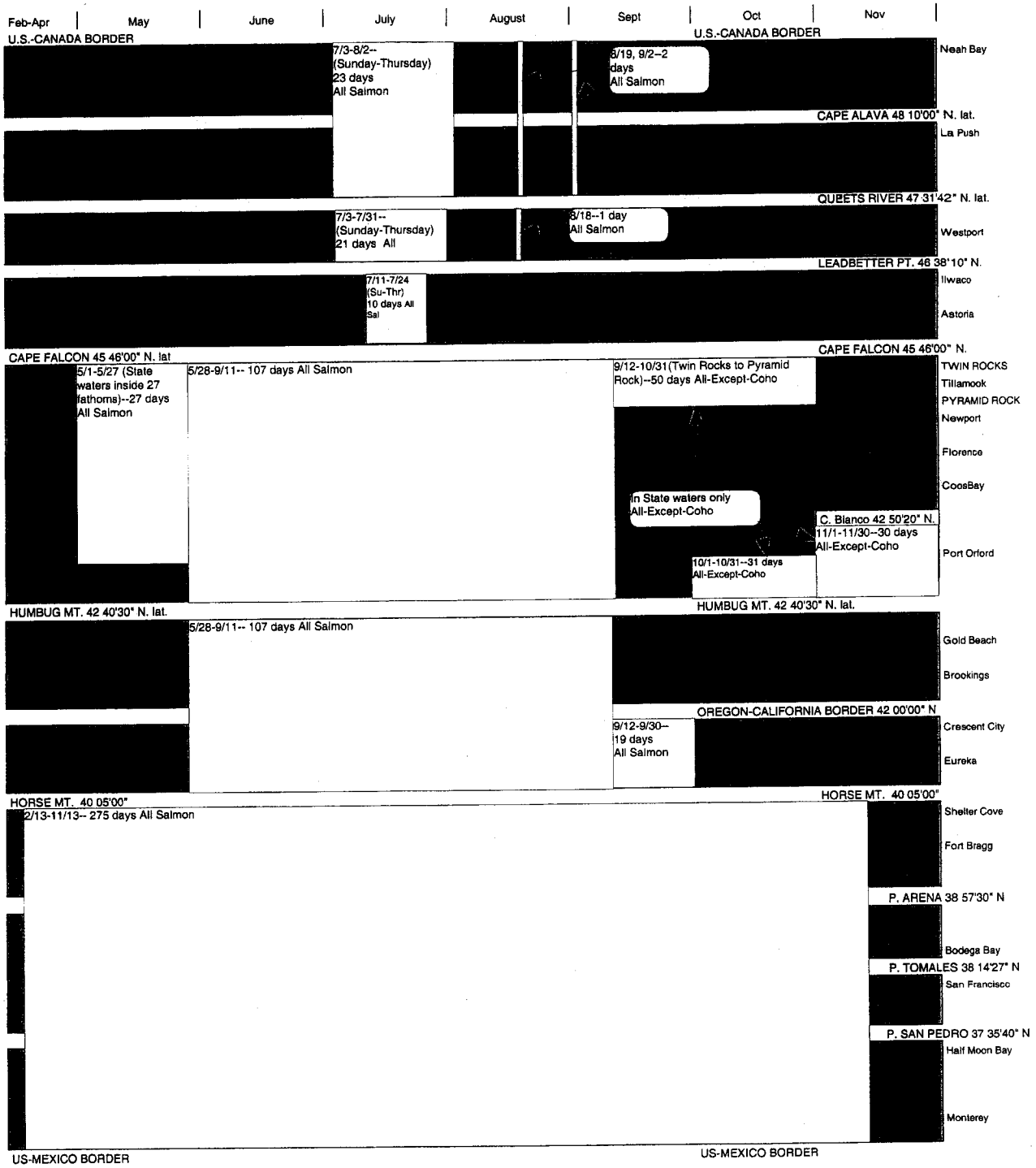


TABLE B-40. Geographic outline of West Coast recreational ocean seasons, 1994.

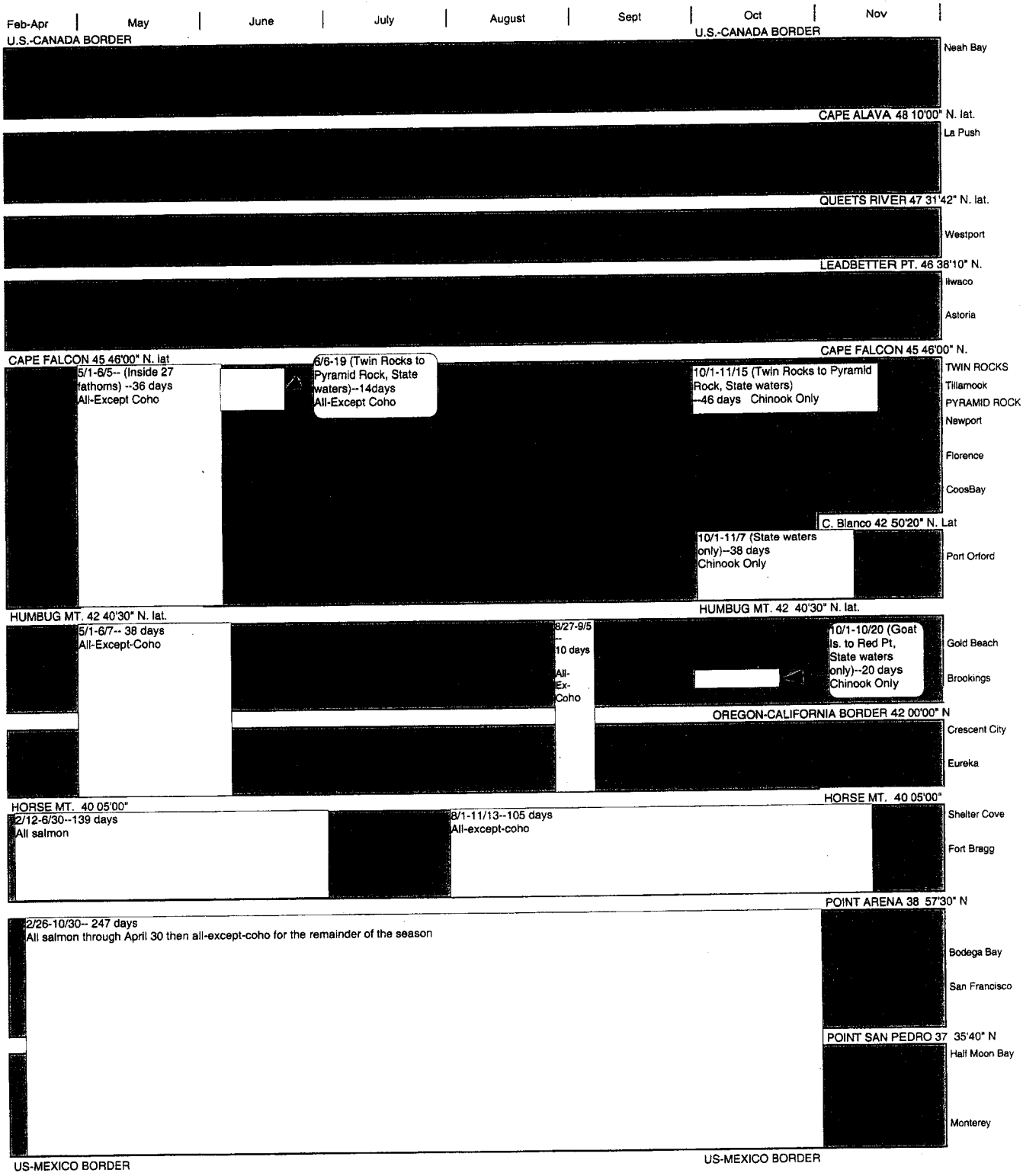


TABLE B-41. Geographic outline of West Coast recreational ocean seasons, 1997.

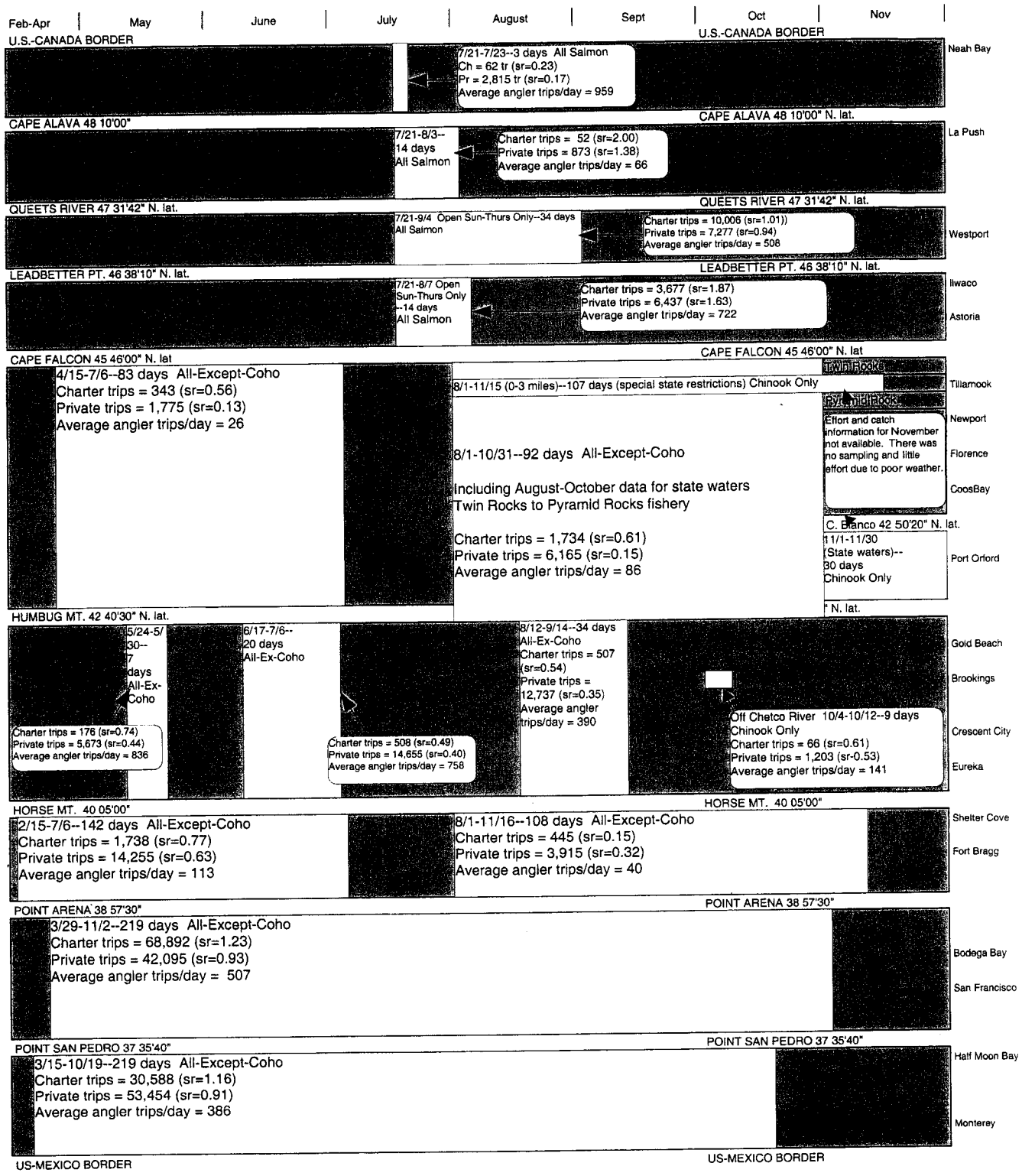


TABLE B-42. **California, Oregon, and Washington** ocean **recreational** salmon **effort** in thousands of angler trips and **catch** in thousands of fish by boat type.

Year or Average	Angler Trips		Chinook Catch[a/]		Coho Catch[a/]	
	Charter	Private	Charter	Private	Charter	Private
			WASHINGTON[f/g/]			
1981-1990	77.8	64.7	29.3	11.9	95.7	73.3
1979	220.8	89.8	61.1	15.7	227.9	62.4
1980	193.9	86.2	41.1	12.5	288.4	73.1
1981	162.2	74.6	62.8	21.7	182.4	55.5
1982	131.9	86.8	85.8	21.0	124.0	82.5
1983	123.0	90.4	39.1	9.5	122.6	89.2
1984	29.9	46.8	7.7	7.4	38.5	49.6
1985	62.9	49.8	17.4	9.2	99.0	69.0
1986	58.1	51.4	13.3	7.9	98.0	77.7
1987	53.7	48.3	27.7	12.9	59.9	58.6
1988	32.4	37.1	11.2	7.8	46.1	43.7
1989	58.5	65.9	11.2	8.1	95.2	94.5
1990	65.0	94.4	16.6	13.0	90.9	113.6
1991	43.7	69.6	5.0	7.3	80.2	111.6
1992	38.2	56.8	11.8	6.6	48.5	62.6
1993	40.2	68.9	5.8	6.9	52.8	62.3
1994	-	-	-	-	-	-
1995	17.9	30.0	b/	0.4	26.1	37.4
1996	15.3	23.5	b/	0.2	24.5	24.4
1997[c/]	12.5	15.1	1.7	2.3	12.5	12.8

a/ Catch numbers may include some illegal harvest.
b/ Less than 50 fish.
c/ Preliminary.
d/ Salmon data from surveyed ports only. These generally include Astoria, Garibaldi, Depoe Bay, Newport, Winchester Bay, Coos Bay, and Brookings. Since 1981, Pacific City and Florence have also been included. Gold Beach data are included from 1981-1987. Astoria was not included in 1994.
e/ Numbers do not include angling from the Columbia River jetty.
f/ Numbers do not include angling from the Columbia River jetty or from the late-season state waters Area 4B fishery.
g/ Values for 1982-1985 include some inriver Columbia River fishing after closure of the ocean fishery.

TABLE B-43. Numbers of recreational charter vessels by state.

Year	California (Charter Vessels Catching Salmon) Active[a/]	Casual	Total	Oregon (All Charter Vessels)	Washington (Licensed Salmon Charter Vessels)
1980				194	510
1981				248	478
1982				253	415
1983				255	375
1984				218	334
1985				226	288
1986				247	308
1987	96	53	149	254	280
1988	95	71	166	313	281
1989	89	93	182	322	276
1990	93	67	160	170	273
1991	78	108	186	171	267
1992	49	91	140	157	269
1993	66	61	127	148	265
1994	60	42	102	145	260
1995	93	71	164	134	231
1996	75	51	126	127	210
1997	82	38	120	122	209

a/ Active vessels land over 100 salmon, casual vessels land 1 to 100 salmon.

TABLE B-44. Central California charter vessel targeting strategies[a/]

Target Fishing Strategy				# of boats	# of Boat Trips Associated with each Target Species Combination				
Rockfish/ Lingcod	Salmon	Potluck	Other		Rockfish/ Lingcod	Salmon	Potluck	Other	Total
x				1	-	-	-	-	-
	x			9	0	164	0	0	164
		x		0	0	0	0	0	0
			x	5	0	0	0	95	95
x	x			4	0	0	0	0	0
x		x		0	0	0	0	0	0
x			x	2	-	-	-	-	-
	x	x		3	-	-	-	-	-
	x		x	0	0	0	0	0	0
		x	x	5	0	0	214	176	390
x	x	x		4	14	313	26	0	354
x	x		x	28	1,299	1,824	0	277	3,400
x		x	x	1	-	-	-	-	-
	x	x	x	10	0	438	113	165	717
x	x	x	x	22	683	1,295	446	366	2,790
			Total	94	2,105	4,097	804	1,099	8,105
		Total For Salmon Vessels		80	1,996	4,034	585	808	7,425

a/ Based on data from 1995-1997 CPFV logbooks, provided courtesy of California Department of Fish and Game. The central California region is defined to include: Monterey, Santa Cruz, San Mateo, San Francisco, Marin, Sonoma, Solano, Alameda, and Contra Costa counties. Distribution of boat trips across target species combinations not provided when the number of boats associated with a given combination is less than or equal to three (denoted "–" in the table).

TABLE B-45. Northern California charter vessel targeting strategies.[a/]

Target Fishing Strategy				# of Boat Trips Associated with each Target Species Combination			
Rockfish/ Lingcod	Salmon	Other	# of boats	Rockfish/ Lingcod	Salmon	Other	Total
x			1	-	-	-	-
	x		1	-	-	-	-
		x	0	0	0	0	0
x	x		1	-	-	-	-
x		x	0	0	0	0	0
	x	x	0	0	0	0	0
x	x	x	10	328	282	88	698
		Total	13	352	303	95	751
Total For Salmon Vessels			12	328	282	88	698

a/ Based on data from 1995-1997 CPFV logbooks, provided courtesy of California Department of Fish and Game. The northern California region is defined to include: Mendocino, Humboldt, and Del Norte counties. Distribution of boat trips across target species combinations not provided when the number of boats associated with a given combination is less than or equal to three (denoted "–" in the table).

TABLE B-46. Oregon charter vessels targeting strategies by port, 1998 (ODFW Ocean Salmon Management Program).

Target Fishing Strategy					Number of Boats by Port											
Salmon	Bottomfish	Halibut	Tuna	#boats	Astoria[a/]	Nehalem	Garibaldi	Pacific City	Depoe Bay	Newport	Winchester Bay	Coos Bay	Bandon	Gold Beach	Brookings	
	X			14			1	1	8	1					3	
		X		4			2			2						
	X	X		8			6						1	1		
	X		X	2					2							
	X	X	X	9			2		6					1		
X				5	5											
X	X			17	6				1	2	1					7
X	X	X		10		1	2		2	5						
X	X		X	1	1											
X	X	X	X	13	1		1		1	9			1			
			Total:	83	13	1	14	1	20	19	1		2	2	3	7
		Total Salmon		46	13	1	3	0	4	16	1		1	0	0	7

a/ All 13 of the Astoria vessels also target sturgeon.

TABLE B-47. Washington charter vessels targeting strategies by port, 1995-1996 (Washington Ocean Sampling Program).

Target Fishing Strategy					Number of Boats by Port		
Salmon	Bottomfish	Halibut	Tuna	# boats	Ilwaco[a/]	Westport	Neah Bay
			x	1	0	1	0
		x		7			7
	x	x		4		1	3
x				11	8	3	
x			x	1	1		
x		x	x	1		1	
x	x			7	5	2	
x	x		x	3	1	2	
x	x	x		16	2	8	6
x	x	x	x	18	3	15	
			Total	69	20	33	16
			Total Salmon	57	20	31	6

a/ 14 of the 16 vessels in Ilwaco also target sturgeon.

TABLE B-48. Recreational trips (thousands) in two of the major inside marine water salmon fisheries on the West Coast.

	Puget Sound	Buoy-10
1985	882	n/a
1986	972	102
1987	1,180	125
1988	927	183
1989	1,027	148
1990	1,016	76
1991	924	169
1992	726	115
1993	809	76
1994	353	9
1995	514	25
1996	n/a	18
1997	n/a	56
Average	848	92

TABLE B-49. Salmon processors/buyers, by total volume purchased of all West Coast salmon species and by percent of total purchases comprised of ocean caught salmon, 1995-1997 average for known processors/buyers (West Coast commercial ocean troll Indian and non-Indian salmon).

Purchases (all species)	Ocean Salmon as a Percent of Purchases of All Species (1995 through 1997 Average)						Row Total	Cumulative Row Total
	< 5%	5%-20%	20%-50%	50%-80%	80%-95%	>95%		
Number of Processors								
≤$10,000	21	29	31	37	20	102	240	240
$10,000-$150,000	40	19	33	12	6	7	117	357
$150,000-$500,000	12	8	8				28	385
$500,000-$3,000,000	25	8	3	1		1	38	423
>$3,000,000	11	7	1				19	442
Column Total	109	71	76	50	26	110	442	
Cumulative Column Total	109	180	256	306	332	442		
Percent of Total Number of Processors								
≤$10,000	4.8	6.6	7.0	8.4	4.5	23.1	54.3	54
$10,000-$150,000	9.0	4.3	7.5	2.7	1.4	1.6	26.5	81
$150,000-$500,000	2.7	1.8	1.8	0.0	0.0	0.0	6.3	87
$500,000-$3,000,000	5.7	1.8	0.7	0.2	0.0	0.2	8.6	96
>$3,000,000	2.5	1.6	0.2	0.0	0.0	0.0	4.3	100
Column Total	24.7	16.1	17.2	11.3	5.9	24.9	100.0	
Cumulative Column Total	24.7	40.7	57.9	69.2	75.1	100		
Exvessel Value of Purchases								
≤$10,000	3,199	16,357	45,226	87,226	51,797	192,054	395,858	395,858
$10,000-$150,000	42,824	121,803	715,268	237,167	209,100	149,093	1,475,256	1,871,114
$150,000-$500,000	92,601	392,301	684,284				1,169,186	3,040,300
$500,000-$3,000,000	255,116	991,753	1,422,760	277,930		853,023	3,800,582	6,840,882
>$3,000,000	2,136,973	3,657,614	961,111				6,755,699	13,596,580
Column Total	2,530,713	5,179,828	3,828,649	602,324	260,897	1,194,171	13,596,580	
Cumulative Colomn Total	2,530,713	7,710,541	11,539,189	12,141,513	12,402,410	13,596,580		
Salmon Purchases By Group as a Percent of Total Salmon Purchases								
≤$10,000	0.0	0.1	0.3	0.6	0.4	1.4	2.9	2.9
$10,000-$150,000	0.3	0.9	5.3	1.7	1.5	1.1	10.9	13.8
$150,000-$500,000	0.7	2.9	5.0	0.0	0.0	0.0	9	22.4
$500,000-$3,000,000	1.9	7.3	10.5	2.0	0.0	6.3	28	50.3
>$3,000,000	15.7	26.9	7.1	0.0	0.0	0.0	50	100.0
Column Total	18.6	38.1	28.2	4.4	1.9	8.8	100	
Cumulative Column Total	18.6	56.7	84.9	89.3	91.2	100.0		

TABLE B-50. Number of salmon processors/buyers and purchases by processor/buyer rank (based on value of ocean caught salmon purchases) and grouped by level of ocean caught salmon purchases, 1995 through 1997 average for known processors/buyers (West Coast commercial ocean troll Indian and non-Indian salmon).

Processor/Buyer Percentile Rank	Total Ocean Caught Salmon Purchases (1995 through 1997)					
	≤$1,000	$1,000-10,000	$10,000-100,000	$>100,000	Row Total	Cumulative Row Total
Number of Processors/Buyers						
≤50	160	61			221	221
50-80		110	22		132	353
80-90			44		44	397
90-95			18	4	22	419
95-100				23	23	442
Column Total	160	171	84	27	442	
Cumulative Column Total	160	331	415	442		
Percent of Total Processors						
≤50	36.2	13.8			50.0	50.0
50-80		24.9	5.0		29.9	79.9
80-90			10.0		10.0	89.8
90-95			4.1	0.9	5.0	94.8
95-100				5.2	5.2	100.0
Column Total	36.2	38.7	19.0	6.1	100.0	
Cumulative Column Total	36.2	74.9	93.9	100.0		
Exvessel Value of Salmon Purchases ($)						
≤50	56,370	91,638			148,008	148,008
50-80		477,491	255,808		733,299	881,306
80-90			1,051,286		1,051,286	1,932,593
90-95			1,171,845	499,840	1,671,684	3,604,277
95-100				9,992,304	9,992,304	13,596,580
Column Total	56,370	569,128	2,478,939	10,492,143	13,596,580	
Cumulative Column Total	56,370	625,498	3,104,437	13,596,580		
Salmon Purchases By Group as a Percent of Total Salmon Purchases						
≤50	0.4	0.7			1.1	1.1
50-80		3.5	1.9		5.4	6.5
80-90			7.7		7.7	14.2
90-95			8.6	3.7	12.3	26.5
95-100				73.0	73.0	100.0
Column Total	0.4	4.2	17.7	77.7	100.0	
Cumulative Column Total	0.4	4.6	22.3	100.0		

TABLE B-51. Number of state licensed buyers and processors receiving fish landed on the West Coast.

Purchases (All West Coast Species)	Number of Buyers and Processors Handling		Percent Handling Ocean Caught Salmon
	All Species	Ocean Caught Salmon	
<$10,000	1,101	240	21.8
$10,000-$150,000	557	117	21.0
$150,000-$500,000	123	28	22.8
$500,000-$3,000,000	122	38	31.1
>$3,000,000	24	19	79.2
Column Total	1,927	442	22.3

TABLE B-52. Numbers of processors/buyers and purchases, by processor/buyer rank (based on value of ocean-caught salmon purchases) and by number of vessels from which deliveries are received, 1995 through 1997 average for known processors/buyers (West Coast commercial ocean troll Indian and non-Indian salmon).

Processor/Buyer Percentile Rank	Number of Vessels from Which Deliveries are Received (1995 through 1997 Average) 1-2	>2-8	>8-16	>16-64	>64	Row Total	Cum Row Tot
Number of Processor/Buyers							
≤50	197	17				214	214
50-80	69	45	16			130	344
80-90	5	15	11	10		41	385
90-95		2	3	17		22	407
95-100				6	17	23	430
Column Total	271	79	30	33	17	430	
Cumulative Column Total	271	350	380	413	430		
Percent of Processors/Buyers							
≤50	45.8	4.0				49.8	49.8
50-80	16.0	10.5	3.7			30.2	80.0
80-90	1.2	3.5	2.6	2.3		9.5	89.5
90-95		0.5	0.7	4.0		5.1	94.7
95-100				1.4	4.0	5.3	100.0
Column Total	63.0	18.4	7.0	7.7	4.0	100.0	
Cumulative Column Total	63.0	81.4	88.4	96.0	100.0		
Exvessel Value of Salmon Purchases ($)							
≤50	124,156	21,990				146,146	146,146
50-80	302,431	286,572	138,735			727,738	873,883
80-90	124,847	316,500	268,328	256,688		966,362	1,840,245
90-95		132,189	176,151	1,363,344		1,671,684	3,511,929
95-100				1,214,885	8,777,418	9,992,304	13,504,233
Column Total	551,433	757,251	583,213	2,834,917	8,777,418	13,504,233	
Cumulative Column Total	551,433	1,308,684	1,891,897	4,726,815	13,504,233		
Salmon Purchases By Group as a Percent of Total Salmon Purchases							
≤50	0.9	0.2	0.0	0.0	0.0	1.1	1.1
50-80	2.2	2.1	1.0	0.0	0.0	5.4	6.5
80-90	0.9	2.3	2.0	1.9	0.0	7.2	13.6
90-95	0.0	1.0	1.3	10.1	0.0	12.4	26.0
95-100	0.0	0.0	0.0	9.0	65.0	74.0	100.0
Column Total	5.6	4.3	21.0	65.0	100.0	100.0	
Cumulative Column Total	9.7	14.0	35.0	100.0			
Average Salmon Purchases Per Processor/Buyer							
						Row Average (Weighted)	
≤50	630	1,294				683	
50-80	4,383	6,368	8,671			5,598	
80-90	24,969	21,100	24,393	25,669		23,570	
90-95		66,095	58,717	80,197		75,986	
95-100				202,481	516,319	434,448	
Column Average (Weighted)	2,035	9,585	19,440	85,907	516,319		

TABLE B-53. Numbers of processors/buyers and salmon purchases, by processor rank (based on value of ocean-caught salmon purchases) and by number of processing/buying sites (all species), 1995 through 1997 average for known processors/buyers (West Coast commercial ocean troll Indian and non-Indian salmon).

Processor/Buyer Percentile Rank	Number of Processing/Buying Sites (1995 through 1997 Average) 1	>1-2	>2-4	>4-8	>8	Row Total	Cumulative Row Total
			Number of Processors/Buyers				
≤50	142	51	12	12	4	221	221
50-80	54	37	29	9	3	132	353
80-90	9	8	18	6	3	44	397
90-95	2	2	10	7	1	22	419
95-100	1	2	7	6	7	23	442
Column Total	208	100	76	40	18	442	
Cumulative Column Total	208	308	384	424	442		
			Percent of Total Processors/Buyers				
≤50	32.1	11.5	2.7	2.7	0.9	50.0	50.0
50-80	12.2	8.4	6.6	2.0	0.7	29.9	79.9
80-90	2.0	1.8	4.1	1.4	0.7	10.0	89.8
90-95	0.5	0.5	2.3	1.6	0.2	5.0	94.8
95-100	0.2	0.5	1.6	1.4	1.6	5.2	100.0
Column Total	47.1	22.6	17.2	9.0	4.1	100.0	
Cumulative Column Total	47.1	69.7	86.9	95.9	100.0		
			Exvessel Value of Salmon Purchases ($)				
≤50	80,444	45,712	10,042	8,157	3,652	148,008	148,008
50-80	271,495	208,508	164,723	66,923	21,650	733,299	881,306
80-90	235,996	154,627	438,902	133,082	88,680	1,051,286	1,932,593
90-95	123,874	110,870	773,266	544,888	118,787	1,671,684	3,604,277
95-100	140,628	596,134	1,983,398	3,820,828	3,451,316	9,992,304	13,596,580
Column Total	852,436	1,115,852	3,370,331	4,573,877	3,684,084	13,596,580	
Cumulative Column Total	852,436	1,968,288	5,338,619	9,912,496	13,596,580		
			Salmon Purchases By Group as a Percent of Total Salmon Purchases				
≤50	0.6	0.3	0.1	0.1	0.0	1.1	1.1
50-80	2.0	1.5	1.2	0.5	0.2	5.4	6.5
80-90	1.7	1.1	3.2	1.0	0.7	7.7	14.2
90-95	0.9	0.8	5.7	4.0	0.9	12.3	26.5
95-100	1.0	4.4	14.6	28.1	25.4	73.5	100.0
Column Total	6.3	8.2	24.8	33.6	27.1	100.0	
Cumulative Column Total	6.3	14.5	39.3	72.9	100.0		

TABLE B-54. Numbers of processors/buyers and salmon purchases, by number of vessels from which ocean-caught salmon are received and by number of processing/buying sites (all species), 1995 through 1997 average for known processors/buyers (West Coast commercial ocean troll Indian and non-Indian salmon).

Number of Vessels from Which Deliveries are Received	Processor/Buyer Number of Processing/Buying Sites (1995 through 1997 Average).						
	1	>1-2	>2-4	>4-8	>8	Row Total	Cumulative Row Total
				Number of Processors/Buyers			
1-2	174	59	22	12	4	271	271
>2-8	15	28	22	11	3	79	350
>8-16	8	5	10	4	3	30	380
>16-64	2	4	19	7	1	33	413
>64		1	3	6	7	17	430
Column Total	199	97	76	40	18	430	
Cumulative Column Total	199	296	372	412	430		
				Percent of Total Processors/Buyers			
1-2	40.5	13.7	5.1	2.8	0.9	63.0	63.0
>2-8	3.5	6.5	5.1	2.6	0.7	18.4	81.4
>8-16	1.9	1.2	2.3	0.9	0.7	7.0	88.4
>16-64	0.5	0.9	4.4	1.6	0.2	7.7	96.0
>64	0.0	0.2	0.7	1.4	1.6	4.0	100.0
Column Total	46.3	22.6	17.7	9.3	4.2	100.0	
Cumulative Column Total	46.3	68.8	86.5	95.8	100.0		
				Exvessel Value of Salmon Purchases ($)			
1-2	343,921	117,106	77,864	8,891	3,652	551,433	551,433
>2-8	103,479	206,721	307,713	117,689	21,650	757,251	1,308,684
>8-16	130,946	43,495	174,753	145,340	88,680	583,213	1,891,897
>16-64	206,984	279,206	1,748,811	481,130	118,787	2,834,917	4,726,815
>64		444,084	1,061,190	3,820,828	3,451,316	8,777,418	13,504,233
Column Total	785,330	1,090,611	3,370,331	4,573,877	3,684,084	13,504,233	
Cumulative Column Total	785,330	1,875,941	5,246,271	9,820,149	13,504,233		
				Salmon Purchases By Group as a Percent of Total Salmon Purchases			
1-2	2.5	0.9	0.6	0.1	0.0	4.1	4.1
>2-8	0.8	1.5	2.3	0.9	0.2	5.6	9.7
>8-16	1.0	0.3	1.3	1.1	0.7	4.3	14.0
>16-64	1.5	2.1	13.0	3.6	0.9	21.0	35.0
>64	0.0	3.3	7.9	28.3	25.6	65.0	100.0
Column Total	5.8	8.1	25.0	33.9	27.3	100.0	
Cumulative Column Total	5.8	13.9	38.8	72.7	100.0		
				Average Salmon Purchases Per Processor/Buyer			
						Row Average (Wtd)	
1-2	1,977	1,985	3,539	741	913	2,035	
>2-8	6,899	7,383	13,987	10,699	7,217	9,585	
>8-16	16,368	8,699	17,475	36,335	29,560	19,440	
>16-64	103,492	69,801	92,043	68,733	118,787	85,907	
>64		444,084	353,730	636,805	493,045	516,319	
Column Average (Wtd)	3,946	11,243	44,346	114,347	204,671	31,405	

TABLE B-55. West Coast ports with more than $10,000 exvessel value of salmon landings for a three-year period (1995-1997) for all areas of catch.

Washington		Oregon		California	
Port	County	Port	County	Port	County
Blaine	Whatcom	Columbia River	Oregon Upriver Counties	Cresent City	Del Norte
Bellingham	Whatcom	Astoria	Clatsop	Fields Landing	Humboldt
Point Roberts	Whatcom	Garibaldi (Tillamook)	Tillamook	Eureka	Humboldt
Friday Harbor	San Juan	Pacific City	Tillamook	Trinidad	Humboldt
Anacortes	Skagit	Depoe Bay	Lincoln	Shelter Cove	Humboldt
LaConner	Skagit	Newport	Lincoln	Fort Bragg	Mendocino
Whidbey Island	Island	Florence	Lane	Albion	Mendocino
Everett	Snohomish	Winchester	Douglas	Point Arena	Mendocino
Seattle	King	Charleston (Coos Bay)	Coos	Bodega Bay	Sonoma
Tacoma	Pierce	Bandon	Coos	Jenner	Sonoma
Olympia	Thurston	Port Orford	Curry	Dillon Beach	Marin
Shelton	Mason	Brookings	Curry	Bolinas	Marin
Port Townsend	Jefferson			Sausilito	Marin
Queets	Jefferson			San Francisco	San Francisco
Poulsbo	Kitsap			Berkeley	Alameda
Bremmerton	Kitsap			Richmond	Contra Costa
Port Angeles	Clallam			Princeton	San Mateo
Neah Bay	Clallam			Pigeon Point	San Mateo
La Push	Clallam			Santa Cruz	Santa Cruz
Taholah	Grays Harbor			Monterey	Monterey
Aberdeen	Grays Harbor			Moss Landing	Monterey
Hoquiam	Grays Harbor			Morro Bay	San Luis Obispo
Westport	Grays Harbor			Avila	San Luis Obispo
Grayland	Grays Harbor			Santa Barbara	Santa Barbara
Tokeland	Pacific			Ventura	Ventura
Raymond	Pacific			San Pedro	Los Angeles
South Bend	Pacific				
Bay Center	Pacific				
Naselle	Pacific				
Long Beach	Pacific				
Ilwaco	Pacific				
Chinook	Pacific				
Cathlamet	Wahkiakum				
Skamania	Skamania				
The Dalles	Klickitat				

TABLE B-56. Numbers of nonIndian vessels landing, total non-Indian revenue and non-Indian ocean salmon revenue by county, for vessels with valid identification numbers.[a/]

		Vessels Landing						Primary Port[b/] Vessels Based on						Exvessel Revenue ($ thousands)					
		All Vessels			Salmon Vessels			All Species			Ocean Salmon			All Species			Salmon[c/]		
Region	County	1988	1989	1997	1988	1989	1997	1988	1989	1997	1988	1989	1997	1988	1989	1997	1988	1989	1997
St. of Geo.	Whatcom	1,496	1,436	806	1	25	0	804	762	563	0	19	0	23,513	24,256	18,178	conf	89	0
San Juan	San Juan	322	197	23	11	2	0	78	59	3	2	1	0	1,311	758	42	20	conf	0
	Skagit	1,078	856	276	38	3	0	350	312	136	17	2	0	5,887	5,718	2,799	364	conf	0
Metro Puget	Snohomish	806	790	173	178	166	0	189	219	64	52	73	0	5,501	5,948	1,461	115	54	0
Sound	King	1,516	1,186	318	180	50	2	558	493	127	48	22	2	11,015	9,822	8,103	416	73	conf
	Pierce	223	267	142	6	14	0	85	106	60	1	10	0	1,363	1,765	1,835	conf	3	0
South Puget	Thurston	36	27	5	17	6	0	10	13	2	2	5	0	23	24	conf	8	conf	0
Sound	Mason	44	75	7	0	1	0	20	12	4	0	1	0	62	75	38	0	conf	0
NE Olympic &	Jefferson	308	307	90	19	14	0	92	74	40	12	6	0	1,328	1,416	1,779	141	61	0
NW Olympic	Clallam	842	993	272	162	271	25	341	536	145	77	203	20	3,795	4,535	3,451	413	314	48
Central WA	Grays Harbor	776	803	369	351	457	26	371	521	258	175	334	23	20,943	16,780	20,456	662	651	70
WA S. Coast &	Pacific	1,000	887	342	224	194	0	604	622	253	81	125	0	25,366	18,704	9,863	200	156	0
OR Col. Upriver	Not Identified	700	536	192	0	0	0	483	395	158	0	0	0	13,560	3,300	558	0	0	0
Astoria-	Clatsop	295	374	246	91	185	5	131	162	155	32	63	2	17,559	19,626	22,489	137	261	conf
Tillamook	Tillamook	587	593	132	542	547	69	409	385	106	402	365	58	5,897	3,989	1,603	2,864	1,281	61
Newport	Lincoln	975	890	417	758	711	212	640	519	286	532	419	180	25,195	19,319	21,238	7,201	2,369	1,645
Coos Bay	Lane	245	215	45	227	202	34	96	82	28	98	80	26	2,196	1,004	798	1,252	377	139
	Douglas	362	397	55	332	369	34	237	226	36	221	214	22	2,881	2,018	1,041	1,498	917	41
	Coos	925	909	219	829	771	104	458	506	137	455	497	80	18,674	16,563	12,134	6,625	3,721	436
Brookings	Curry	471	464	226	382	358	63	184	205	155	129	138	40	6,885	9,679	8,895	2,034	1,110	140
Cresc. City	Del Norte	401	390	275	127	148	5	214	231	175	31	60	0	15,824	13,143	14,274	559	294	conf
Eureka	Humboldt	460	420	259	329	281	28	212	213	181	100	100	20	12,774	8,819	14,271	1,774	557	29
Fort Bragg	Mendocino	1,059	1,016	303	842	777	57	666	607	201	583	508	32	22,825	13,544	11,538	10,713	2,719	92
San Fran	Sonoma	1,033	935	371	877	784	199	565	493	211	527	430	110	15,674	6,973	5,801	10,468	2,176	734
	Marin	426	357	144	274	234	58	164	111	52	118	87	31	4,281	1,610	3,064	2,322	612	329
	San Fran	656	679	421	261	318	132	307	325	269	108	115	73	9,263	8,377	19,737	1,894	865	1,089
	Alameda	227	276	156	127	154	48	112	158	73	82	101	23	3,076	3,133	2,068	1,598	674	75
	San Mateo	610	740	411	497	620	270	302	331	226	246	292	175	7,194	5,010	6,427	4,295	2,079	1,772
	Marin	426	357	144	274	234	58	164	111	52	118	87	31	4,281	1,610	3,064	2,322	612	329
Monterey	Monterey	564	574	559	377	397	297	387	391	328	281	304	220	9,340	8,207	14,564	3,315	1,626	2,006
	Santa Cruz	304	376	188	247	299	131	132	171	85	107	139	56	3,079	1,942	1,619	2,002	799	594
S.L. Obispo	S.L. Obispo	445	441	426	222	214	134	255	301	275	131	161	81	8,213	7,467	6,783	1,488	746	533
S. Barbara	S. Barbara	307	351	308	15	12	15	194	223	206	5	6	9	5,691	8,759	8,778	27	46	20
	Ventura	315	404	317	9	4	4	168	219	194	0	2	2	13,390	12,562	21,679	conf	conf	conf
Los Angeles	Los Angeles	587	538	444	0	4	1	390	383	289	0	1	0	59,130	44,442	32,084	0	conf	conf
	Orange	110	107	94	2	3	2	69	75	67	1	2	2	1,118	1,286	1,887	conf	conf	conf
San Diego	San Diego	375	376	236	6	6	0	275	287	170	0	2	0	6,982	9,565	6,456	conf	conf	0
Inland Californ	Not Identified	245	210	25	221	188	1	120	103	14	116	97	0	1,525	599	122	1,436	519	conf
Total								10,836	10,942	5,784	4,890	5,071	1,318	396,612	322,346	310,981	68,192	25,808	10,200
Total Confidential Exvessel Value Excluded														0	0	6	29	45	19

a/ Revenue is not reported where less than 10 vessels made landings in a county, indicated as "conf". Total of landings exvessel value with held for individual counties is reported at the end of the table.

b/ The primary port is the port where a majority of the value of all landings were made. Primary ports were assigned based on all species and on ocean caught salmon landings of chinook, pink and coho salmon.

c/ Ocean caught, chinook, coho and pink salmon only.

TABLE B-57. Estimates of **California recreational** ocean salmon angler **trips** by port area and boat type. (Page 1 of 2)

Year	Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	State Total
			CHARTER TRIPS (thousands)			
1976	0.8	2.2	4.1	66.2	7.9	81.2
1977	1.0	1.2	1.7	72.0	4.8	80.7
1978	2.4	1.3	0.9	47.3	1.3	53.2
1979	2.2	0.7	3.3	69.6	3.1	79.0
1980	1.4	0.6	2.0	62.4	2.9	69.3
1981	0.6	0.5	1.3	56.1	2.7	61.1
1982	0.5	0.4	2.4	72.2	4.4	79.9
1983	0.5	1.4	1.6	50.8	2.7	56.9
1984	0.5	0.9	1.4	56.8	1.9	61.5
1985	1.6	3.5	2.3	74.6	3.2	85.1
1986	1.1	2.8	2.8	69.6	10.1	86.4
1987	1.5	3.8	4.6	82.9	12.3	105.0
1988	0.9	2.5	5.6	81.1	11.7	101.7
1989	0.6	5.4	4.5	83.5	14.0	108.0
1990	0.8	3.2	2.7	54.3	17.4	78.4
1991	1.0	2.1	5.4	43.7	17.0	69.2
1992	0.1	0.2	1.5	38.6	7.3	47.7
1993	0.4	1.0	2.0	53.2	9.4	66.0
1994	0.2	0.2	1.3	63.9	7.2	72.8
1995	0.1	0.7	3.8	79.2	68.9	152.9
1996	a/	0.6	5.0	57.6	21.4	84.6
1997[b/]	a/	0.8	2.2	68.9	30.6	102.4
			PRIVATE TRIPS (thousands)			
1976	27.9	28.2	13.0	30.5	6.3	106.0
1977	21.8	25.5	14.0	34.2	5.1	100.7
1978	15.0	19.8	8.5	48.7	5.4	97.5
1979	9.6	17.3	6.5	34.7	6.7	74.8
1980	17.8	22.5	4.4	23.7	6.7	75.1
1981	13.4	15.8	6.8	19.0	5.7	60.8
1982	24.6	22.3	8.0	28.7	7.7	91.4
1983	21.2	21.5	6.8	9.5	6.8	65.8
1984	23.3	17.9	4.6	8.2	11.4	65.5
1985	29.5	31.4	12.6	18.7	14.6	106.8
1986	24.5	26.1	10.4	22.1	26.1	109.2
1987	50.6	42.4	9.4	25.5	35.4	163.3
1988	43.0	30.3	12.2	27.0	28.2	140.7
1989	33.0	37.7	13.0	11.5	41.7	137.0
1990	41.9	35.4	11.9	35.4	49.0	173.7
1991	24.5	25.3	17.2	26.5	33.8	127.4
1992	9.0	8.9	9.7	23.4	29.1	80.2
1993	15.0	17.3	17.4	29.6	29.7	108.9
1994	9.4	6.3	18.1	43.7	39.6	117.1
1995	11.8	12.0	25.4	62.2	114.2	225.6
1996	11.3	13.6	26.2	46.6	43.2	140.9
1997[b/]	6.6	11.6	18.2	42.1	53.5	131.9

TABLE B-57. Estimates of **California recreational** ocean salmon angler **trips** by port area and boat type. (Page 2 of 2)

Year	Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	State Total
			TOTAL TRIPS (thousands)			
1976	28.7	30.5	17.0	96.8	14.2	187.2
1977	22.8	26.7	15.7	106.2	9.9	181.3
1978	17.4	21.2	9.5	96.1	6.6	150.7
1979	11.7	18.0	9.8	104.3	9.9	153.7
1980	19.2	23.1	6.4	86.1	9.6	144.4
1981	14.1	16.3	8.1	75.1	8.4	122.0
1982	25.1	22.8	10.4	100.9	12.1	171.3
1983	21.7	22.8	8.4	60.3	9.5	122.7
1984	23.8	18.8	6.0	65.0	13.3	127.0
1985	31.0	34.9	15.0	93.3	17.8	191.9
1986	25.6	28.9	13.2	91.7	36.2	195.6
1987	52.1	46.1	14.0	108.4	47.7	268.3
1988	43.9	32.8	17.8	108.1	39.9	242.4
1989	33.6	43.0	17.5	95.0	55.7	244.9
1990	42.7	38.7	14.6	89.7	66.5	252.1
1991	25.6	27.4	22.6	70.2	50.8	196.6
1992	9.1	9.1	11.2	62.0	36.4	127.9
1993	15.4	18.3	19.3	82.8	39.1	174.9
1994	9.7	6.4	19.4	107.6	46.8	189.9
1995	11.9	12.8	29.3	141.5	183.1	378.5
1996	11.3	14.2	31.3	104.2	64.5	225.4
1997[b/]	6.6	12.4	20.4	111.0	84.0	234.3

a/ Less than 50.
b/ Preliminary.

TABLE B-58. Estimates of **Oregon recreational** ocean salmon angler **trips** by port area and boat type. (Page 1 of 2)

Year	Astoria	Tillamook	Newport	Coos Bay	Brookings	State Total
			CHARTER TRIPS (thousands)			
1979	18.5	2.8	26.7	22.7	3.0	73.7
1980	26.3	3.7	26.7	19.6	2.8	79.1
1981	16.0	3.1	25.5	17.6	3.2	65.4
1982	11.8	2.1	14.6	11.4	3.4	43.3
1983	12.9	1.8	11.5	12.1	3.6	41.9
1984	2.7	2.5	11.1	5.9	2.1	24.3
1985	8.3	5.3	23.1	12.5	4.2	53.4
1986	7.7	3.0	20.0	9.6	3.4	43.7
1987	8.0	5.5	28.4	14.4	4.6	60.9
1988	2.4	7.3	34.2	15.6	3.0	62.5
1989	9.1	5.2	28.3	13.1	4.4	60.2
1990	8.5	5.5	26.6	12.2	2.5	55.3
1991	8.1	2.5	19.2	8.4	2.1	40.3
1992	4.6	2.7	14.8	7.4	0.5	30.0
1993	5.8	0.5	4.7	1.8	0.6	13.4
1994	0.0[a/]	1.2	b/	b/	0.2	1.4
1995	2.5	1.2	0.6	b/	0.3	4.6
1996	1.9	0.8	2.1	0.1	0.6	5.6
1997[c/]	1.3	0.3	1.8	0.0	0.5	3.9
			PRIVATE TRIPS (thousands)			
1979	24.3	16.3	45.4	52.9	48.8	187.7
1980	20.1	29.3	56.6	65.2	47.7	218.9
1981	28.7	34.9	51.8	66.3	64.0	245.8
1982	15.4	22.5	38.8	47.9	58.0	182.7
1983	18.0	23.5	31.0	59.6	52.1	184.1
1984	4.4	21.3	32.8	34.3	35.9	128.7
1985	11.7	33.2	47.4	51.0	54.8	198.2
1986	12.8	15.0	32.2	34.0	49.3	143.3
1987	9.1	23.6	48.6	48.1	64.8	194.2
1988	3.2	26.0	55.5	53.5	50.0	188.2
1989	10.7	26.1	54.4	53.5	61.3	206.1
1990	17.0	28.0	44.8	52.8	48.6	191.2
1991	13.6	18.5	34.0	49.3	34.4	149.7
1992	8.3	23.4	38.3	48.2	17.2	135.4
1993	12.7	5.1	12.4	13.6	23.2	66.9
1994	0.0[a/]	9.1	0.1	0.4	16.0	25.5
1995	7.2	3.9	0.4	0.7	19.1	31.2
1996	3.7	7.5	0.6	3.8	22.7	38.3
1997[c/]	2.3	3.4	0.6	3.9	16.1	26.4

TABLE B-58. Estimates of **Oregon recreational** ocean salmon angler **trips** by port area and boat type. (Page 2 of 2)

Year	Astoria	Tillamook	Newport	Coos Bay	Brookings	State Total
			TOTAL TRIPS (thousands)			
1979	43.3	31.0	72.4	94.7	60.0	301.3
1980	46.3	47.8	83.9	97.4	56.0	331.4
1981	44.7	38.0	77.3	83.9	67.1	311.0
1982	27.2	24.6	53.5	59.4	61.4	226.0
1983	30.9	25.3	42.6	71.6	55.7	226.0
1984	8.3	25.0	41.5	40.2	38.0	153.1
1985	20.0	38.6	70.6	63.5	59.0	251.6
1986	20.5	17.9	52.2	43.6	52.7	187.0
1987	17.1	29.1	76.9	62.6	69.4	255.1
1988	5.7	33.3	89.6	69.0	53.1	250.7
1989	19.8	31.3	82.8	66.6	65.8	266.3
1990	25.5	33.5	71.4	65.0	51.1	246.6
1991	21.7	21.0	53.3	57.7	36.4	190.1
1992	12.9	26.1	53.1	55.6	17.7	165.3
1993	17.8	5.6	17.1	15.3	23.8	79.6
1994	0.0[a/]	10.3	0.1	0.4	16.2	26.9
1995	9.6	5.1	0.9	0.7	19.4	35.8
1996	5.6	8.3	2.8	3.9	23.3	44.0
1997[c/]	3.6	3.7	2.4	3.9	16.6	30.2

a/ The fishery north of Cape Falcon was closed and it is assumed that no trips were taken out of Astoria to the south of Cape Falcon area. No samplers were stationed in Astoria.
b/ Less than 50.
c/ Preliminary.

TABLE B-59. Estimates of **Washington recreational** ocean salmon angler **trips** by port area.

Year	Neah Bay[a/]	La Push	Westport	Ilwaco[b/]	Coastal Area Total
			CHARTER TRIPS (thousands)		
1984[c/]	0.3	0.0	11.6	18.0	29.9
1985[c/]	2.0	0.0	42.2	20.7	62.9
1986	2.4	0.0	36.6	19.1	58.1
1987	1.9	0.0	34.1	17.7	53.7
1988	2.0	0.0	23.5	6.9	32.4
1989	1.5	0.0	40.8	16.2	58.5
1990	2.1	0.0	43.4	19.5	65.0
1991	1.4	0.2	28.6	13.5	43.7
1992	0.7	0.2	28.1	9.2	38.2
1993	1.0	0.1	27.4	11.7	40.2
1994	-	-	-	-	-
1995	0.2	0.1	12.7	5.0	17.9
1996	0.2	d/	10.3	4.8	15.3
1997[e/]	0.1	0.1	10.0	2.4	12.5
			PRIVATE TRIPS (thousands)		
1984[c/]	8.3	0.2	2.3	36.0	46.8
1985[c/]	15.2	1.5	13.7	19.4	49.8
1986	17.4	1.7	14.8	17.5	51.4
1987	17.9	2.0	9.8	18.6	48.3
1988	14.8	2.8	13.9	5.6	37.1
1989	15.0	1.6	18.7	30.6	65.9
1990	19.5	4.2	25.9	44.8	94.4
1991	14.8	3.3	24.2	27.3	69.6
1992	11.0	2.3	25.6	17.9	56.8
1993	18.4	2.8	23.5	24.2	68.9
1994	-	-	-	-	-
1995	5.3	1.4	9.0	14.2	30.0
1996	9.1	1.3	5.2	7.9	23.5
1997[e/]	2.8	0.9	7.3	4.1	15.1
			TOTAL TRIPS (thousands)		
1984[c/]	8.6	0.2	13.9	54.0	76.7
1985[c/]	17.2	1.5	55.9	40.1	114.7
1986	19.8	1.7	51.4	36.6	109.5
1987	19.8	2.0	43.9	36.3	102.0
1988	16.8	2.8	37.4	12.5	69.5
1989	16.5	1.6	59.5	46.8	124.4
1990	21.6	4.2	69.3	64.3	159.4
1991	16.2	3.5	52.8	40.8	113.3
1992	11.7	2.5	53.7	27.1	95.0
1993	19.4	2.9	50.9	35.9	109.1
1994	-	-	-	-	-
1995	5.5	1.5	21.7	19.2	47.9
1996	9.3	1.3	15.5	12.7	38.8
1997[e/]	2.9	0.9	17.3	6.5	27.6

a/ Does not include effort from the late-season state-water Area 4B fishery.
b/ Does not include effort from the Columbia River Jetty.
c/ Values for 1984 and 1985 include some Columbia River fishing after closure of the ocean fishery.
d/ Less than 50.
e/ Preliminary.

TABLE B-60. Estimates of **California coastal community and state personal income** impacts[a/] of the troll and recreational ocean salmon fishery for major port areas.

Year or Average	Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	Coastal Community Total[b/]	State Total
			OCEAN TROLL (thousands of dollars)[c/]				
1976-1980	5,495	13,882	13,561	17,795	7,732	58,465	75,063
1981-1985	2,696	3,252	7,592	14,337	4,887	32,763	40,793
1986	771	2,146	9,831	16,247	10,424	39,421	49,730
1987	2,289	4,495	18,815	29,413	7,268	62,281	76,645
1988	1,203	3,793	26,102	53,100	14,945	99,143	120,355
1989	623	1,148	6,915	15,646	6,915	31,247	38,374
1990	111	782	4,098	13,202	8,147	26,341	32,073
1991	17	421	2,365	11,074	5,620	19,497	23,594
1992	2	3	100	6,160	3,166	9,432	11,174
1993	7	43	858	6,565	4,330	11,803	14,341
1994	0	25	317	9,931	3,253	13,527	15,997
1995	11	26	276	11,315	10,300	21,927	26,853
1996	9	381	685	4,921	5,743	11,739	14,749
1997[d/]	3	48	163	8,582	6,347	15,142	18,533
			RECREATIONAL (thousands of dollars)				
1976-1980	1,013	1,174	684	10,278	688	13,838	15,522
1981-1985	1,109	1,143	548	9,102	727	12,630	14,216
1986	1,243	1,502	782	10,385	2,227	16,138	18,535
1987	2,487	2,353	921	12,325	2,872	20,958	24,421
1988	2,072	1,661	1,153	12,172	2,488	19,546	22,570
1989	1,583	2,304	1,081	11,618	3,336	19,922	23,190
1990	2,014	1,974	840	9,122	4,023	17,973	21,456
1991	1,241	1,391	1,368	7,230	3,295	14,525	17,329
1992	421	432	608	6,389	2,066	9,917	11,472
1993	733	903	1,014	8,656	2,315	13,622	15,740
1994	454	311	972	10,856	2,529	15,123	17,174
1995	559	632	1,579	13,916	12,326	29,011	34,804
1996	521	686	1,746	10,190	4,170	17,313	20,252
1997[d/]	304	619	1,072	11,423	5,599	19,018	22,138

a/ Expressed in 1997 dollars. Per pound and per day estimates of income impacts provided from output of the Fishery Economic Assessment Model. These are the income impacts associated with expenditures in the troll or recreational sectors. There is no differentiation between money new to the area and money which would otherwise have been expended in other sectors.

b/ Income impacts on the coastal economy. Totals do not include impacts of one coastal community on another.

c/ Excluding pink salmon.

d/ Preliminary.

TABLE B-61. Estimates of **Oregon coastal community and state personal income** impacts of the troll and recreational ocean salmon fishery for major port areas.[a/]

Year or Average	Astoria	Tillamook	Newport	Coos Bay	Brookings[b/]	Coastal Community Total[c/]	State Total
			OCEAN TROLL (thousands of dollars)[d/]				
1976-1980	3,438	4,426	10,377	15,968	6,636	40,845	55,384
1981-1985	1,105	1,426	3,336	5,871	2,556	14,293	19,425
1986	598	1,568	5,308	8,692	1,822	17,989	24,368
1987	707	3,534	7,037	19,063	3,800	34,142	46,107
1988	306	5,470	13,620	18,279	3,529	41,205	55,469
1989	544	2,615	4,686	9,746	1,936	19,526	26,408
1990	361	1,481	2,014	7,157	846	11,859	15,998
1991	194	1,383	2,001	2,241	89	5,908	7,980
1992	91	561	2,984	992	27	4,656	6,279
1993	39	331	1,659	663	97	2,788	3,738
1994	1	124	615	175	180	1,094	1,499
1995	21	293	3,725	1,274	150	5,462	7,352
1996	55	350	3,112	1,055	372	4,944	6,712
1997[e/]	9	96	2,665	1,001	198	3,969	5,370
			RECREATIONAL (thousands of dollars)				
1976-1980	2,912	2,221	4,129	5,461	3,599	18,322	23,719
1981-1985	1,656	1,335	3,190	3,253	2,263	11,697	15,188
1986	1,281	864	3,128	2,305	2,136	9,715	12,650
1987	1,156	1,431	4,557	3,339	2,818	13,301	17,345
1988	366	1,690	5,367	3,674	2,127	13,225	17,228
1989	1,330	1,502	4,778	3,436	2,670	13,716	17,875
1990	1,534	1,604	4,239	3,321	2,031	12,730	16,517
1991	1,354	956	3,126	2,816	1,466	9,718	12,572
1992	793	1,167	2,890	2,676	685	8,211	10,595
1993	1,093	246	927	728	918	3,912	5,064
1994	0	468	4	16	615	1,102	1,484
1995	543	263	71	29	739	1,645	2,175
1996	339	368	218	165	899	1,989	2,650
1997[e/]	222	161	190	159	644	1,377	1,357

a/ Expressed in 1997 dollars. Per pound and per day estimates of income impacts provided by the Fishery Economic Assessment Model. These are the income impacts associated with expenditures in the troll or recreational sectors. There is no differentiation between money new to the area and money which would otherwise have been expended in other sectors.

b/ On average, between 1976-1991 over 50% of the troll fishery community income impacts for the Brookings port area originated from landings in Brookings and Gold Beach. For 1986-1990 an average of about 40% of the impacts for the Brookings port area originated in landings made through Brookings and Gold Beach. In 1992 and 1993, impacts originating through these two ports averaged less than 18% and 11%, respectively, of the total for the Brookings port area. Since 1994, the average has been 61%. Port Orford is the other port included in the Brookings port area.

c/ Income impacts on the coastal economy. Totals do not include impacts of one coastal community on another.

d/ Excludes pink salmon.

e/ Preliminary.

TABLE B-62. Estimates of **Washington coastal community and state personal income** impacts of the non-Indian troll and recreational ocean salmon fishery for major port areas.[a/]

Year or Average	Neah Bay	La Push	Westport	Ilwaco[b/]	Coastal Community Total[c/d/]	Puget Sound	State Total
			OCEAN TROLL (thousands of dollars)[e/f/]				
1976-1980	4,964	6,781	14,959	4,813	31,517	6,673	46,699
1981-1985	969	392	4,080	875	6,317	1,416	9,089
1986	385	170	1,269	489	2,314	448	3,393
1987	269	171	3,221	479	4,141	389	5,142
1988	526	147	1,627	307	2,607	2,323	5,829
1989	410	13	1,528	289	2,239	629	3,370
1990	1,042	191	1,593	236	3,063	249	4,020
1991	703	63	1,063	140	1,968	230	2,695
1992	646	201	1,235	46	2,127	295	2,928
1993	439	131	712	10	1,292	172	1,783
1994	-	-	-	-	-	26	32
1995	124	27	29	0	180	42	304
1996	63	2	64	2	131	35	209
1997	49	1	138	0	188	39	265
			RECREATIONAL (thousands of dollars)				
1976-1980	1,749	1,528	12,253	4,843	20,374	-	27,672
1981-1985	1,771	410	8,474	3,935	14,590	-	19,853
1986	884	65	3,973	2,191	7,113	-	9,639
1987	858	77	3,543	2,114	6,593	-	8,950
1988	748	108	2,726	766	4,347	-	5,811
1989	711	61	4,516	2,415	7,704	-	10,435
1990	937	161	5,043	3,189	9,330	-	12,688
1991	694	145	3,606	2,076	6,521	-	8,847
1992	485	106	3,616	1,390	5,597	-	7,525
1993	797	117	3,468	1,818	6,199	-	8,390
1994	-	-	-	-	-	-	-
1995	222	63	1,532	913	2,730	-	3,696
1996	371	50	1,157	674	2,252	-	3,054
1997[g/]	117	40	1,215	342	1,714	-	2,278

a/ Expressed in 1997 dollars. Per pound and per recreational day estimates of income impacts provided by the fishery economic assessment model. These are the income impacts associated with expenditures in the troll or recreational sectors. There is no differentiation between money new to the area and money which would otherwise have been expended in other sectors.
b/ Excludes recreational shorebased effort from the north side of the Columbia River jetty.
c/ Income impacts on the coastal economy. Totals do not include impacts of one coastal community on another.
d/ Includes a very small amount of fish landed in other coastal Washington areas.
e/ Excludes pink salmon.
f/ All commercial values in this table are based on preliminary information available at the start of each year's salmon review.
g/ Preliminary.

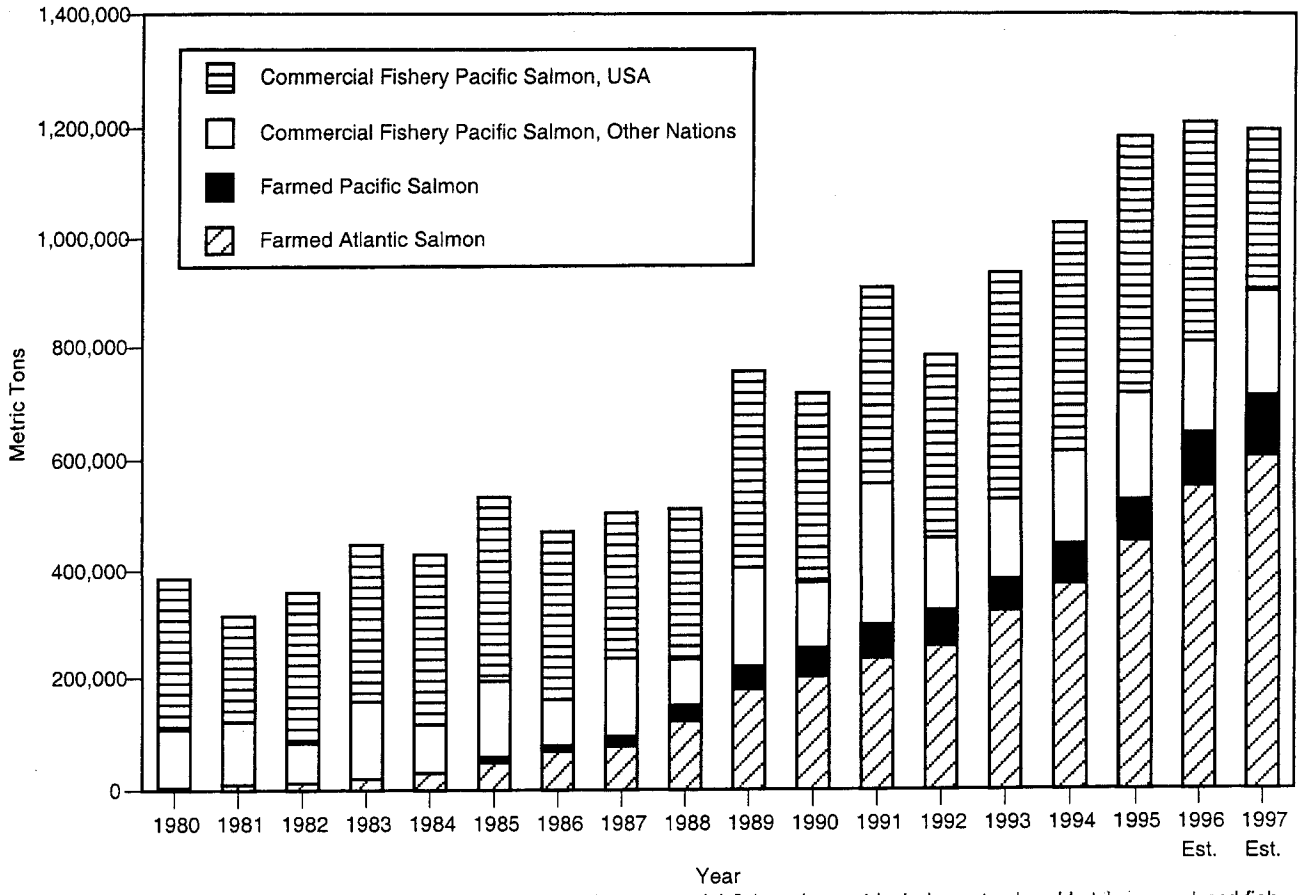


FIGURE B-1a. Estimated world salmon production; comercial fishery harvest includes natural and hatchery produced fish. (World salmon supply estimates prepared by the Salmon Market Information Service, University of Alaska, Anchorage, May 1988).

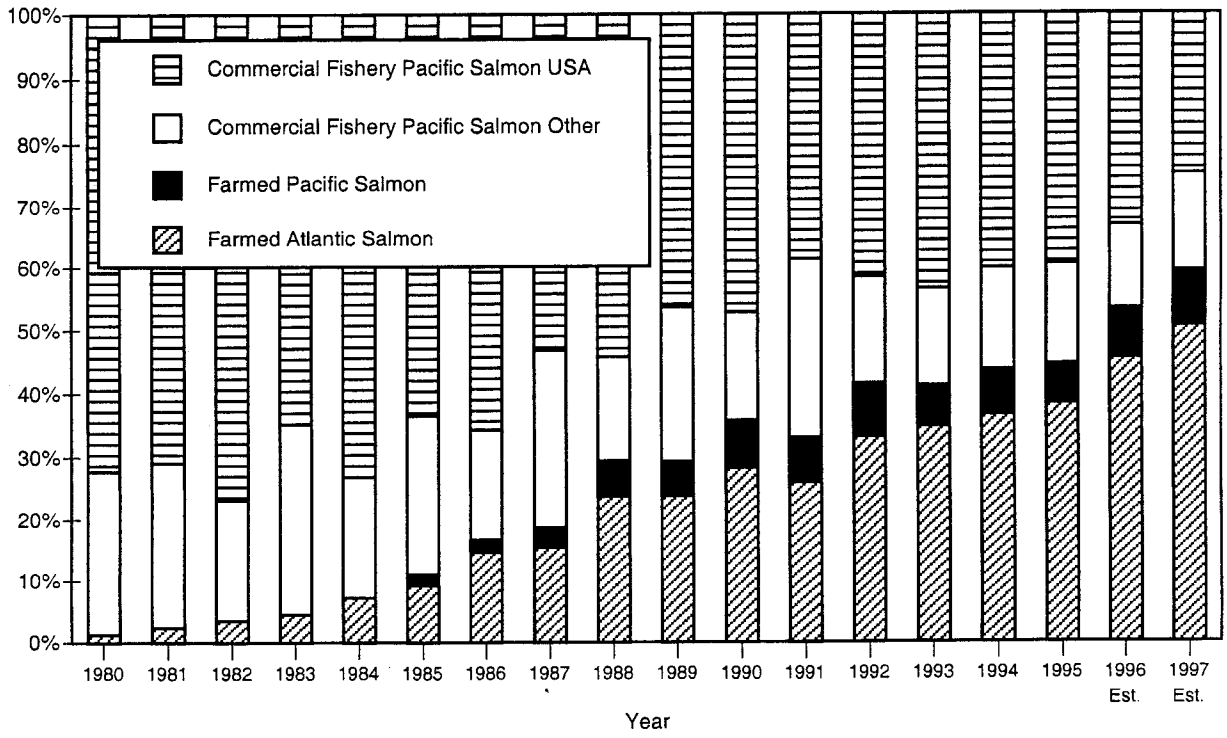


FIGURE B-1b. Percent world salmon production by type. (World salmon supply estimates prepared by the Salmon Market Information Service, University of Alaska, Anchorage, May 1988).

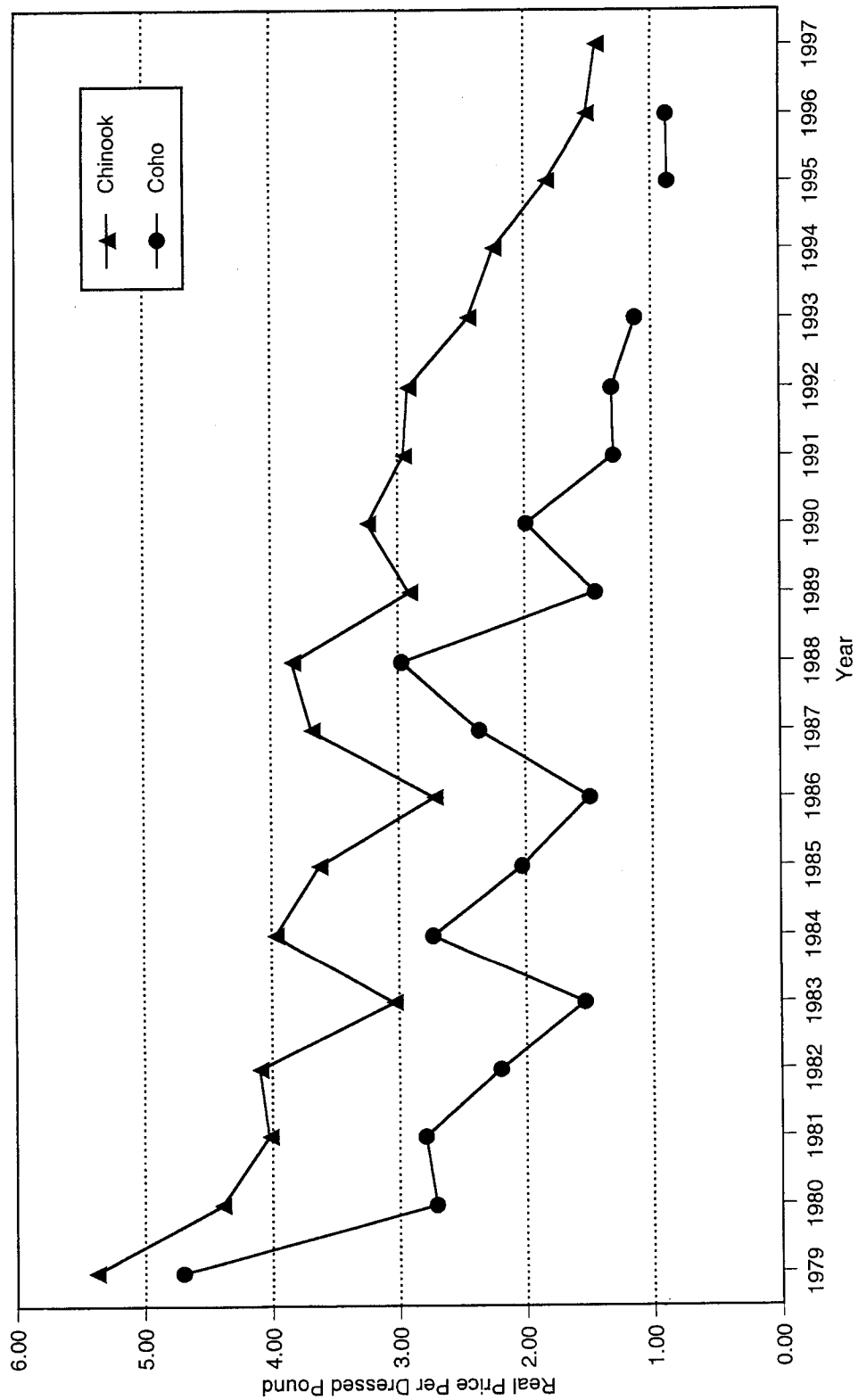


FIGURE B-2. West Coast non-Indian ocean troll exvessel salmon price trends.

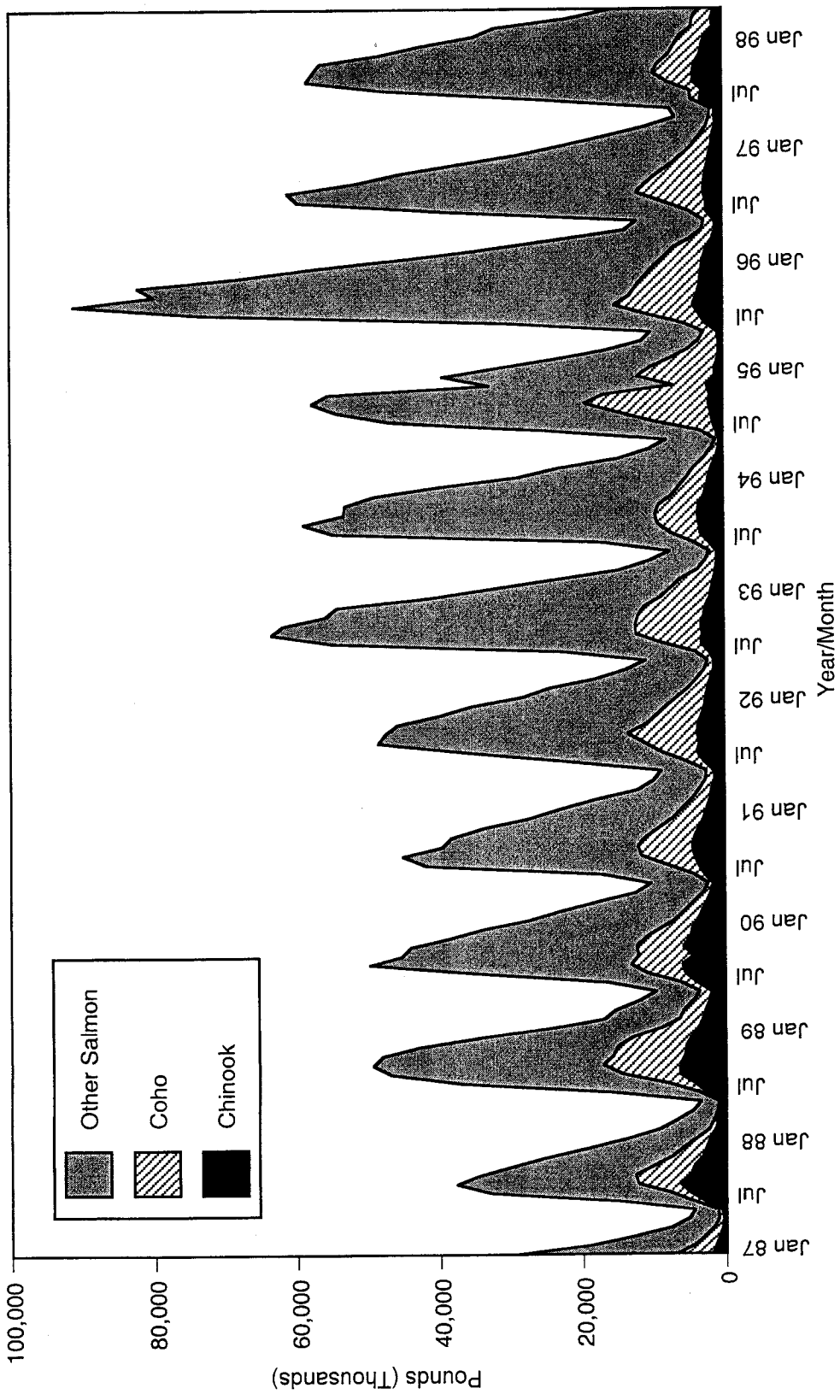


FIGURE B-3. U.S. cold storage holding of dressed and round salmon.

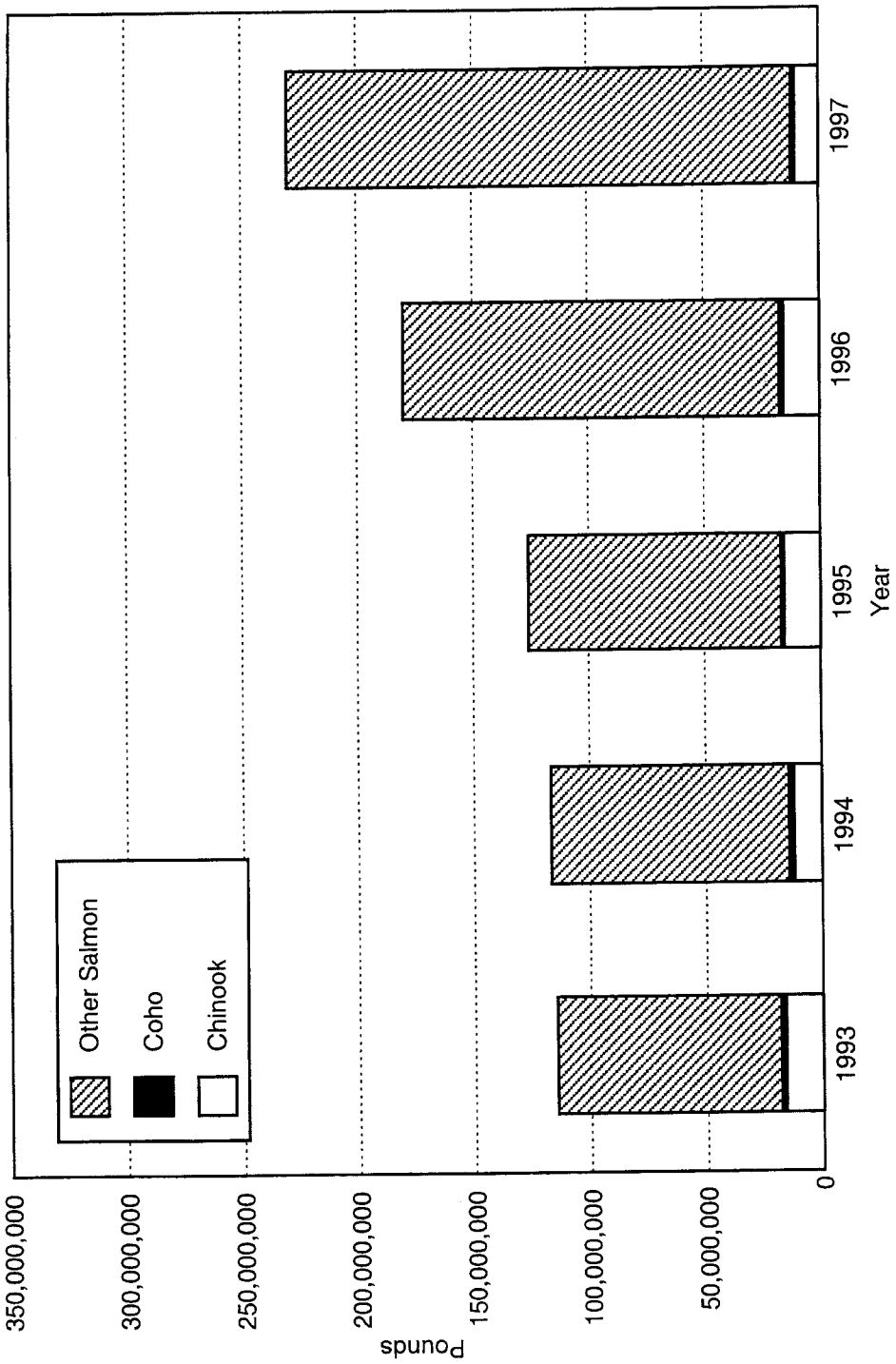


FIGURE B-4. U.S. salmon imports, annual volume of fresh and frozen salmon.

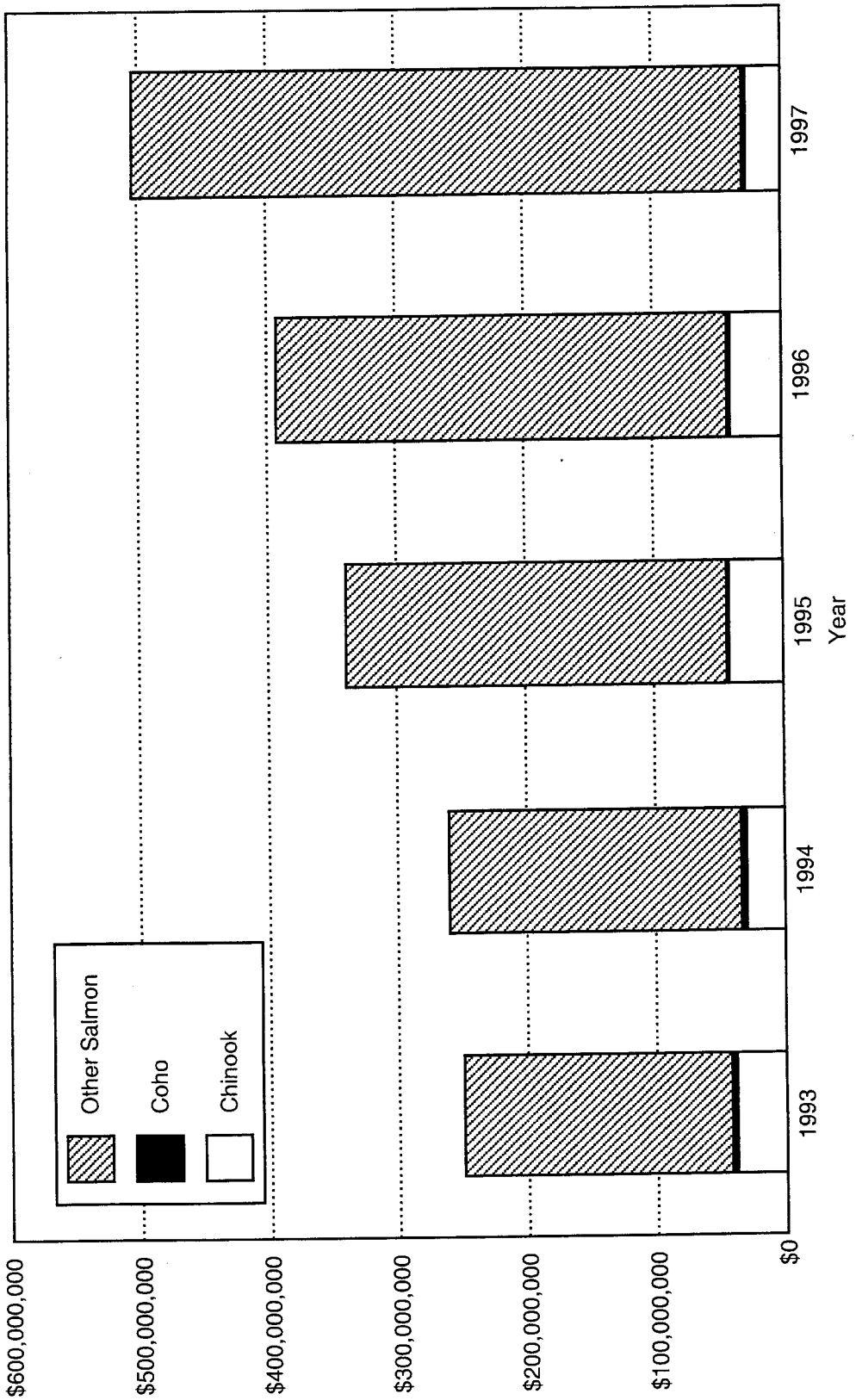


FIGURE B-5. U.S. salmon imports, annual value of fresh and frozen salmon.

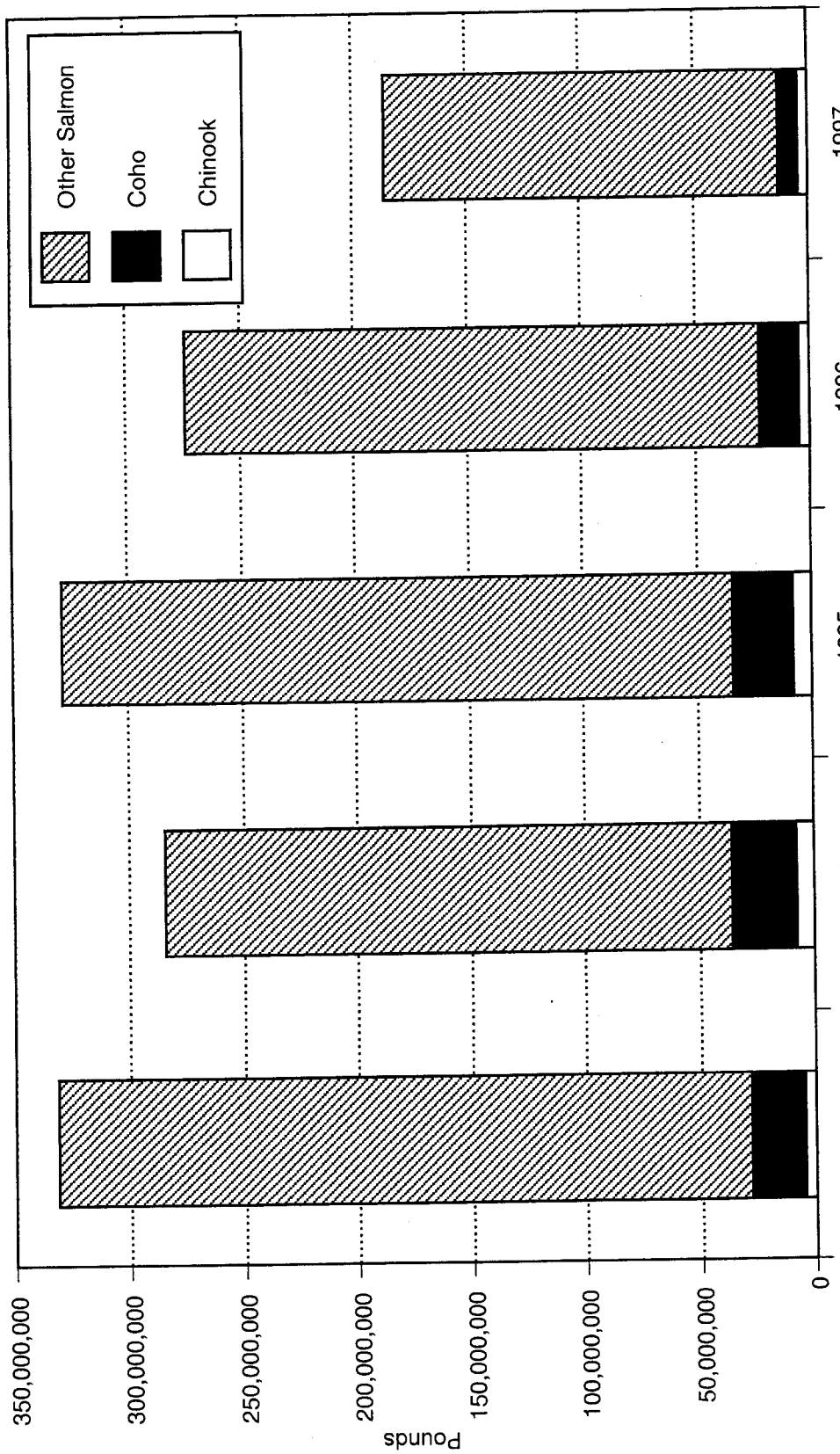


FIGURE B-6. U.S. salmon exports annual volume of fresh and frozen salmon.

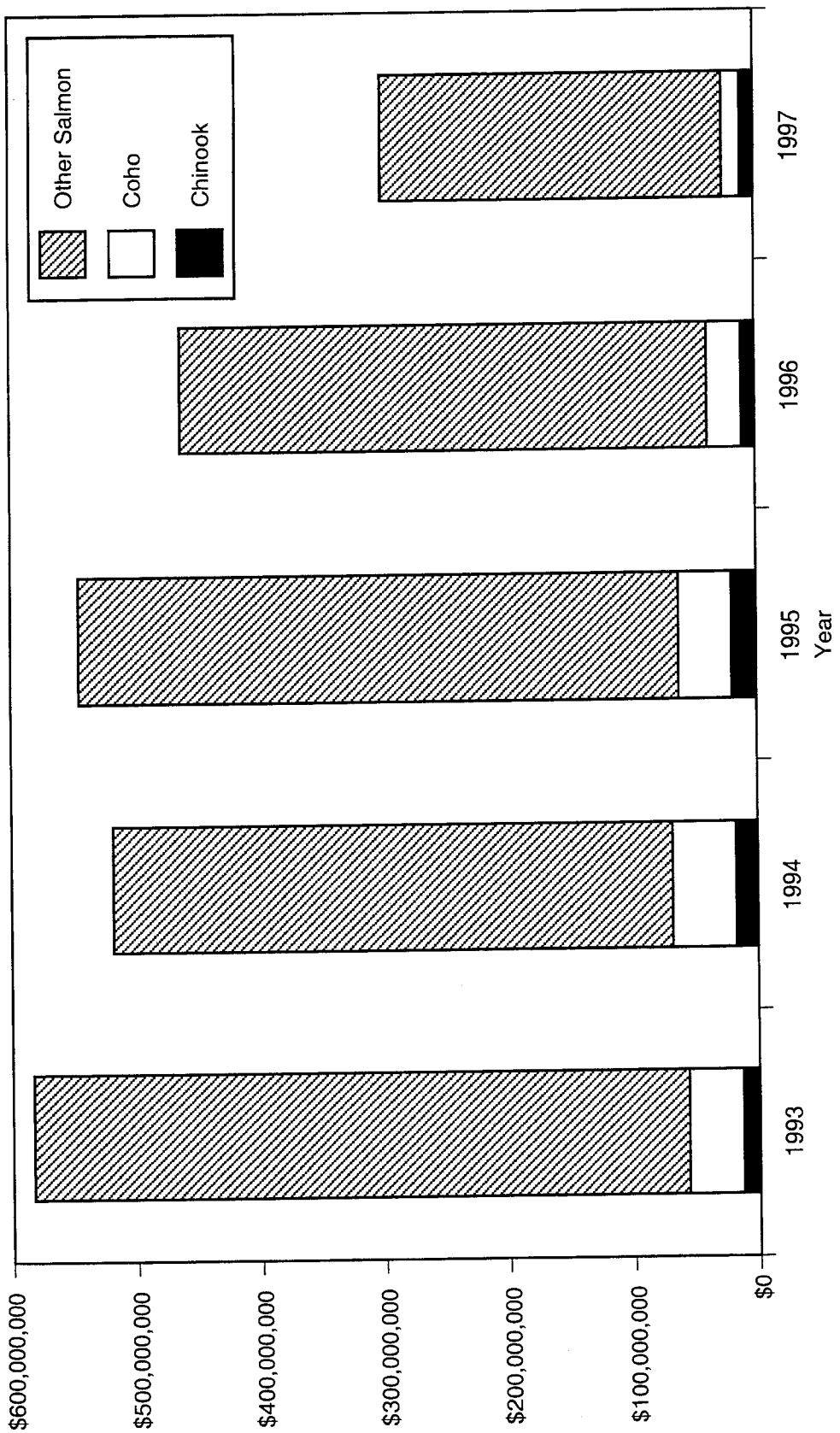


FIGURE B-7. U.S. salmon exports annual value of fresh and frozen salmon.

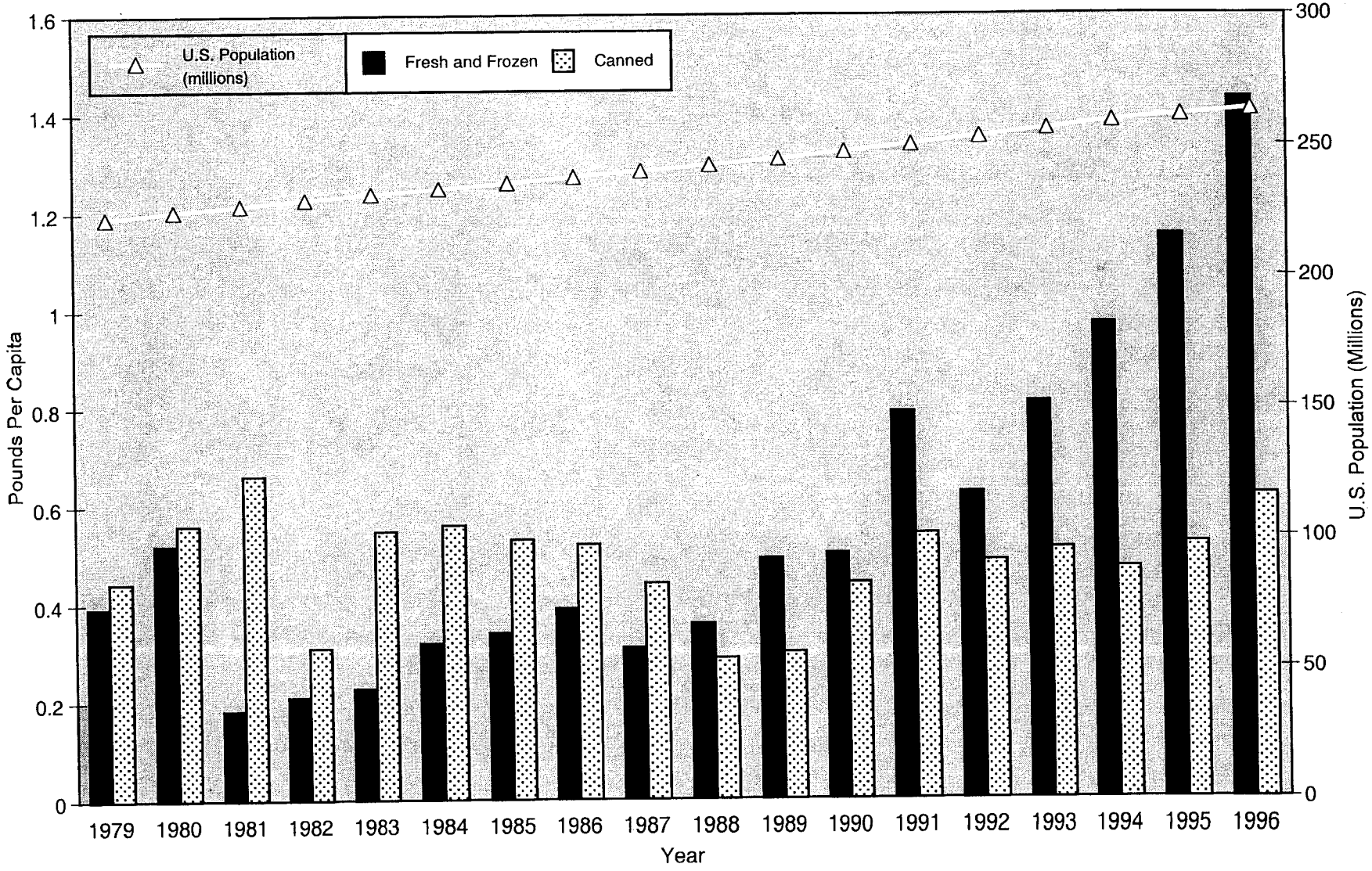


FIGURE B-8. U.S. per capita salmon consumption and population trends.

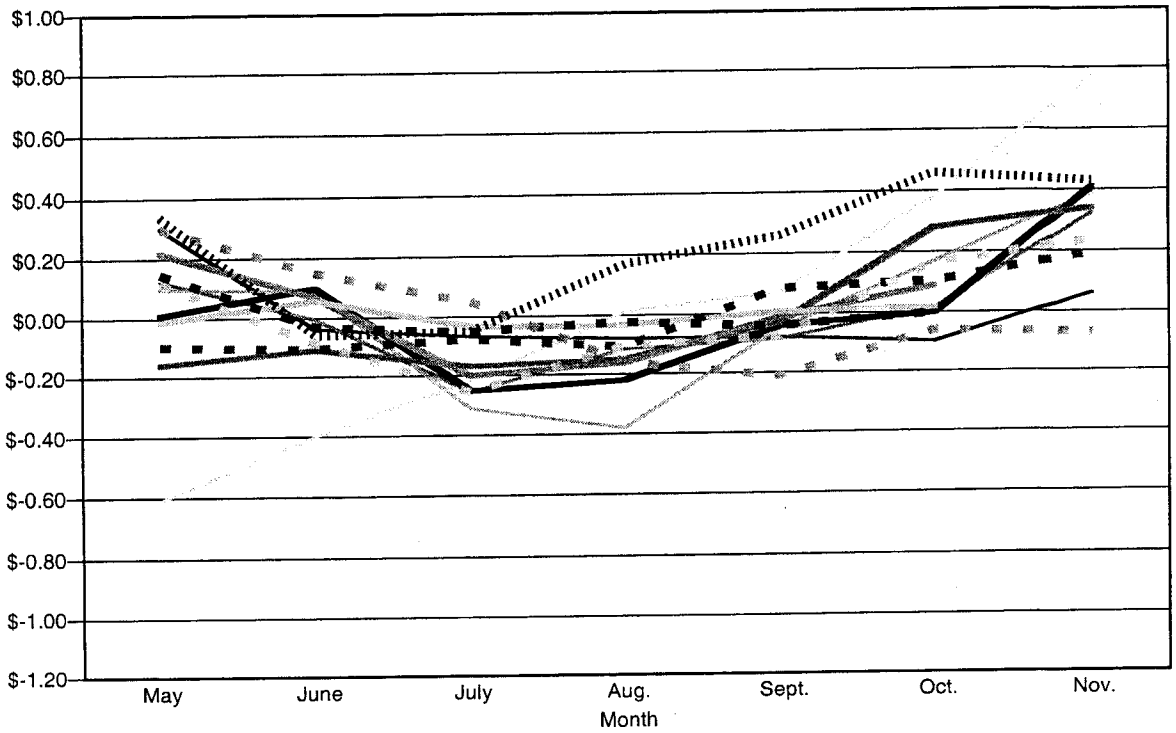
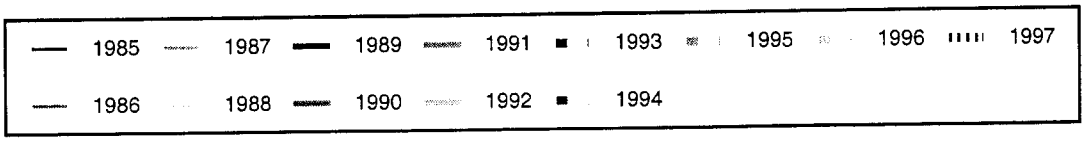


FIGURE B-9. Inseason exvessel price fluctuations for large chinook (Oregon).



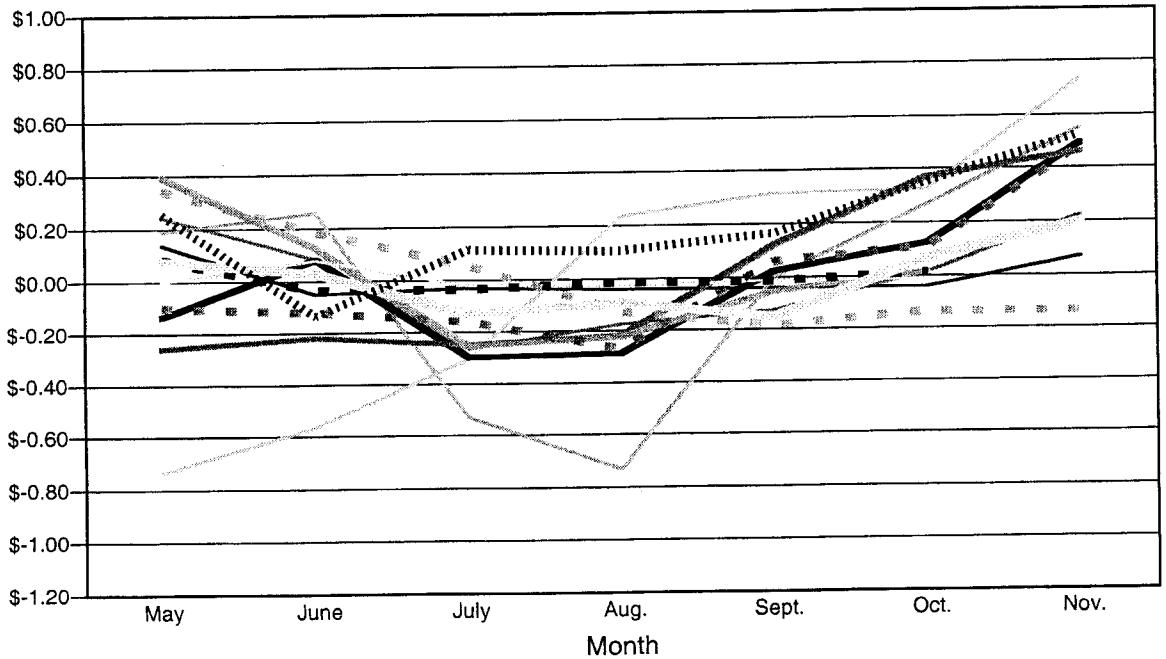


FIGURE B-10. Inseason exvessel price fluctuations for medium chinook (Oregon).

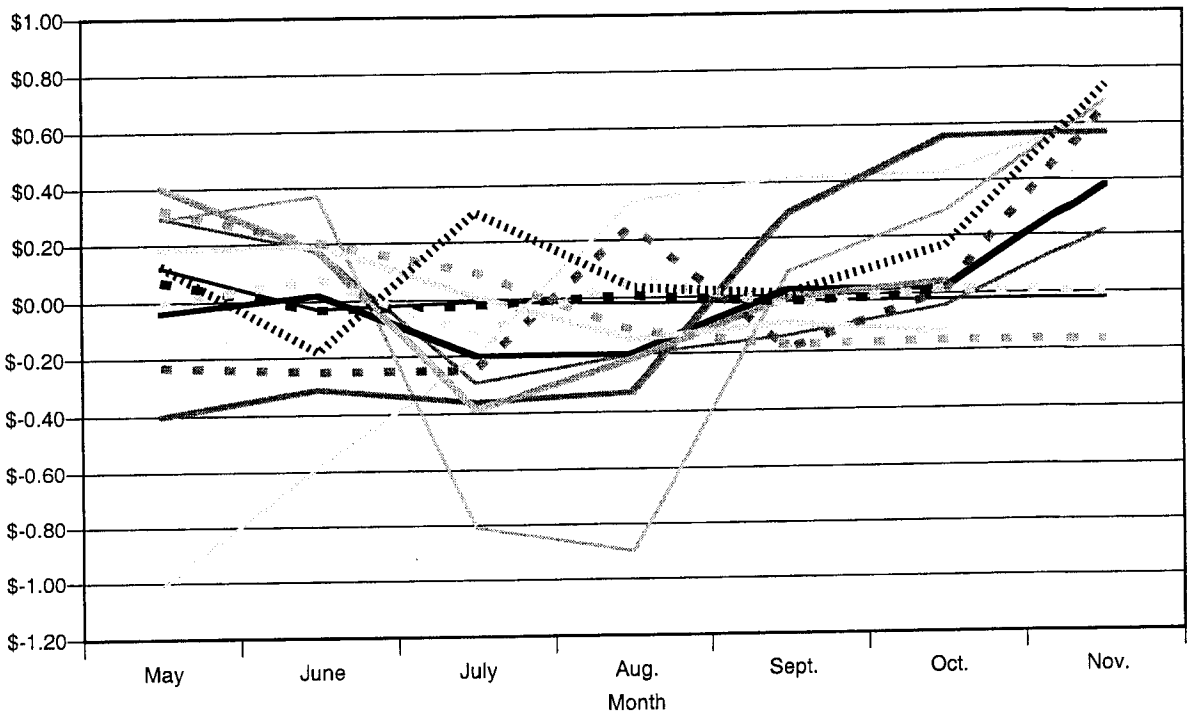
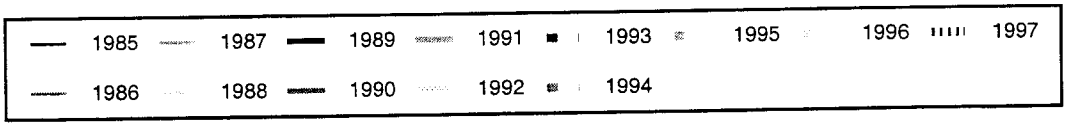


FIGURE B-11. Inseason exvessel price fluctuations for small chinook (Oregon).



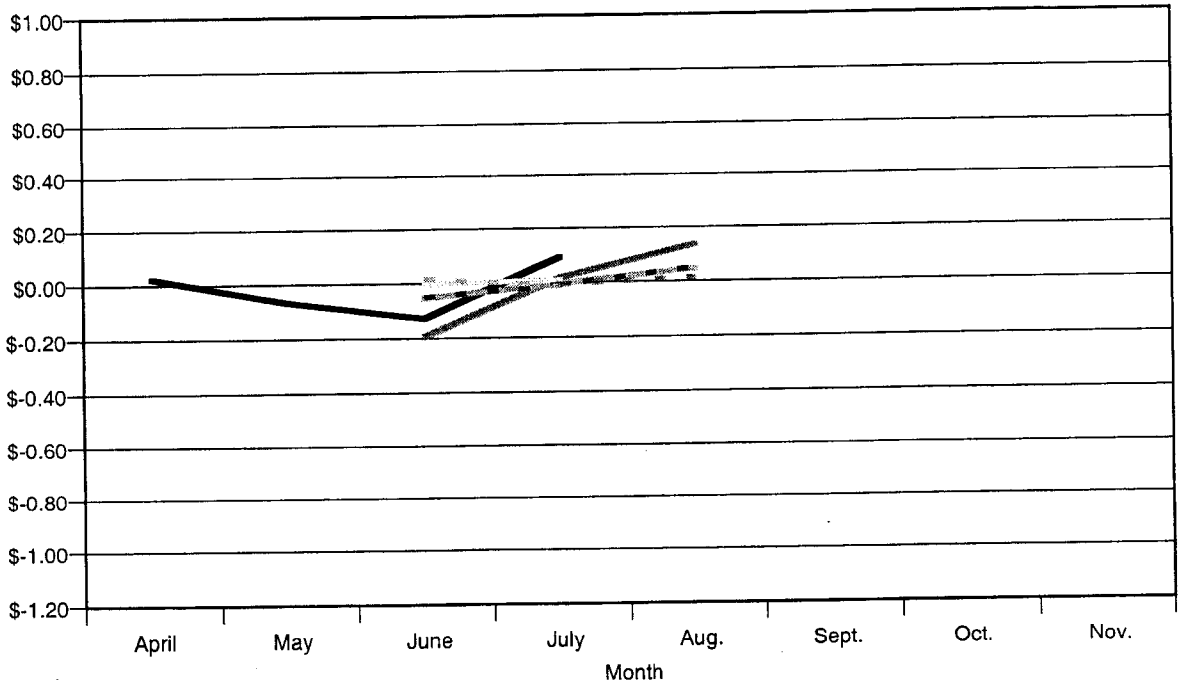


FIGURE B-12. Inseason exvessel price fluctuations for mixed coho (Washington).

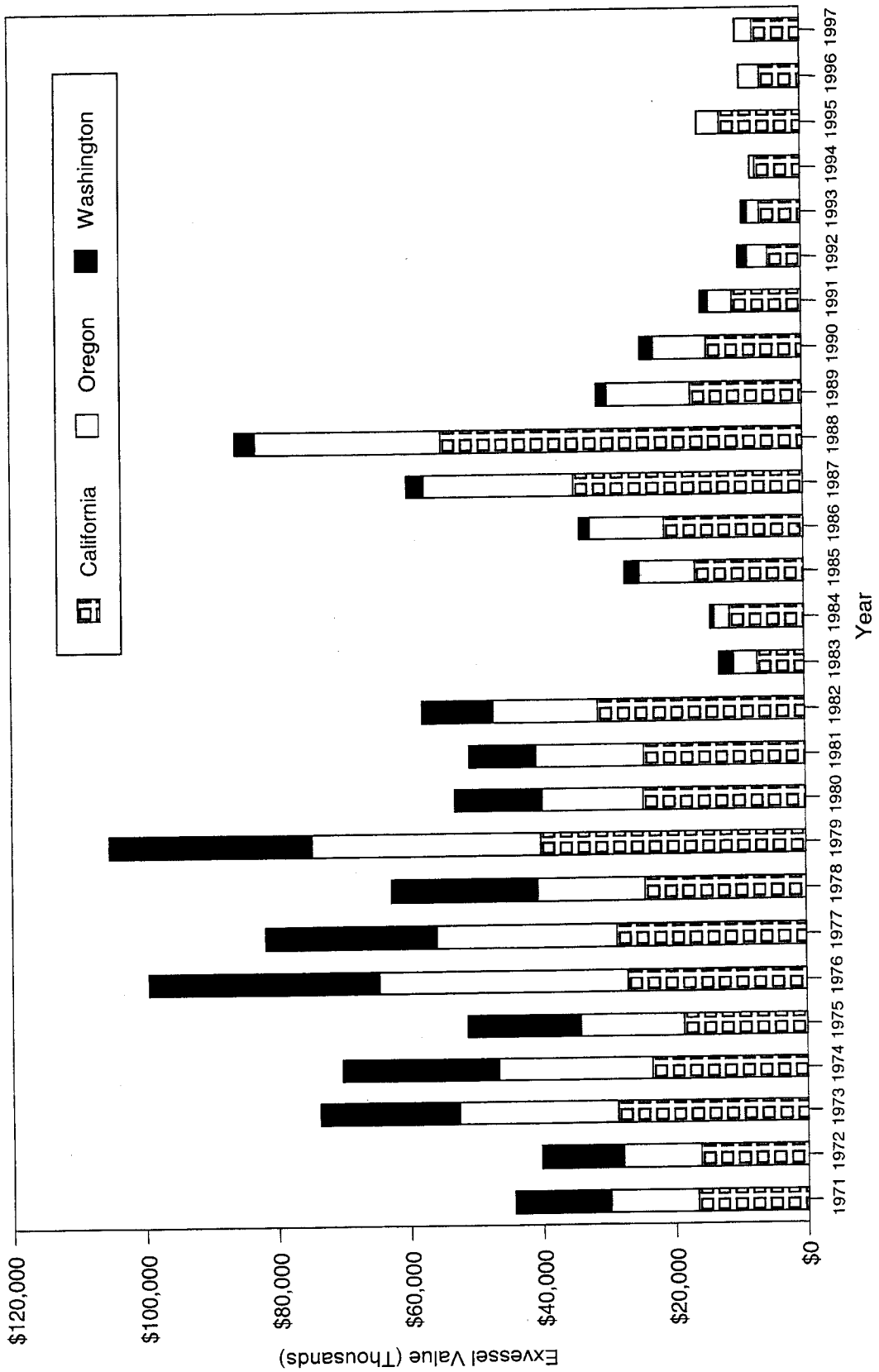


FIGURE B-13. Exvessel value of troll chinook and coho landings by state of landing (1997 dollars).

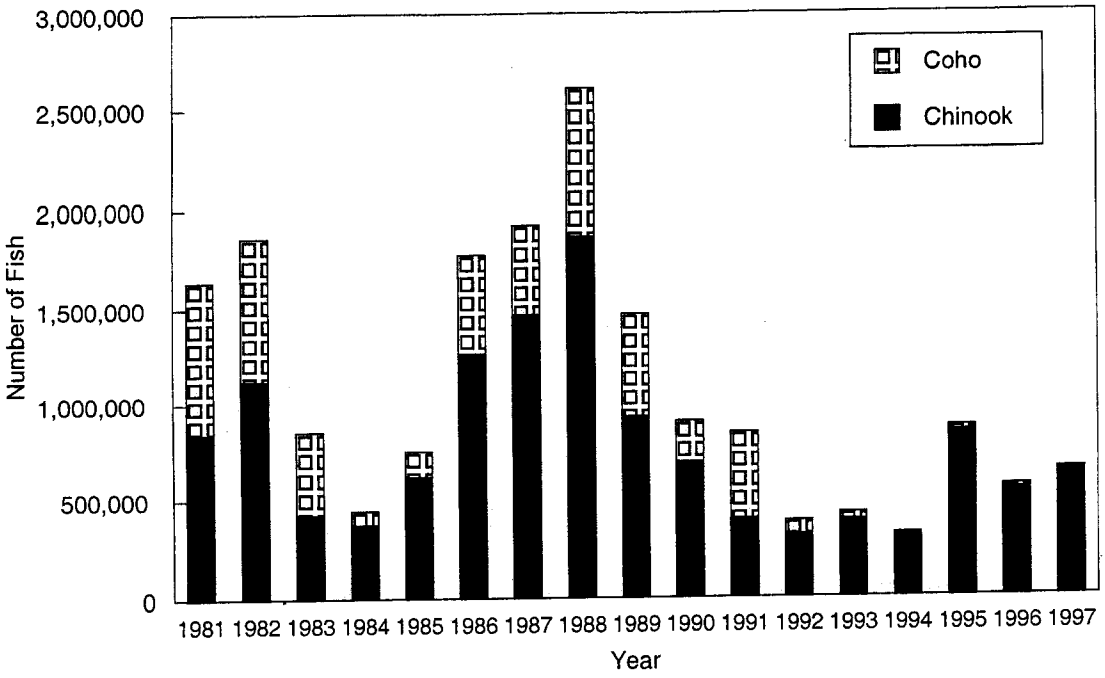


FIGURE B-14. West Coast non-Indian ocean commercial troll chinook and coho harvest.

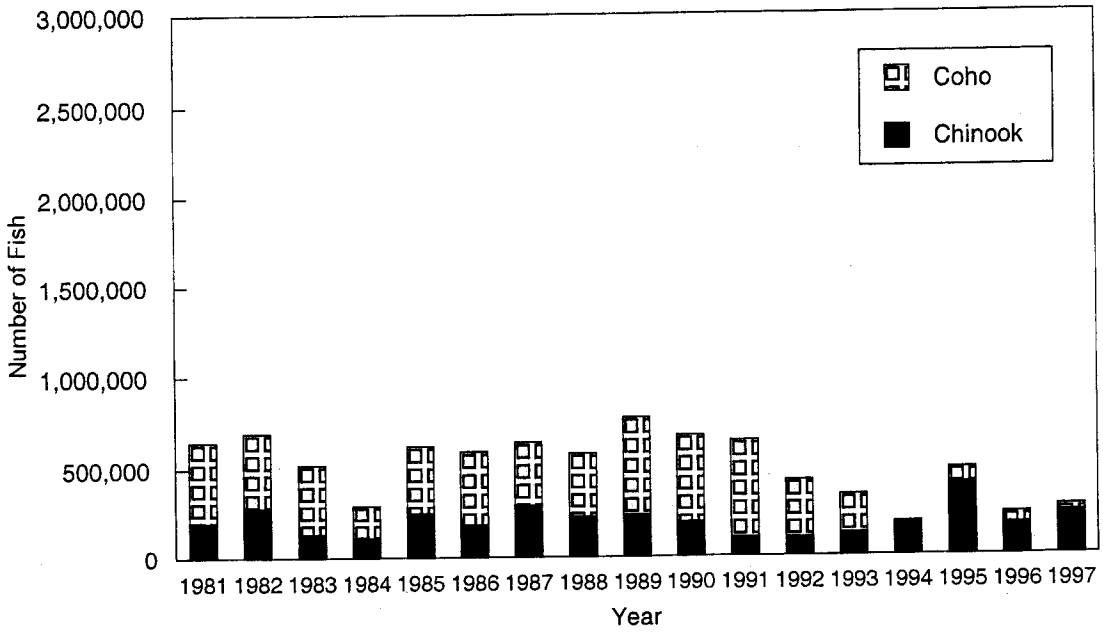


FIGURE B-15. West Coast recreational ocean chinook and coho harvest.

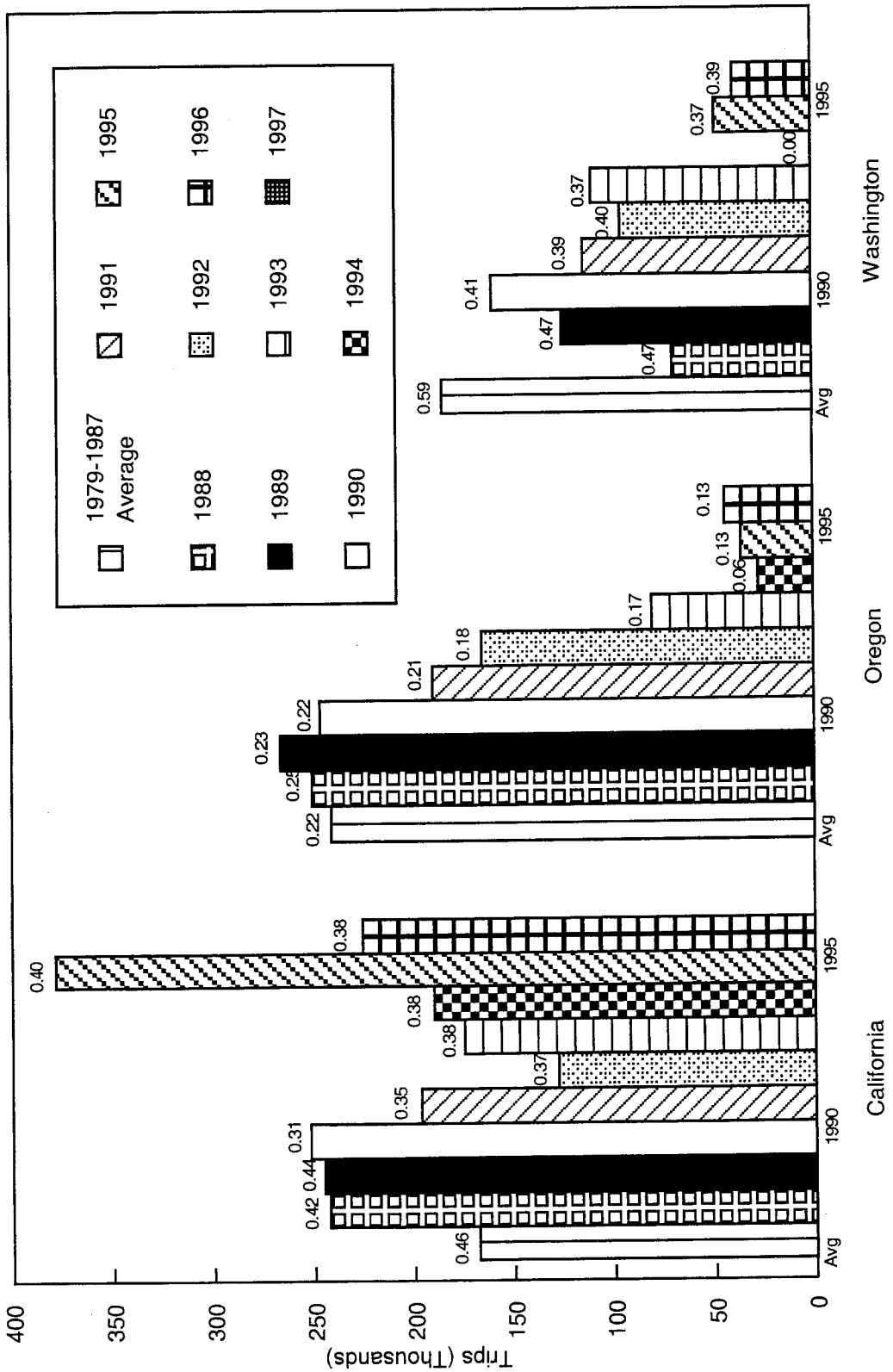


FIGURE B-16. Total recreational ocean salmon trips by state (with proportion of charter trips shown above each bar).