



47th Annual Report of the

# PACIFIC STATES MARINE FISHERIES COMMISSION

FOR THE YEAR 1994

TO THE CONGRESS OF THE UNITED STATES AND TO THE  
GOVERNORS AND LEGISLATURES OF WASHINGTON OREGON,  
CALIFORNIA, IDAHO AND ALASKA

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## *PSMFC COMMISSIONERS 1994*

*Harriet Spanel, Chair*

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LOREN LEMAN

Alaska State Senate  
Appointee

CHUCK MEACHAM, JR.

Alaska Dept. Fish & Game

DALE KELLEY

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Senate

ED MANARY

Washington Dept. Fish &  
Wildlife

HARRIET SPANEL

Governor's  
Washington State

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*Our goal, as stated in the bylaws, is "to promote and support policies and actions directed at the conservation, development and management of fishery resources of mutual concern to member states through a coordinated regional approach to research, monitoring and utilization".*

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**47th Annual Report of the  
PACIFIC STATES MARINE FISHERIES COMMISSION  
FOR THE YEAR 1994**

To the Congress of the United States and the Governors and Legislatures of the Five Compacting States, Washington, Oregon, California, Idaho, and Alaska, by the Commissioners of the Pacific States Marine Fisheries Commission in Compliance with the State Enabling Acts Creating the Commission and Public Laws 232; 766; and 315 of the 80th; 87th; and 91st Congresses of the United States Assenting Thereto.

**Respectfully submitted,  
PACIFIC STATES MARINE FISHERIES COMMISSION**

**RANDY FISHER, Executive Director**

**Headquarters  
45 SE 82nd Drive, Suite 100  
Gladstone, Oregon 97027-2522**

**Al J. Didier, Jr.  
EDITOR**

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**TABLE OF CONTENTS**

**ADMINISTRATIVE REPORTS AND ACTIONS**

EXECUTIVE DIRECTOR'S REPORT  
FINANCIAL, AUDIT, AND BUDGET REPORTS  
1994 Audit Report

**ANNUAL MEETING EVENTS**

SUMMARY  
SPECIAL ISSUES  
Mass Marking  
HACCP and New Labeling Update  
Future Visions  
NWPPC Salmon Program  
1995 ANNUAL MEETING  
ANNUAL PSMFC AWARD

**1994 PUBLICATIONS**

**PACIFIC COAST FISHERY REVIEW REPORTS**

DUNGENESS CRAB FISHERY IN 1993-94  
SHRIMP FISHERY IN 1994  
SEA URCHIN FISHERY IN 1994  
ALBACORE FISHERY IN 1994

[TROLL SALMON FISHERY IN 1994](#)  
[SALMON AND STEELHEAD SPORT HARVESTS IN 1993](#)  
[PACIFIC HALIBUT FISHERY IN 1994](#)  
[GROUNDFISH FISHERY IN 1994](#)

**PERSONNEL**

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# 47TH ANNUAL REPORT - 1994

## ***ADMINISTRATIVE REPORTS AND ACTIONS***

### **EXECUTIVE DIRECTOR'S REPORT**

The Pacific States Marine Fisheries Commission began 1994 under the leadership of a new Executive Director. The Commission continued to help the fishermen and resource agencies of the five compacting states address the management of Pacific ocean living marine resources. PSMFC remained active as custodian and coordinator of coastwide fisheries data bases, increased contract services for the states and related agencies, and worked with fishermen on issues such as marine debris and habitat protection. The following are among the highlights of 1994.

**Randy Fisher** became the new Executive Director of PSMFC in February. Mr. Fisher is the former Director of the Oregon Department of Fish and Wildlife.

The **Marine Mammal Protection Act (MMPA)** was reauthorized during the year. New amendments to the Act shift emphasis from the ill-defined concept of Optimum Sustainable Population (OSP) toward a more definable Potential Biological Removal (PBR) level. The PBR system regulates takes of marine mammals incidental to fishing operations based on estimates of the mammal's minimum population size and net productivity. As expected, the amended MMPA prohibits intentional lethal takes of marine mammals in fisheries, and requires mandatory registration in some fisheries. A cumbersome "task force" approach was provided to deal with problems caused by nuisance animals. NMFS was directed to prepare a report describing the impacts of California sea lions and Pacific harbor seals on salmon stocks and on Pacific ecosystems; NMFS and PSMFC will discuss recommendations to accompany this report in 1995. Action on reauthorizations of the **Endangered Species Act (ESA)** and the **Magnuson Fishery Conservation and Management Act (MFCMA)** stalled during the election year; discussions of both are expected to resume in 1995.

The value of external contracts administered by PSMFC increased by 4% from \$11.5 million in 1993 to \$12.0 million in 1994.

For the first time since its adoption, Dungeness crab fishery managers implemented the **Tri-State Dungeness Crab Committee** protocol to delay the opening of the 1994-95 season in Washington and northern Oregon waters. The opening was delayed 15 days due to the prevalence of soft-shell crab. Vessels that began the season in southern waters on

the traditional December 1 opening date were required to wait 30 days before fishing in the northern zone. The opening was orderly, and both fishermen and processors seemed pleased. The Committee was relatively inactive during 1994, as members from each state worked to get limited entry legislation enacted. By the end of the year, limited entry bills had passed the Washington and California legislatures, and a bill was in preparation for submission to the next biennial session of the Oregon legislature.

The **Information Management Services (IMS)** section, now one year old, is comprised of the following programs:

Pacific Fisheries Information Network (PacFIN)

Regional Mark Processing Center (RMPC)

Coordinated Information System (CIS)

Pit Tag Information System (PTAGIS)

PSMFC Computer Services Center (CSC)

Each is a regional or coastwide data management and coordination effort that provides consistent and standardized data to fisheries managers, researchers, and decision makers. Wherever possible, the IMS section has provided a forum for sharing resources and ideas.

During 1994 the staff of the **Pacific Fisheries Information Network (PacFIN)** Office began re-developing the PacFIN system in a totally different hardware and software environment. The new platform is the National Marine Fisheries Service (NMFS) IT95 central computing system for the Alaska Fisheries Science Center (AFSC). This is a Control Data (CDC) system that uses the Unix operating system and the Oracle database management system.

PacFIN staff developed software to unload all data from the prior system and began the process of unloading data and transferring it to the new IT95 system. By the end of the year all Oracle tables were designed and established, one or more annual partitions had been loaded for testing purposes, and Oracle software had been developed to process each transaction type. With the close of 1994 Oracle software development was continuing, and since the Oracle database design had been finalized, the final loading of data for 1981 through 1992 was initiated. Check-out and testing of on-line catch summaries in conjunction with WDFW was completed for 1987 through 1992, thus bringing the redefinition re-development project to a close for the Washington-Oregon-California (W-0-C) portion of the database for 1981 through 1994.

The **Regional Mark Processing Center (CWT)** continued its involvement in regional tag and mark coordination activities, management and reporting of the coastwide Coded Wire Tag (CWT) data. A primary focus for the year was further enhancement of the Regional Mark Information System ("RMIS"). Its primary objective is to facilitate the

on-line exchange of coded wire tag data between the releasing agencies, sampling/recovery agencies, and other interested parties. The Mark Center also serves as the U.S. site for exchanging U.S. coded wire tag data with Canada for Pacific Salmon Treaty purposes.

RMIS provides user access to four types of CWT data: 1) release; 2) recoveries; 3) catch/sample; and 4) location codes. In addition, the database contains hatchery release data for production that is untagged and unassociated with CWT release groups. Users may obtain a variety of release and recovery reports, as well as data records in either raw or aggregated form. Some of the new features of RMIS include:

- ability to automatically build lists of tag codes from the release data, edit the lists, and then use them to retrieve coastwide tag recoveries;
- ability to select hatcheries and recovery sites by simply entering the geographic location name rather than a code;
- much faster file downloading speeds;
- user customizable report formats; and,
- access to catch/sample data and some non-CWT release data.

Further RMIS enhancements are underway. RMIS is now directly linked to several regional organizations through the Internet computer network. With this capability, users can download RMIS reports, CWT data sets, and validation error lists via FTP (File Transfer Protocol) if their site also has an Internet connection. Other new features include:

- Anonymous-FTP service to other agencies and to the public (address: [psmfc.org](http://psmfc.org));
- E-mail communication with RMIS administrators. Ken Johnson's address is [johnsonk@psmfc.org](mailto:johnsonk@psmfc.org). James Longwill's address is [jamesr@psmfc.org](mailto:jamesr@psmfc.org); and
- World-Wide-Web service is currently under development, and will be available soon for use with network browsing software.

In early 1993 PSMFC assumed project management and administrative responsibility for the **Columbia River Coordinated Information System (CIS)**. In 1994, the Commission took on the responsibilities of regional data management for the project. The goal of the CIS is to develop and provide an efficient system for obtaining and exchanging information needed to plan, monitor, and evaluate anadromous fish protection, mitigation, and enhancement activities in the Columbia River Basin. The primary objectives for this project are to:

- Develop and provide an Anadromous Fish Information System (AFIS), to store and disseminate data contained in the Natural Production, Hatchery Production, Habitat, and Multi-Stock components, and to provide summarized anadromous stock data, and monitoring and evaluation data in standardized formats;
- Develop and provide an Anadromous Fish Reference System (AFRS), to organize, store, and disseminate anadromous salmonid reference information, and build the capability to: 1) facilitate access and respond to user requests for references to the basin gray literature and other less accessible sources of

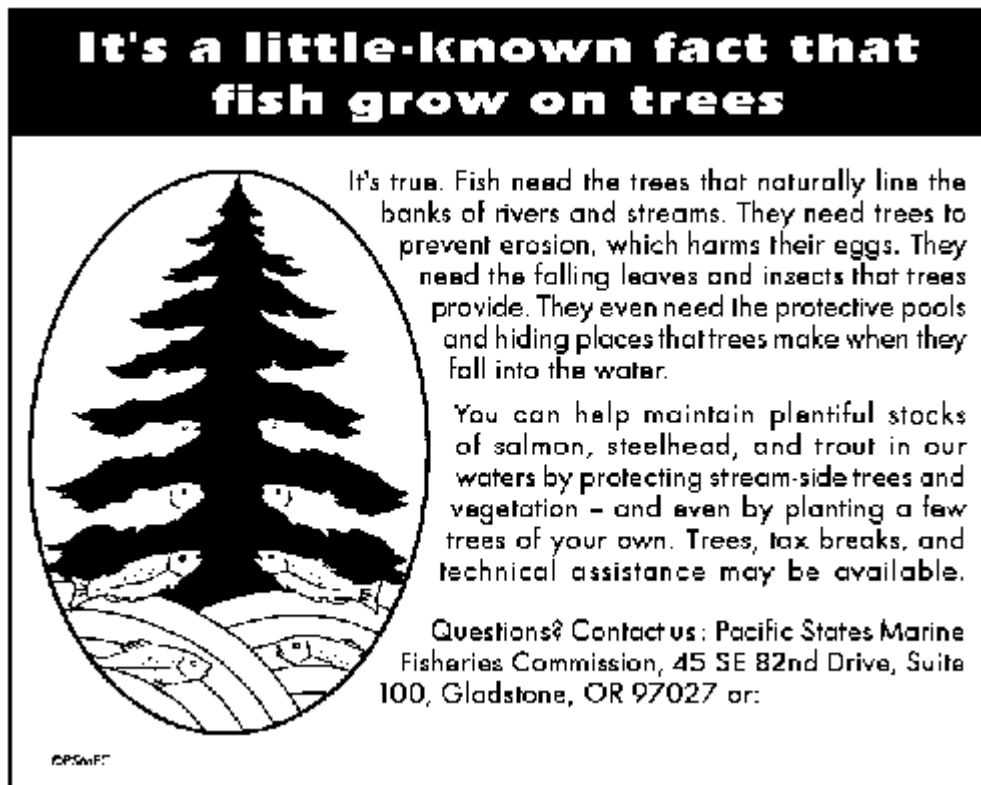
- salmonid information; 2) facilitate access to individuals and organizations who are direct sources of anadromous salmonid data and datasets; 3) provide access to historic and current information on Northwest Power Planning Council program activities; and 4) provide access to Columbia River system models and other technical tools used in system management;
- Integrate and provide AFIS and AFRS components in a single electronic system (Distributed System) that provides the described information and services via a common user interface and menu structure.

Substantial progress was made towards achieving these objectives in 1994. The first formal release of the regional database was made in May. During the remainder of the year, staff improved the information base, expanded the scope and completion of the various datasets, and refined data exchange and dissemination protocols to streamline data flow from providers and improve data access to end users.

In 1994, the number of PIT Tag Interrogation and Tagging records collected by the **Pit Tag Information System (PTAGIS)** doubled over the entire data set that had been collected since 1987. This dramatic increase was due to the increased number of tags implanted in juvenile salmonids and to the number of new interrogation monitors. In response to the rapid growth of the PIT Tag data sets, the PIT Tag Operations Center has acquired a SPARC 1000 Server and has re-engineered processes that validate and load data into the database. We are confident that this platform will support the continued growth of the PIT Tag data set over the next three to five years.

Other major program deliverables include the development and distribution of a new User Manual for the PTAGIS application, and the deployment of a major functional enhancement to the PC software, PITTAG.EXE that is used by researchers who implant PIT Tags into fish. Our field maintenance and operations crew operating from offices in the Tri-Cities also installed new PIT Tag interrogation systems at Lower Monumental and McNary dams.

The **Computer Services Center** continued providing service to PSMFC projects and regional data users. Major 1994 calendar year accomplishments included: set-up and configuration of the SUN 1000 for the Pit Tag project; providing full Internet access to the PSMFC headquarters office; and set-up and administration of a computer network at the PSMFC headquarters office;



**Figure 1.** PSMFC public information advertisements are available for use by not-for-profit groups.

The **F.I.S.H. Habitat Education Program** initiated Flying for Fish - A Watershed Action Program in partnership with the environmental group LightHawk. This program provides Washington state fishermen the opportunity to learn about the habitat problems impacting fish, and to fly over their watersheds (the Puyallup and White Rivers, the Green and Cedar Rivers, and the Nooksak Rivers). Viewing the watershed from the air, the cumulative impacts of land and water use patterns become clearer and participants gain a better understanding of how these factors affect fish. Fishermen are provided written information about these issues, and are made aware of restoration efforts which are being undertaken. Participants are encouraged to share their experience with others through presentations and media articles, and by inviting politicians and the media to participate in subsequent flights.

F.I.S.H. also sponsored community meetings in Crescent City and Eureka, California; Brookings and Astoria, Oregon; and Westport, Seattle, and Port Townsend, Washington to bring fishermen together with others concerned about fish habitat. Participants learn about local issues and what's being done, meet others involved in restoration programs, and find out how they can get involved. They also receive educational outreach information they can use to heighten awareness in their communities. Participants have reported that these meetings are valuable and that they have shared the information with others, and they have asked for additional meetings.



The F.I.S.H. Habitat Education Program helped form, and continues to facilitate and encourage the progress of the Central Coast Watersheds Group. This group, like others throughout the region, aims to involve representatives from all the varied interests in a watershed - from timber companies, small farmers, fishermen, and environmentalists, to federal, state, and local government agencies. It also takes a comprehensive look at the watershed to define needs and prioritize actions. The group has helped assure that local timber workers and fishermen will be trained and hired to do the habitat assessment, monitoring, and restoration work required by watershed action plans.

A **Pollution Prevention Workshop** for ports and marinas was provided for West Coast harbor masters in conjunction with the 1994 Pacific Coast Congress of Harbor Masters and Port Managers. This seminar was designed to help ports meet the needs of their fishing communities for convenient and environmentally appropriate services for vessel maintenance, fueling, bilge cleaning, oil and antifreeze recycling, and hazardous waste reception, and to meet their own regulatory requirements for implementation of best management practices

The **Gill Net Recycling Program** continues to thrive with ever increasing interest in the fishing communities of Bellingham, Seattle, Anacortes, Everett, and Port Townsend, Washington; and Cordova, Naknek, Dillingham, Kenai, Petersburg, and Haines, Alaska. About 150,000 pounds of net were recycled during 1994.

The **Recreational Fisheries Information Network (RecFIN)** estimates marine recreational catch and effort for all modes of fishing along the Pacific coast from California to Washington. Funding is a mix of state contributions and federal money provided by the National Marine Fisheries Service (NMFS). Because of a shortage of funds, however, field sampling was curtailed in 1994. Sampling in Oregon and California employed the Marine Recreational Fisheries Statistics Survey (MRFSS) methodology used by NMFS on the Atlantic and Gulf coasts, and previously used by PSMFC and the states during the past 14 years. Sampling in Southern California took place January-December, but sampling in Northern California and Oregon. took place only during March-December. Field sampling in California and Oregon combined some existing state sampling programs with the MRFSS to maximize sample sizes and avoid duplication. A total of 33,000 anglers were interviewed in the MRFSS portion of the sampling in California and Oregon.

Since there were insufficient funds to conduct the MRFSS in Washington, RecFIN funding for Washington state was used to augment some existing state sampling programs. The Ocean Sampling Program was begun a month earlier (April) and extended an extra month into the late fall period (October). The Puget Sound Boat Sampling was augmented to provide coverage in the San Juan Islands and other parts of Northern Puget Sound; while Recreational Halibut Monitoring received assistance for the printing of catch record cards and conducting the angler telephone survey.

During 1994, the PSMFC served as fiscal administrator for the entire **Northern Squawfish Predator Control Program**. The program's goal is to remove 200,000

northern squawfish in the 11+ inch size range each year to affect a 50% reduction in predation on young salmon smolts in the mainstem Columbia River. PSMFC subcontracted with the four Columbia River tribes, Columbia River Intertribal Fish Commission, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Columbia Basin Fish and Wildlife Authority and a few private consultants to accomplish the various tasks associated with the program. These tasks include the Sport Reward Program, Site Specific Fisheries, Dam Angling, Fish Handling and Population/Program Evaluation.

The Sport Reward Fishery is the primary harvester of Northern Squawfish in the program. Field operations for this segment are provided by Washington Department of Fish and Wildlife. Sport-caught fish 11 inches or greater in length are checked-in to one of 14 registration stations along the river where a voucher is issued for all qualifying fish turned in each day. The vouchers are then mailed by the angler to PSMFC for payment. A total of 126,767 sport-caught fish were harvested in the 1994 fishing season, representing reward payments of \$380,301. Anglers returning tagged fish received a bonus reward of \$50 to encourage return of the tags used for population assessments and program evaluation. Two hundred and ninety-three tags were returned during the season. Special drawings, tournaments, and prizes paid an additional \$49,800 to participants. A total of \$443,751 in rewards were paid during the season.

## **FINANCIAL, AUDIT, AND BUDGET REPORTS**

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### **COMBINED BALANCE SHEET - JUNE 30, 1994**

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	General Fund and Special Revenue	General Fixed Assets	General Long-Term Debt	Totals
ASSETS				
Cash	375,762			375,762
Due from other Finds	2,934,799			2,934,799
Receivables:				
Grants and Contracts	2,761,562			2,761,562
Other	24,493			24,493
Fixed Assets		3,377,227		3,377,227
Amount to be Provided for Retirement of General Long-Term Debt			843,263	843,263
Total Assets	6,114,120	3,377,227	843,263	10,334,610

LIABILITIES AND FUND BALANCE

Due to Other Funds	2,934,799		2,934,799
Accounts Payable	2,451,289		2,451,289
Payroll Liabilites	228,306		228,306
Accrued Compensated Absences	169,021	35,564	204,585
Tenant Deposits	3,302		3,302
Capital Lease Obligations		207,734	207,734
Real Estate Contracts		599,965	599,965
Deferred Revenues	173,237		173,237
Total Liabilities	5,959,954	843,263	6,803,217
Fund Equity			
Investment in General Fixed Assets		3,377,227	3,377,227
Balance Reserved for Prepaid Insurance	14,954		14,954
Unreserved Balance: Designated for Subsequent Years' Expenditure	139,212		139,212
Total Fund Equity	154,166	3,377,227	0 3,531,393
Total Liabilities and Fund Equity	6,114,120	3,377,227	843,263 10,334,610

The Commission receives its financial support from contributions from its member states, grants, contracts, and indirect cost charges on external contracts. Since 1977, the states' contributions have remained level funded at \$106,000 per year. These contributions are made available from the member states in accordance with Article X of the Interstate Compact which created the Commission. The formula calls for eighty percent of the total contributions to be shared equally by those states having as a boundary the Pacific Ocean and five percent from Idaho. The fifteen percent balance is divided by the states in proportion to the primary market value of the products of their commercial fisheries on the basis of the (then) latest 5-year catch records.

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## **1994 Audit Report**

To the Board of Commissioners

Pacific States Marine Fisheries Commission

Clackamas County, Oregon

We have audited the general purpose financial statements of Pacific States Marine Fisheries Commission, Clackamas County, Oregon as of and for the year then ended June 30, 1994 as listed in the table of contents. These general purpose financial statements are the responsibility of the Commission's management. Our responsibility is to express an opinion on these financial statements based on our audit. The financial statements of Pacific States Marine Fisheries Commission as of and for the year ended June 30, 1993, were audited by other auditors whose report dated January 13, 1994 expressed an unqualified opinion on those statements

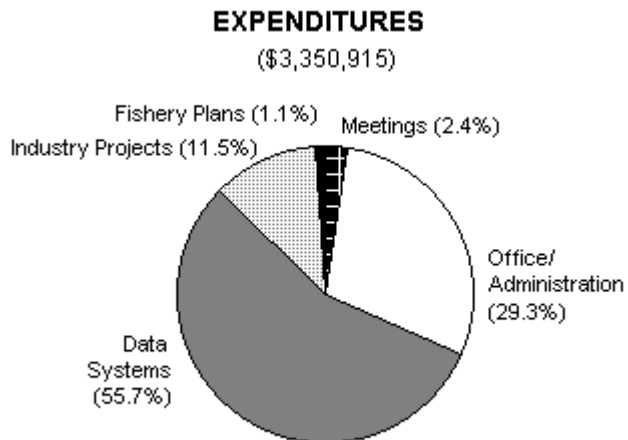
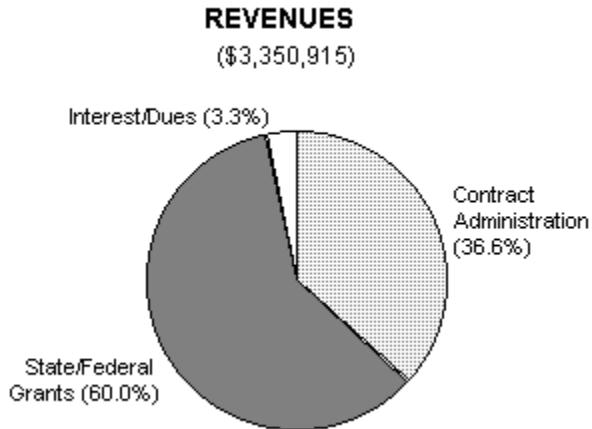
We conducted our audit in accordance with generally accepted auditing standards, Government Auditing Standards, issued by the Comptroller General of the United States, and the provisions of Office of Management and Budget Circular A-128, "Audits of State and Local Governments." Those standards and OMB Circular A-128 require that we plan and perform the audit to obtain reasonable assurance about whether the general purpose financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the general purpose financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the general purpose financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the general purpose financial statements referred to above present fairly, in all material respects, the financial position of Pacific States Marine Fisheries Commission, Clackamas County, Oregon at June 30, 1994 and the results of its operations for the year then ended are in conformity with generally accepted accounting principles.

Our audit was conducted for the purpose of forming an opinion on the general purpose financial statements taken as a whole. The supplementary data, as listed in the table of contents is presented for purposes of additional analysis and is not a required part of the general purpose financial statements. Such information has been subjected to the auditing procedures applied in the audit of the general purpose financial statements and, in our opinion, is fairly stated in all material respects in relation to the general purpose financial statements taken as a whole.

Pauly, Rogers and Co., P.C.  
 Tigard, Oregon  
 October 26, 1994

*Editor's Note: Copies of the complete auditor's report are available upon request.*




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External Contracts for the Period  
 July 1, 1993- June 30, 1994

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Contract	Amount
NMFS Albacore Logbook & Port Sampling	20,744
NMFS Columbia River Gill-Net Fisheries Observer Program	503,465
NMFS Interjurisdictional Fisheries Program	93,500

NMFS Pacific Fisheries Information Network (PacFIN)	1,481,900
NMFS Recreational Fisheries Information Network (RecFIN)	659,413
NMFS/USFWS Regional Mark Processing Center	301,567
USFWS Klamath R. Diversion Screens	31,118
USFWS Wallop-Breaux	125,000
USFWS Snake R. Comprehensive Plan	782,535
PFMC/NPFMC Council Support	36,000
EPA Net Collection and Recycling	12,535
COE Fish Transportation Oversight Team	43,000
WA DEQ Bi-State Water Quality	62,500
ODFW/PSMFC Whiting Observer Program	32,628
CA Bay, Estuary	29,177
CA Northern Sportfish	43,000
CA Salmon Protection & Enhancement	25,128
CA Sea Urchin Fishery	69,496
CA Sportfish Sampling Studies	225,000
BPA Analytical Method Coordination	62,238
BPA Columbia Basin Fish & Wildlife Authority	1,247,531
BPA Columbia River Coded Wire Tag	1,193,619
BPA Coordinated Information System	713,163
BPA Integrated Hatchery Operations	730,176
BPA Fish Screen Oversight Committee	63,728
BPA PIT Tag Data Base	366,176
BPA Smolt Coordination (FPC)	1,339,453
BPA Squawfish Sport Reward Program	1,406,371
Fish Marking Coordinator Support	29,479
Health to the Salmon	100,000

Investigational Animal Drug

186,150

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Total Contracts

12,015,790

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Submitted by Pam Kahut, Fiscal Manager/Treasurer

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## **1994 PSMFC OPERATING BUDGET**

# **ANNUAL MEETING EVENTS**

### ***SUMMARY***

The 1994 PSMFC Annual Meeting was held October 2-4 in Seattle, Washington, and was chaired by Sen. Harriet Spanel. The agenda included a panel discussion on the mass marking of hatchery-produced salmonids; a status review of major federal legislation; an update on HACCP and new seafood labeling requirements; perspectives on the future by the new regional directors of the EPA, USFWS, and NMFS; in-state meetings for the five member states; and the annual business meeting. Luncheon speaker Jim Anderson reviewed salmon price forecasting models, and described the challenges to the wild salmon industry posed by farmed salmon. Rollie Schmitt, the new director of the National Marine Fisheries Service, shared his views on the state of world fisheries, problems faced by the fishing industry, and the direction in which he hopes to lead NMFS. Dinner speaker Peter Redmayne discussed recent changes in the world seafood market.

### ***SPECIAL ISSUES***

#### **Mass Marking**

Terry Wright of the Northwest Indian Fisheries Commission has opposed mass marking since the original proposals several years earlier, but he observed that there is no official tribal position on the issue at this time. The tribes opposed earlier proposals which lacked significant analysis on potential impacts, but retain an open mind on the issue. Mr. Wright believes that the wide appeal of mass marking lies in its promise as a simple way of increasing salmon catches. In reality, mass marking is not a simple proposal, and assessing its costs/benefits/limitations will depend on assumptions made regarding key variables for which there are little or no data. While mass marking could be used for several purposes, its primary stated goal is to identify fish for harvest in selective fisheries, while reducing impacts on threatened or endangered stocks. The costs, however, are both direct (marking, personnel, recovery, marking related mortality) as well as indirect (incidental catch-and-release mortality, increased enforcement). Since the

tribes would incur major costs to mass mark their fish, they are interested in how the allocation of benefits would be changed to compensate. The most critical question, however, is whether mass marking is compatible with current CWT-based fishery management models and programs. This system is the most important stock identification technique used on the West Coast for research and management, and agencies spend approximately \$12 million each year for tagging and recovery programs. Given the critical role of the CWT program, implementation of a new program like mass marking must be done in a coordinated manner. The PSC analysis of selective fisheries is nearing completion, and should address whether selective fisheries can lead to increased spawning escapements, whether there will be deleterious impacts on the CWT program, and estimate the costs of implementation. Projected costs for a joint annual Washington/British Columbia mass marking of 25 million coho salmon, however, total \$2.6 million in capital expenditures and \$1.7 million for annual operation. Mr. Wright remains unconvinced that the benefit of retaining a few selective sport fisheries would justify fund reallocations of that magnitude.

Zeke Grader of the Pacific Coast Federation of Fisherman's Associations sees the current challenge as preserving and rebuilding salmon stocks while at the same time preserving a fishing industry. Most wild stocks are not in decline due to overfishing, but to a combination of hydro-power operation problems, extensive water diversion, logging practices in coastal watersheds, and some grazing practices. Mass marking is seen as an attractive alternative to weak stock management restrictions in commercial and sport fisheries. One criticism of mass marking/selective fisheries is the underlying concern for incidental hooking mortality. Mr. Grader believes that management changes (i.e., mandatory use of barbless hooks coastwide) since the early mortality studies were conducted could affect the conclusions. He believes that hooking mortality in commercial fisheries could be reduced to 10-15% through additional research, new techniques, and education. Those who are concerned that wild stocks will no longer be protected if fishermen target hatchery fish finally recognize the contributions non-governmental organizations have made to protect fish. Mr. Grader believes many fisheries agencies have failed to protect wild fish because of funding problems or lack of leadership, and only the lawsuits of sport and commercial industry groups have forced action. Wild stocks will still be valuable to fishermen as a genetic reserve for hatchery broodstocks and as a potential opportunity for expanded harvests as those stocks are rebuilt to former levels. Mass marking will undoubtedly increase the costs of hatchery operations, but the increases are insignificant when compared with the costs to coastal communities of total shutdown of commercial and sport fisheries. Hydro-power operations, water diversion projects, and other water users should begin to pay the full costs for hatcheries that were supposed to mitigate their water resource diversions and habitat removals. Agencies should be more active in confronting those special interests that are in denial about their impacts. Two of the principal commercial fishing concerns regarding mass marks are whether the mark will be easily recognized (to minimize handling and reduce hooking mortality), and whether agencies can be trusted to refrain from using the technique to reallocate fish to other groups. It is vital that hatchery fish be marked now; the issue of selective fisheries can be resolved later.



Jim Martin of the Oregon Department of Fish and Wildlife observed that his warning of 1991 regarding the potential impact of the Endangered Species Act on fisheries was becoming reality. We can no longer continue a hatchery dominated system driven by mixed harvest rates, because the issue of protecting endangered and threatened species will not go away. The logging industry believed it was politically powerful enough to withstand the pressures for change and was proven wrong; fisheries will suffer a similar fate. We have already seen fishery closures we would not have thought possible several years ago. Mass marking has been successfully used for the last decade to manage Columbia River steelhead. Hatchery coho in the Rogue River are now 100% marked, and the Rogue is the only Oregon coastal system for which a selective fishery was planned pre-season. Large hatchery returns to the Rogue and Elk rivers are expected, and 100% marking adds harvest flexibility. ODFW would like that flexibility in other systems, but under current rules is forced to mark with both adipose clip and CWT at added expense, or to use ventral clips at added mortality cost. ODFW argued against mass marking proposals in the past, largely because its assumptions regarding wild stock abundance, productivity, and ability to sustain harvest were wrong. The costs of lost information, time, and ability to track and respond to individual stock concerns are reasons why ODFW now wishes to mass mark. Mass marking and selective fisheries will not work in some years, but they will work in most years. Projections of future coho harvest rates vary from 30% to 0%, and ODFW wants the flexibility to harvest surplus hatchery production when it is available. Costs in reduced hatchery production and reduced ocean productivity will be offset by increased management flexibility. Mr. Martin senses that divergent agency views are gathering direction because the alternatives are so bleak, and he urged a careful but bold approach.

Robert Z. Smith stated that the National Marine Fisheries Service, as a major producer of Columbia basin hatchery salmon and steelhead smolts and as the agency responsible for salmon and steelhead ESA implementation, is interested in mass marking as a way to maintain harvest opportunities. This year the Congressional Committee on Appropriations directed NMFS involvement in mass marking, but provided no additional funding for the effort. Of necessity, this involvement will come at the expense of hatchery production. NMFS supports the Snake River Salmon Recovery Team recommendation that 10% of all hatchery production be marked with a CWT. The team also recommended mass marking of hatchery fish, but encouraged development of an alternative to the adipose clip due to potential conflicts with the CWT program. NMFS has no official position on mass marking because it is still working on a Columbia basin recovery plan that will address mass marking and selective fisheries; release of that plan is scheduled for December 31, 1994. NMFS also hopes to have a policy paper available that discusses mass marking and endangered species. While NMFS would like to provide fishing opportunities, it is committed that any mass marking should not compromise the existing CWT program. Costs associated with mass marking will be substantial. CWT detection programs will be required to switch to more expensive electronic detection equipment to attain necessary sampling goals. Adipose-only marks on Columbia basin production are estimated to cost \$2.6 to \$4.4 million. Labor costs are a larger concern; Columbia basin adipose-only mass marking would require 27,000 marker days in a relatively narrow time window. Adipose plus CWT marks would cost even more. The are

also mortality costs associated with applying marks. While estimates of hooking mortality vary, the ESA concept of "take" is not limited to just lethal removal; it can include disturbance. Catch and release of an unmarked protected fish could be considered an ESA "take", and the issue must be addressed in a biological opinion for selected fisheries. NMFS supports development of an alternative and innovative mass mark. The agency also has an open and positive mind on mass marking in general, but would like to see potential problems addressed.

## **HACCP and New Labeling Update**

Alan Bennett of the U.S. Food and Drug Administration described the HACCP (Hazard Analysis and Critical Control Point) program as science-based, end product oriented. A monitoring procedure at key points in the processing operation detects safety lapses, and monitoring records are used by federal and state officials to monitor compliance. HACCP is being tested on the seafood industry, but may be applied at some point to all food industries. The technique was first used by the food industry in the space program, and has been used in the canning industry for 20 years. It is an attempt to reform current regulations which tend to be reactive rather than preventative. Regulations alone are not enough, however; as industry must recognize the importance of these regulations and follow them. Seafood carries some special associated risks not faced in other food industries: the product is often wild caught; hazards can be either naturally occurring or man-made; many species are involved; most products are highly perishable; some products are consumed raw; product comes from many countries; and, product is subject to varied levels of regulatory control. Through the HACCP program, industry will ensure the safety of its product and government will verify that industry is living up to its responsibilities. The HACCP program covers domestic processors, factory trawlers, packers, and repackers; it does not cover fishing vessels, common carriers, or retailers. Under these regulations, FDA can require safety, but it can only encourage quality and discourage economic fraud (i.e., species substitution).

All products labeled after August 8, 1994 must comply with the Nutritional Labeling and Education Act of 1990. Small businesses are exempted based on the number of employees or the number of units processed. Raw fruit, vegetables, and fish are also exempt from nutritional labeling. Packaged fish can be labeled on an "as cooked" basis. Retail stores are supposed to be participating in a voluntary program to display average nutritional data for the top 20 seafood products. If there are not enough volunteer participants, the program can be made mandatory.

## **Future Visions**

When asked to share their visions of the future, the new regional directors of three federal natural resources agencies responded as follows:

Chuck Clarke, Environmental Protection Agency

Challenges of the future will include 1) Trying to find the leadership and vision within the political system to make long range decisions. Agencies and citizens need to find, encourage, and support the leadership that will look ahead 10 to 20 years and make some hard political decisions; 2) Bridging the "stovepipes" that natural resource agencies have built around themselves through their own separate agendas. Agencies need to come together to share information, focus, and make decisions that deliver natural resource protection; 3) Using limited resources better. Budgets for natural resources protection are not going up, and the prospects for the future are not good; 4) Struggling to develop the good science and data base lines needed to protect resources. Agencies need to coordinate the information they have collected for years, summarize it for citizens, and use it to project what is going to happen in the future; 5) Dealing with regulatory backlash. Prior environmentalists have dealt with traditional industry and pollution sources; now non-point sources must be addressed. It is not as easy to regulate private citizens and their lifestyles, and this must be addressed through public education.

Current EPA regional activities include review of the Columbia River facility EIS, and investigating the linkages between water quantity and quality. State agencies should support reauthorizations of the Clean Water Act and Safe Drinking Water Act as essential elements in the linkage of water quantity and quality. The region is trying to shift to an ecosystem approach by reorganizing within the region for stronger focus on higher priority watersheds or ecosystems. The region is also focusing time on the forest initiative, the salmon initiative, and in trying to work more closely with tribal interests. The three western EPA regions are beginning to work toward a common approach to water issues.

Michael J. Spear - U.S. Fish and Wildlife Service

Three key USFWS issues in the future will include implementations of the Forest Plan, salmon restoration efforts, and the San Francisco/Central Valley Improvement Act. All three have anadromous fish as the common denominator. USFWS hopes that salmon restoration will not only remove these species from the endangered lists, but will restore salmon for fishermen and to the role they once played in the Pacific Northwest. Mr. Spear hopes fishermen will support both ESA and an ecosystem approach. Few other industries are more impacted than fisheries by the lack of an ecosystem approach. For all its faults, the ESA is forcing a look at the big picture. While a single species ESA approach is not really the proper vehicle to investigate these issues, it is a powerful tool that gets people's attention. We must use it to look beyond single species to the broader system deficiencies.

USFWS is reorganizing at the field level toward the broader ecosystem approach, with both fisheries and ecological services staffs reporting to the same supervisors. This internal reorganization should make it easier for states and tribes to know with whom in the USFWS they should interact. USFWS is also attempting external reorganization by working more closely with the NMFS to share resources, review work, and divide responsibilities.

USFWS estimates marbled murrelet numbers in western Washington are declining 5-7% per year, probably due in large part to habitat loss. USFWS needs information on what is really happening in the murrelet interaction with fisheries, and the only way to get that information is from fishermen. The agency hopes to work with fishermen to determine the extent of the problem and to find a solution, rather than to take a strong regulatory approach under the Migratory Bird Treaty Act. USFWS has provided non-jeopardy opinions to NMFS and BIA, provided incidental take statements, established a monitoring plan, and discussed examination of alternative fishing methods. A letter has also been obtained from the U.S. attorney stating that persons who cooperate with the program will not be prosecuted for any incidental takes which do occur.

#### Will Stelle - National Marine Fisheries Service

We are currently in a changing world, and none of us can accurately predict where it will take us. We have seen unprecedented regionwide declines in anadromous fish stocks. The ESA machinery has been injected into fisheries management; it does not fit well but it is here for awhile. We are also seeing a breakdown in some of our bilateral relationships with our neighbor to the north, and those relationships must be reestablished in a responsible and predictable way. This can be seen as an extraordinary opportunity which will be vital for the long term health of regional resources. If successful, we can develop and adopt approaches and techniques for conserving natural resources that will serve as a model to the nation. Salmon restoration will be much more complicated than the spotted owl issue, since it is a regional issue, involves more than just Federal lands, covers a broader geographic area, and affects more agencies and institutions.

There are several essential building blocks needed to accomplish this task, and it is reassuring that people in the region are committed to making it work. One block is technical; i.e., to develop and harness the technical capability to describe what is happening to salmon resources, identify the causes of declines, and create the technical solutions to bring them back. Developing that information will tax our capability, since the outlook for future federal fiscal resources is dismal. Federal resource agencies will need to forge agreements with states, counties, and local governments. The next building block is institutional, since fisheries management and restoration will require the active participation of many levels of government. Another block is financial, since there is probably not enough money in the system as it is now to do the job. Managers in all agencies will need to use available resources better. Federal agencies are undergoing their own internal review, but they need to allow state and local governments to see into the process. The next block is regulatory and programmatic, since most of the tools necessary to affect habitat are not federal but county tools. To be successful in habitat recovery, county governments will have to be brought in. Water quality programs must be married to aquatic health programs. The final building block is educational, and this is not a short term task. Restoration success may not be measurable in 5 years, but possibly in 10 or 15 years. To support that timeline, the educational effort must be maintained over the long term.

To address these issues, it will be essential that the federal natural resource agencies organize and work better together. We cannot afford the type of inter-agency conflicts that have occurred in the past. To the extent that other federal agencies have responsibilities, resources, or capabilities, NMFS and USFWS will attempt to bring them in so that they can speak with one federal voice. Federal agencies have learned from the pre-1992 conflicts on the forest issue, and resolve to have a more organized and coherent approach on the salmon issue. Some organization is still needed to make sure that federal, state, and tribal activities fit better together.

## **NWPPC Salmon Program**

Rick Applegate, director of fish and wildlife programs for the Northwest Power Planning Council, reviewed the current status of the Council's salmon program. The 9th Circuit Court of Appeals recently remanded the Council's proposed amendments to its salmon program, stating that the proposal contained inadequate findings for the adopted amendments and the alternatives, showed insufficient deference to state and tribal recommendations, and contained inadequate biological objectives. The judge also rejected claims by utilities and others that a cost/benefit analysis of the amendments was required.

Snake River fall chinook and spring/summer chinook have declined with dam construction. Drought in the late 1980's and el Niño in the 1990's have exacerbated the problem. As a result, 1995 will be the last smolt population of reasonable size for the next several years. Based on current returns, substantial declines are projected for 1996 and 1997; there is concern that we could see the extinction of the spring/summer chinook run. Steelhead returns to the mid-Columbia River are also in trouble. When populations are allowed to get this low, it is difficult for them to recover.

ESA tends to focus on listed species and can be a reactive statute. A goal would be to make those listings unnecessary, and that will require rebuilding all of the salmonid populations in the Columbia River system. NWPPC would like to coordinate its work with that done under the ESA, the Northwest Power Act, the US/Canada Treaty, and various tribal treaties. Additional input and coordination is needed from states and tribes in at least four areas where recommendations from these groups currently conflict. These include the impacts of water release on flows and resident fish, the extent to which barge transportation of smolts should be used, the role which hatcheries should play to supplement natural production, and the identification of mutually acceptable biological objectives.

The draft Council rulemaking proposes stricter habitat standards that closely follow the habitat standards recommended by the Columbia River Intertribal Fish Commission. Local cooperative riparian and watershed improvements are important, but must be guided by performance standards. The draft contains several proposals for reducing harvest rates on fall chinook to 35% or 50%. It also includes biological objectives, setting a doubling of the runs in the Columbia River basin as a goal, with 50,000 natural spawning spring/summer chinook over Lower Granite Dam. Five options for mainstem

management explore various combinations and schedules for dam drawdown and smolt transportation. Modeling suggests that status quo operation will not recover salmon runs, and the success of more aggressive flow regimes often depends on assumptions regarding the success of smolt transportation. Costs for these options vary between \$100 - \$800 million (including capital investment, annual operating expenses, and lost power revenue), and are anticipated to require rate increases of 10-20%.

## **1995 ANNUAL MEETING**

The 48th Annual Meeting of PSMFC will be hosted by the state of Alaska, and chaired by Alaska State Senator Loren Leman. The meeting has been scheduled for September 30 through October 3 in Anchorage.

## **ANNUAL PSMFC AWARD**

**FOR CONTRIBUTION TO**

**PACIFIC COAST FISHERIES**

**REPRESENTATIVE NORMAN D. DICKS**

**Figure 2.** Congressman Norman Dicks of Washington received PSMFC's 1994 Annual Award for Contribution to Pacific Coast Fisheries.

The Commission's annual award for contributions to Pacific coast fisheries was established in 1987. Its purpose is to honor special individuals with interests in fisheries who have made significant contributions toward promoting fisheries in our member states.

The 1994 award was presented to Representative Norman D. Dicks, from Bremerton, Washington. Rep. Dicks has represented Washington's 6th Congressional District since 1977, and currently serves on the House Appropriations and Select Intelligence committees. The Commission recognized Congressman Dicks for his long-standing interest in the natural resources of the Pacific Northwest, and for his efforts to insure that the states of the Pacific Northwest region received the federal funding necessary to protect those resources. PSMFC is proud to present this award to Congressman Dicks.

## **1994 PUBLICATIONS**

*Habitat Hotline* (published periodically) is a bulletin board of current events dealing with water quality, wetlands development, logging, and other habitat issues that affect fisheries.

*Fish/Water Public Information Messages* (no date) are a series of four public information advertisements suitable for reproduction which emphasize the connection between fish, clean water, and corporate/individual water use.

*Fish/Trees Public Information Messages* (no date) are a series of three public information advertisements suitable for reproduction which describe the importance of trees or other streamside vegetation to healthy fish populations.

*When Salmon Are Dammed: Problems for the Columbia Basin's Salmon* (no date) is a fact sheet describing the problems dams pose for salmon, proposed dam modifications and their costs, and steps individuals can take to help salmon recovery.

*Summary of the Fourth Pacific Coast Steelhead Management Meeting* (April 1994) is a summary of panel discussions at a March 1994 meeting of steelhead managers. Topics included: updates on Endangered Species Act listings; steelhead harvest management; ecosystem management; and quantifying the relationship between steelhead production and habitat.

*45th Annual Report of the Pacific States Marine Fisheries Commission for the Year 1992* (May 1994) contains a summary of PSMFC activities, funding, and expenditures, and reviews selected Pacific Coast fisheries statistics for 1992.

*Pacific Salmonid Coded Wire Tag Releases: 1987 - 1993* (June 1994) documents coded-wire tag (CWT) releases of Pacific coast salmon and steelhead during 1987 through 1993

*PIT Tag Information System PTAGIS2.1 User Manual Version 1.1* (June 1994) is intended for users of the PSMFC Computer Services Center and documents operation of the PIT (Passive Integrated Transponder) Tag Information System (PTAGIS).

*Report of the Nearshore Rockfish Workshop* (August 1994) summarized the proceedings of a March 1 & 2, 1994 Portland, Oregon workshop sponsored by PSMFC to address current management programs for nearshore rockfish, methods to determine the population status, methods for managing and setting harvest rates when biological data are lacking, and ways to balance nearshore rockfish populations with harvest management and public perceptions of harvest management.

*46th Annual Report of the Pacific States Marine Fisheries Commission for the Year 1993* (September 1994) contains a summary of PSMFC activities, funding, and expenditures, and reviews selected Pacific Coast fisheries statistics for 1993.

*PIT Tag Technical Workshop Summary* (October 1995) summarizes key messages of a workshop held on August 25 & 26, 1995 for researchers, agencies, tribes, technicians, and other involved parties to discuss technical issues regarding PIT tagging fish and the PTAGIS system

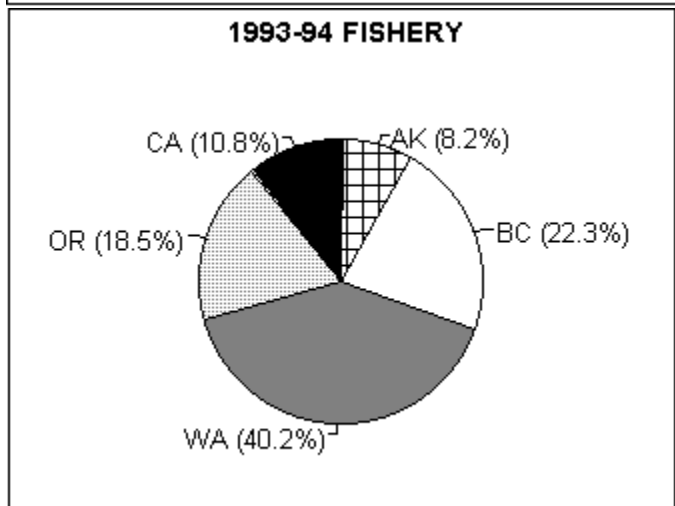
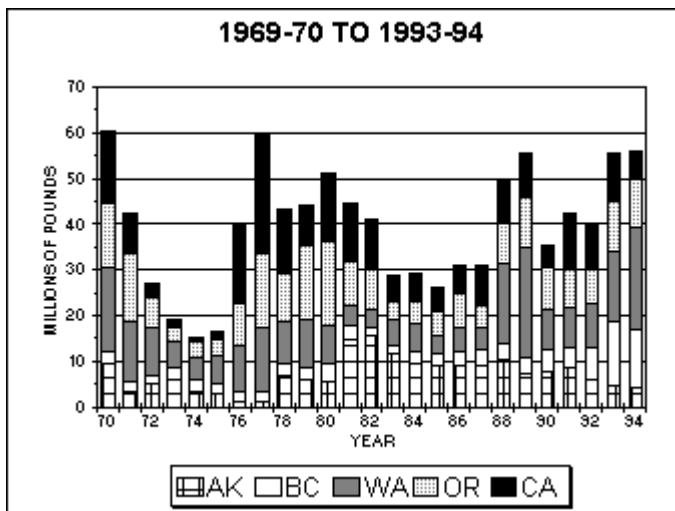
*Protecting Fish Habitat: A directory of the habitat activities of west coast fishing groups* (December 1994) lists fishing groups that are interested and active in either habitat education, protection, or advocacy.

We have limited copies of the following Bonneville Power Administration report for a project in which PSMFC is involved:

*Columbia River Coordinated Information System: Annual Report FY 1993* (February 1994) documents and provides an overview of work efforts completed in meeting contract requirements for the Columbia River Basin Coordinated Information System (CIS) for the period October 1, 1992 through September 30, 1993.

# PACIFIC COAST FISHERY REVIEW REPORTS

## DUNGENESS CRAB FISHERY IN 1993-94





## **Alaska**

Total landings were 4.6 million pounds, about 0.4 million pounds less than in 1993. The largest area of production was Southeast (2.8 million pounds), followed by Kodiak (0.9 million pounds). Approximately 796,257 pounds were taken in Cook Inlet, Chignik, Alaska Peninsula, and the Bering Sea, combined.

## **Washington**

Landings for the 1993-94 Dungeness crab fishery totaled 22.5 million pounds. The coastal fishery (December 1, 1993 -September 15, 1994) produced 19.7 million pounds, the second highest harvest on record. The Puget Sound fishery (October 1, 1993 - April 15, 1994) produced 2.4 million pounds. Tribal landings are included in both figures. Puget Sound tribal fishers landed an additional 399,336 pounds in June and July 1994. The opening ex-vessel price for the coastal fishery was \$1.10 per pound. Two hundred ninety-five vessels made 9,547 landings in the coastal fishery. The Washington legislature passed a limited entry bill for the coastal fishery during the 1994 Washington legislative session; the bill takes effect January 1, 1995. The permanent fleet size consists of about 220 vessels; approximately 40 vessels will receive temporary licenses that expire December 31, 1999. The limited entry program prohibits vessels greater than 99 feet in length.

## **Oregon**

Total Oregon landings for the 1993-94 season were 10.3 million pounds. Leading ports were Astoria, Newport, and Charleston at 4.6, 2.6, and 1.2 million pounds, respectively. Catch was noticeably poor at the south coast ports of Brookings and Port Orford. A total fleet of 385 vessels made 7,847 landings in the ocean fishery. The fall bay fishery produced 99,870 pounds of the season total. Pre-season test fishing confirmed acceptable quality on the north coast, and the fishery began statewide on December 1. The ex-vessel price averaged \$1.14 per pound in December, rising to over \$1.50 during the spring months.

## **California**

California Dungeness crab landings were 6.1 million pounds, a 40% decrease from the previous season. Landings for the northern California ports of Crescent City, Trinidad, Eureka, and Fort Bragg were 3.5, 0.6, 1.1, and 0.1 million pounds, respectively. The ex-vessel price opened at \$1.00 per pound and there were 424 vessels in the fleet. Central California landings totaled 0.8 million pounds, an 82% increase over the 1992-93 season. The Central California ex-vessel price opened at \$1.90 per pound.

### **Contributors:**

Carole Smith, Alaska Department of Fish and Game  
Kerry Hobbs, Dept. of Fisheries and Oceans, Canada

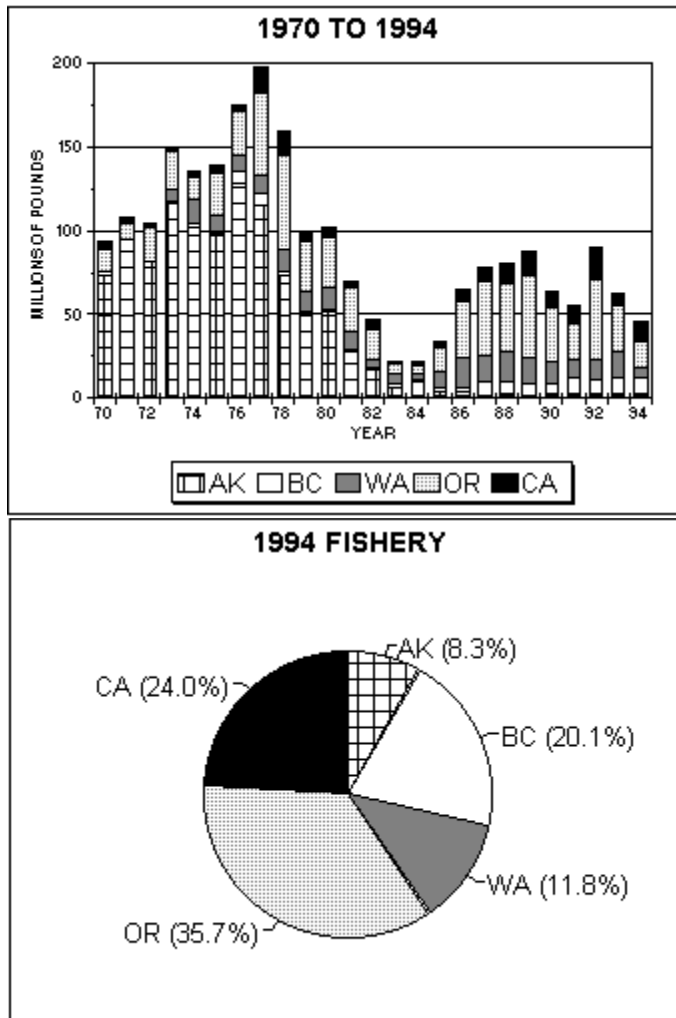
Paul LaRiviere, Washington Dept. of Fish and Wildlife  
 Neil Richmond, Oregon Dept. of Fish and Wildlife  
 Ron Warner, California Department of Fish and Game

Table 1. Annual landings of Dungeness crab by state, province, and entire Pacific coast (in thousands of pounds).

Year or Season *	Alaska	British	Wash- ngton	Oregon	California	Total
1969-70	9,696	2,548	18,675	13,849	15,564	60,332
70-71	3,749	1,963	13,211	14,735	8,501	42,159
71-72	5,448	1,975	10,095	6,780	2,875	27,173
72-73	6,423	2,580	5,583	3,143	1,500	19,229
73-74	3,818	2,500	4,604	3,462	880	15,264
74-75	3,036	2,513	5,896	3,335	1,816	16,596
75-76	1,545	2,121	9,885	9,099	17,410	40,060
76-77	1,162	2,269	14,023	16,200	26,404	60,058
77-78	7,169	2,592	9,237	10,375	13,800	43,173
78-79	6,334	2,599	10,362	16,352	8,300	43,947
1979-80	5,912	3,750	8,320	18,277	14,853	51,112
80-81	15,109	2,903	4,494	9,429	12,717	44,652
81-82	15,811	1,973	3,928	8,700	10,786	41,198
82-83	11,801	2,116	5,237	4,100	5,413	28,667
83-84	9,967	2,546	6,166	4,700	5,854	29,233
84-85	9,180	2,568	4,266	4,900	5,248	26,162
85-86	9,358	2,912	5,430	7,171	5,990	30,861
86-87	9,346	3,596	4,806	4,747	8,597	31,092
87-88	10,571	3,377	17,858	8,685	8,754	49,245
88-89	7,667	3,355	23,896	11,154	9,552	55,624
1989-90	8,145	4,780	8,629	9,236	4,548	35,338
90-91	9,062	4,160	8,883	8,248	11,956	42,309
91-92	6,210	7,335	9,173	7,657	9,807	40,182
92-93	5,016	13,865	15,533	10,873	10,071	55,357
10-year Mean	8,452	4,849	10,464	7,737	8,038	39,540
1993-94	4,575	12,449	22,493	10,343	6,067	55,928

\* Alaska and British Columbia crab catches are reported on a calendar year basis. The last year mentioned in this column is the calendar year. Washington, Oregon, and California catches are reported on a season basis that begins during the first year and ends the following year.

## SHRIMP FISHERY IN 1994



### Alaska

Commercial landings of shrimp totaled 3.8 million pounds in 1994, an increase of about 35% from the 1993 season but only about 1% greater than the previous 10-year average. Landings of trawl-caught shrimp totaled 3.1 million pounds, and 0.7 million pounds of shrimp were caught by pot.

Southeastern Alaska shrimp landings accounted for 96% of the Alaska total, with 2.9 million pounds of trawl-caught and 747,000 pounds of pot-caught shrimp. Prince William Sound accounted for 3% of the Alaska total with 110,900 pounds of trawl-caught shrimp. The remaining Alaska landings were distributed between Cook Inlet, Kodiak, and the Bering Sea.

## Washington

Coastal pink shrimp landings in 1994 totaled 5,428,961 pounds, a 65% decrease from 1993 landings and 59% below the average of the ten prior seasons. The estimated total fishing effort was between 50% and 60% lower than in 1993. Landings peaked in August at 1,324,886 pounds. Fifty-three vessels made a total of 486 landings during the season for an average of 11,102 pounds per landing; the highest monthly average was July's 15,379 pounds per landing.

## Oregon

The total 1994 pink shrimp (*Pandalus jordani*) harvest in Oregon was approximately 16.4 million pounds ([Table 2](#)), about 10.5 million pounds less than the 1993 landed catch and well below the fifteen year average of 27.6 million pounds. It was the lowest annual landing total since 1985. A total of 150 vessels made 1,481 deliveries of pink shrimp into Oregon ports during 1994 compared with 154 vessels and 1,617 deliveries during 1993.

The total effort (hours) expended to harvest the landed catch was 48,533 h, just a thousand hours less than in 1993 ([Table 3](#)). Total CPUE was 337 lb/h in 1994, considerably less than the 542 lb/h seen in 1993

Most shrimp production occurred on the south coast in areas 86, 88, and 92 with most of the effort centered there as well. Monthly catches peaked in June. Volume in other months and areas was sharply lower. By contrast, in 1993, most shrimp volume was harvested early in the season off Washington.

The catch-weighted average count per pound of shrimp landed in Oregon was about 123 shrimp/lb., slightly more than the 15 -year average of 115 shrimp/lb. Growth of age-1 and age-2 shrimp was above average this year, which helped to keep the count per pound down despite the dominance of age-1 shrimp in the catch.

## California

Pacific ocean shrimp landings for the 1994 season totaled 11.2 million pounds statewide, an increase of 44% over the 1993 season. The season opened on April 1 with a price settlement of \$0.57 per pound.

### Contributors:

Carole Smith, Alaska Department of Fish and Game  
Kerry Hobbs, Dept. of Fisheries and Oceans, Canada  
Steve Barry, Washington Department of Fish and Wildlife  
Stephen Jones, Oregon Department of Fish and Wildlife  
Ron Warner, California Department of Fish and Game

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Table 2. Annual Pacific Coast pandalid shrimp landings (in thousands of pounds) by state and province.

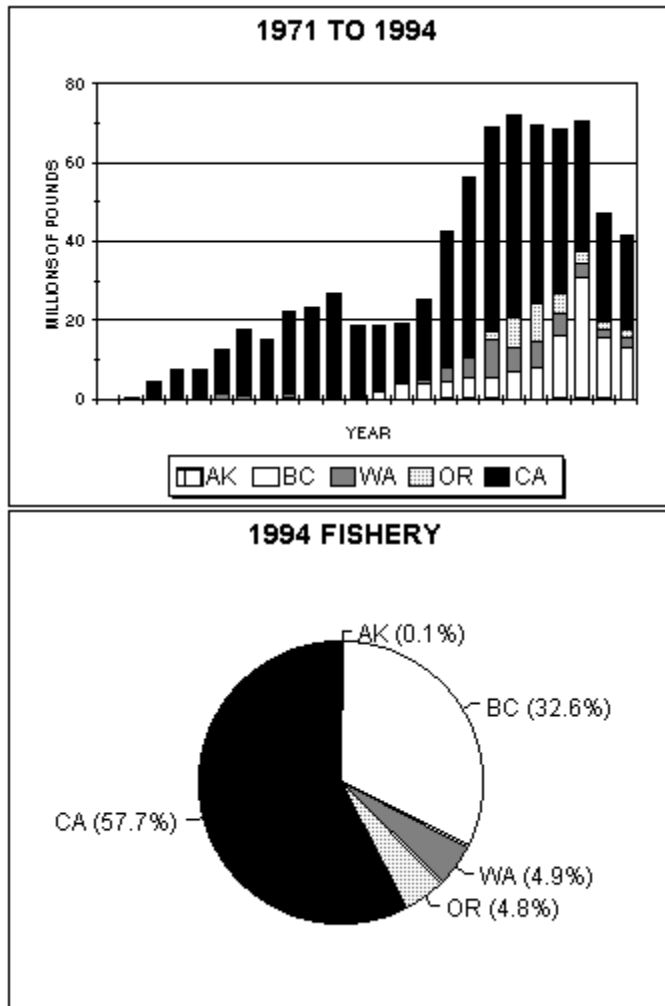
Year	Alaska	British Columbia	Wash- gton	Oregon	California	TOTAL
1970	74,256	1,538	606	12,481.7	4,172.2	93,054
71	94,801	735	79	9,213.2	2,728.2	107,556
72	82,098	794	9	19,165.3	2,621.3	104,688
73	116,719	1,792	7,038	22,752.7	1,206.4	149,509
74	102,298	2,581	14,895	13,022.1	2,382.9	135,179
75	98,535	1,728	10,167	23,893	4,993	139,316
76	129,011	7,723	9,261	25,392	3,400	174,787
77	116,011	6,176	11,803	48,580	15,633	198,203
78	73,293	3,460	12,298	56,997	13,167	159,215
79	50,916	1,578	12,135	29,579	4,992	99,200
1980	52,568	1,500	12,629	30,152	5,050	101,899
81	28,029	2,070	10,055	25,918	3,670	69,742
82	16,987	1,515	5,000	18,462	4,550	46,514
83	7,458	1,636	5,656	6,547	1,132	22,429
84	9,539	2,013	3,423	4,844	1,485	21,304
85	4,204	2,628	9,118	14,848	3,293	34,091
86	4,064	2,901	17,400	33,798	6,800	64,963
87	2,457	7,196	15,900	44,800	7,800	78,153
88	2,773	7,233	18,300	41,484	11,100	80,890
89	2,000	6,876	15,870	49,083	13,314	87,143
1990	3,197	5,955	13,504	31,883	8,684	63,223
91	3,794	9,317	9,949	21,720	10,358	55,138
92	3,073	8,490	12,012	48,033	18,516	90,124
93	2,838	9,916	15,456	26,923	7,800	62,933
10-yr Mean	4,256	5,424	12,113	29,704	8,248	59,746
1994	3,826	9,253	5,429	16,379	11,038	45,924

Table 3. Oregon landings (pounds) of pink shrimp and effort (hours) during 1993 and 1994, by PSMFC area of harvest.

PSMFC 1993 Area	Geographic Boundaries	1994
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Pounds	Hours	Pounds	Hours
72 6,448,853	Cape Flattery to Cape Elizabeth 7,995	1,029,378	1,244
74 3,849,148	Cape Elizabeth to Willapa Bay 7,351	449,500	2,100
75 40,109	Willapa Bay to Columbia River 53	3	7
82 3,365,698	Columbia River to Cape Falcon 5,345	1,603,713	6,462
84 2,396,875	Cape Falcon to Cape Perpetua 4,751	1,585,217	7,044
86 4,825,946	Cape Perpetua to Cape Blanco 12,795	3,854,568	13,632
88 3,430,717	Cape Blanco to California border 6,801	4,137,631	11,393
92 2,565,797	California border to Cape Mendocino 4,571	3,244,322	6,651
Total 26,923,143	49,662	16,378,846	48,533

## SEA URCHIN FISHERY IN 1994



### Alaska

Statewide sea urchin fishery harvests during 1994 were much reduced from previous years. The only significant harvest occurred in the Kodiak area, where 23,400 pounds of green sea urchins were harvested. This catch came primarily during the fall season which begins in October, with a small amount from January 1994. A negligible green urchin harvest occurred in Cook Inlet, where catch was limited by few urchins greater than the 2-inch minimum size limit and low roe recoveries; a different rotational fishing area was opened in 1994 from 1993. The Southeast Alaska fishery for red sea urchins was not opened during 1994 due to predation by sea otters in the Sitka Sound fishing area. A population assessment survey was initiated in the Ketchikan area during the fall in an attempt to document another urchin population where a future commercial fishery may be possible.

### British Columbia

Preliminary 1994 landings of sea urchins in British Columbia were 13.5 million pounds and, as in the past, most of these were red sea urchins (12.8 million pounds). The North Coast quota was 13 million pounds and the South Coast quota was 3.4 million pounds. A voluntary individual vessel quota slowed the fishery and increased prices, resulting in the coastwide quota not being fully taken. Green sea urchin landings were 715,019 pounds in 1994. There was a 990,000 pound quota for green sea urchins for the South Coast, but no quota was instituted for the North Coast. Poor weather in December resulted in the quota not being taken. Purple sea urchins are not harvested in British Columbia.

The 1995 red sea urchin quotas are 12 million pounds for the North Coast and 3.05 million pounds for the South Coast. Quotas for red sea urchins in 1996 will likely be the same as those in 1995. Green sea urchin quotas in 1995 are 588,400 pounds for the South Coast and a 200,000 pound quota for Areas 3 and 4 of the North Coast, with quotas in other North Coast areas to be arranged in-season. There are continued stock strength concerns for green sea urchins in British Columbia, and this concern will likely be reflected in reduced quotas in 1996.

## **Washington**

Sea urchin landings during the 1994 season totaled 2.04 million pounds (1.51 million pounds of red urchins and 0.53 million pounds of green urchins). Indian tribes landed 0.27 million pounds of the red urchin total. The average ex-vessel price for red urchins was \$0.97 per pound, while green urchins fetched \$1.64 per pound. The total ex-vessel value of landings was \$2.33 million. Sixty-five boats made landings, up from 62 last season. The non-tribal red and green sea urchin fisheries, with a total quota of 1.96 million pounds, ran from November 28 through January 18, with openings two or three days per week depending on market conditions. The red urchin quota in Districts 1 and 4 was 1.36 million pounds, 20 percent higher than last season's red urchin quota in Districts 2 and 5. The statewide green urchin quota remained unchanged from previous seasons at 600,000 pounds.

## **Oregon**

Red sea urchin landings in Oregon declined for the fourth year in a row since the peak harvest in 1990. Total landings in 1994 were just over 1.79 million pounds landed by 45 harvesters. The average ex-vessel price of \$0.77 per pound was less than the \$0.87 per pound received in 1993. Port Orford continued to be the major port of landing, with just over 1 million pounds landed. Gold Beach was the next highest port, with just over 500,000 pounds landed. The voluntary industry closure of Orford Reef from May 1 through October 31 to protect Steller sea lion pupping rocks and reserve Orford Reef for the winter fishery became rule in December 1994. Average size and catch-per-unit-of-effort continued to decrease. Concern about declining catch, average size, and CPUE prompted the sea urchin industry to request a suspension of the sea urchin permit lottery. At their December 1994 meeting, the Oregon Fish and Wildlife Commission voted to suspend the lottery effective January 1, 1995.



Purple sea urchins were harvested for the third year in 1994. Specific areas were opened for the harvest of purple urchins only after surveys of size and densities were conducted. Two areas were closed during 1994 after their quotas were taken. Three new areas were surveyed and opened in 1994. Harvest increased dramatically from 1993 levels, but still only totaled about 197,000 pounds, taken from ten separate areas. Most of the harvest was taken from the Arago area and landed into Charleston.

## California

Preliminary estimates of 1994 sea urchin landings in California totaled 23.8 million pounds of red sea urchins and 137,600 pounds of purple sea urchins. The average ex-vessel price for the year was about \$1.00 per pound. There were no regulation changes between 1993 and 1994; the same closures, size limits, and other restrictions were in place. Factors contributing to the decline in 1994 were similar to those noted in 1993, especially in northern California: a reduction in available biomass; bad weather; and a shift in selectivity by the divers to a higher quality product. Not currently measured, but likely to have occurred, was a move by some northern California divers to fish in southern California as the stock availability continues to decline in the north. There were about 560 sea urchin permits issued in 1994.

The Department and the sea urchin industry are in the process of reviewing the Department's 1994 Draft Sea Urchin Fishery Management Plan which explores some options for establishing a total allowable catch for northern and southern California waters. No management actions will be initiated before that review process is complete.

### Contributors:

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Table 4. Annual landings of sea urchins (in thousands of pounds)  
 by state or province.

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Year	Alaska	British Columbia	Wash- ington	Oregon	California	Total
1971		+	1.8		0.2	2.0
72		+	2.5		76.5	79.0
73		802.5	14.7		3,594.7	4,411.9
74		++	57.4		7,107.8	7,165.2
75		++	31.0		7,567.2	7,598.2
76		++	1,544.4		11,106.4	12,650.4

77		154.5	1,045.6		16,536.3	17,736.4
78		165.3	471.4		14,424.3	15,061.0
79		701.5	697.0		20,544.2	21,942.7
1980	*	733.7	132.9		22,167.1	23,033.7
81	*	254.2	304.2		26,333.7	26,892.1
82	*	351.2	40.6		18,403.9	18,795.7
83	*	2,173.3	497.2		15,809.4	18,479.9
84	107.4	3,890.1	604.5		14,746.5	19,348.5
85	126.0	4,001.2	878.8		19,994.9	25,000.9
86	282.4	4,556.7	3,501.2	55.8	4,130.7	42,526.8
87	757.1	4,935.0	4,908.3	202.8	45,636.8	56,440.0
88	244.9	5,644.5	9,357.9	1,947.3	51,988.0	69,182.6
89	187.0	7,201.2	5,739.7	7,842.6	51,187.3	72,157.8
1990	100.3	8,008.5	6,839.2	9,320.9	45,269.7	69,538.6
91	225.1	16,105.2	5,686.4	4,736.9	41,926.7	68,680.3
92	454.1	30,917.8	3,298.2	2,954.2	32,681.4	70,305.7
93	386.9	5,378.9	1,867.6	2,217.3	27,012.4	6,863.1
5-year Mean	238.0	16,790.2	3,945.9	4,243.2	34,175.0	59,392.3
1994**	23.4	13,540.8	2,037.9	1,986.7	23,985.0	41,573.8

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\* Confidential information: fewer than four fishermen with landings

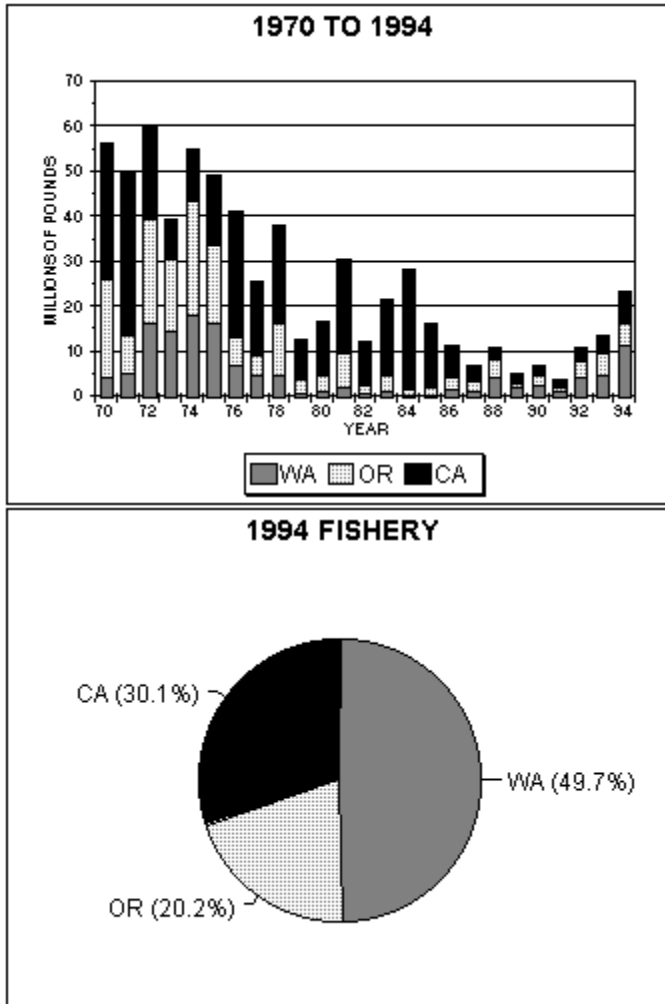
\*\* All 1994 data are preliminary.

+ Data from 1971-73 combined.

++ Data from 1974-77 combined.

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## ALBACORE FISHERY IN 1994



Commercial albacore landings increased in 1994 with total landings of approximately 23.2 million pounds in Washington, Oregon and California. This represents a 71% increase from 1993, and is 12% above the previous 20-year average for this fishery.

### Washington

Albacore landings in Washington during 1994 totaled 11,553,133 pounds. Landings by month were: 13,268 pounds in June; 699,324 pounds in July; 5,728,297 pounds during August; 3,413,259 pounds during September; 1,639,326 pounds during October; and 59,659 pounds during November. About 14% of the total catch (1,669,694 pounds) was reported to have come from Canadian catch areas.

### Oregon

The 1994 Oregon albacore season effectively began in late July when offshore boats began making landings (one isolated landing of fish caught near Midway Island occurred during June). During July, approximately 78,967 pounds were delivered into Oregon

ports. August showed the largest monthly total landings of the year with 2,272,223 pounds unloaded in Oregon. The fishery slowed in September and October when 1,410,822 and 853,094 pounds were delivered, respectively. Few deliveries occurred in November.

Albacore fishermen reported exceptionally good fishing throughout the season in waters 800 or more miles off the coast, with trips consistently averaging 200 to over 400 fish per day. Most of the smaller boats spent the season fishing from 50 to 150 miles off the central Oregon coast, catching 100 to 200 fish per day in August. This catch rate declined in September and October as schools became more scattered.

The average weight of individual albacore landed in Oregon during 1994 was in the 12 to 14 pound range, with some large (20 to 25 pound) fish also showing in the catch. Few fish under nine pounds in weight were reported. In 1994, Newport received 57% of the Oregon deliveries; Astoria was second with 13%; and, Charleston was third with 11%. Several other ports also received deliveries. Ex-vessel prices paid during 1994 ranged from \$1,400 to \$1,550 per ton for fresh albacore and \$1,800 to \$2,000 per ton for frozen fish.

The preliminary total for Oregon albacore landings during 1994 was 4,685,937 pounds, a slight decrease from 1993 but still the second highest level in the last decade.

## **California**

Commercial albacore landings in California increased in 1994 to nearly seven million pounds. This was the best albacore season since 1986 when slightly more than seven million pounds were landed. The number of vessels making a landing in California ports also increased to 321 compared to 249 in 1993. Like last year, albacore were found relatively close to shore in the northern portion of the state and afforded smaller vessels the opportunity to join the fishery.

Landings were primarily made from vessels using troll gear (98%) while longlines and gill nets represented a very small portion of the catch (2%). The season in the north Pacific began in late July and continued until December. More than 92% of the annual landings were made from August through October in three major port areas: Crescent City/Eureka; Moss Landing; and Terminal Island/San Pedro.

While approximately 96 "dealers" bought albacore in California, only seven bought more than 150,000 pounds during 1994. Prices ranged from \$1,600 per ton to \$1,950 per ton, depending on condition and size of landing. The negotiated price was \$1,900 per ton, however, many boat owners had trouble collecting from the major buyer. A stable buying situation is still not established along the West Coast and may impact the 1995 season.

Contributors:

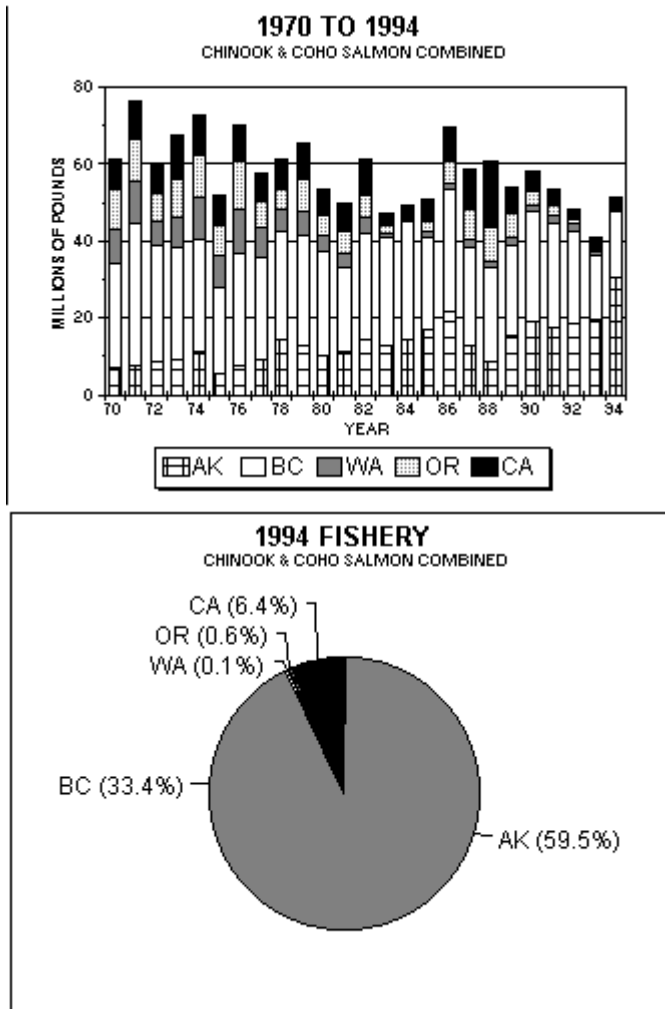
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Table 5. Albacore landings in Washington, Oregon,  
 and California (in thousands of pounds).

Year	Washington	Oregon	California	Total
1970	4,390	21,782	29,932	56,104
71	5,250	8,420	36,117	49,787
72	16,238	23,056	21,001	60,295
73	14,446	16,350	8,641	39,437
74	17,983	25,225	11,806	55,014
75	16,297	17,166	15,413	48,876
76	7,202	5,934	27,754	40,890
77	4,948	4,420	15,905	25,273
78	5,008	11,285	21,549	37,842
79	830	3,107	8,508	12,445
1980	1,299	3,505	11,958	16,762
81	1,928	7,727	20,584	30,239
82	586	1,913	9,439	11,938
83	1,168	3,410	16,732	21,310
84	147	1,631	26,520	28,298
85	379	1,525	14,410	16,314
86	1,862	2,461	7,018	11,341
87	1,167	2,288	3,090	6,545
88	4,197	3,967	2,665	10,829
89	1,882	1,080	1,819	4,781
1990	2,542	2,079	1,942	6,563
91	943	1,259	1,494	3,696
92	4,095	3,889	2,772	10,756
93	4,813	4,754	4,028	13,595
20-year Mean	3,964	5,431	11,270	20,665
1994*	11,553	4,686	6,994	23,233

\*Preliminary

## TROLL SALMON FISHERY IN 1994



### Alaska

The commercial troll fishery in Southeast Alaska and Yakutat occurs in State of Alaska waters and in the Federal Exclusive Economic Zone (EEZ) east of the longitude of Cape Suckling. The EEZ waters are those more than 3 miles west of the surf line. All other waters of Alaska are closed to commercial trolling. The commercial troll fishery harvests primarily chinook and coho salmon. Other species of salmon harvested by trollers are normally considered incidental, although targeting of pink and chum salmon has increased in recent yrs. The troll fishery normally harvests about 90% of the chinook salmon and 50-75% (target is 61%) of the coho salmon taken in Southeast Alaska commercial fisheries.

Commercial trolling for chinook salmon occurs in two seasons; winter (October 11 through April 14) and summer (April 15 to September 30). A quota on the number of non-Alaskan chinook salmon is set yly under the U.S./Canada Pacific Salmon Treaty (PST). Time and area openings are set by the Alaska Board of Fisheries. The season for

coho salmon is from June 15 to September 20. There are no season restrictions for other species of salmon.

A total of 4,942,748 salmon of all species were harvested by the troll fleet in 1994. This was the highest total since statehood, due to record catches of coho salmon, and excellent landings of pink and chum salmon. Hand troll vessels harvested 541,739 fish, and power troll vessels harvested 4,401,009 fish.

The 1994 troll chinook fishery was managed to (1) comply with provision of the PST regarding chinook catch ceilings and minimization of incidental mortalities, (2) continue the Southeast Alaska natural chinook rebuilding program, (3) harvest a total of 180,400 treaty chinook salmon, and (4) provide maximum harvest of Alaska hatchery-produced chinook salmon.

Since implementation of the PST, troll chinook catches had remained relatively stable until 1990, when an additional quota increase of 39,000 chinook salmon over previous years and a record Alaska hatchery add-on combined to produce a harvest of 287,427. In 1992, the troll fishery was required to make up a cumulative all-g overage from previous years, resulting in the lowest chinook harvest ever.

The chinook Annex of the PST expired following the 1992 season, and the PST negotiations ended without an agreement for chinook salmon in both 1993 and 1994. Consequently, the NMFS Northwest Region entered into consultation with the NPFMC over management of Southeast Alaska chinook salmon fisheries, specifically to reduce impact on the Snake River Fall Chinook (SRFC). The department submitted biological assessments of the SE chinook salmon fishery and its effect upon the SRFC. The department found that the SE Alaska fisheries impact upon the SRFC was insignificant. The NMFS rejected this assessment and required a reduction in the number of chinook salmon harvested. The department responded with further assessments of the fisheries impact that were intended to minimize the impacts required by NMFS. Following the consultation, the NMFS issued a Biological Opinion that limited the total all-g catch of chinook salmon to 240,000 treaty fish.

The 1994 chinook salmon all-g fishery was managed for a ceiling of 240,000 fish. In addition, although no annex was formally signed, the fishery was managed to comply with previous PST protocol as follows: the base catch was calculated by subtracting the "add-on" (Alaskan hatchery produced chinook minus pre-Treaty production and risk factor), and (2) a management range of plus or minus 7.5% for accumulation of overages and underages beginning in 1987. The all-g catch (cost recovery not included) was approximately 262,500 chinook salmon. The commercial catch was 221,851 fish (84.5%), and the recreational harvest 40,630 (15.5%). A hatchery harvest of 37,791 fish was calculated (30,996 fish add-on). The total commercial harvest of chinook salmon included a troll harvest of 186,167 fish, a purse seine harvest of 14,824 fish greater than 5 pounds, a drift gillnet harvest of 16,733 fish, a set gillnet harvest of 3,897 fish, and a commercial all-g catch of 230 fish in the Annette Island Reserve.

The 1994 winter troll season began October 11, 1993, and continued through April 14, 1994. The open area during the 1993-94 winter season was restricted to those areas of Southeast Alaska east of the surfline (except Sitka Sound where the line was modified to follow LORAN lines), portions of District 16 north of Cape Spencer, and the waters of Yakutat Bay. All outer coastal areas, including the EEZ, were closed during the winter fishery. Following the Alaska Board of Fisheries (BOF) meeting in January, the lines for the winter fishery were changed to comply with the new management plan.

Approximately 56,368 (30%) of the 1994 troll chinook catch was harvested during the 1993-94 winter season. This catch, the fourth largest winter catch on record, was included in the all-g catch ceiling. In 1994, the BOF adopted a catch ceiling of 45,000 chinook salmon for the winter troll season, which will be in place beginning with the 1995 winter fishery.

In 1994, experimental fisheries were conducted a minimum of two days per week in twelve n-terminal hatchery areas. Some fisheries started in late May, and all were open by the second week in June. The purpose of all (except the Cross Sound fishery, which is designed to take chum and pink salmon) was to increase the take of Alaska-origin hatchery chinook salmon. Time was increased in areas that have high Alaska hatchery catch percentages. Between 57 and 314 boats participated each week in the 1994 experimental fisheries and they harvested 11,267 chinook salmon. This is slightly less than that number taken the previous season. In January 1994, the BOF eliminated the hatchery access fishery to provide more fishing opportunity for chinook salmon during the general summer troll season.

The 1994 general summer troll harvest target was determined by subtracting the base catches in the winter and June troll fisheries. Five percent of this total was added for the expected Alaska hatchery contribution. Opening of the 1994 general troll season was again delayed until July 1. This reduced the duration of the chinook salmon non-retention fishery which occurs after the allowable chinook salmon catch has been taken. In 1994, a relatively low number of chinook salmon remained under the quota (approximately 124,000 fish) after the winter and experimental fisheries, and a high abundance of chinook salmon was expected. Therefore, the troll fishery was open for a set period of seven days (July 1-7), with a resulting harvest of 98,200 chinook salmon (14,000 fish per day). With 25,800 chinook salmon remaining under the quota, another five days of chinook fishing were allowed from August 29-September 2. The total numbers of days open for chinook salmon in 1994 was 12. Because at least seventy percent of the remaining quota for the general summer season was harvested during the initial opening, areas of high chinook salmon abundance were closed to slow down the harvest rate as prescribed by the management plan adopted by the BOF in 1994. The catch during the second opening was 20,200 chinook salmon (5,000 fish per day). With less than 5,000 fish remaining on the 1994 quota another chinook salmon opening was not warranted, and chinook non-retention remained in effect until the close of the summer troll season on September 30.



Total Southeast troll chinook salmon catch for 1994 was 186,040 fish (3,003,554 pounds dressed weight, 3,413,130 pounds round weight). Average weights were 16.14 pounds dressed weight, and 18.35 pounds round weight.

General regulatory dates for the troll coho salmon season are June 15 through September 20. The major portion of the coho salmon catch normally occurs from mid-July through ly September. Southeast Alaska coho salmon fisheries are managed based on assessed in-season run strength, and are regulated to achieve conservation objectives and allocation policies established by the Board of Fisheries. Harvest ceilings such as those in the chinook salmon fishery are not used. Opening of the general coho season in 1994 was delayed to correspond to the opening of the chinook season on July 1. However, coho salmon caught after June 14 in the experimental and terminal fisheries could be retained. An assessment completed on July 22 indicated a projected total commercial harvest well above the 1.12 million fish guideline, and no closure of the troll fishery was necessary for conservation. In ly August, an assessment indicated that only a limited closure of five days was required for allocation. Immediately following a news release of the closure, NMFS notified the department that it was reinitiating consultation on the chinook salmon harvest. The department then canceled the troll closure until the matter could be settled. An assessment following this indicated that the abundance of coho salmon continued to build and that no coho salmon closure was necessary. A two day closure was announced for late August in order to restart the chinook salmon fishery. Finally, the coho salmon season was extended for 10 days, and closed on September 30.

Catch statistics for coho salmon totaled 3.46 million fish, the highest since the fishery began 100 ys ago, and follows the previous record harvest of 2.40 million fish in 1993. (25.08 million pounds dressed weight or 27.26 million pounds round weight). Beginning in 1989, the troll share of the commercial harvest has averaged 64%.

The estimated ex-vessel value for the chinook troll fishery for 1994 was approximately \$6.38 million (\$2.13 per pound), with coho valued at about \$29.57 million (\$1.18 per pound).

## **Washington**

Due to the record low pre-season projections for many Washington coho and chinook salmon stocks, the Pacific Fishery Management Council voted to close the non-treaty ocean fisheries in the area north of Cape Falcon, both commercial and recreational, to allow maximum return of weak stocks to spawning areas. Consequently, there was no non-treaty ocean commercial salmon troll fishery in the area from Cape Falcon, Oregon, to the U.S./Canada border in 1994.

The 1994 treaty Indian salmon troll fisheries were also constrained by concerns for impacts on Columbia River chinook salmon and unprecedented low abundance of several naturally spawning coho salmon stocks. The 1994 season consisted of only a directed chinook salmon season conducted between May 1 and June 30. Availability of chinook salmon was fair, and the total catch of 4,435 fish represented 27% of the overall chinook

salmon quota of 16,400 fish. A total of 52,132 pounds of chinook salmon were landed. No directed coho salmon harvest occurred in either the ocean or the Strait of Juan de Fuca by treaty Indian troll fisheries during the 1994 season. The 1994 treaty troll season ran for 61 days, compared to the 1993 treaty troll season of 146 days for the QTA Tribes and 153 days for the Makah and S'Klallam Tribes (a 60% reduction in season duration).

## **Oregon**

The area north of Cape Falcon was closed to troll salmon fishing in 1994. All Oregon fisheries were closed to the harvest of coho salmon, and were limited to four spreads per wire to reduce interceptions of coho salmon.

The area from Cape Falcon to Humbug Mountain was open from May 1 through June 30, was closed to all salmon trolling in July and August, but reopened from Cascade Head to Humbug Mountain from September 1 through October 31. The area from Cape Falcon to Cascade Head was closed during September to provide additional protection for Tillamook basin coho salmon, but was open October 1-31 for all species except coho salmon.

South of Humbug Mountain, from Sisters Rocks to House Rock (0-6 miles) the fishery was open on May 1, 2, 5, 6, 10, 11, 14, 15, and 18-31. The area from Sisters Rocks to Mack Arch (0-6 miles) was open August 8-31. All boats that participated in this latter fishery were required to preregister and were restricted to a daily landing limit of 20 chinook salmon on August 8 and 9, and 60 chinook salmon per landing during the period of August 10-31.

Additional terminal area state waters (0-3 miles) fall chinook salmon target fisheries occurred off Tillamook Bay (Twin Rocks to Pyramid Rock) from November 1-15, off the Elk River (Cape Blanco to Humbug Mountain) from November 1-7, and off the Chetco River (Goat Island to Red Point) from October 10-25 and October 30-31.

Oregon troll chinook salmon landings in 1994 totaled 0.3 million pounds (round weight). The 1994 landings were 62% below the 1993 landings of 0.9 million pounds, and 89% below the 1984-93 average of 2.7 million pounds.

## **California**

In 1994, the troll season north of Horse Mountain was closed for the entire season. Between Horse Mountain and Point Arena there was a fishery for all salmon except coho salmon during the month of September. South of Point Arena, fishing for all salmon except coho salmon occurred between May 1 and June 11 from Point San Pedro (approximately 15 miles south of the Golden Gate) to the Mexican border; between July 1 and July 31 from Point Reyes to the Mexican border; and between August 1 and September 30 from Point Arena to the Mexican border. Statewide, the minimum size limit for chinook salmon was 26 inches in total length, and barbless hooks were required.

California's preliminary troll chinook salmon landings were 3.3 million pounds round weight, approximately 54% of the previous 10-y average of 6.1 million pounds. Commercial fishing for coho salmon was closed for the entire season.

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Table 6. Pacific Coast commercial troll chinook salmon landings in millions of pounds round weight.

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Year	*Alaska	British Columbia	Washington	Oregon	California	Total
1970	5.1	9.9	2.5	1.9	6.1	25.5
71	4.9	15.2	3.1	1.2	5.7	30.1
72	3.3	14.1	2.6	1.5	6.2	27.7
73	5.0	12.7	3.8	4.0	8.7	34.2
74	5.1	13.5	4.3	2.6	5.8	31.3
75	4.4	12.6	3.3	3.0	6.6	29.9
76	3.5	13.8	4.4	2.2	5.7	29.6
77	4.7	12.1	3.3	4.0	6.6	30.7
78	6.8	13.2	2.4	2.2	6.0	30.6
79	6.0	11.1	2.0	3.0	7.9	30.0
1980	5.5	11.6	1.9	2.5	6.4	27.9
81	4.7	9.9	1.4	1.8	6.8	24.6
82	4.5	11.9	1.9	2.7	8.5	29.5
83	4.3	9.5	0.8	0.8	2.4	17.8
84	4.4	11.1	0.2	0.6	2.3	18.7
85	4.0	9.3	0.6	2.3	5.2	21.4
86	4.7	8.6	0.7	3.9	7.6	25.5
87	5.3	10.2	1.1	6.0	9.5	32.1
88	4.3	11.3	1.5	5.0	16.5	38.6
89	5.2	8.6	1.2	4.1	6.2	25.3
1990	5.6	9.2	0.6	2.5	4.7	22.6
91	5.2	8.3	0.8	0.8	3.7	18.8
92	3.3	10.1	1.0	1.2	1.9	17.5
93	4.4	8.7	0.6	0.9	2.9	17.5
10-year Mean	4.6	9.5	0.8	2.7	6.1	23.8

1994\*\* 3.4 5.6 0.1 0.3 3.3 12.6

\* Troll-caught salmon are landed dressed. Round weights are projected.

\*\* All 1994 data are preliminary.

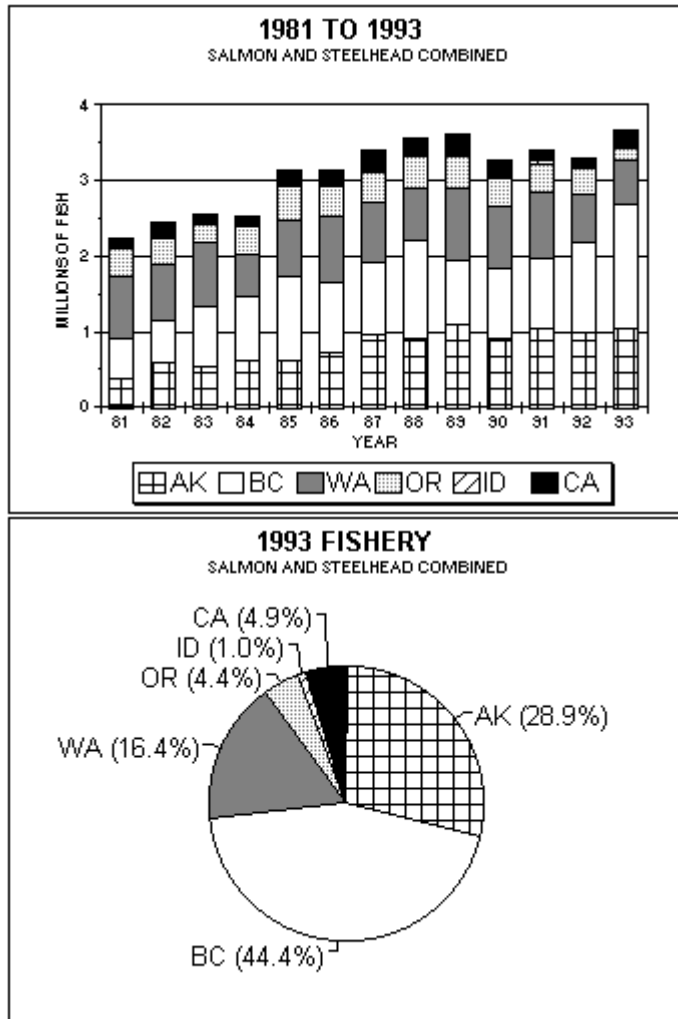
Table 7. Pacific Coast commercial troll coho salmon landings in millions of pounds round weight.

Yr	*Alaska	British Columbia	Wash-ington	Oregon	Califo-ornia	Total
1970	2.2	17.3	6.1	8.7	1.5	35.8
71	3.1	21.4	7.9	10.1	3.7	46.2
72	5.7	15.9	3.9	5.6	1.2	32.3
73	4.5	16.2	4.3	5.9	2.3	33.2
74	6.7	15.6	6.4	8.3	4.3	41.3
75	1.5	9.5	5.1	4.7	1.3	22.1
76	4.3	15.3	7.2	10.4	3.3	40.5
77	4.9	14.4	4.3	3.0	0.2	26.8
78	8.0	14.9	3.2	3.2	1.5	30.8
79	7.1	17.7	4.2	5.3	1.2	35.5
1980	5.0	15.3	2.3	2.5	0.3	25.4
81	6.7	12.2	2.0	3.8	0.5	25.2
82	10.2	15.8	2.2	3.1	0.6	31.9
83	8.5	18.9	0.3	1.3	0.3	29.3
84	10.4	19.2	0.3	0.1	0.4	30.5
85	13.2	14.8	0.6	0.6	0.1	29.3
86	17.3	23.1	0.7	2.2	0.8	44.1
87	7.7	15.5	0.7	2.2	0.3	26.4
88	4.4	13.3	0.3	3.8	0.4	22.2
89	10.4	15.1	0.7	2.3	0.3	28.8
1990	13.8	19.5	1.0	0.7	0.4	35.4
91	12.5	19.1	1.1	1.6	0.5	34.7
92	15.5	13.8	1.0	0.2	0.0	30.5
93	15.3	8.0	0.4	0.0	0.0	23.6
10-yr Mean	12.0	16.1	0.7	1.4	0.3	30.6
1994**	27.3	11.7	0.0	0.0	0.0	38.9

\* Troll-caught salmon are landed dressed. Round weights are projected.

\*\* All 1994 data are preliminary.

## SALMON AND STEELHEAD SPORT HARVESTS IN 1993



### Alaska

Anglers harvested an estimated 1,052,082 salmon and 3,818 steelhead in Alaska in 1993. The statewide harvest of anadromous salmon was the second highest on record, exceeded only by the 1989 harvest. It was up 1% from the 1992 harvest and was 24% above the 1983-1992 mean. The chinook and coho salmon harvests were record highs. The chinook salmon harvest was 81% above the previous ten-y mean and was up 37%, nly 57,000 fish, above 1992. Approximately 35,000 of the 57,000 increase in chinook salmon harvest was generated by Kenai Peninsula fisheries; approximately 20,000 of the 35,000 Kenai Peninsula increase was generated by the Kenai River. The coho salmon harvest

was up 19% from 1992 and 49% above the previous ten-y mean. The steelhead harvest of 3,818 fish was up 21% from 1992, but was 31% below the previous 10-y mean. An estimated 27,014 steelhead were caught and released by anglers.

### **British Columbia**

Recreational salmon harvest in British Columbia tidal waters were the highest in the last decade. Salmon harvests were 35% above 1992, and 66% above the previous 10-y mean.

Anglers in British Columbia harvested an estimated 7,150 steelhead in 1993. An estimated 73,456 steelhead were caught and released.

### **Washington**

Marine recreational anglers harvested a total of 99,398 chinook salmon, 299,298 coho salmon, 69,993 pink salmon, 5,884 chum salmon, and 1,077 sockeye salmon in Washington marine waters. The total of 475,632 salmon harvested in marine Catch Record Card Areas 1-13 in 1993 was 25% below the ten-y mean.

The 1993 Washington sport harvest of steelhead was 124,286 fish. 19% below 1992, and 13% below the previous ten-y mean.

### **Oregon**

The most restrictive ocean salmon fishery regulations in Oregon history were implemented in 1993 to increase escapement of coho salmon. These limited the harvest of 65,800 salmon in 1993, down 67% from the already very limited 1992 season.

Chinook salmon harvest by the ocean sport fishery was the lowest on record at 6,400 fish in 1993, compared to 12,600 in 1992. This was 79% below the 1983-92 mean of 30,400 chinook salmon.

The ocean recreational harvest of coho salmon was also the lowest on record, and down 68% from 1992 levels. Only 59,300 coho salmon were landed in 1993, compared to 185,800 in 1992. This was 70% below the 10-y mean of 199,800 coho salmon.

Anglers harvested an additional 121,600 chinook salmon and 22,400 coho salmon from Oregon estuaries and freshwater sites in 1993. The steelhead harvest of 95,000 fish was 23% below the 1992 take of 122,700 fish and 34% below the 1983-92 average of 142,900 fish. Only a very minor portion (<0.1%) of the steelhead harvest occurs in ocean waters.

### **Idaho**

A spring chinook salmon sport season opened on the Little Salmon River from May 22 through June 21. During the 31-day season, anglers harvested 423 chinook salmon.

Steelhead anglers harvested 34,705 fish in 1993; 18,550 from the 1992-93 run (spring season) and 16,155 from the 1993-94 run (fall season). The 1992 harvest was 6% less than the 1992 harvest and 10% greater than the ten-y average. An estimated 51,348 hatchery and wild steelhead were caught and released by anglers.

### California

Recreational fishery regulations were generally less restrictive than those in place during 1992. Ocean recreational anglers harvested an estimated 110,000 chinook salmon in 1993, a 33.1% increase over 1992, but 16.1% less than the previous 10-y average (1983-1992). Coho salmon landings were 29,800 in 1993, up from 11,500 fish taken in 1992, but 13.9% below the 10-y average. The combined ocean recreational harvest of 139,800 salmon was the second lowest total over the last 10 ys.

Beginning in January 1993, steelhead anglers in California are required to carry and complete a non-transferable report card when fishing for steelhead in any of the state's anadromous waters. Funds generated from report card sales are used for steelhead restoration and resch. An estimated 40,485 steelhead were harvested by California anglers in 1993; another 127,166 steelhead were caught and released.

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 Terry Jackson, California Department of Fish and Game

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Table 8. Salmon and steelhead sport harvest, 1993

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Steelhead State/Province	Total Chinook	Coho	Pink	Other * Salmon
Alaska 3,818 1,055,900	210,833	412,487	124,582	304,180
British Columbia** 7,150 1,623,446	295,833	963,173	223,193	134,097

Washington**		99,398	299,298	69,993	6,961
124,286	599,936				
Oregon**		6,400	59,300	-	-
95,000	160,700				
Idaho		423	-	-	-
34,705	35,128				
California**		110,000	29,800	-	-
40,485	180,285				
Total		716,673	1,726,689	417,766	445,200
305,444	3,655,395				

\* Sockeye and chum salmon

\*\* Marine salmon fishery harvests only

Table 9. Salmon and steelhead sport harvest (in thousands of fish) for the Pacific Coast, 1975 to 1993.

Y	Alaska Californiat	British Total Columbia†	Washington†	Oregont	Idaho
	Salmon Steelh Steelh Salmon Steelh ead	Steelh Salmon Steelh ead	Steelh Salmon Steelh ead	Steelh Salmon Steelh ead	Salmon Steelh Steelh ead
1975	178.0 0.0 125.0	2.2 1,929.9	947.5 280.6	NA 1,297.8	92.9 329.1 185.5 0.0
76	200.6 2.0 139.0	2.3 2,569.3	982.6 211.7	NA 1,649.0	89.1 580.7 118.3 0.0
77	381.1 13.0 117.8	3.7 1,857.7	NA 261.8	18.2 1,094.6	100.0 260.7 145.1 3.5
78	525.4 11.5 114.0	4.3 Steelh 1,950.0	NA 379.5	14.7 1,021.6	163.1 282.6 200.6 7.0
79	361.2 5.7 140.9	3.0 harves 1,739.6	NA 225.9	12.7 1,035.2	94.8 202.3 122.4 closed
1980	531.8 9.1 106.4	4.8 not 1,730.5	NA 368.7	10.9 747.4	151.1 344.9 203.7 closed
81	379.5 13.0 94.6	3.3 estima 1,406.7	514.3 296.4	10.0 702.0	125.1 230.6 155.0 closed



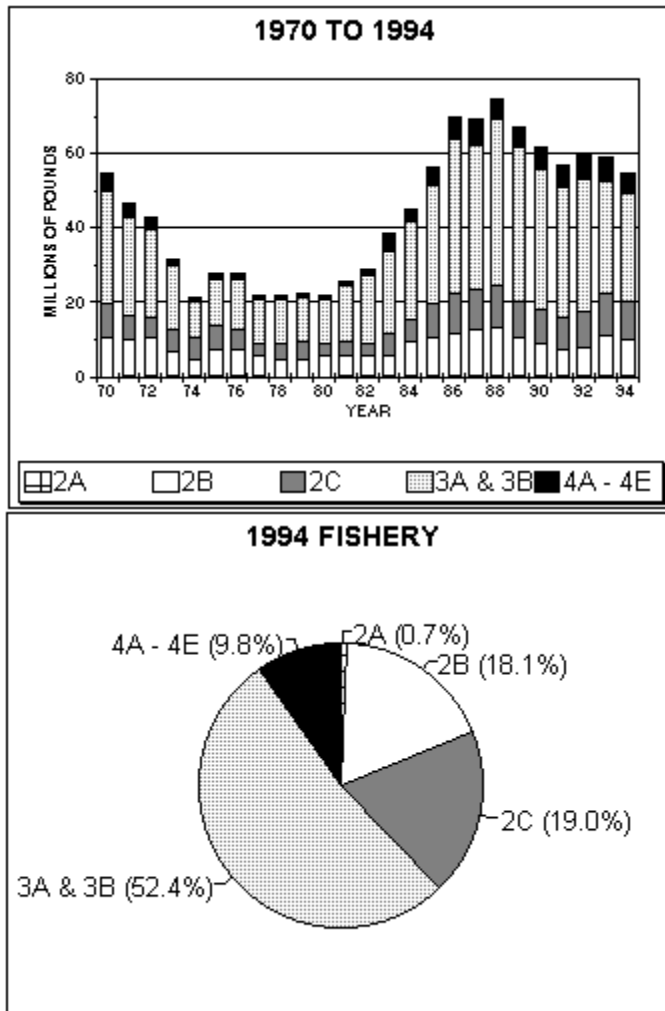
82	597.3	3.7	538.9	13.5	645.1	104.2	213.9	135.1	closed
20.5	165.4	in	1,621.7	263.5					
83	532.5	5.4	792.1	15.1	751.8	78.6	171.7	84.2	closed
32.2	91.1	Califo	1,547.1	200.4					
84	625.8	6.5	828.1	18.9	419.3	149.5	140.3	198.4	closed
25.1	106.8	before	1,292.2	379.5					
85	619.0	4.7	1,096.1	19.4	578.6	165.8	246.1	188.9	2.5
34.5	186.9	1993	1,633.1	393.4					
86	720.5	5.9	896.4	24.8	715.2	168.5	241.7	149.4	4.0
40.0	160.3		1,841.7	363.9					
87	969.9	5.9	922.4	16.7	672.2	134.5	240.9	161.0	0.7
30.2	239.8		2,123.5	331.6					
88	907.8	6.3	1,297.2	14.9	533.2	138.0	265.2	174.1	0.7
21.3	206.1		1,913.0	339.7					
89	1,097.2	6.4	848.1	12.2	710.5	236.2	306.6	112.8	closed
38.6	237.0		2,351.3	394.0					
1990	909.1	5.6	926.5	9.4	716.2	103.0	227.2	142.3	0.9
30.6	191.4		2,044.8	281.5					
91	1,036.6	5.1	933.0	10.1	778.7	103.0	273.8	95.0	closed
26.4	150.1		2,239.2	229.5					
92	993.2	3.1	1,195.0	10.9	483.1	153.6	198.4	122.7	0.5
36.9	85.1		1,760.3	316.3					
10-yr	841.2	5.5	973.5	15.2	635.9	143.1	231.2	142.9	0.9
31.6	165.5		1,874.6	323.0					
Mean									
1993	1,052.1	3.8	1,616.3	7.2	475.6	124.3	65.7	95.0	0.4
34.7	139.8	40.5	1,733.7	298.3					

† Marine salmon fishery harvests only

NA = Not Available

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## PACIFIC HALIBUT FISHERY IN 1994



The 1994 commercial catch of 54.7 million pounds ([Table 10](#)) was 2.0 million pounds under the catch limit. Only in regulatory areas 2A, 4A, 4C, 4D, and 4E (SE) did the actual catches exceed the catch limits, and then only by slight amounts.

The Canadian Individual Quota Fishery (IVQ) continued in 1994, commencing on March 1 and ending on November 15. Under the IVQ system, 435 vessels were allowed to catch a predetermined poundage as calculated by the Canadian Department of Fisheries and Oceans (DFO), based on the 10.0 million pound catch limit approved by the IPHC. IVQ fishermen have been allowed to carry over amounts up to 10 percent of the vessel's quota to the following y's catch. In 1994, approximately 40,000 pounds of carryover were added to the 10 million pound catch limit.

In the United States, the Pacific halibut fishery is an open access fishery with no limited entry. In 1993, the IPHC processed 5,418 commercial license applications. In several regulatory areas, fishing period poundage limits by vessel size class were necessary to stay within the catch limits.

Table 10. Preliminary catch summary of the 1994 Pacific halibut fishery

Regulatory Area	Catch Limit (thousand lbs.)	Fishing Days	Catch (thousand lbs.)
2A CA / OR / WA	179	1.25	182 a
2A b	177	8.75	188 b
2B British Columbia	10,000 c	259	9,911
2C Southeast Alaska	11,000	3	10,379 d
3A Central Gulf of AK	26,000	3	24,844 a
3B Western Gulf of AK	4,000	3	3,860 a
4A Eastern Aleutian Is.	1,800	3.5	1,803 a
4B Western Aleutian Is.	2,100	13.5 e	2,017 a, f
4C Pribilof Is.	700	15	715 f
4D St. Matthew Is.	665	1.25	693
4D N St. Lawrence Is.	35	22 g	18 f
4E NW Nelson Is.	70	56 h	62 f
4E SE Bristol Bay	30	30 h	58 f
Total	56,755		54,730

a Poundage limits by vessel class during some or all fishing periods

b Treaty Indian Fishery

c An additional 40,000 pounds available as carryover from 1993

d Includes 54,000 pounds taken by Metlakatla Indians during

- additional fishing within reservation waters
- e 12-hour opening every second day some periods
- f Single fishing period limit for all vessels some or all periods
- g Alternating one day open and one day closed
- h Alternating two days open and one day closed

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Table 11. Pacific Coast halibut landings of the United States and Canada (in millions of pounds).

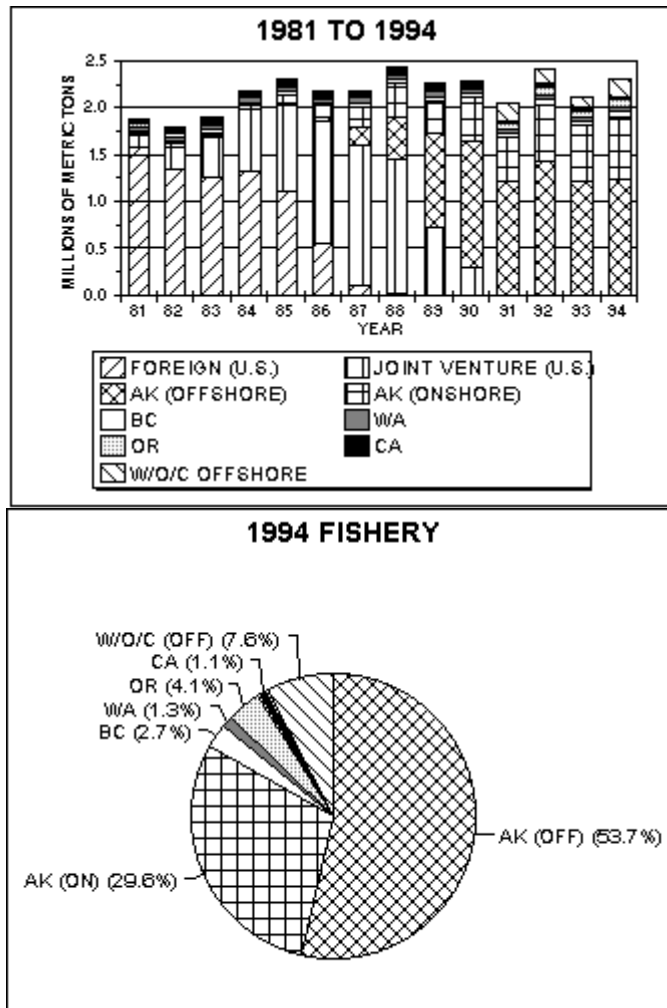
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Year	Canadian	U.S.	Total
1970	29.2	25.8	54.9
71	25.5	21.2	46.7
72	22.5	20.4	42.9
73	14.4	17.3	31.7
74	7.4	13.9	21.3
75	11.3	16.3	27.6
76	12.0	15.5	27.5
77	8.8	13.1	21.9
78	8.6	13.4	22.0
79	6.6	15.9	22.5
1980	7.6	14.3	21.9
81	5.6	20.1	25.7
82	5.5	23.5	29.0
83	5.4	33.0	38.4
84	8.9	35.9	44.8
85	10.4	45.7	56.7
86	11.0	58.0	69.0
87	12.3	55.9	68.2
88	12.9	61.4	74.3
89	10.1	56.5	66.6
1990	8.6	53.0	61.6
91	7.2	49.8	57.0
92	7.6	52.3	59.9
93	10.6	48.6	59.3
94	9.9	44.8	54.7

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Compiled by Heather Gilroy, International Pacific Halibut Commission

## GROUND FISH FISHERY IN 1994



The estimated 1994 groundfish landings by North American fishermen from the North Pacific Ocean are 2,384,909 metric tons (mt), an 11% increase from 1993 ([Table 12](#)). The Canadian Joint Venture Fishery increased 85%, Washington-Oregon-California at-sea processing increased 83%, shoreside landings into Oregon increased 29%, landings to shoreside processors in Alaska increased 13%, and landings by at-sea processors off Alaska increased 1%. ([Table 12](#)). Trawl fisheries accounted for 93% (2,131,803 mt) of the aggregate domestic catch, followed by hook and line at 6% (139,912 mt), pot at 1% (23,790 mt) and other g at 0.2% (3,605 mt) ([Table 13](#)).

Statistics by state or province for 1993 presented in this report are from the Pacific Fisheries Information Network (PacFIN), and reflect first port of landing. Catches by geographic area are different, and those statistics are also available from PacFIN. Due to an ongoing computer system change, 1994 data for this report were unavailable from PacFIN and were provided by the various agencies. All 1994 data are preliminary.

## **Alaska**

The 1994 total Alaska groundfish harvest from at-sea processors and Alaskan ports combined was up 5% from 1993 levels. Of the 1,913,790 mt catch, 36% was landed at Alaska ports, up from 33% in 1993 and 30% in 1992. The remaining 64% was delivered to at-sea processors.

Landings to Alaskan ports increased 13% from 1993 levels. Trawl landings were up 12%, pot landings were up 48%, and hook and line landings were up 24%, while landings by other gs were down 72% from 1993.

Landings to at-sea processors were relatively unchanged from 1993 (up 1%). Trawl landings were virtually the same as 1993, outweighing high percentage increases in landings by hook and line and pot gs (21% and 310% respectively).

## **British Columbia**

Landings of groundfish (excluding halibut) to Canadian ports were 61,718 mt in 1994, an increase of 15% from 1993 levels. Trawlers landed 52,864 mt, 86% of the total catch and 13% above 1993 levels. Major species in the trawl landings were Pacific whiting (44%) and Pacific ocean perch (7%).

Landings to Canadian ports of groundfish caught by g other than trawl totaled 8,854 mt. Sablefish traps accounted for 4,155 mt (100% sablefish). Longline and handline accounted for 3,641 mt (44% rockfish, 24% dogfish, 16% sablefish, and 16% lingcod). Miscellaneous g, including troll, handline, and nets, accounted for 1,058 mt (63% lingcod and 30% rockfish).

Each y, Fisheries Branch (DFO) conducts creel surveys of the recreational angling fishery in the Strait of Georgia (Area 4B). Principal target species are chinook and coho salmon. In 1994 these surveys covered only the months of January to October. Provisional estimates of 1994 catches for this ten-month period were 6,885 fish for lingcod, 162,431 fish for all rockfish species, and 1,244 fish for dogfish. There was also an estimate of 35,840 fish for other fin fish which includes greenlings and sculpins, as well as other species such as herring.

In 1994, three foreign nations, Poland, China, and Russia, were involved in joint venture fisheries for Pacific whiting off the southwest coast of Vancouver Island (Area 3C). Seventy Canadian catcher vessels delivered Pacific whiting and incidental species to fourteen processing vessels. A total of 84,154 mt of Pacific whiting was processed by seven Polish vessels, five Chinese vessels, and two Russian vessels. There were no national or supplemental fisheries for Pacific whiting off southwest Vancouver Island (Area 3C) in 1994.

## **Washington**

Total groundfish landings in Washington in 1994 were 29,089 mt, 17% below the 1993 level. In 1994, 36% of the total groundfish landed in Washington (10,590 mt) came from Canadian catch areas, down from 40% in 1993 and 47% in 1992. Trawl landings made up 85% of the total, with an overall decrease of 13% for the second y in a row. Although landings of yellowtail rockfish and Pacific Ocean perch increased slightly, total rockfish landings were down 22% from the 1993 level. Trawl flatfish were down 16% from 1993 landings. Shore-side whiting trawl landings increased 34% from the 1993 level. Longline landings were within 1% of the 1993 level at 3,613 mt.

Landings of groundfish in Puget Sound in 1994 were 1,504 mt., 5% of total Washington groundfish landings. Regulations were enacted during 1994 which eliminate trawling in most of Puget Sound.

### **WOC At-Sea**

A three-y allocation plan was initiated in 1994 which reserves 40 percent of the annual harvest guideline for shore-based processing after the first 60 percent is taken in open competition (first come, first served) by both at-sea and shore-based processing sectors. Surplus whiting may be made available for at-sea processing on August 15, or a later date, if the shore-based industry does not need the remainder of the harvest guideline. This was also the first y for implementation of a license limitation program in the Pacific groundfish fishery; catcher vessels were required to possess a permit to operate. This changed the composition of the at-sea processing fleet considerably, increasing the number of motherships because permits were not required for vessels that only process. Nine vessels operated as motherships in the spring 1994 fishery, including six that in previous ys had operated as catcher/processors. No catcher/processors qualified for a permit initially, but seven purchased permits in time to operate in the spring fishery.

At-sea processing started on April 15, and could occur only north of 42°N latitude. At-sea processing was prohibited on May 13, when 60% of the harvest guideline was projected to be reached. A small release of 16,000 mt surplus to shore-based needs was made available for at-sea processing on October 1. In 1994, about 180,361 mt of fish were delivered to at-sea processors, of which 175,649 mt (97.4%) were retained whiting, 3,424 mt (1.9%) were discarded whiting, and 1,288 mt (0.7%) were bycatch of other species, most of which were discarded. About 73,656 mt of whiting were delivered shore-side. A total of 252,729 mt of whiting were caught in 1994 by at-sea and shore-based sectors combined, over 97% of the 260,000 mt harvest guideline. The catch in 1994 was almost 80% higher than in 1993 due to a substantial increase in the estimate of available biomass.

### **Oregon**

Total commercial groundfish landings in 1994 were 94,227 mt, a 29% increase from 1993. The ex-vessel value was \$33 million. Trawl landings were 97% of the total and were 31% larger than in 1993. This increase was a direct result of a larger whiting allocation. Nineteen ninety-four was the first y of a three-y whiting allocation agreement

giving shore-side processors a larger share of that resource. The 60% Olympic, 40% shore-side allocation resulted in a 65,109 mt share to shore-side compared to 35,820 mt during 1993. This, in conjunction with increased shore-side processing capabilities, produced an 82% increase in whiting landings and represented only 70% of the groundfish volume landed into Oregon. Landings of traditional flatfish and rockfish groups were down 28% and 26% respectively. Pot landings increased 78%, while hook and line g decreased 4%.

## California

The California commercial groundfish harvest for 1994 was 24,557 mt, with an ex-vessel value of approximately \$24 million. Total 1994 landings decreased approximately 12% or 3,498 mt from 1993. In 1994, as in 1993, significant decreases in harvest were noted from most categories. Reasons for the decline include a drop in production as stocks are fished down to optimum levels and a reduced market demand for some species. Flatfish landings, other than Dover sole, and Pacific whiting showed increases for 1994.

The general distribution of 1994 landings by trawl and line g showed the same trend evident during the past two ys. The bottom and midwater trawl component rose to 82% in 1993, up from 79% in 1993 and 75% in 1992. The line proportion of the catch dropped from 15% in 1992 to 12% in 1993 and to just under 12% in 1994. Trap component was similar to 1993 at 1% , however, setnet groundfish landings dropped from 4% in 1993 to 3% in 1994.

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 David Thomas, California Department of Fish and Game  
 Gerry Kobylinski, Pacific States Marine Fish. Commission

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Table 12. Total commercial groundfish landings in metric tons (mt) by port of landing with percent change.

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Region	1993 (mt)	1994 (mt)	Percent Change
Alaska	601,890	680,284	13%
Alaska At-Sea	1,218,196	1,233,506	1%
Washington	34,869	29,089	-17%



Oregon	72,967	94,227	29%
California	28,055	24,557	-12%
WOC At-Sea	95,827	175,731	83%
Total U.S.	2,051,804	2,237,393	9%
Canada (B.C.)	53,775	61,718	15%
Canada Joint Venture	46,373	85,798	85%
Total Canada	100,148	147,516	47%
Total U.S.-Canada	2,151,952	2,384,909	11%

Table 13. Domestic groundfish landings in metric tons by g and first port of landing.

Other G*		Trawl		Hook & Line		Pots	
		Total					
Region		1993	1994	1993	1994	1993	1994
1993	1994	1993	1994				
Alaska		565,308	632,473	25,575	31,724	10,874	16,047
133	37	601,890	680,284				
Alaska At-Sea		1,137,871	1,134,883	79,791	96,434	534	2,189
0	0	1,218,196	1,233,506				
Washington		28,500	24,843	3,629	3,613	8	14
2,733	620	34,869	29,089				
Oregon		69,693	91,122	1,666	1,593	674	1,197
935	314	72,967	94,227				
California		22,039	19,887	3,478	2,907	214	187
2,325	1,576	28,055	24,557				
WOC At-Sea		95,827	175,731	0	0	0	0
0	0	95,827	175,731				
Total U.S.		1,919,237	2,078,939	114,138	136,271	12,303	19,635
6,126	2,547	2,051,804	2,237,393				
Canada (B.C.)		46,668	52,864	3,545	3,641	3,378	4,155
184	1,058	53,775	61,718				
Total U.S.		1,965,905	2,131,803	117,683	139,912	15,681	23,790
6,310	3,605	2,105,579	2,299,111				
Canada							

\* Other G includes the following PSMFC G groupings: Nets, Trolls, Shrimp Trawls, and Other.

Table 14. Landings (metric tons) into Alaska ports during 1994 by g and by species.

SPECIES	TROLLS	OTHER	TOTAL	JIG	LOGLINE	POTS	TRAWL
ARROWTOOTH FLOUNDER	0	0	3,094	0	90	1	3,004
ALASKA PLAICE	0	0	799	0	0	0	799
DOVER SOLE	0	0	1,808	0	0	0	1,808
ENGLISH SOLE	0	0	5	0	0	0	5
GREENLAND TURBOT	0	0	1,336	0	841	4	490
PETRALE SOLE	0	0	0	0	0	0	0
REX SOLE	0	0	1,105	0	0	0	1,105
ROCK SOLE	0	0	7,729	0	0	0	7,728
STARRY FLOUNDER	0	0	254	0	0	0	254
YELLOWFIN SOLE	0	0	12,551	0	0	2	12,548
OTHER FLATFISH	0	0	3,450	0	2	0	3,447
UNSPECIFIED FLATFISH	0	0	752	0	3	0	749
THORNYHEADS (MIXED)	0	0	444	1	290	0	153
BLACK ROCKFISH	21	0	307	229	52	0	6
BOCACCIO	0	0	3	1	2	0	0
CANARY ROCKFISH	0	0	5	0	5	0	0
DARKBLOTCHED ROCKFISH	0	0	0	0	0	0	0
DUSKY ROCKFISH	2	0	212	25	37	0	148
QUILLBACK ROCKFISH	2	0	82	4	52	0	24
REDBANDED ROCKFISH	0	0	21	0	21	0	0

REDSTRIPE ROCKFISH	0	1	0	22
0 0 23				
ROSETHORN ROCKFISH	0	3	0	1
0 0 4				
ROUGHEYE ROCKFISH	0	132	0	68
0 0 200				
SHORTAKER ROCKFISH	0	87	0	43
0 0 131				
SILVERGREY ROCKFISH	8	14	0	1
0 0 23				
YELLOWEYE ROCKFISH	21	671	0	0
3 2 697				
YELLOWTAIL ROCKFISH	3	1	0	0
0 0 4				
OTHER DEMERSAL ROCKFISH	1	7	0	1
0 0 9				
OTHER SLOPE ROCKFISH	0	48	0	71
0 0 118				
PACIFIC OCEAN PERCH	0	4	0	152
0 0 156				
UNSPECIFIED PELAGIC ROCKFISH	0	0	0	0
0 0 0				
UNSPECIFIED ROCKFISH	0	27	0	5
0 0 32				
UNSPECIFIED SLOPE ROCKFISH	0	2	0	703
0 0 705				
WIDOW ROCKFISH	0	0	0	0
0 0 1				
ATKA MACKEREL	1	0	0	132
0 0 133				
LINGCOD	201	175	2	1
2 0 381				
PACIFIC COD	900	8,055	15,982	63,297
5 0 88,239				
SABLEFISH	0	19,504	5	595
0 0 20,104				
UNSPECIFIED ROUND FISH	0	0	0	1
0 0 1				
WALLEYE POLLOCK	3	6	7	533,016
0 0 533,032				
SPINY DOGFISH	0	1	0	0
0 0 1				
OTHER GROUND FISH	0	0	0	16
0 0 16				
UNSPECIFIED SQUID	0	0	1	173
0 0 174				
UNSPECIFIED GROUND FISH	0	193	43	1,907
0 0 2,143				
<hr/>				
ALL GROUND FISH	1,398	30,326	16,047	632,473
35 2 680,284				
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Table 15. Landings (metric tons) to domestic at-sea processors during 1994 by area, gear, and species.

WASHINGTON	TOTAL	ALASKA			
		HOOK & LINE	POTS	TRAWLS	TOTAL
OREGON SPECIES	DOMESTIC AT-SEA PROCESSING				
CALIFORNIA AT-SEA					
ARROWTOOTH FLOUNDER		238	0	619	858
- 858					
UNSPECIFIED TURBOTS		1,079	-	5,115	6,194
- 6,194					
FLATHEAD SOLE		-	-	722	722
- 722					
ROCK SOLE		3	-	20,945	20,948
- 20,948					
UNSPECIFIED FLATFISH		24	0	10,515	10,539
0 10,539					
YELLOWFIN SOLE		0	-	99,536	99,536
- 99,536					
OTHER FLATFISH		-	-	89	89
- 89					
THORNYHEADS (MIXED)		121	-	379	500
- 500					
OTHER ROCKFISH		2	-	2,299	2,300
80 2,380					
PACIFIC OCEAN PERCH		5	-	11,656	11,660
- 11,660					
SHORTTRAKER+ROUGHEYE		181	-	1,306	1,487
- 1,487					
SRKR+REYE+NRCK+SHRP		15	-	808	823
- 823					
UNSPECIFIED DEMERSAL-91		3	-	25	28
- 28					
UNSPECIFIED ROCKFISH		206	5	73	284
- 284					
UNSPECIFIED SLOPE-93		1	-	386	387
- 387					
ATKA MACKEREL		4	0	62,486	62,490
- 62,490					
JACK MACKEREL		-	-	-	-
0 0					
LINGCOD		-	-	-	-
0 0					
PACIFIC COD		87,741	2,128	36,314	126,184
0 126,184					
PACIFIC WHITING		-	-	-	-
175,649 175,649					
SABLEFISH		4,230	18	1,806	6,054
0 6,054					

WALLEYE POLLOCK	1,273	34	879,424	880,731
- 880,731				
UNSPECIFIED GROUND FISH	1,308	4	380	1,693
0 1,693				

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ALL GROUND FISH	96,434	2,189	1,134,883	1,233,506
175,731 1,409,237				

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NOTE: 0 =--landed catch less than 0.5 metric tons

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Table 16. Landings (metric tons) into British Columbia ports during 1994 by g and by species.

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SPECIES	TROLLS	TOTAL	HOOK & LINE	NETS	POTS
TRAWLS					
ARROWTOOTH FLOUNDER			0	-	-
1,849	-	1,849			
DOVER SOLE			-	-	-
2,216	-	2,216			
ENGLISH SOLE			-	-	-
1,012	0	1,012			
PETRALE SOLE			-	-	-
325	-	325			
REX SOLE			-	-	-
193	-	193			
ROCK SOLE			1	-	-
1,766	-	1,767			
STARRY FLOUNDER			-	-	-
85	-	85			
YELLOWFIN SOLE			-	-	-
6	-	6			
SANDDABS			-	-	-
1	-	1			
OTHER FLATFISH			-	-	-
187	-	187			
UNSPECIFIED FLATFISH			1	-	-
0 1					
BLACK ROCKFISH			-	-	-
13	-	13			
BOCACCIO			-	-	-
364	-	364			
CANARY ROCKFISH			-	-	-
813	-	813			
DARKBLOTCHED ROCKFISH			-	-	-
49	-	49			

DUSKY ROCKFISH			-	-	-
0	-	0			
QUILLBACK ROCKFISH			-	-	-
37	-	37			
REDBANDED ROCKFISH			-	-	-
369	-	369			
REDSTRIPE ROCKFISH			-	-	-
862	-	862			
ROSETHORN ROCKFISH			-	-	-
4	-	4			
ROUGHEYE ROCKFISH			-	-	6
998	-	1,004			
SHARPCHIN ROCKFISH			-	-	-
118	-	118			
SHORTRAKER ROCKFISH			-	-	-
358	-	358			
SILVERGREY ROCKFISH			-	-	-
2,271	-	2,271			
SPLITNOSE ROCKFISH			-	-	-
63	-	63			
VERMILION ROCKFISH			-	-	-
1	-	1			
YELLOWEYE ROCKFISH			-	-	-
51	-	51			
YELLOWMOUTH ROCKFISH			19	-	-
585	-	604			
YELLOWTAIL ROCKFISH			5	-	-
1,922	2	1,929			
OTHER ROCKFISH			1,570	0	-
60	312	1,942			
PACIFIC OCEAN PERCH			1	1	-
3,622	0	3,624			
THORNYHEADS			-	-	-
485	0	485			
WIDOW ROCKFISH			-	-	-
696	-	696			
JACK MACKEREL			-	-	-
1	-	1			
LINGCOD			565	0	-
2,016	670	3,251			
PACIFIC COD			5	--	-
2,874	1	2,880			
PACIFIC WHITING			-	-	-
23,439	-	23,439			
SABLEFISH			574	-	4,149
280	-	5,003			
WALLEYE POLLOCK			-	-	-
2,503	-	2,503			
SPINY DOGFISH			883	-	-
153	69	1,105			
UNSPECIFIED OCTOPUS			-	-	-
15	-	15			
UNSPECIFIED SCULPIN			-	-	-
0	-	0			
UNSPECIFIED SHARK			-	-	-
0	-	0			

UNSPECIFIED SKATE			9	-	-
143	0	152			
UNSPECIFIED SQUID			-	-	-
0	-	0			
OTHER GROUND FISH			-	-	-
59	-	59			
UNSPECIFIED GROUND FISH			8	2	-
-	1	11			
<hr/>					
ALL GROUND FISH			3,641	3	4,155
52,864	1,055	61,718			
<hr/>					

NOTE: 0 =--landed catch less than 0.5 metric tons

Table 17. Landings (metric tons) by British Columbia joint-venture fisheries during 1994.

SPECIES	LANDINGS
PACIFIC WHITING	84,154
WALLEYE POLLOCK	166
PACIFIC OCEAN PERCH	3
ROCKFISH	1,291
OTHER FISH	184
<hr/>	
TOTAL	85,798
<hr/>	

Table 18. Landings (metric tons) into Washington ports during 1994 by gear and by species.

SPECIES			HOOK &	NETS	POTS	TROLLS
TRAWLS	SHRIMP	TOTAL	LINE			
TRAWLS						
ARROWTOOTH FLOUNDER			0	-	-	-
3,211	10	3,221				
DOVER SOLE			0	-	-	-
1,993	44	2,040				
ENGLISH SOLE			0	-	-	-
581	1	583				

PETRALE SOLE			0	-	-	-
305	0	306				
REX SOLE			-	-	-	-
70	1	71				
ROCK SOLE			0	0	-	0
234	-	234				
STARRY FLOUNDER			0	0	-	-
124	-	124				
OTHER FLATFISH			0	0	-	-
44	1	44				
YELLOWTAIL ROCKFISH			20	-	-	5
1,351	220	1,595				
OTHER ROCKFISH			221	-	-	6
910	5	1,142				
PACIFIC OCEAN PERCH			0	-	-	-
1,563	0	1,563				
THORNYHEADS			21	-	-	-
546	1	568				
WIDOW ROCKFISH			1	-	-	-
866	1	868				
UNSPECIFIED ROCKFISH			359	0	0	1
3,569	16	3,946				
LINGCOD			48	0	1	24
1,402	19	1,494				
PACIFIC COD			10	-	0	0
1,091	9	1,110				
PACIFIC WHITING			-	-	-	-
4,913	-	4,913				
SABLEFISH			1,395	-	13	0
515	26	1,949				
SPINY DOGFISH			1,536	228	0	-
1,223	-	2,987				
OTHER GROUND FISH			-	-	-	-
330	-	330				
<hr/>						
ALL GROUND FISH			3,613	228	14	36
24,843	356	29,089				

NOTE: 0 ==landed catch less than 0.5 metric tons

Table 19. Landings (metric tons) into Oregon ports during 1994 by gear and by species.

SPECIES			HOOK &	NETS	POTS	TROLLS	TRAWLS
SHRIMP	OTHER	TOTAL	LINE				
TRAWLS	GS						



ARROWTOOTH FLOUNDER	0	-	0	-	1,718
2 - 1,721					
DOVER SOLE	0	-	1	-	3,846
24 - 3,871					
ENGLISH SOLE	0	-	-	-	358
1 0 358					
FLATHEAD SOLE	-	-	-	-	3
0 - 4					
OTHER FLATFISH	0	-	-	-	706
1 0 707					
PETRALE SOLE	0	-	-	0	613
2 0 616					
REX SOLE	0	-	-	-	218
1 - 219					
ROCK SOLE	0	-	-	-	4
- - 4					
STARRY FLOUNDER	0	0	0	-	63
0 - 63					
THORNYHEADS (MIXED)	3	-	1	-	4,039
1 - 4,044					
BLACK ROCKFISH	131	-	0	1	14
0 - 145					
BOCACCIO	15	-	-	-	121
3 - 139					
CANARY ROCKFISH	104	-	-	-	809
10 - 923					
CHILIPEPPER	-	-	-	-	21
- - 21					
DARKBLOTCHED ROCKFISH	1	-	-	-	571
0 - 572					
OTHER ROCKFISH	29	-	-	-	186
1 - 216					
QUILLBACK ROCKFISH	1	-	-	-	-
- - 1					
REDBANDED ROCKFISH	14	-	-	-	32
- - 46					
REDSTRIPE ROCKFISH	1	-	-	-	359
0 - 360					
ROSETHORN ROCKFISH	0	-	-	-	33
- - 33					
ROUGHEYE ROCKFISH	19	-	0	-	96
1 - 116					
SHARPCHIN ROCKFISH	-	-	-	-	293
- - 293					
SHORTRAKER ROCKFISH	2	-	-	-	52
- - 54					
SILVERGREY ROCKFISH	5	-	-	-	78
- - 82					
SPLITNOSE ROCKFISH	-	-	-	-	151
- - 151					
VERMILION ROCKFISH	4	-	-	-	0
- - 4					
YELLOWEYE ROCKFISH	25	-	-	-	88
- - 113					
YELLOWMOUTH ROCKFISH	0	-	-	-	258
- - 259					

YELLOWTAIL ROCKFISH	132	-	0	4	2,898
160	-	3,193			
PACIFIC OCEAN PERCH	3	-	0	-	633
5	-	641			
SHORTBELLY ROCKFISH	-	-	-	-	49
-	-	49			
UNSPECIFIED ROCKFISH	45	-	5	17	14
16	0	97			
WIDOW ROCKFISH	10	-	-	0	4,380
6	-	4,396			
CABEZON	6	-	0	0	1
-	-	7			
LINGCOD	134	-	0	5	691
30	0	861			
OTHER ROUND FISH	0	-	-	-	-
-	-	0			
PACIFIC COD	0	-	0	-	168
3	-	171			
PACIFIC WHITING	-	-	-	-	65,109
1	-	65,110			
SABLEFISH	910	-	1,189	0	1,980
20	-	4,099			
WALLEYE POLLOCK	-	-	-	-	0
-	-	0			
SPINY DOGFISH	0	-	-	-	69
0	-	69			
OTHER GROUND FISH	0	-	0	-	400
0	-	400			
<hr/>					
ALL GROUND FISH	1,593	0	1,197	27	91,122
287	0	94,227			

NOTE: 0 --landed catch less than 0.5 metric tons

Table 20. Landings (metric tons) into California ports during 1994 by gear and by species.

SPECIES			HOOK &	NETS	POTS	TROLLS	TRAWLS
SHRIMP	OTHER	TOTAL	LINE				
TRAWLS	GS						
ARROWTOOTH FLOUNDER			-	-	-	-	72
1	0	73					
UNSPECIFIED TURBOTS			0	-	-	-	4
-	-	5					
DOVER SOLE			2	0	2	0	4,404
29	39	4,477					
ENGLISH SOLE			0	1	-	1	437
7	3	449					

PETRALE SOLE			3	3	-	1	506
21	3	537					
REX SOLE			4	-	-	-	559
2	4	568					
ROCK SOLE			0	-	-	-	4
-	-	4					
SAND SOLE			0	-	-	0	52
2	0	55					
SANDDABS			8	0	-	0	622
22	4	657					
STARRY FLOUNDER			1	0	-	-	14
0	0	15					
OTHER FLATFISH			0	-	-	-	0
-	-	0					
UNSPECIFIED FLATFISH			2	1	0	-	6
10	1	19					
THORNYHEADS (MIXED)			64	0	0	0	3,194
9	42	3,310					
ROCKFISH (MIXED)			2,115	585	19	293	4,187
102	125	7,426					
CABEZON			30	0	5	0	3
-	0	38					
KELP GREENLING			3	-	-	-	0
-	-	4					
LINGCOD			122	93	2	13	316
9	5	560					
PACIFIC WHITING			1	-	-	-	3,611
-	1	3,613					
SABLEFISH			538	6	160	2	1,370
16	75	2,166					
OTHER ROUND FISH			3	-	-	-	-
-	0	3					
CALIFORNIA SKATE			-	-	-	-	0
-	-	0					
LEOPARD SHARK			4	3	-	-	3
-	4	13					
SOUPFIN SHARK			6	26	-	-	3
0	1	36					
SPINY DOGFISH			0	0	-	-	0
-	-	1					
UNSPECIFIED GRENADIERS			1	-	-	-	520
-	9	530					
<hr/>							
ALL GROUND FISH			2,907	718	187	310	19,887
231	317	24,557					
<hr/>							

NOTE: 0 ==landed catch less than 0.5 metric  
tons

# PERSONNEL

## COMMISSIONERS

The following were commissioners during all or part of 1994:

### Alaska

Dale Kelley, Juneau  
Loren Leman, Anchorage  
Chuck Meacham, Jr., Juneau

### California

Al Petrovich, Sacramento  
David Ptak, San Diego  
Nao Takasugi, Sacramento

### Idaho

Jerry Conley, Boise  
Norman Guth, Salmon  
Bruce Sweeney, Lewiston

### Oregon

Bill Bradbury, Bandon  
Paul Heikkila, Coquille  
Rudolph Rosen, Portland

### Washington

Ed Manary, Olympia  
Harriet Spanel, Bellingham  
Dean Sutherland, Vancouver

## ADVISORS

The Advisory Committee is composed of representatives of the major user groups in each State. The following were Advisory Committee members during all or part of 1994:

### Alaska

Chris Blackburn, Kodiak  
Loren Croxton, Petersburg

Paul Gronholdt, Sand Point  
Henry Mitchell, Anchorage  
Doug Ogden, Anchorage  
Harold Thompson, Sitka  
Bruce Wallace, Ketchikan

#### California

Robert Fletcher, San Diego  
Zeke Grader, Sausalito  
Harold Olsen, Torrance  
Charles Platt, Fort Bragg  
Robert Ross, Sacramento  
Roger Thomas, Sausalito  
Tony West, San Pedro

#### Idaho

Keith Carlson, Lewiston  
Richard Meiers, Eagle  
Louis Racine, Pocatello

#### Oregon

Don Christenson, Newport  
Joe Easley, Astoria  
Harriet Engblom, Astoria  
Herb Goblirsch, Otter Rock  
John Marincovich, Astoria  
Ron Sparks, Monmouth  
Frank Warrens, Portland

#### Washington

Donald Bevan, Seattle  
Joe Blum, Seattle  
Fred Felleman, Seattle  
Rudy Peterson, Seattle  
John Thomas, White Salmon  
Terry Wright, Olympia  
Robert Zuanich, Seattle

### **COORDINATORS**

PSMFC Coordinators facilitate all aspects of PSMFC programs within their State. The following were PSMFC Coordinators in 1994:

Alaska: Phil Rigby, Alaska Dept. Fish & Game

California: L.B. Boydston, California Dept. Fish & Game

Idaho: Steve Huffaker, Idaho Dept. Fish & Game

Oregon: Kay Brown, Oregon Dept. Fish & Wildlife

Washington: Position vacant

### **PSMFC EXECUTIVE STAFF**

The following were PSMFC Staff members in 1994:

Randy Fisher, Executive Director  
David Hanson, Deputy Director  
Russell Porter, Field Programs Administrator  
Al Didier, Program Manager  
Pam Kahut, Fiscal Manager/Treasurer  
Lori Johnson, Fiscal Assistant  
Sherry Holley, Personnel  
Matt Robertson, Payroll  
Rick Masters, Accounting Supervisor  
Renee Barrett, Account Payable  
Sharon Hittle, Executive Assistant  
Liza Bauman, Clerical Specialist  
La Donna Cortez, Clerical Specialist  
Stan Allen, IMS Chief  
J. Kenneth Johnson, RMPC Manager  
James Longwill, RMPC Computer Specialist  
Will Daspit, PacFIN Data Manager  
Ed Kiel, PacFIN Computer Programmer  
Brad Stenberg, PacFIN Data Systems Operator  
Carter Stein, PIT Tag Database Manager  
Don Warf, PIT Tag Field Systems Engineer  
Jennifer Mead, PIT Tag Computer Programmer  
Duane Anderson, CIS Database Manager  
Terry Shane, Computer Services Center Manager  
Fran Recht, Habitat Education Program Manager  
Stephen Phillips, Habitat Specialist  
Craig Miller, Data Entry Technician