*52nd Annual Report of the*

# PACIFIC STATES MARINE FISHERIES COMMISSION

**FOR THE YEAR 1999**

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

# PSMFC COMMISSIONERS 1999
# Harriet Spanel, Chair

### ALASKA

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| GEORGIANNA LINCOLN<br>Alaska State Senate | DAVID BENTON<br>Alaska Dept. Fish & Game | DALE KELLEY<br>Governor's Appointee |

### CALIFORNIA

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| *-Position Vacant-*<br>California State Assembly | ROBERT HIGHT<br>California Dept. Fish & Game | DAVID PTAK<br>Governor's Appointee |

### IDAHO

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| BRUCE SWEENEY<br>Idaho State Senate | JERRY MALLET<br>Idaho Dept. Fish & Game | ROY MOULTON<br>Governor's Appointee |

### OREGON

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| GARY GEORGE<br>Oregon State Senate | JIM GREER<br>Oregon Dept. Fish & Wildlife | PAUL HEIKKILA<br>Governor's Appointee |

### WASHINGTON

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| HARRIET SPANEL<br>Washington State Senate | JEFF KOENINGS<br>Washington Dept. Fish & Wildlife | DEAN SUTHERLAND<br>Governor's Appointee |

***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".***

52nd Annual Report

of the

# PACIFIC STATES MARINE

# FISHERIES COMMISSION

FOR THE YEAR 1999

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

## TABLE OF CONTENTS

Page

# 52ND ANNUAL REPORT - 1999

## ADMINISTRATIVE REPORTS AND ACTIONS

### EXECUTIVE DIRECTOR'S REPORT

The Pacific States Marine Fisheries Commission (PSMFC) helps the fishermen and resource agencies of our five compacting states address the management of our Pacific ocean living marine resources. In 1999, PSMFC remained active as custodian and coordinator of coastwide fisheries databases, and maintained contract services for states and related agencies, and worked with fishermen on issues such as crab quality testing and habitat protection. The following are among the activities of the year:

- The value of external contracts administered by PSMFC increased 4% to $22.2 million.

- A coordinated research program to assess **Marine Mammal Impacts** on Pacific coast salmonids continued during 1999. The work included monitoring rates of predation on selected salmonid stocks by pinnipeds in the Quilcene, Dosewalips, Duckabush, Hamma Hamma, Skokomish, Rogue, Alsea, Smith, Mad, and Eel rivers. Other studies assessed the seasonal abundance and distribution of pinnipeds along the Washington and Oregon coasts.

- During 1999 the **PacFIN** Office processed 181 datafeeds from seven data sources and responded to 194 requests-for-information. There were also 66,000 visits to PSMFC's PacFIN website for an average of 5,500 visits per month. This compares to 2,855 per month during 1998, 1,512 per month in 1997 and 803 in 1996.

The Quota Species Monitoring (QSM) inseason catch-tracking subsystem was augmented with the addition of catch for splitnose rockfish, chilipepper, and "Sebastes South". The QSM Limited-entry (LE) and Open-access (OA) Best Estimate Reports were added to the website The 'C' program code was re-structured and in certain places re-written, making the program considerably more maintainable.

In support of West Coast on-board observer studies, retrieval software was developed to produce various statistics such as number of fishing trips, pounds per trip, and trips per vessel per month by gear-group and port group for sablefish and groundfish for the W-O-C for both LE and OA fleets.

The centralized W-O-C Trawl Logbook Data Subsystem went from development status to an on-line status during 1999. By the end of the year tow-by-tow data for 1987 thru 1998 for WDFW and ODFW and for 1981-1997 for CDFG was available to on-line users. Throughout the year refinements to this system continued, various retrievals were developed for PacFIN clients, and ticket-matching and expansion methods continued to be improved.

The centralized Biological Data Subsystem (BDS) continued in development status during 1999 as the issues of duplicate data and the handling of codes in the age column that do not represent actual ages continued to be analyzed. By the end of 1999 the BDS included data from AFSC for 94-97, from CDFG for 93-98, from ODFW for 93-98, and from WDFW for 90-98.

Oracle tables were designed and created for the EFIN fisheries cost-data project. The current design includes 23 tables intended to hold survey data for both catcher vessels and shoreside processors.

Support was provided to ADFG staff and then later the AKFIN staff in their efforts to re-institute the monthly ADFG PacFIN datafeed. This support included providing all relevant documentation, including the system specification, and reviewing code list assignments for species, areas, gears, and ports.

A new version of the software that produces vessel-summaries was developed. This new software routine distributes catch from rockfish market-categories to individual rockfish species and categorizes vessels as either LE or OA if appropriate. This new distribution of catch is in addition to the 13-dimension vessel-summaries that have been a PacFIN feature since 1993.

New methods for validating state-vessel registration data were added to the central processing system including: validations based on ratios of length, weight, and horsepower; restricting type 1 vessel-ids to 6 or 7 digits; and validations based on state plate number assignment practices.

After an hiatus of about one year, the datafeed for the at-sea pacific whiting fishery was resumed with the NMFS/NWR serving as the data source rather than the NMFS/AFSC. PacFIN staff participated in the extensive check-out and testing of this re-developed datafeed.

The algorithm for "correcting" gear codes was finalized during 1999. This is a method that assigns a more appropriate alternate gear group (i.e. HKL, TWL, POT, etc) to certain individual fish-ticket-lines based on prevalent gear usage and catch thresholds.

The extract_sc program was developed during 1999 and provides for a generalized capability for retrieving data from the summarized catch tables.

The PacFIN staff did considerable testing and debugging, in conjunction with the NMFS/AFSC/OFIS staff, during the transition from the SGI/Irix/Oracle7.3 to the Sun/Solaris/Oracle8.0 system platforms.

- The **Alaska Fisheries Information Network (AKFIN)** is a cooperative data program for available fishery dependent data and social and economic data relating to Alaska fisheries and fishing communities.

AKFIN supports coordinated, efficient and timely collection, entry, transfer, access, management and analysis of these data. The data/information systems encompass State of Alaska and Federal fishery data for use by fishery managers, the North Pacific Fishery Management Council and its Plan Development Teams and Scientific and Statistical Committee, and each participating agency to meet respective fishery management responsibilities. Data are provided to PSMFC, AKFIN by the Alaska Department of Fish and Game (ADF&G), State of Alaska Commercial Fisheries Entry Commission, National Marine Fisheries Service Alaska Region, and the National Marine Fisheries Service Alaska Fisheries Science Center.

The AKFIN Steering Committee met quarterly to review and prioritize project products and tasks. Notably, PSMFC, AKFIN was granted access to confidential state fisheries information by the State of Alaska Legislature. PSMFC, AKFIN completed a memorandum of agreement with the state to enable the legislation. The Steering Committee solidified these actions through approval of the AKFIN Support Center Confidential Information Process and Procedures. Additional documentation prepared by AKFIN Support Center to facilitate data access included Data Exchange Options, Agency Data Exchange Formats, AKFIN Computer Hardware/Software and Data Security, and Improving Understanding of Terminology. The Steering Committee also reviewed the AKFIN Charter and recommended an annual meeting of the AKFIN Policy Committee. The Steering Committee affirmed that development of a comprehensive database was not feasible and endorsed a project by project work plan for the AKFIN Support Center. The AKFIN Technical Committee met once to review product recovery rates. An AKFIN Fishery Data Work Group was formed and a report on Alaska Groundfish Delivery Reporting Systems was completed for Agency review.

Maintenance of AKFIN Support Center systems included: installation of a tape backup, NT workstation and a network printer; software upgrades for the NT Workstations, Sun server, and firewall; and debugging of T-1 line communications, and network connectivity. The Oracle environment was upgraded to version 8.1.5 and database administration tools were added. Unix directories and Oracle users were defined to enable SQL query of agency data in Oracle.

AKFIN Support Center received access to the NMFS weekly processor reports, Blend catch estimates, prohibited species catch, permit files, and North Pacific Observer database and ADF&G data feeds of the groundfish fish tickets and intent to operate data. Given this suite of information, AKFIN drafted report formats, completed procedures and interagency code translation tables for a preliminary report of landed groundfish catch by vessel for the January 2000 Steering Committee meeting. A database was developed for tracking data feeds and data requests.

The AKFIN program continues to support: maintenance of the ADF&G catch and production database; development of new shellfish and groundfish fish ticket processing systems and databases; dockside sampling of crab and groundfish landings; collection, editing and entry of crab & groundfish fish tickets; analysis of groundfish and crab fishery data; and determination of fish age.

Plans for 2000 include continued support of ADF&G data collection and data management programs. AKFIN Support Center will compile the Alaska portion of Annual Fisheries of the United States for NMFS, annual summaries of Alaska catch for the North Pacific Anadromous Fisheries Commission, monthly summaries of state landed catch to PacFIN, Economics Committee specified reports, and end-user data requests and reports. Standard fishery information reports for Alaska will be loaded to the AKFIN web site and updated with scheduled data feeds. AKFIN Support Center will begin implementing a data warehouse.

- The **Regional Mark Processing Center** (RMPC) continues to provide regional services to all State, Federal, Tribal, and non-governmental agencies involved in marking anadromous salmonid fishes on the entire Pacific Coast, including Canada. These services include coastwide coordination of tagging and fin marking programs, and maintenance of a regional

**Figure 1.** Employees of the Idaho Department of Fish and Game inject PIT tags into juvenile Snake River salmon as part of the PITAGIS program.

database for releases and recoveries of coded wire tag (CWT) marked salmonids. In addition, the Mark Center serves as the single United States database to exchange CWT information with Canada for Pacific Salmon Treaty purposes. The CWT data can be accessed through PSMFC's Regional Mark Information System (RMIS) by either dial-up (tel: 503-650-5437; up to 28,000 bps) or via the internet (www.rmis.org).

Coding for RMIS web enabled applications continued at full pace during 1999. A two year effort to fully convert all of the functionality of the dial-in system (character based; log in required) to the web environment was achieved during this year. The Mark Center's web site was formally activated on January 3rd, 2000. New RMIS features include the ability to run a report and send it to the user's browser for immediate review or via email to the user's home computer. In addition, users can now use the 'cut and paste' feature to copy large lists of individual tag codes from a personal document into an HTML form that can be used to generate data retrieval queries for either tag release or recovery information.

Another noteworthy RMIS improvement provides 'real time' coupling of the data load and validation programs with the data status tables. Users can now determine the status of any data set, including date of submission, errors encountered during validation, or date that the data were validated and available on-line. In the past, the data status tables were manually updated once a data set was fully validated and merged into the on-line data tables for user access. Maintaining current data status tables was an ongoing problem, and users rarely knew whether the data were complete.

The 1999 annual Mark Meeting again focused on the key issues of coastwide mass marking and selective fisheries activities. Washington and Oregon provided an update on efforts to mass mark their respective production of hatchery chinook. Participants also attempted to develop a formal charter for the Regional Mark Committee in order to define its role in dealing with politically charged mass marking issues. A draft charter prepared by the Subcommittee on the Charter met with initial approval, but there were concerns that the Mark Committee's role could be interpreted to supercede agency authority. The Charter will be redefined as the guiding Principles and Guidelines for the normal operations of the Mark Committee.

There has been great interest, and continued use of the Mark Center's hosted forums for PSC user requests and committee discussions. In addition, several new forums were set up in the past few months. Forums now in use include: (1) PSC Data Standards; (2) PSC Data Sharing Committee; (3) Regional Mark Committee; (4) North Pacific Anadromous Fish Commission's Otolith Committee; and (5) PSC Selective Fisheries Evaluation Committee.

The Pacific Salmon Commission's CWT data exchange format (Version 3.2) was revisited in late October, 1999. The key issues involved Y2K compliance for PSC data exchange formats. In addition, work focused on upgrading the exchange format to Version 4.0 in order to meet needs of relational databases such as Oracle (CDFO), and Ingres (PSFMC). No Y2K problems were subsequently experienced by the Mark Center's data management operations.

- The Columbia River **PIT Tag Information System** (PTAGIS) is a data collection, distribution and coordination project. The project saw over 1,500,000 juvenile salmonids marked with passive integrated transponder (PIT) tags, for the 1999 out-migration through the Columbia and Snake river systems, compared to over 940,000 in 1998. This number is up from around 623,000 in 1997 and 430,000 during the 1996 out-migrations. In 1999, these fish generated over 7,300,000 interrogation records compared with 4,873,000 interrogation records in 1998, at the major dams on the Lower Snake and Columbia rivers. One fish can generate many interrogation records, depending upon how many interrogation monitors 'saw' the fish.

Work was completed on a project that implements the new International Standards Organization (ISO) tag frequency in the Columbia River basin. PIT Tag interrogation systems at the main-stem hydroelectric dams ceased operations about a month earlier than usual in order to allow time to install the necessary infrastructure required to support the new interrogation systems. PSMFC's PIT Tag Operations Center staff worked throughout the winter of 1999-2000 in order to install over 170 transceiver systems at seven interrogation sites.

New software was deployed in order to support the new interrogation systems. The new computer program, used when PIT tagging fish, runs under the Windows™ operating system, is called PITTAG2. Users reported that the new program was much more functional and robust than any previous versions of the tagging program.

Other software modifications were made in the archive database to support the ISO transition. Data structures and processes were modified to accommodate the 14 character tag codes, and to handle potential problems related to the year 2000 date rollover.

We initiated a process to assume operations and maintenance responsibility for the "Separation by Code" (SbyC) system. This system has the capability to divert PIT tagged fish in various directions based upon distinct tag code. It was developed and has been operated by National Marine Fisheries Service, since 1994. The transition of SbyC operations and maintenance responsibilities from NMFS to PSMFC is estimated to be complete by the spring of 2001. Since the SbyC software was developed for a DOS operating system, work will begin in 2000 to develop a Windows™ operating system version of the program. Production deployment of this new system is targeted for 2002.

The PIT Tag Operations Center is providing operations and maintenance expertise as the region

develops PIT tag interrogation capabilities for adult fish, within the fish ladders at the dams on the Columbia and Snake Rivers. Plans are to have an adult PIT tag system installed at Bonneville Dam (and perhaps McNary Dam) by 2002.

- **StreamNet** is a cooperative information management project among the region's fish and wildlife agencies and tribes. It obtains, maintains and distributes regionally consistent biological information for use in managing and monitoring effectiveness of the Northwest Power Planning Council's (NWPPC) Columbia River Basin Fish and Wildlife Program and for many other fisheries and habitat related activities. The data are obtained from participating agencies and other entities in the region that collect data to meet their own research and management needs. StreamNet acquires these data and standardizes them so that similar types of data are in consistent formats and are comparable throughout the region.

Over the past year, the StreamNet project finished development of the new 1:100,000 routed hydrography for the Pacific Northwest. We then assigned new location identifier codes (LLIDs) to the data to link them to the newly routed hydrography. A significant update of the database was made available at the StreamNet web site. The Data Exchange Formats were updated to accommodate new data types, including habitat restoration project information and resident fish hatchery releases, and we updated the hatchery facility information. We also began working to establish data standards for temperatures and macro-invertebrates. Development of the habitat restoration project data was initiated. We developed and initiated use of a new User Interface tool for data entry, rules-checking and conversion to the regionally standardized Data Exchange Format. We also completed distribution data for all major salmon and steelhead species and runs for the Columbia Basin and coastal areas.

The Oregon StreamNet project developed more detailed species distribution data in sample subbasins and tied the data to documented sources. The Montana project modified and provided guidance and data to the new Montana Rivers Information System <http://nris.state.mt.us/wis/mris1.html> and contributed 3200 agency documents to the StreamNet Library. Idaho StreamNet made significant progress toward developing an agency wide electronic Fishery Information System to provide an efficient electronic flow of information from IDFG to StreamNet (ID). The Fish and Wildlife Service StreamNet coordinator initiated an improved procedure for efficiently submitting hatchery related information to the StreamNet database.

Conversion of the StreamNet database to the LLID based georeferencing system represents a significant improvement to the system in terms of increased precision and utility. This new system allows StreamNet to georeference data to any segment of almost any 1:100,000 scale stream in Washington, Oregon, Idaho, or western Montana. It also allows for more efficient data collection with custom StreamNet tools, more efficient data storage and management, and quick and powerful display of the data with GIS (Geographic Information Systems) technology. Since the StreamNet project had been in the lead in perfecting and maintaining the 1:100,000 Pacific Northwest Hydrography, the project was contracted by EPA to coordinate compilation of hydrography data for the Northwest for inclusion in the National Hydrologic Dataset (NHD), the new nationally consistent 1:100,000 hydrography layer. The regional and state StreamNet projects then reviewed and proofed the Northwest NHD product prior to its finalization and distribution by the EPA.

The Internet has become the primary means of distributing the StreamNet fisheries information. The online query system at www.streamnet.org allows users to enter criteria for the location, species and type of information needed. The on line-query locates the information and allows users to see it on the screen. They can then request data summaries, graphs or maps, and they may download parts or all of the data tables for use in their own databases. Reference documents are also listed, and can be accessed at the StreamNet Library. Work was begun in 1999 to redesign the query system so that it is able to query the data based on the new LLID location identifiers that have been added to the data.

Future work for the StreamNet project will focus in two areas: maintaining and upgrading Internet data delivery capability and supporting the regional emphasis on subbasin scale planning and ecosystem based management.

- The **Recreational Fisheries Information Network (RecFIN)** is a cooperative effort between the state fishery agencies in Washington, Oregon, and California, the Pacific States Marine Fisheries Commission (PSMFC), and National Marine Fisheries Service (NMFS). The four goals of RecFIN are as follows: 1) Develop and implement a State/Federal cooperative program for a coastwide marine recreational fisheries data system; 2) Coordinate collection, management, and dissemination of Pacific coast marine recreational fishery data; 3) Provide the data in a central location on a timely basis in the format needed to support state and federal work on Pacific marine recreational fisheries; and 4) Reduce and avoid duplication of data collection efforts between RecFIN members.

Coastwide recreational fisheries landings data is available online from the RecFIN database at: www.psmfc.org/recfin. Catch and effort data, angler demographic and economic data, and biological data for pacific coast marine recreational fisheries may be accessed. The database contains recreational fishery data for the years 1980-89 and 1993-date. The primary source of data in the RecFIN database comes from the Marine Recreational Fisheries Statistics Survey (MRFSS) funded nationwide by NMFS. This survey continues for 12 months of the year and samples in four

basic fishing modes: man-made structures (piers, jetties, docks etc.), beaches and banks, private and rental boats, and party and charter boats.

During 1999, 38,504 anglers were interviewed coastwide. The survey was spread out over about 700 fishing sites coastwide in the three states. Of these sites, about 57% are in California, 10% in Oregon and 33% in Washington State. This extensive coastwide survey adds about 157,000 total data records to the database each year with an average of about 80 data elements per interview.

Each of the states has some recreational sampling programs. These have varied from year to year. In 1999 they included: Washington ocean boats surveys on the coast from late April through late September; Oregon ocean boat surveys from January through December; and a California ocean boat salmon sampling program. State data is incorporated into the RecFIN database once it is available. The States and the Pacific Fishery Management Council utilized RecFIN data in establishing fishing regulations.

- The **Northern Pikeminnow Predator Control Program** was again funded by Bonneville Power Administration (BPA) in 1999 and administered by PSMFC. The program remained a joint effort between the state agencies of Washington and Oregon, Columbia River treaty tribes, Columbia River Intertribal Fish Commission (CRITFC) and Columbia Basin Fish and Wildlife Authority (CBFWA). Washington ran the sport-reward registration/creel check stations throughout the river and handled all fish checked in to the program. Oregon provided fish tagging services, population studies, food habit and reproductive studies, as well as exploitation rate estimates. PSMFC contracted with the CBFWA for technical administration of the program. PSMFC provided fiscal and contractual oversight for all segments of the Program and processed all reward vouchers for the sport-reward anglers. CRITFC and the treaty tribes conducted angling at the dams and site specific removals by means of gillnets at tributary mouths to aid salmonid downstream migration survival.

In 1999 a total of 113,386 fish were harvested in the sport-reward fishery totaling rewards of $565,241. A total of an additional 159 tagged fish were returned resulting in tag reward payments of $7,950. A total of 2,085 anglers who registered were successful in catching one or more fish in 1999. The season for 1999 ran from May 1, 1999 through October 17, 1999.

- The **FISH Habitat Education Program**'s work in 1999 to protect habitat for salmon and other sport-fish species was focused in 5 primary areas--watershed council development to support salmon restoration, estuarine restoration prioritization, watershed education through aerial tours, pollution prevention education, and public and boater outreach about fish habitat. The Commission's habitat efforts I 1999 were funded primarily by the Wallop-Breaux Sport Fish Restoration program fund, with additional support from the Oregon Department of Environmental Quality for the Program's erosion prevention outreach efforts and seminars.

The Program supported the Midcoast Watersheds Council, a multi-partnership, non-profit association dedicated to salmon habitat and water quality restoration on the high priority central Oregon coast area. This Council, which was formed and fostered for the past 5 years by this Program's efforts, works in key coho, chum, steelhead, and chinook habitat. It is presently conducting about $750,000 of watershed assessment, restoration, monitoring, and watershed education activities. The Program provided the primary leadership and assistance that allowed the Council to hire and oversee a new Council coordinator, a newsletter editor, and an education specialist to help schools become involved in high quality water quality and macroinvertebrate monitoring. The Program also helped assure expert review, analysis and metadata documentation for the Council's GIS information, and provided editorial oversight for the production of 4 public-information newsletters on watershed and salmon issues.

The Program also coordinated an estuary assessment and prioritization project for the Midcoast Watersheds Council. The Program wrote the $21,000 grant proposal for the project (which was funded by the Oregon Governor's Watershed Enhancement Board) and oversaw the work of the contractor, project steering committee, and others involved with the committee. The work, completed in November 1999, studied the estuarine wetlands (tide-influenced wetlands) of the key Alsea and Yaquina basins to prioritize these areas for protection or restoration activities. Forty-three sites on the Yaquina estuary and 36 sites on the Alsea were

**Figure 2.** MidCoast Watersheds Council members listen to a biologist from the Oregon Department of Fish and Wildlife discuss juvenile coho use of off channel winter habitat areas and riparian area food webs.

characterized and prioritized for protection or restoration using factors like size, number of owners, current and historic vegetative communities, type and date of alterations, presence and integrity of tidal channels, logistical complexity and type of 'fixes' needed for restoration (e.g. culvert replacement, dike removal, fill removal, tide gate removal), connection to stream systems, fish use, and rarity of the site. To our knowledge, it is the first such work accomplished by a watershed council and should set the stage for such work by others.

This Flights for Fishermen Program (Watershed Education Through Aerial Tours) provides habitat issue orientations and watershed area over-flights in small aircraft as a means of outreach to politicians, community leaders, farmers, timber operators and others to increase their understanding of fish habitat issues and restoration needs. The focus of the watershed education flights in 1999 was to support the development of King County, Washington watershed groups (Cedar, Sammamish and Green/Duwamish). Each group is made up of local community and political leaders, but this year flights involved a greater diversity of participants than ever before. They included citizens, agency representatives, City and County public officials, scientists, fishermen, farmers, environmental group representatives, politicians, business men, foundation representatives, and for the first time, representatives of communities of faith (who are working to reach local citizens through their churches and educate them on watershed issues). A total of 57 people participated in the flights, with additional citizens and agency representatives participating in the pre-flight orientations and post-flight discussions.

**Figure 3. E**xcavating and grading contractors, homebuilders, developers, and others receive field training in erosion control at a PSMFC-sponsored workshop.

The Program's pollution prevention work concentrated in two areas: oil spill prevention and erosion control work. The Program provided review and advice to the California Coastal Commission as it initiated studies and programs to determine equipment and educational outreach needs to control bilge oil discharge. Additionally, Program Leader Fran Recht was an representative invited on the nine person New Carissa Review Committee that reviewed the state's oil spill prevention, preparedness, and response system and suggested improvements based on the New Carissa spill experience. The Committee met seven times between April and November of 1999 and drafted detailed recommendations dealing with marine vessel accident prevention, preparation for marine spill response, incident response system management, environmental assessment and restoration capacity, communication, agency administrative capacity, and changes to statutes and requirements related to vessel financial assurances and wreck removal. A final report to the Governor was made public in June 2000.

Erosion from construction sites can contribute significant amounts of sediment to streams-- with rates orders of magnitude greater than that produced by timber or agricultural operations. Hence the Program sought grant funds and began conducting educational workshops for small building contractors. The first two one-day workshops, that combined classroom and field sessions were held on the Oregon coast in spring and fall of 1999. The workshops concentrated on providing practical techniques and sharing information on types of effective products appropriate for building sites less than 5 acres in size. Educational outreach materials and presentations made the connection between pollution prevention and benefits to salmon and water quality. The workshops were well received by the contractors and will be repeated as funding allows in other venues up and down the coast beginning in 2000.

Many venues were used to inform citizens, students, fishermen and other members of the public about salmon, watershed health, and water quality issues. These included schools, sportsmen's shows in San Mateo, California and Portland, Oregon, county and regional fairs, and Port and Harbormaster Association meetings. Additionally, new outreach information was developed for the public regarding bottom fish facts and posted on the Internet.

- PSMFC's ***Habitat Hotline*** was a newsletter that informed fishermen, fisheries conservationists, conservation groups, state and federal agencies, and PSMFC commissioners and advisors about important habitat issues in the five PSMFC member states. Information on national legislation and rule-makings were also included. In December 1999, after seven-and-a-half years and 45 issues, the PSMFC stopped publishing the *Habitat Hotline* due to funding cutbacks in the US Fish and Wildlife Service's Federal Aid in Sportfish Restoration Program (also known as the "Wallop-Breaux" program). We are extremely grateful to

the USFWS for their support of this publication over the years. Thanks also to the Norcross Wildlife Foundation who also supported the *Hotline* in its early years.

- In the fall of 1999, PSMFC received Bonneville Power Administration (BPA) funding to carry out an **Aquatic Nuisance Species (ANS) Prevention Program** for the Columbia River Basin (CRB). BPA is concerned that the spread of zebra mussels westward across the continental United States poses a serious economic and ecological threat to the CRB's multiple uses such as agricultural, navigation, boating, fishing, industrial, and hydroelectric operations. The program is also focusing on the Chinese mitten crab, which has caused problems in the San Francisco Bay Delta. One of goals of this regional program is to develop an ANS plan for the Columbia River Basin. The ANS plan to be developed by the Fall of 2000 will identify: current ANS program actions and expenditures being undertaken by state, federal and private entities; additional prevention actions needed on CRB ANS; and other potential funding sources to implement needed actions. Immediate measures are needed to slow the westward movement of zebra mussels, so the PSMFC/BPA program is implementing preventative actions for keeping ANS species out of the Columbia River Basin. These actions will include: (1) informing (primarily western) state and federal government decision-makers of the critical nature of the zebra mussel threat and promoting the need for the immediate creation, expansion, and funding of an ANS program; (2) beginning to set up a zebra mussel inspection program on interstate highways for boats, trailers, and other highway transportation vectors of ANS; and (3) coordinating a regional consensus on the threat of mitten crabs.

## 1999 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.

*51st Annual Report of the Pacific States Marine Fisheries Commission for the Year 1998* (September 1999) contains a summary of PSMFC activities, funding, and expenditures, and reviews selected Pacific Coast fisheries statistics for 1998.

# FINANCIAL, AUDIT, AND BUDGET REPORTS

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.

## 1999 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, as of and for the year then ended June 30, 1999, 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 general purpose financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards 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 the Pacific States Marine Fisheries Commission, as of June 30, 1999 and the results of its operations for the year then ended in conformity with generally accepted accounting principles.

In accordance with *Government Auditing Standards*, we have also issued a report dated July 20, 2000 on our consideration of the Commission's internal control structure

**COMBINED BALANCE SHEET – JUNE 30, 1999**

| | General Fund | Special Revenue | General Fixed Assets | General Long-Term Debt | Totals |
|---|---|---|---|---|---|
| | | ASSETS | | | |
| Cash and Investments | 1,445,377 | 0 | 0 | 0 | 1,445,377 |
| Due from other Funds | 3,238,285 | 794,202 | 0 | 0 | 4,032,487 |
| Receivables: | | | | | |
| Grants and Contracts | 0 | 3,238,285 | 0 | 0 | 3,238,285 |
| Other | 1,191,131 | 0 | 0 | 0 | 1,191,131 |
| Prepaids | 56,214 | 0 | 0 | 0 | 56,214 |
| Fixed Assets | 0 | 0 | 3,577,414 | 0 | 3,577,414 |
| Amount to be Provided for Retirement of General Long-Term Debt | 0 | 0 | 0 | 637,395 | 637,395 |
| Total Assets | 5,931,007 | 4,032,487 | 3,577,414 | 637,395 | 14,178,303 |
| | | LIABILITIES AND FUND EQUITY | | | |
| Liabilities | | | | | |
| Due to Other Funds | 794,202 | 3,238,285 | 0 | 0 | 4,032,487 |
| Accounts Payable | 3,427,004 | 0 | 0 | 0 | 3,427,004 |
| Payroll Liabilities | 334,521 | 0 | 0 | 0 | 334,521 |
| Accrued Compensated Absences | 469,881 | 0 | 0 | 0 | 469,881 |
| Tenant Deposits | 4,432 | 0 | 0 | 0 | 4,432 |
| Advances | 289,526 | 0 | 0 | 0 | 289,526 |
| Capital Lease Obligations | 0 | 0 | 0 | 77,830 | 77,830 |
| Real Estate Contracts | 0 | 0 | 0 | 559,565 | 559,565 |
| Deferred Revenues | 0 | 794,202 | 0 | 0 | 794,202 |
| Total Liabilities | 5,319,566 | 4,032,487 | 0 | 637,395 | 9,989,448 |
| Fund Equity | | | | | |
| Investment in General Fixed Assets | 0 | 0 | 3,577,414 | 0 | 3,577,414 |
| Fund Balance Reserved for Prepaid Insurance | 19,026 | 0 | 0 | 0 | 19,026 |
| Unreserved: | 592,415 | 0 | 0 | 0 | 592,415 |
| Total Fund Equity | 611,441 | 0 | 3,577,414 | 0 | 4,188,855 |
| Total Liabilities and Fund Equity | 5,931,007 | 4,032,487 | 3,577,414 | 637,395 | 14,178,303 |

and on our tests of its compliance with certain provisions of laws, regulations, contracts and grants.

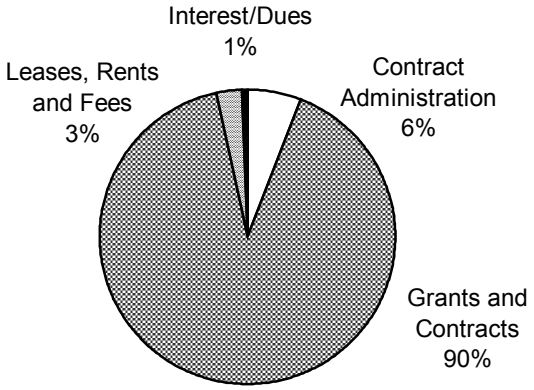
Our audit was conducted for the purpose of forming an opinion on the general purpose financial statements of Pacific States Marine Fisheries Commission taken as a whole. The accompanying schedule of expenditures of federal awards is presented for purposes of additional analysis as required by U.S. Office of Management and Budget Circular A-133, *Audit of States, Local Governments, and Non-Profit Organizations*, and is not a required part of the general purpose financial statements. The accompanying supplementary information listed in the table of contents is also presented for purposes of additional analysis and is also 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.

Cahall, Veltrie, Foster & Company, LLC
Portland, Oregon
July 20, 2000

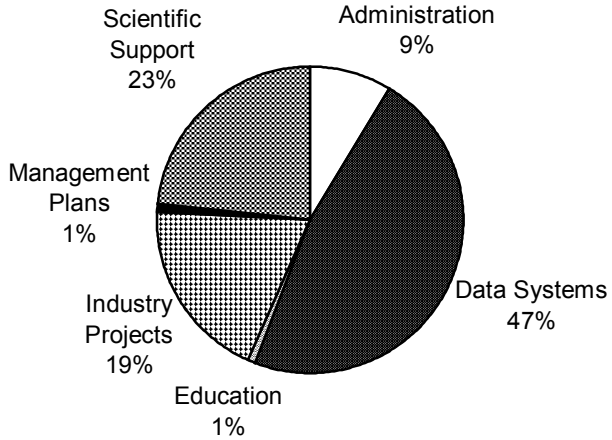
*Editors Note: Copies of the complete auditor's report are available upon request*

## 1999 PSMFC OPERATING BUDGET

### REVENUES




### EXPENDITURES




| External Contracts for the Period July 1, 1998 - June 30, 1999 | |
|---|---|
| NMFS AKFIN | 1,565,809 |
| NMFS Albacore Logbook & Port Sampling | 76,743 |
| NMFS Columbia Basin Biosampling and Monitoring | 1,440,006 |
| NMFS Develop and Test Pulse Power Device | 26,182 |
| NMFS Economic Analysis of West Coast Fisheries | 205,249 |
| NMFS Expanding Pinniped Populations | 329,315 |
| NMFS Habitat Restoration Data | 55,941 |
| NMFS Interjurisdictional Fisheries Program | 228,181 |
| NMFS Marine Recreational Fisheries Economic Survey | 183,739 |
| NMFS Miscellaneous support agreements | 404,998 |
| NMFS Northwest Emergency Assistance Program | 439,089 |
| NMFS Pacific Fisheries Information Network (PacFIN) | 2,342,247 |
| NMFS Recreational Fisheries Angler Survey Analysis | 12,218 |
| NMFS Recreational Fisheries Information Network (RecFIN) | 987,818 |
| NMFS Streamnet | 127,220 |
| NMFS/USFWS Regional Mark Processing Center | 308,734 |
| USFWS Miscellaneous contracts | 24,789 |
| USFWS W/B Administration | 171,463 |
| PFMC/NPFMC Council Support | 113,135 |
| COE Fish Bypass Transportation Program | 223,272 |
| EPA Clean Water Act projects | 51,145 |
| EPA Pacific NW River Reach File Technical Support | 143,689 |
| EPA Watershed Coordinator Funding | 3,021 |
| BPA Aquatic Nuisance Species | 6,193 |
| BPA Columbia River Coded Wire Tag | 1,427,503 |
| BPA Comparative Survival Study | 293,879 |
| BPA Northern Pikeminnow Sport Reward Program | 2,712,186 |
| BPA PIT Tag Data Base | 1,128,420 |
| BPA PIT Tag Procuring | 1,958,021 |
| BPA Smolt Coordination (Fish Passage Center) | 901,812 |
| BPA Smolt Monitoring | 1,143,542 |
| BPA Streamnet | 1,734,038 |
| Multi-Agency Fish Marking Coordination Support | 34,835 |
| For the Sake of the Salmon | 507,737 |
| Willamette Restoration Initiative | 71,895 |
| CA Miscellaneous Sampling Projects | 3,498 |
| CDFG Grow Pen Coordinator | 4,430 |
| CDFG Marine Related Issues Coordination | 32,771 |
| CDFG Oil Spill Modeling | 43,243 |
| CDFG Sea Urchin Fishery | 23,462 |
| CDFG Yreka Fish Habitat | 35,958 |
| CDFG/UCSD Punta Gorda Reserve and Big Creek Reserve | 263,908 |
| ODEQ Better Oregon Program | 21,936 |
| ODFW Groundfish Observers/Data Collection | 99,977 |
| ODFW/PSMFC Whiting Observer Program | 17,620 |
| ODLCD Rocky Reef Habitat Assessment | 37,400 |
| Oregon Watershed Enhancement Board projects | 42,802 |
| OSU Health Insurance Survey | 613 |
| WDFW Cowlitz Falls | 115,245 |
| WDFW Handford Stray Survival | 51,332 |
| Total Contracts | 22,178,259 |

Submitted by Pam Kahut, Fiscal Manager/Treasurer

# 1999 ANNUAL MEETING EVENTS

## SUMMARY

The 1999 PSMFC Annual Meeting was held August 30 - September 1 in Blaine, Washington with State Senator Harriet Spanel as chair. The agenda included reviews of federal legislation and appropriations, and panel discussions exploring aquaculture and pen-rearing, and exotic species and the impacts of their introductions. Glenn Merrill and Dr. Stephen Langdon described the recent National Research Council report and recommendations on use of Individual Fishing Quotas in fisheries management, and the development of the Community Development Quota (CDQ) program in Alaska. Penny Dalton of the National Marine Fisheries Service (NMFS) described the outlook for the agency, its budget, and MSFCMA implementation issues, while Will Stelle of the NMFS Northwest Region described coming challenges in groundfish and salmon management. Rick Marks discussed issues developing on the East Coast since the 1996 amendments to the MSFCMA (the Sustainable Fisheries Act, SFA) which may have significance for West Coast fisheries, while Rod Fugita advocated the use of marine sanctuaries in the management of marine fisheries. Phil Anderson, Bob Fletcher, and Clarence Pautzke described issues facing the Pacific and North Pacific Fishery Management councils, including salmon, groundfish, and highly migratory species management, and SFA implementation issues. Luncheon speaker John Mitchell of US National Bank explored the similarities between the fishing industry and the health care, forest products, and agriculture industries, while dinner speaker Rear Admiral Paul Blayney discussed the US Coast Guard's mission on the Pacific coast.

## BUSINESS MEETING

The following issues were addressed at the annual business meeting on September 1, 1999:

- The Commission unanimously approved the annual budget as proposed.

- NMFS Budget and Vision for 2005:
  a) The Commission was unable to endorse the Vision for 2005 described in the NMFS strategic plan (Vote: 5-0). Commissioners desired clarification on the relationship between the vision statement and its implementation through the program budget.
  b) The Commission directed staff to work with NMFS, the Congress, management councils, other commissions, and others to improve the current NOAA/NMFS budgeting process, to ensure that the budget clearly shows how projects are developed and how expenditures are distributed by region. PSMFC requests a mechanism for state input early in the budget development process, and not just the opportunity to comment on the budget after it has been developed (Vote: 5-0).

- Aquaculture and Pen Rearing:
  a) PSMFC supports funding for aquaculture research but not aquaculture promotion in the NMFS budget (Vote: 5-0).
  b) PSMFC supports the development of environmentally sound aquaculture programs. Further, the Commission supports the development of a coastwide genetics and disease policy and protocol for aquaculture. The Commission opposes further expansion of the culture of non-endemic species and stocks until this policy is developed and approved, to ensure that aquaculture practices in one region do not adversely affect another region. Commission staff is directed to work with NMFS to develop a process whereby the states may affect the development of the national aquaculture policy (Vote: 4-1).
  c) PSMFC staff was directed to consider the issues raised in the Alaska White Paper on Atlantic Salmon, and the comments of other states on that document, during efforts to develop a national aquaculture policy.

- Aquatic Nuisance Species (ANS):
  a) PSMFC will seek to become the centralized coastal entity to coordinate ANS activities. Staff should give coastwide ANS issues associated with ballast water highest priority (Vote: 5-0).
  b) The Commission supports the eradication of mitten crabs by whatever means necessary, while minimizing the chances of translocation (Vote: 5-0).

- Marine Mammal Protection Act (MMPA) Reauthorization Issues: PSMFC directed staff to continue preparations for MMPA reauthorization hearings (Vote: 5-0). The Commission remains committed to incorporating the recommendations of the NMFS/PSMFC report to Congress into the redrafted MMPA.

- National Research Council Review of Individual Fishing Quotas: PSMFC will convene an ad hoc committee that will work with Commission staff to assemble relevant information on the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) reauthorization, identify issues of common concern and areas of disagreement among member states, and develop a set of recommendations that can be brought before the Commission at its next annual meeting in the year 2000 (Vote: 4-0-1). In developing their recommendations, the committee should consider the recommendations of the NRC report, the recommendations of the Council chairs, and any other relevant information. Each state will appoint one member to the committee by the end of September 1999.

- Marine Sanctuaries: PSMFC will continue to share information between states and monitor Council activities to ensure state involvement in marine sanctuary and reserve issues (Vote: 5-0).

- Avian Predation on Smolts in the Lower Columbia River and Estuary:
  a) The Commission directed staff to provide input into annual and long-term planning efforts addressing avian predation (e.g., Caspian Tern Working Group, Northwest Power Planning Council, etc.) (Vote: 5-0). The Commission is concerned primarily with the tern colonies located on the artificial islands in the lower river, but is also concerned by avian predation in other areas.
  b) Commission staff are directed to discuss with the Army Corps of Engineers (COE) its intent for dredge spoil disposal, encourage the COE and NMFS to provide adequate funding to conduct the necessary research and address avian predation problems in a more aggressive manner, and make every effort to speed resolution of the issues (Vote: 5-0). Commissioners requested a short presentation on this issue at the next annual meeting.

- Highly Migratory Species, Fishery Management Plan: PSMFC requests that NMFS provide a budget augmentation to the Pacific Fishery Management Council (PFMC) or to the NMFS Southwest region to develop a Highly Migratory Species Fishery Management Plan. The Commission encourages NMFS to work with the PFMC to develop a budget, and identify a schedule so that the management plan can be implemented by October 1, 2000. PSMFC encourages NMFS to use the discretionary funds that are available to the agency for high priority items for this purpose (Vote: 5-0).

- Economic Assistance Due to Harvest Reductions in West Coast Groundfish: PSMFC recognizes that the West Coast groundfish fishery is facing economic crisis. The Commission will support efforts by the states of Washington, Oregon, and California to seek disaster relief and economic assistance alternatives, including job retraining, for fishing and fish processing families adversely affected by harvest reductions in West Coast groundfish (Vote: 5-0).

- World Fisheries Day: PSMFC will recognize World Fisheries Day 1999 (to be held on November 21) with appropriate publicity or events, and calls upon other West Coast states to recognize and participate in World Fisheries Day as an annual event, and for the President and Congress to likewise recognize the day (Vote: 5-0).

- Annual Meeting Dates: Commissioners discussed the merits of holding the annual meeting in late August versus the traditional early October date. Late August dates were generally preferred.

## 2000 ANNUAL MEETING

The 53rd Annual Meeting of PSMFC will be hosted by the state of Alaska. The meeting has been tentatively scheduled for August 28-30 in Girdwood.

# ANNUAL PSMFC AWARD
## FOR CONTRIBUTION TO PACIFIC COAST FISHERIES

### DAYTON L. ALVERSON

The Commission's 1999 award for contribution to Pacific coast fisheries was presented to Dr. Dayton "Lee" Alverson.

During his long and distinguished career, Dr. Alverson has been a major contributor to fisheries science and shaper of fisheries management on a global scale. A past director of the Northwest and Alaska Fisheries Center, he served as an Associate Professor at the University of Washington School of Marine Affairs and as an Affiliate Professor at the University of Washington School of Fisheries and Marine Affairs. Dr. Alverson has also been an invited lecturer at universities and advisor to governments throughout the world. He is a member of the Marine Board of the National Academy of Science. During his career in fisheries, Dr. Alverson has authored over 140 peer-reviewed papers, including works on population dynamics, resources surveys, state of marine resources, systematics, fisheries distribution and ecology, and life history and migration. He has authored or co-authored a number of books, and his works on survey methodology have been published by the UN/FAO. Dr. Alverson has also completed hundreds of additional papers for public- and private-sector clients in his role as founder, President, and Chairman of the Board of Natural Resources Consultants Inc. His major efforts in recent years have involved the study of bycatch on a national and global scale, as well as works on the state of world marine fisheries.

Dr. Alverson organized the first International Fishing Industry workshop on marine debris in 1985, which concluded with a commitment of international fishing industry members to support MARPOL and to establish a fishing industry creed that fostered efforts to stop the discard of debris at sea. He also organized the first fishing industry workshop on bycatch in 1992 that brought together scientists and fishermen from all over the U.S. in a joint effort to establish fishing practices and methodologies to reduce bycatch in national fisheries. He played important roles in the United Nations Conference on the Law of the Sea, in negotiations for the Marine Mammal Protection Act, in the drafting of a treaty with Canada to control Pacific salmon interceptions, and in negotiations to reduce Japanese and Soviet fishing activities off the U.S.

Throughout his career, Dr. Alverson has questioned the popular answer in search of the right one. He has consistently thought beyond today to tomorrow and the day after. In so doing, he changed the way fisheries scientists and managers go about their business and the way the rest of the world perceives those efforts. It gives the Pacific States Marine Fisheries Commission great pleasure to recognize those contributions through this award for 1999.

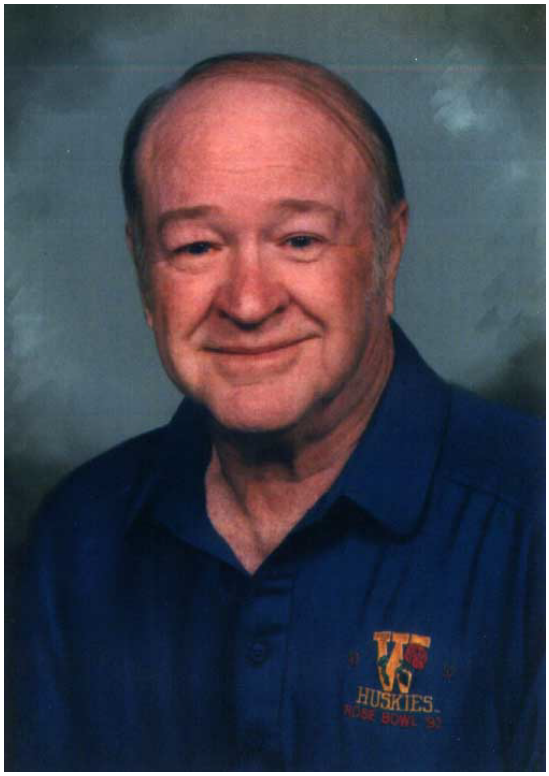
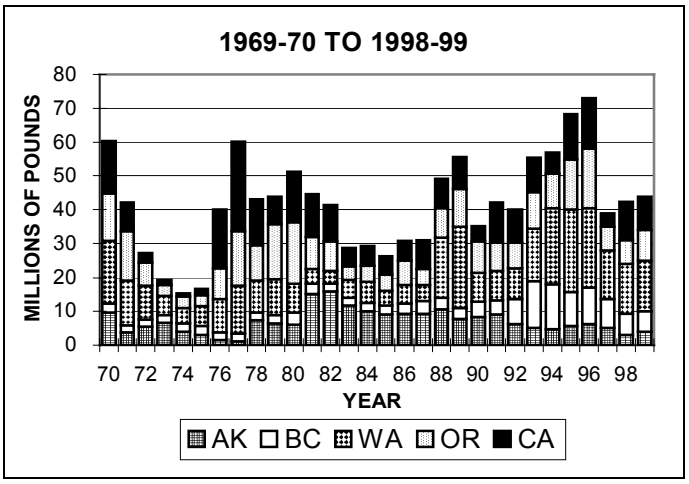
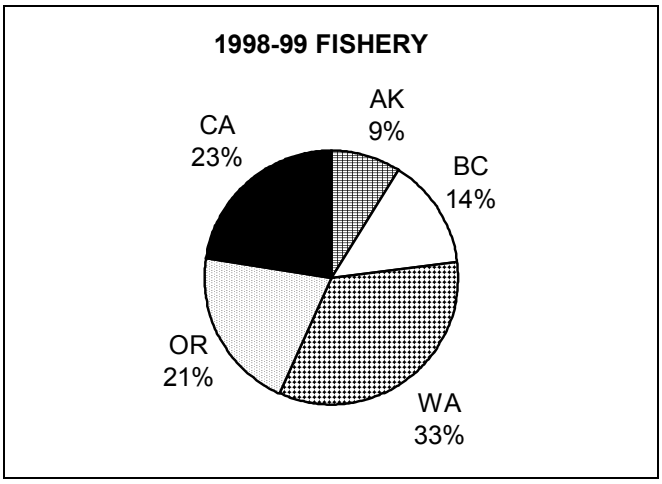



**Figure 4.** Dr. Dayton L. Alverson received the 1999 PSMFC Annual Award in recognition of his contributions to Pacific Coast fisheries management and research.

# PACIFIC COAST FISHERY REVIEW REPORTS

## DUNGENESS CRAB FISHERY IN 1998-99




**Alaska**

Total landings of Dungeness crab were 3.96 million pounds, a 37% increase over 1998 but still 34% less than the previous 10-year mean. Eighty-five percent of the landings were from Southeast Alaska (3.36 million pounds) and 14% were from Kodiak (0.55 million pounds). Landings were also reported from the Alaska Peninsula and Bristol Bay.

**British Columbia**

Overall landings of Dungeness crab were down slightly from 2,900 tonnes (6.43 million pounds) in 1998 to 2,782 tonnes (6.13 million pounds) in 1999. Landed value remained nearly the same at $21 million (Can.) in both years. This is due to increasing prices paid for crabs which averaged $7.22/kg ($15.90/lb Can.) in 1998 and increased to $7.49/kg ($16.50/lb) in the 1999 fishing season. Indications for 2000 are that prices could approach $10.00/kg.

The crab fishery has been driven since 1993 by Hecate Strait (Area A) landings, which showed a increase in 1999 to 1,400 tonnes, up from 1,100 tonnes in 1998. The Skeena River (Area B) has experienced declines since 1995 and the West Coast of Vancouver Island (Area E) was also down by about half from 485 tonnes in 1998 to 235 tonnes in 1999. All other areas appeared to be about average.

The fishery is considered to be nearly fully exploited. Recent management has centered on reducing overall effort, especially during softshell periods. Enforcement concerns are for landing undersized product, harvest of females, and poaching, especially near large urban areas. Stocks overall continue to be productive. New developments in the fishery include the renewal of area selection for another three years, in which fishermen elect to fish one of six license areas. Trap limits were introduced in all areas in spring 2000 with third-party monitoring paid by industry funds to ensure compliance. Area A (Hecate Strait) fishermen have elected to install video cameras on all vessels participating in that fishery in an effort to address problems with theft of gear and trap robbery.

**Washington**

Landings for the 1998-99 Washington Dungeness crab fishery totaled 14.8 million lbs. The coastal fishery (treaty and non-treaty) produced 9.8 million lbs. Non-treaty fishermen

Table 1. Pacific Coast commercial landings of Dungeness crab (in thousands of pounds). †

| Year | Alaska | British Columbia | Wash-ington | 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 | 2,898 | 4,494 | 9,429 | 12,717 | 44,647 |
| 81-82 | 15,811 | 2,201 | 3,928 | 8,700 | 10,786 | 41,426 |
| 82-83 | 11,801 | 2,110 | 5,237 | 4,100 | 5,413 | 28,661 |
| 83-84 | 9,967 | 2,548 | 6,166 | 4,700 | 5,854 | 29,235 |
| 84-85 | 9,180 | 2,566 | 4,266 | 4,900 | 5,248 | 26,160 |
| 85-86 | 9,358 | 2,909 | 5,430 | 7,171 | 5,990 | 30,858 |
| 86-87 | 9,346 | 3,595 | 4,806 | 4,747 | 8,597 | 31,091 |
| 87-88 | 10,571 | 3,324 | 17,858 | 8,685 | 8,754 | 49,192 |
| 88-89 | 7,667 | 3,348 | 23,896 | 11,154 | 9,552 | 55,617 |
| 1989-90 | 8,145 | 4,695 | 8,629 | 9,236 | 4,548 | 35,253 |
| 90-91 | 9,062 | 4,096 | 8,870 | 8,248 | 11,950 | 42,226 |
| 91-92 | 6,210 | 7,349 | 9,163 | 7,561 | 9,806 | 40,089 |
| 92-93 | 5,016 | 13,865 | 15,532 | 10,873 | 10,077 | 55,363 |
| 93-94 | 4,575 | 13,217 | 22,532 | 10,240 | 6,445 | 57,010 |
| 94-95 | 5,670 | 10,007 | 24,253 | 15,043 | 13,242 | 68,215 |
| 95-96 | 6,132 | 10,870 | 23,282 | 17,706 | 15,184 | 73,174 |
| 96-97 | 4,944 | 8,647 | 14,327 | 7,052 | 4,006 | 38,976 |
| 97-98 | 2,900 | 6,434 | 14,679 | 7,082 | 11,381 | 42,475 |
| 1998-99 | 3,963 | 6,134 | 14,833 | 9,110 | 9,884 | 43,924 |
| 10-Year Mean | 6,032 | 8,253 | 16,516 | 10,420 | 9,619 | 50,840 |

† 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.

landed 8.97 million pounds with an ex-vessel value of 19.4 million dollars. Coastal treaty fishers landed 846,658 lbs. A total of 178 non-treaty and 30 treaty vessels made 6,031 landings. The opening ex-vessel price for the coastal fishery was the same as the previous season at $1.35 per lb. The non-treaty season opened on December 1, 1998 and closed on September 15, 1999.

The non-treaty Puget Sound fishery (October 1998 - May 1999) produced 2.0 millions lbs. from 5,924 landings. Puget Sound treaty fishers (June 1997 through May 1998) made 12,295 landings for a total harvest of 3.2 million lbs.

**Oregon**

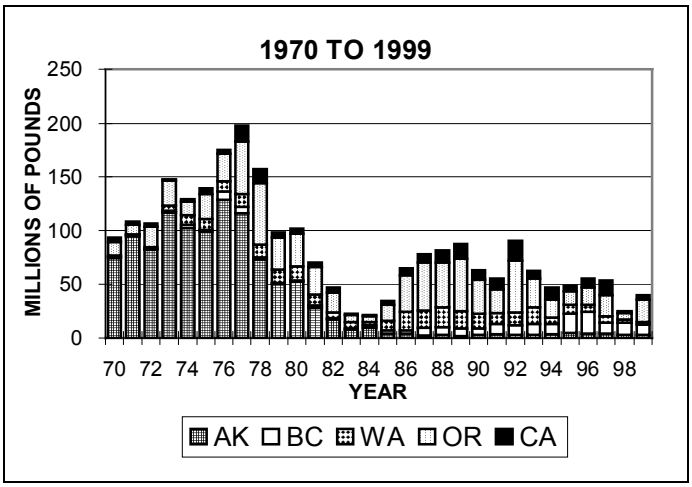
Oregon Dungeness crab landings for 1998-99 totaled 9.1 million pounds, about 2 million pounds above both the 1996-97 and 1997-98 seasons landings of 7 million pounds. Leading ports of landings were Newport, Astoria and Brookings at 2.6, 2.4 and 1.6 million pounds respectively. Monthly catch totals for December and January were 62% percent and 20% percent of the season total respectively.

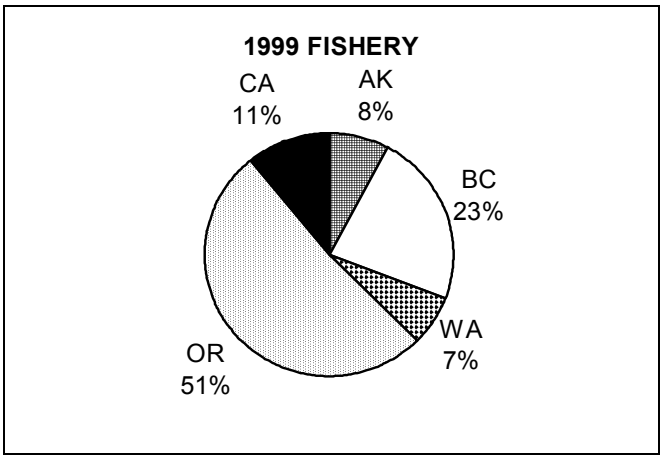
During the season, 306 vessels made 7,426 landings in the ocean fishery. A total of about 116,000 pots were registered at the mandatory hold inspection prior to opening day. Ex-vessel price per pound averaged $1.78 for the season, climbing to $2.75 in May and ending at $2.66 in August.

More restrictive regulations were implemented in the 1998-99 season to lower the potential for expansion of the summer live softshell crab fishery. Action included a 1,200 pound vessel landing limit per week starting the second Monday in June through the end of the season on August 14th, and a reduction in the summer catch ceiling from 10% to 7% of the previous December-May Oregon crab harvest. The summer 1999 fishery (June 1 - August 14) showed a 55% reduction in pounds landed as compared to the 1998 summer season.

Contributors:
Gary Christofferson, PSMFC AKFIN
Antan Phillips, Department of Fisheries and Oceans, Canada
Heather Reed, Washington Department of Fish and Wildlife
John Schaefer, Oregon Department of Fish and Wildlife

## SHRIMP FISHERY IN 1999




**Alaska**

Commercial landings of shrimp during 1999 totaled 3.094 million pounds, only 1% less than in 1998 but 11% less than the previous 10-year average. Landings consisted of pink shrimp (*Pandalus eous*, 1.87 million pounds), sidestripe shrimp (*Pandalopsis dispar*, 0.47 million pounds), coonstripe shrimp (*Pandalus hypsinotus*, 0.09 million pounds), and spot shrimp (*Pandalus platyceros*, 0.66 million pounds). Approximately 2.4 million pounds were taken by trawl gear and 0.7 million pounds were taken by pot gear. Southeast Alaska accounted for about 97% of the landings by weight in 1999, but shrimp were also landed in Prince William Sound, Kodiak, Dutch Harbor, and the Aleutians.

**British Columbia**

Total 1999 shrimp trawl landings were 2,725 tonnes, which is a decrease from 1998 (3,268 tonnes) and 1997 (3,255 tonnes). Landings from the west coast of Vancouver Island have traditionally dominated this fishery, though there has been considerable movement into other areas since 1996. Landings from this area, which consist mainly of *Pandalus jordani,* exceeded 1,300 tonnes in 1999. In contrast, landings on the east coast of Vancouver Island totaled just less than half of that landed on the west coast. In the north coast, the largest landings came from the Prince Rupert District and totaled 573 tonnes. The inshore fisheries of the north coast and the Strait of Georgia generally have mixed landings that include *P. borealis eous* and *Pandalopsis dispar*.

The number of shrimp trawl licenses issued annually is limited to 248. In 1999, there were 241 eligible commercial licenses and 4 eligible communal commercial licenses. Of these, only 179 vessels actively fished for shrimp. The shrimp trawl fishery has been managed primarily through area quotas since 1997, though some areas off the west coast of Vancouver Island are managed through seasonal openings. Logbooks and sale slips are mandatory in this fishery, and biological data are collected by research surveys and through commercial sampling.

The commercial prawn trap fishery occurs throughout the B.C. coast. In 1999, less than 1,400 tonnes were landed, down from over 1,600 tonnes in 1998. The majority of commercial prawn trap fishery landings have historically come from the fishing grounds inside of Vancouver Island (71% in 1998), with the remainder from the west coast of Vancouver Island (6%) and the north/central coast (23%). The short season prevents the fleet from prospecting for additional grounds in offshore areas. The presence of prawns in offshore areas is known from shrimp trawl and groundfish trawl fisheries.

With a landed value of $18.4 M, the Pacific coast prawn by trap fishery was the region's ninth most valuable fishery and the third most valuable invertebrate fishery in 1998, after geoducks and crabs. Landed value peaked in 1997 at more than $26 M. The true landed value for that year is estimated to be in excess of $30 M. A review of the fish slips indicated that some fishers were reporting unrealistically low dockside prices. Landed value declined to $18 M in 1998 due to changes in the Japanese economy. Landed value in 1999 is estimated to be in excess of $20M. As there were approximately 244 licenses active in the fishery in 1999, the landed value averaged in excess of $80 K per license.

There are several product types: frozen at sea (FAS), fresh landed then frozen, fresh and live. The FAS product and catch that is landed and then frozen, is destined for the Japanese market, and this market accounts for more than 90% of the catch. Prices vary from year to year, and according to product size. In 1999, a 1kg box of medium (40 count) or large prawns was worth approximately $14 landed value. A 1kg box of extra large or jumbos was worth more than $17.

Live and fresh prawns are sold to local markets, local restaurants or through dock sales. Fresh prawns and some frozen prawns may be sold as whole or tailed product. Tailed product has the head and thorax removed. Dock sale prices in 1999 were typically $12 to $17 per kg. As tailed product results in 50% weight loss, this product form has a higher value.

**Washington**

Washington 1999 coastal pink shrimp (*Pandalus jordani*) landings totaled 2,654,369 pounds. Landings were below average for the sixth consecutive season. The 1999 total is the second lowest since 1972 and more than 5 million pounds below the 10-year average of 7.8 million pounds. Landings averaged 14,271 pounds for the season. Only 14 vessels participated in the fishery on a regular basis.

**Oregon**

The total 1999 pink shrimp (*Pandalus jordani*) harvest in Oregon was approximately 20.5 million pounds (Table 2), an increase of about 14.4 million pounds above the 1998 landing total. The fifteen-year average Oregon landing total was about 25.8 million pounds. A total of 121 vessels made 1,354 deliveries of pink shrimp into Oregon ports during 1999 compared with 109 vessels and 692 deliveries during 1998.

Monthly landings were below the monthly average throughout the season, but the landings closely approached the average during June and July. Landings peaked during June at 4.5 million pounds. The peak, which typically occurs in May, was delayed due to a combination of small shrimp size, weather, and price disputes.

The bulk of the 1999 shrimp harvest occurred in areas 84 and 86 (Table 3). Fishing effort during the season increased approximately 50% over the 1998 season. It was the largest

Table 2. Pacific Coast commercial landings of pandalid shrimp in thousands of pounds.

| Year | Alaska | British Columbia | Wash-ington | Oregon | California | Total |
|---|---|---|---|---|---|---|
| 1970 | 74,256 | 1,538 | 926 | 12,482 | 4,172 | 93,374 |
| 71 | 94,801 | 735 | 678 | 9,213 | 2,728 | 108,155 |
| 72 | 82,098 | 794 | 1,582 | 19,165 | 2,621 | 106,261 |
| 73 | 116,719 | 1,735 | 5,271 | 22,753 | 1,206 | 147,685 |
| 74 | 102,298 | 2,650 | 9,325 | 13,022 | 2,383 | 129,678 |
| 75 | 98,535 | 1,729 | 10,167 | 23,893 | 4,993 | 139,317 |
| 76 | 129,011 | 7,722 | 9,261 | 25,392 | 3,400 | 174,786 |
| 77 | 116,011 | 6,176 | 11,803 | 48,580 | 15,633 | 198,203 |
| 78 | 73,293 | 1,569 | 12,298 | 56,997 | 13,167 | 157,324 |
| 79 | 50,916 | 716 | 12,135 | 29,579 | 4,992 | 98,338 |
| 1980 | 52,568 | 1,500 | 12,629 | 30,152 | 5,050 | 101,899 |
| 81 | 28,029 | 2,070 | 10,084 | 25,924 | 4,166 | 70,273 |
| 82 | 16,987 | 1,515 | 5,042 | 18,462 | 4,550 | 46,556 |
| 83 | 7,458 | 1,636 | 5,747 | 6,547 | 1,151 | 22,540 |
| 84 | 9,539 | 2,013 | 3,453 | 4,844 | 1,658 | 21,506 |
| 85 | 4,204 | 2,628 | 9,134 | 14,855 | 3,381 | 34,203 |
| 86 | 4,064 | 2,901 | 17,460 | 33,884 | 6,758 | 65,066 |
| 87 | 2,457 | 7,196 | 15,948 | 44,589 | 8,023 | 78,214 |
| 88 | 2,773 | 7,233 | 18,226 | 41,846 | 11,236 | 81,314 |
| 89 | 2,000 | 6,876 | 15,909 | 49,129 | 13,351 | 87,265 |
| 1990 | 3,197 | 5,955 | 13,570 | 31,883 | 8,701 | 63,305 |
| 91 | 3,794 | 9,317 | 10,098 | 21,720 | 10,365 | 55,293 |
| 92 | 3,073 | 8,490 | 12,363 | 48,033 | 18,683 | 90,642 |
| 93 | 2,838 | 9,916 | 15,793 | 26,923 | 7,127 | 62,597 |
| 94 | 3,826 | 9,253 | 6,058 | 16,386 | 11,227 | 45,924 |
| 95 | 4,949 | 17,550 | 8,409 | 12,106 | 5,785 | 48,799 |
| 96 | 4,001 | 20,164 | 6,512 | 15,727 | 9,414 | 55,818 |
| 97 | 3,966 | 10,405 | 5,768 | 19,560 | 13,946 | 53,645 |
| 98 | 3,138 | 11,208 | 2,720 | 6,096 | 1,836 | 24,999 |
| 1999 | 3,094 | 9,094 | 2,654 | 20,451 | 4,243 | 39,536 |
| 10-Year Mean | 3,478 | 10,913 | 9,720 | 24,756 | 10,044 | 58,829 |

Table 3. Oregon landings (pounds) of pink shrimp and effort (hours) during 1998 and 1999, by PFMC area of harvest

| PFMC Area | Geographic Boundaries | 1999 | | 1998 | |
|---|---|---|---|---|---|
| | | Pounds | Hours | Pounds | Hours |
| 72 | Cape Flattery to Cape Elizabeth | 13,150 | 72 | 486 | 39 |
| 74 | Cape Elizabeth to Willapa Bay | 162,053 | 501 | 75,574 | 505 |
| 75 | Willapa Bay to Columbia River | 739 | 5 | 79,932 | 368 |
| 82 | Columbia River to Cape Falcon | 3,069,170 | 8,363 | 1,635,771 | 7,211 |
| 84 | Cape Falcon to Cape Perpetua | 8,826,455 | 20,257 | 2,225,209 | 7,853 |
| 86 | Cape Perpetua to Cape Blanco | 7,053,795 | 15,683 | 1,357,703 | 6,022 |
| 88 | Cape Blanco to California border | 1,249,654 | 2,786 | 62,418 | 329 |
| 92 | California border to Cape Mendocino | 76,220 | 289 | 633,749 | 1,740 |
| Total | | 20,451,236 | 47,956 | 6,070,842 | 24,067 |

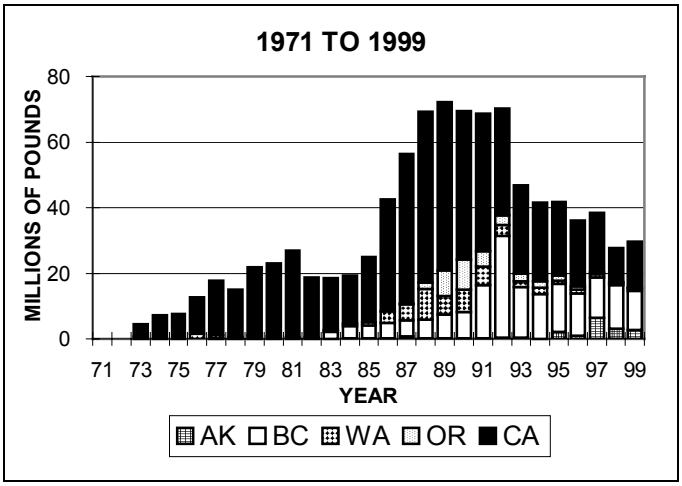
percentage increase in the fishery since 1986. The season average catch-per-unit-of-effort (CPUE) increased sharply in 1999, but remained slightly below the 15-year average CPUE of 282 lb/SRE. CPUE was highest during May, peaking in area 84.

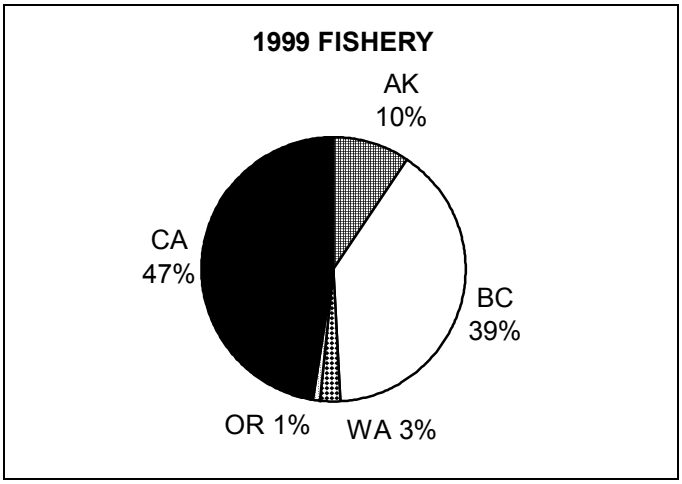
The weighted average count per pound (count) was about 131 shrimp/lb in 1999, the highest it has been since 1987. It was well above the 15-year average count of about 114 shrimp/lb. The relatively high count is attributed to the high proportion of age-1 shrimp in the catch (91% of the catch by number of shrimp), the highest percentage ever seen in the fishery. We attribute this scenario to a near average recruitment of age-1 shrimp coming on top of the very low shrimp stock left at the end of the 1998 season.

The ex-vessel shrimp price varied between $0.40-$0.60 per pound in 1999, similar to the price structure in 1998. The opening price was about $0.50/lb, which held through April. The price dropped to $0.45 during May, then to $0.40 in June, correlating with increased volumes of shrimp landed. The price increased to $0.45 in early July, and this price continued through August. A split price structure prevailed during September and October, with lower count shrimp selling at $0.60/lb.

Contributors:
Peggy Murphy and Gary Christofferson, PSMFC AKFIN
Norm Olsen, Department of Fisheries and Oceans, Canada
Steve Barry, Washington Department of Fish and Wildlife
Stephen Jones, Oregon Department of Fish and Wildlife

## SEA URCHIN FISHERY IN 1999




**Alaska**

The green sea urchin *Strongylocentrotus droebachiensis* is the only sea urchin species that has been harvested commercially in Central and Westward Regions of Alaska. The green urchin fishery opened in the Kodiak area on October 1, 1999 under the terms of a miscellaneous shellfish permit. The harvest for the 1999 season in the Kodiak area was minimal. Due to the low numbers of divers and processors participating in the fishery, the exact catch total is considered confidential and is not reportable. The fishery in Cook Inlet was closed by regulation in 1997. No urchin fisheries occurred in the Aleutians or Prince William Sound during 1999.

In the Southeast Region, the harvest is restricted to the red sea urchin *Strongylocentrotus franciscanus*. A red sea urchin commercial fishery has been operating in this region with a formal management plan since the 1996-77 season. The total catch for the calendar year 1999 was 2,828,282 pounds. This total includes 2,228,862 pounds from the 1998-99 fishing season and 599,420 pounds from the 1999-00 season. The 1998-99 red sea urchin fishery began on November 22, 1998 for a guideline harvest level (GHL) of 4,641,300 pounds. Sixty-one divers took a harvest of 3,075,095 pounds leaving 34% of the GHL. Five processors bought product, with less than one half of one percent of the product being processed out of the State of Alaska. Ex-value of the fishery was $1,212,628 based on an average price of $0.40 per pound. The season ended September 30, 1999. Roe averaged 7.8 percent throughout the year. The 1999-00 red sea urchin fishery began on October 1, 1999. The total Guideline Harvest Level (GHL) is 5,567,300 lbs of whole urchins. The harvest through August 5, 2000 is 2,471,123 lbs (44% of GHL), taken by 46 divers. Most activity has occurred in Fishing Districts 1 and 4, which remain open with about 50% of their quotas remaining. District 3 had a relatively small quota, which was taken by October 1999.

**British Columbia**

Red sea urchin landings during 1999 totaled 11.4 million pounds, 4.9 million from the 98/99 season (January – June) and 6.5 million from the 99/00 season (July – December). The total coast-wide TAC for the 1998-99 season was 5.603 tonnes (12.3 million pounds), with individual quotas of 112,265 pounds per license. Individuals were allowed up to 500 pounds in quota overage. Fishers were required to offload their catch at a designated landing port or to a packer prior to fishing in a new Quota Management Area. The criteria for license redesignation were modified to facilitate the in-

Table 4. Pacific coast landings of sea urchins (in thousands of pounds). All 1999 data are preliminary.

| | 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 | 12,650.8 |
| 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 | 34,130.7 | 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 | 368.9 | 15,378.9 | 1,867.6 | 2,217.3 | 27,012.4 | 46,845.1 |
| 94 | 23.4 | 13,582.0 | 2,037.9 | 1,986.7 | 23,985.0 | 41,615.0 |
| 95 | 2,118.2 | 14,696.8 | 1,036.2 | 1,546.2 | 22,316.9 | 41,714.4 |
| 96 | 933.3 | 12,939.3 | 1,223.5 | 819.5 | 20,120.4 | 36,036.0 |
| 97 | 6,527.0 | 12,218.5 | 1,048.1 | 490.1 | 18,110.9 | 38,394.6 |
| 98 | 3,035.0 | 13,331.8 | 690.7 | 342.0 | 10,361.6 | 27,761.1 |
| 1999 | 2,828.0 | 11,771.7 | 744.1 | 248.3 | 14,159.8 | 29,751.9 |
| 10-year Mean | 1,397.2 | 14,438.0 | 2,946.8 | 3,225.6 | 29,297.2 | 51,304.9 |

* Confidential Information; fewer than four fishermen with landings
** Data from 1971-73 combined
† Data from 1974-77 combined

season transfer of licenses from one vessel to another. No more than three active licenses per vessel were permitted in-season. A "Block System" was used to manage North Coast area openings. This system includes a protocol that was developed in consultation with the Pacific Urchin Harvesters Association describing the process for moving harvests within and between blocks. Six new closures were in effect in Subareas 1-2 and 101-2 for native access for food, social and ceremonial purposes.

Green sea urchin landings totaled 328,783 pounds during 1999, with a total of 89,405 pounds from the 98/99 season (January-March) and 239,378 pounds from the 99/00 season (November-December). During the 1998/99 season, south coast areas were managed under a 366,079-pound area quota, with individual quotas of 7,471 pounds. The North Coast was managed under a total quota of approximately 13,000 pounds allotted to Area 4.

**Washington**

Sea urchin landings during the 1999 season totaled 0.744 million pounds (0.479 million pounds of red urchins and 0.265 million pounds of green urchins). Total landings were up 8% from the previous season, despite the fact that quotas were nearly identical to last year. This increase in landings was due mainly to the fact that non-Indian divers took 98% of their quota of green urchins this season, compared to only 66% last season. Non-Indian catch-per-landing for red urchins in the San Juan management region was 1,538 pounds, up 35% from last season, and the highest catch rate since 1994. Catch-per-landing for red urchins in the Strait region was 1,751 pounds, down 1% from last season. Green urchin catch-per-landing for the San Juan and Strait regions was 895 pounds and 936 pounds, respectively (down 5% in the San Juans, and up 125% in the Strait compared to last season).

**Oregon**

Red urchin landings for 1999 totaled 248,283 pounds, the ninth consecutive year of declining production. Effort also dropped to 244 diver-deliveries for the year; down from 347 deliveries the previous year. Poor export market conditions continued for most of the year, depressing the average ex-vessel price to $0.56 per pound (monthly range of $0.09 to $1.03) with the monthly average price spiking to $1.03 in December.

Permit numbers are currently at the 30 active permit minimum and are now freely transferable. If the number of active permits falls below 30, new permits will be issued by lottery to maintain the 30-permit minimum.

**California**

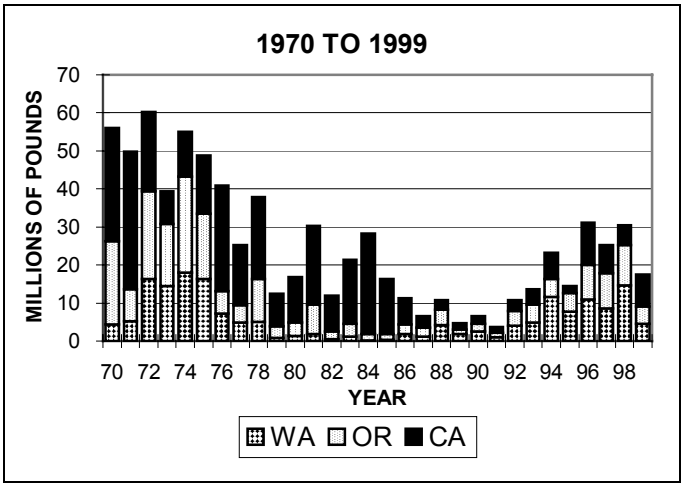
The 1999 red sea urchin catch is estimated at 14.130 million pounds, with approximately 3.182 million pounds in northern California and 10.948 million pounds in the south. This represents a 34% increase over 1999 landings, and the first increase in landings in southern California since 1990. Landings and catch per receipt remained steady at each of the northern ports. As has been noted by others, the decline in 1998 and the 1999 bounce-back in southern California are primarily a response to ocean conditions, with improved kelp growth in 1999 leading to better gonad quality and higher prices. Purple sea urchins taken totaled 29,800 pounds, compared to 14,000 pounds in 1998.

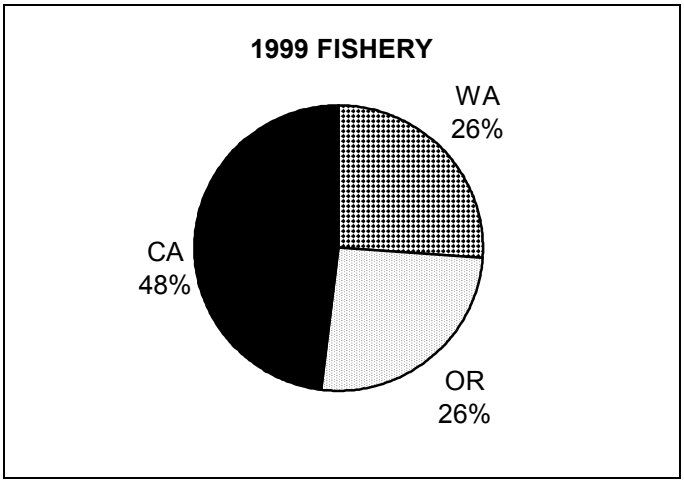
There were 421 sea urchin permits sold in 1999, 43 less than 1998, down 9%. Despite the drop in permits, only 94 permittees took 50% of the catch, with the top diver taking 124,000 pounds. Statewide CPUE as pounds per landing receipt increased by 8% over 1998 to 818 pounds. Fishery value is estimated at $14.4 million, up 66% from 1998's decade low of $8.0 million. Preliminary statewide average price per pound climbed to $0.95, compared to $0.75 the previous year.

Mean test diameter for northern California catch-sampled red urchins fell to 102 mm, down 3 mm (12%) from the previous year. The percentage of short urchins, less than 89 mm, increased to 3.3% from 0.4% in 1998, and 47% of the catch was less than 100 mm (3.9 inches) in 1999. Southern California sampling was concentrated in the fall and winter months after the hiring of a technician in September. A significant reduction in mean test diameter, from 102 mm in 1998 to 93 mm in 1999 (9%) was noted, with almost 65% of the urchins harvested under 95 mm, and a coincident increase in shorts from 1.2% to 4.9%. All of these factors point to a continued reliance on recent fishery recruits.

Contributors:
Robert Larson, Alaska Department of Fish and Game
Alan Campbell, Department of Fisheries and Oceans, Canada
Lisa Lacko, Department of Fisheries and Oceans, Canada
Alex Bradbury, Washington Department of Fish and Wildlife
John Schaefer, Oregon Department of Fish and Wildlife
Pete Kalvass, California Department of Fish and Game

## ALBACORE FISHERY IN 1999




**Washington**

Albacore landings in Washington during 1999 totaled 4,574,469 pounds, a significant decrease from 1998 landings of 14.6 million pounds, and below recent years' average landings. Total landings by month were: 209,767 pounds prior to July; 402,388 pounds in July; 2,004,407 pounds in August; 896,916 pounds in September; 940,044 pounds in October; and 120,947 pounds during November and December.

A total of 206 vessels made landings in Washington in 1999, slightly below the number in 1998. Daily catch rates were low compared to 1998, and the average trip landed in Washington sold 10,000 pounds of albacore. The average price statewide was $1,600 per ton.

The Washington port of Ilwaco received the majority of the deliveries, accounting for 72% of the total; landings in the port of Westport accounted for 21%, while landings in other Washington ports accounted for 7% of the total Washington albacore landings.

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 |
| 94 | 11,553 | 4,698 | 6,939 | 23,190 |
| 95 | 7,664 | 5,034 | 1,833 | 14,531 |
| 96 | 10,992 | 8,948 | 11,151 | 31,092 |
| 97 | 8,654 | 9,168 | 7,379 | 25,201 |
| 98 | 14,617 | 10,601 | 5,242 | 30,459 |
| 1999* | 4,574 | 4,535 | 8,391 | 17,501 |
| 10-year Mean | 6,776 | 5,151 | 4,460 | 16,386 |

* Preliminary

**Oregon**

Landings of albacore into Oregon ports began in June and continued through early November, with the peak occurring in August. The preliminary total for commercial albacore landings in Oregon during 1999 is 4,535,194 pounds. This is a 57% decrease from 1998. Newport received the majority of the deliveries (46%) followed by Astoria at 40% and Charleston at about 7%. Other ports accounted for the remaining 7% of landings.

A total of 305 commercial vessels landed albacore into Oregon in 1999 which is an 18% decrease from 1998. The number of trips decreased from approximately 873 in 1998 to 786 in 1999. Catch-per-unit-effort also dropped substantially in 1999. Part of the decrease in Oregon landings for 1999 can be attributed to a weak offshore fishery until late in the season, and a shift south of the most productive fishing areas to waters off southern California. Market availability was better than in 1998 and ex-vessel price paid to fishermen for frozen product averaged $1,500 to $1,600 per ton.

**California**

Total commercial albacore landings in California during 1999 were 8,391,283 pounds, approximately double the ten year mean and an increase of 60% over 1998. Some positive developments in the albacore market during 1999 included the increase in the non-cannery market, and the almost complete use of the 1998 oversupply by the end of March. Also, Bumble Bee tested and decided to continue marketing an "All American Albacore" label bought only from Western Fishboat

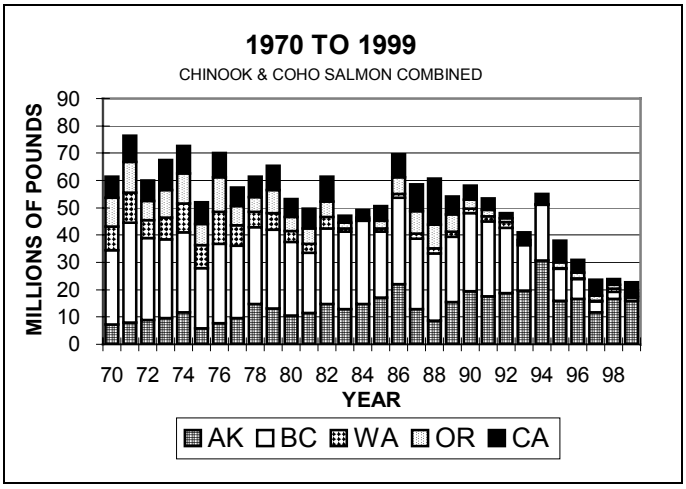
Owners Association (WFOA) members. WFOA promoted this product over the Internet urging consumers to request the "All American Albacore" at their local grocery stores.

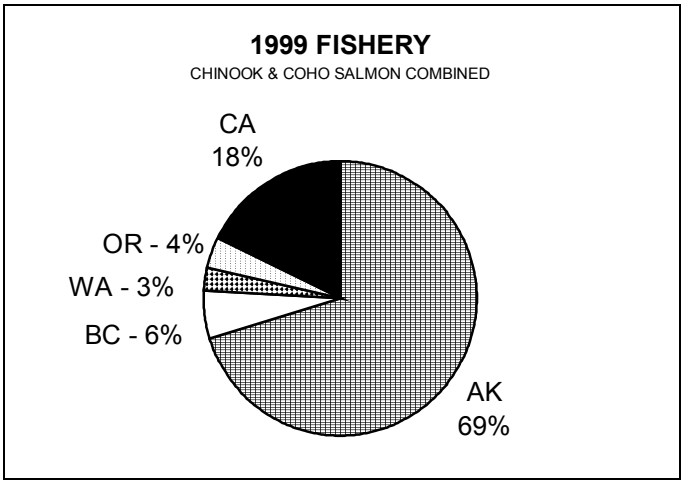
Despite these positive aspects of the market, the number of vessels landing albacore continued to decline in 1999 and prices remained low. In 1999 there were 382 vessels landing tuna, an approximately 36% decrease from 1997 when 600 vessels made landings. Jig and bait gear, as well as troll lines, accounted for 92% of the total landings while gill nets, drift long lines, and other gears accounted for the remaining 8%.

Landings of albacore were highest in the months of September and August, which together accounted for 81% of all landings. Albacore were more available in the south this year as evidenced by over 92% of the landings being made south of San Francisco. San Pedro had the highest number of total pounds landed (71%), followed by San Diego (16%), and Eureka (7%). Prices fluctuated throughout the year, but during the months that landings were the highest (August and September) the price range was $1,500-1,800 per ton.

Contributors:
Wendy Beeghley, Washington Department of Fish and Wildlife
Rhonda Haynes, Oregon Department of Fish and Wildlife
Heather Paulson, California Department of Fish and Game

## TROLL SALMON FISHERY IN 1999




**Alaska**

For the 1999 season, the troll harvest of chinook salmon was managed to: 1) comply with the June 1999 PSTA, 2) continue the Southeast Alaska natural chinook salmon conservation program, 3) provide maximum harvest of Alaska hatchery-produced chinook salmon, 4) minimize incidental mortality during chinook salmon non-retention periods by closing areas of high chinook salmon abundance, and 5) comply with terms of the incidental take permit issued by the NMFS. Alaska's quota was set on a harvest rate initially based on a preseason abundance estimate, with an inseason quota adjustment based on an inseason estimate of abundance. The 1999 fishery was managed to achieve an all-gear harvest of 195,600 Treaty chinook salmon (treaty fish).

The 1999 winter troll fishery began October 11, 1998, and continued through April 14, 1999. By regulation, the open area during the 1999 winter season was restricted to those areas of Southeast Alaska lying east of the surfline south of Cape Spencer, and the waters of Yakutat Bay. All outer coastal areas, including the EEZ, are closed during the winter fishery. Under the Board of Fisheries (BOF) troll fishery management plan, the winter fishery remains open until either a harvest of 45,000 chinook salmon is reached, or until April 14. A total of 286 vessels participated in the 1999 winter fishery, and harvested a total of 31,000 chinook salmon (21% of the 1999 troll chinook salmon harvest). The harvest and harvest per landing decreased slightly when compared to the 1998 season.

Experimental and terminal fisheries (collectively called spring fisheries) target Alaska-origin hatchery chinook salmon, except for the Cross Sound fishery, which targets chum and pink salmon. Experimental troll fisheries were opened in early May, and terminal areas were opened in accordance with private non-profit hatchery (PNP) board schedules. In general, experimental fishing areas were initially opened by emergency order for two-days per week (Monday-Tuesday). Some areas were initially opened for longer periods, based on historic run timing of Alaska hatchery fish. Department personnel examined fish deliveries, and the heads of adipose fin-clipped fish shipped to the state tag lab in Juneau. CWT data that was provided by the tag lab was used inseason to estimate the Alaskan hatchery contribution to the harvest in each area. Fishing time for the following week was determined using this information in combination with historic harvest timing information in each area. Fishing time was extended or curtailed during the week by emergency order as more tag data and harvest information became available.

A total of 342 vessels participated in the 1999 spring fisheries, and harvested 20,500 chinook, 1,100 sockeye, 12,000 coho, 30,400 pink, and 4,500 chum salmon. The harvest was similar to the 1998 harvest, but the Alaska hatchery contribution increased from 31% to 54%. The

majority of the pink and chum salmon were harvested in the Cross Sound pink and chum salmon experimental fishery. One new area in Lisianski Inlet was open in 1999 to assess the Alaska hatchery chinook salmon contribution there, because this area was not sampled during the hatchery access fisheries in 1989 to 1992. Despite increased production at Medvejie and Hidden Falls compared to the 1989-1992 period, the area showed only a 5% Alaska hatchery contribution.

Initially, the all-gear harvest quota for Southeast Alaska was set at 192,800 treaty chinook salmon for the 1999 season. Under the current BOF commercial fisheries plan, the troll and sport fisheries divide the treaty quota in an 80/20 split, after 8,600 plus 4.3% of the treaty chinook salmon quota are subtracted from the quota for commercial net fisheries. Under the current BOF sport fisheries plan, the department is to initially manage the sport fishery at a two fish bag limit until the preseason all-gear quota is established by the CTC. Then, the department is to allow a one, two, or three fish bag limit, which will come closest to the 20% sport fishery allocation.

In 1999, the department received the preseason abundance index of 1.15 in late June, which translated to an all-gear quota under the PSTA of 192,800 fish. The seine fleet was allocated 8,300 fish, the drift gillnet fleet 7,600 fish, and the set gillnet fleet 1,000 fish. The remainder, 176,000 fish, was then initially divided in an 80/20 split, which translated to 141,000 fish to the troll fishery, and 35,000 fish to the sport fishery. The sport fishery target was reduced to 32,000 fish to account for an estimated overage of the 7.5% management range for the sport fishery of 3,000 fish during the 1998 season. The sport fishery bag limit that would come closest to the 20% number of 32,000 fish in the sport fishery was one fish, which translated to an end of season sport harvest projection of 43,000 fish. The troll fishery was initially managed based on the 141,000 quota number. The general summer season troll harvest target was estimated by subtracting the estimated winter treaty fish harvest (29,000 fish), spring fishery harvest (12,000 fish), the pre-treaty production of Alaska hatchery fish (3,700 fish), and an estimated 1,000 fish risk factor, from the yearly PST quota allocated to the troll fishery. This resulted in an initial estimate of 95,000 treaty fish for the general summer quota. According to the BOF plan, 70% (67,000 fish) of these were to be taken in the first opening, and the remaining 30% (30,000 fish) harvested following any closure for coho salmon management in August. The first opening was managed for a harvest of 67,000 treaty fish, plus about 3% Alaska hatchery fish, or 69,000 total fish.

The general summer troll fishery opened for a five-day fishing period on July 1. On July 5, a one day extension of fishing was announced, based on inseason FPD data and vessel counts. The harvest during the first chinook salmon opening was 78,000 chinook salmon, of which 76,000 counted as treaty fish. The harvest per fleet day was 13,000 fish per day.

Following the first opening, the areas of high chinook salmon abundance were closed. A revised abundance index was calculated, and the PST quota was increased from 192,800 to 195,600 fish. This increased the troll treaty quota by about 2,000 fish, or 101,000 for the summer fishery. With a first summer opening harvest of 78,000 fish, about 23,000 fish remained for the second summer opening. By the time the second summer chinook salmon fishery opened August 18, however, the sport fishery harvest was projected to be 46,000 treaty fish, about 13,000 more fish than the 80/20 target number, and about 3,000 fish more than the projection used prior to the July 1 troll opening. The 13,000 fish were subtracted, de facto, from the 80/20-split troll quota of 141,000, leaving a total troll quota of 128,000 fish. The troll treaty fish harvests from the winter, spring, and first summer openings totaled 117,000 fish, and this was subtracted from the troll quota of 128,000 fish, leaving about 11,000 treaty fish for the second summer opening. By this time it was also apparent that the net fisheries would harvest about 8,000 treaty fish less than their quota of treaty fish. This number was added to the troll fishery quota, and the troll fishery was managed for a target of about 20,000 fish for the August period. Due to the small number of fish remaining, the second opening was established at five days. The troll fishery harvested about 16,000 chinook, nearly all of which (97%) counted as treaty fish.

By mid-September, the 1999 troll chinook salmon harvest stood at 133,000 fish, the net harvest at 13,000 fish, and the sport fishery harvest had increased from the mid-August projection of 46,000 to 47,000 fish. This made for a total all-gear treaty harvest of 193,000 fish, leaving just 3,000 fish on the quota, and not enough for a third troll opening for chinook salmon.

In 1999, coho salmon retention began by regulation during the spring fisheries on June 15, but few were caught until the general summer season opened on July 1. The late-July assessment indicated that the run was projected to be

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

| Year | Alaska | British Columbia | Wash-ington | 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 |
| 94 | 3.4 | 6.6 | 0.1 | 0.3 | 3.6 | 14.0 |
| 95 | 2.6 | 2.6 | 0.1 | 2.1 | 7.8 | 15.1 |
| 96 | 2.8 | 0.0 | 0.2 | 2.2 | 4.5 | 9.7 |
| 97 | 4.2 | 2.7 | 0.2 | 1.8 | 6.0 | 14.8 |
| 98 | 3.8 | 2.6 | 0.9 | 1.6 | 2.0 | 10.9 |
| 1999† | 2.5 | 1.3 | 0.4 | 0.8 | 4.0 | 9.1 |
| 10-Year Mean | 4.0 | 5.9 | 0.6 | 1.8 | 4.3 | 16.6 |

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

† All 1999 data are preliminary.

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

| Year | Alaska | British Columbia | Wash-ington | Oregon | California | 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 |
| 94 | 27.3 | 13.8 | 0.0 | 0.0 | 0.0 | 41.0 |
| 95 | 13.3 | 9.2 | 0.3 | 0.0 | 0.0 | 22.8 |
| 96 | 13.9 | 7.2 | 0.2 | 0.0 | 0.0 | 21.2 |
| 97 | 7.5 | 1.3 | 0.0 | 0.0 | 0.0 | 8.9 |
| 98 | 12.9 | 0.0 | 0.0 | 0.0 | 0.0 | 13.0 |
| 1999† | 13.4 | 0.0 | 0.2 | 0.0 | 0.0 | 13.6 |
| 10-Year Mean | 14.2 | 10.7 | 0.5 | 0.5 | 0.1 | 26.0 |

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

† All 1999 data are preliminary.

greater than the conservation threshold of 1.12 million. A second assessment in early August (week 32) indicated that a closure of the troll fishery was necessary for conservation and allocation, primarily in the northern inside areas. Harvest rates were above average in all areas. Therefore, the troll fishery was closed for five days beginning August 13. In mid-September, the coho salmon return was assessed to evaluate an extension of the trolling period beyond September 20. Returns to southern Southeast Alaska and outer Chichagof Island stocks were strong, based on harvest rates in the troll and drift gillnet fisheries, CWT information, and escapement. Harvest rates and CWT recoveries in northern Southeast Alaska and counts at fishwheels on the Taku and Chilkat Rivers indicated a strong, but late, returning run. Surveys of Sitka Sound streams were not adequate to justify an extension of fishing time for those systems. Therefore, areas were extended in most of Southeast Alaska in Districts 1 through 16, except for Sitka Sound and most of Peril Strait, to protect Sitka Sound stocks. The area near the U.S./Canada border was also closed.

The 1999 troll coho salmon harvest of 2.26 million fish was the third highest since statehood and 1.0 million fish more than the 1998 harvest. The BOF management plan allocates 61% of the long-term commercial harvest to the troll fleet. In 1999, the troll portion was 69%, bringing the average since 1989 to 63%. Head-on, dressed average weight of coho salmon was 5.4 pounds in 1999, 1.5 pounds less than the recent five-year average.

A total of 5,700 sockeye salmon, 541,000 pink salmon, and 75,000 chum salmon were harvested during the 1999 troll season. These harvests of sockeye, pink, and chum salmon ranked 19th, 14th, and 9th, respectively, since statehood.

In 1999, the Alaska Commercial Fisheries Entry Commission (CFEC) renewed 897 power troll permits and 1,032 hand troll permits. Preliminary estimates indicate that 724 power troll permits and 332 hand troll permits units were actually fished. This represents a 2% decrease in the power troll effort and a 9% increase in hand troll effort when compared to the 1998 season. This is the first increase in hand troll effort since 1988.

**Washington**

The Pacific Fishery Management Council set a total allowable harvest of 50,000 chinook and 130,000 landed coho for non-Treaty fishers in 1999. The commercial and recreational fishery representatives agreed to trade part of the commercial coho salmon allocation for part of the recreational chinook salmon allocation. This resulted in an allocation of 28,500 chinook and 20,000 coho to the non-Treaty troll fishery.

The 1999 non-Treaty troll fishery opened May 1 in the area between the U.S.-Canada border and Cape Falcon until the earlier of June 15 or attainment of 24,000 chinook. All salmon except coho could be legally retained. Catch rates were high in the northern area known as the “prairie”, but the fishery operated uninterrupted until its automatic closure date of June 15. The fishery was open for a total of 46 fishing days.

The non-Treaty troll fishery reopened on July 10 in the area between the U.S.-Canada border and Cape Alava (outside of 125°05'W longitude and south of 48°23'N latitude) and between Cape Alava and Leadbetter Point for all salmon species. This fishery was opened on a cycle of 4 days open/ 3 days closed until the earlier of September 30 or attainment of 20,000 coho or the overall chinook quota. The fishery was open July 10-13, July 17-20, July 24-27, July 31-August 3, and then was restricted to the area between Cape Alava and Leadbetter Point only August 14-17, September 5-13, and September 22-30. Beginning on September 5, chinook retention was not allowed. The fishery was open for a total of 38 fishing days.

Landings from the non-Treaty troll fishery in the area north of Cape Falcon totaled 17,500 chinook, 3,800 coho, and 53 pink. This represents 61% of the chinook quota and 19% of the coho quota. A total of 0.226 million round pounds of chinook and 0.024 million round pounds of coho were landed.

The 1999 Treaty Indian salmon troll fisheries were again constrained by low forecast abundance of Washington coastal naturally spawning coho salmon stocks, especially Queets River natural coho, as well as concerns for impacts on Puget Sound and Columbia River chinook salmon. The 1999 season consisted of a directed chinook salmon season conducted between May 1 and June 30 and an all species season from August 1 to September 15 (Tribes were closed for differing times during this period). A total of 27,365 chinook and 33,441 coho were landed. These catches represent 91% of the 30,000 chinook quota and 87% of the 38,500 coho quota. A total of 221,900 pounds of chinook and 167,000 pounds of coho were landed. The 1999 season ran 104 days for the Makah Tribe, 107 days for the Quinault

Nation, and 109 days for the other tribes. This was an increase of 35-39 days from the 1998 season.

**Oregon**

All 1999 Oregon commercial troll fisheries were closed to the retention of coho salmon for the sixth straight year. All fisheries to the south of Cape Falcon had terminal gear limitations of no more than 4 “spreads” per wire to reduce interceptions of coho salmon.

The area north of Cape Falcon was open May 1 through June 15 for all species except coho, and was limited to a quota of 24,000 chinook. The control zone at the mouth of the Columbia River remained closed to all salmon fishing. There was one Oregon landing of 15 fish recorded for this fishery.

The area from Cape Falcon to Humbug Mountain was open for all species except coho from April 1 through July 17, August 1 through 29, and September 1 through October 31. The fishery was open without quota limitations, and the 1999 catch totaled 59,700 chinook. The Tillamook Bay Control Zone was closed April 1 through 30 and June 1 through September 15. In addition, there was a state waters terminal fishery off Tillamook Bay from November 1 through 15. A state waters terminal chinook fishery was also open off the mouth of the Elk River for the month of November. Landings were restricted to Port Orford, and there was no quota limiting the season. Catch in this season totaled 1,200 chinook.

The area from Humbug Mountain to the Oregon/California border was open for all species except coho May 1 through 31. There was no quota on this fishery. The total catch was less than 50 chinook.

The area from Sisters Rocks to Mack Arch (0-4 miles of shore) was open for all species except coho with a 2,500-chinook quota from August 1 through 31. Landings were restricted to Port Orford, Gold Beach, and Brookings. The fishery took a total of 1,000 chinook.

The area from House Rock to Humboldt South Jetty, California was open for all species except coho September 1 through 30 under a 7,000-chinook quota with a 1,000-chinook harvest guideline for landings into Brookings. There was a daily landing and possession limit of 30 fish. Oregon recorded landings of less than 50 fish. An additional state waters fall chinook target fishery occurred off the Chetco River (Goat Island to 42°01’20” N. latitude) from October 12 through 31. Landings were restricted to Brookings. There was a 20 chinook daily landing limit per vessel, and an overall quota of 1,000 chinook. A total of 400 chinook were landed during this season.

Oregon troll chinook landings in 1999 totaled 63,500 fish and 828,900 pounds (round weight), with a total of 5,108 boat days of effort.

**California**

In 1999, the troll season north of Horse Mountain was open from the Oregon-California Border south to the southern jetty at the entrance of Humboldt Bay from September 1 through September 30, under a 7,000 chinook quota. Between Horse Mountain and Point Arena, commercial salmon fishing was allowed from September 1 through September 30.

In the area between Point Arena and Point Reyes, fishing occurred from July 17 through September 30. For a second year, a test fishery inside six nautical miles was conducted between Fort Ross and Point Reyes from July 1 through July 12, under a 2,500 chinook quota. Landings were restricted to Bodega Bay with a daily landing limit of 30 fish per day. From Point Reyes to Point San Pedro, fishing occurred from July 1 through September 30. From Point San Pedro to California-Mexico Border, fishing occurred from May 1 through August 21 and September 1 through September 30.

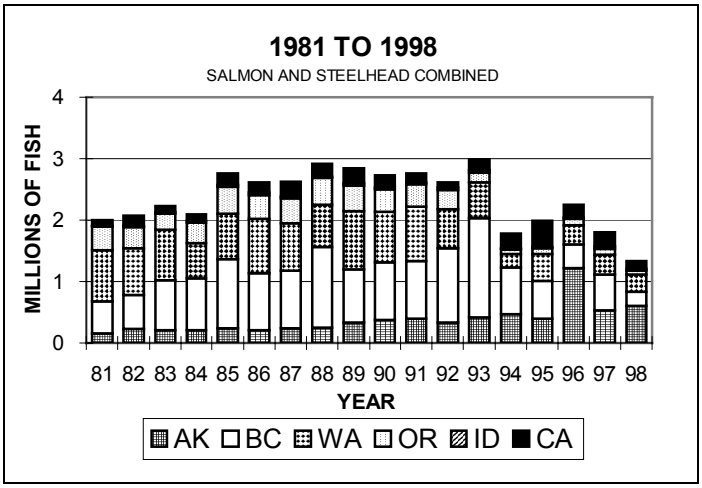
An experimental fishery was conducted in three areas during April. The northern area between Pillar Point and Pigeon Point was opened from April 14 through 16, under a 3,000 chinook quota. Landings were restricted to this area with a daily landing limit of 30 fish per day. Two adjacent southern areas from Point Piedras Blancas to Point Conception and Point Conception to Point Pitas, were opened from April 14 through 16, April 21 through 23, and April 26 through 28. Each of these areas had a separate quota of 2,500 chinook and landings were restricted to Morro Bay and Avila for the area above Point Conception and Santa Barbara below Point Conception. The daily landing limit started at 30 fish per day in both areas but was increased to 90 fish per day on April 21 due to poor fishing.

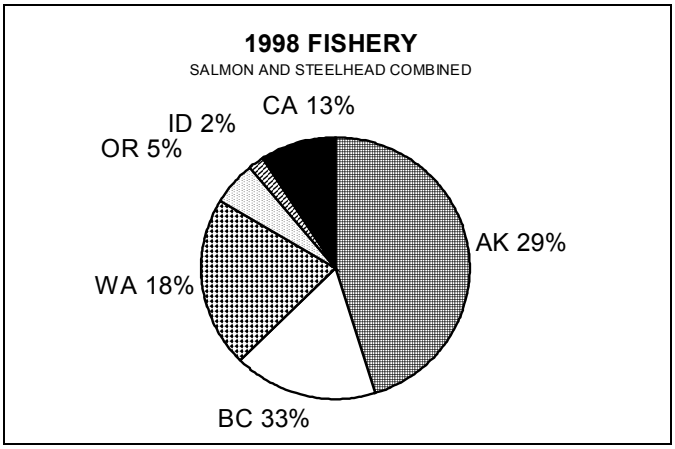
Statewide, the minimum size limit for chinook was 26 inches total length until July 1 when it increased to 27 inches total length, and barbless hooks were required with no more that 6 lines per vessel.

California's preliminary troll chinook landings were 4.0 million pounds (round weight), which was 89% higher than 1998's 2.0 million pounds (round weight) and approximately 92% of the previous 10-year average of 4.3 million pounds (round weight). The sharp increase in California’s 1999 troll chinook landings was primarily due to increased abundance of Central Valley chinook salmon. Commercial fishing for coho salmon was closed the entire season.

Contributors:
Mark Stopha, Alaska Department of Fish and Game
John Davidson, Department of Fisheries and Oceans, Canada
Wendy Beeghley, Washington Department of Fish and Wildlife
Lee Hoines, Washington Department of Fish and Wildlife
Keith Lutz, Northwest Indian Fisheries Commission
Justine Benson, Oregon Department of Fish and Wildlife
Scott Barrow, California Department of Fish and Game

## SALMON AND STEELHEAD SPORT HARVESTS IN 1998




**Alaska**

An estimated 602,763 salmon of all species were taken in saltwater recreational fisheries off Alaska in 1998. Marine fishery harvest totals increased 15% from 1997 due to increased harvests of all species except chinook salmon (down 17%). Harvests of sockeye salmon increased 68%, while harvests of chum, pink, and coho salmon were up 47%, 35%, and 14%, respectively. In the past decade, only about 38% of the total recreational harvest of salmon is taken in marine fisheries. The total (saltwater + freshwater) statewide harvest of anadromous salmon increased 21% from 1997, and at 1.35 million fish was the highest on record.

The statewide steelhead harvest increased over 1997, but was still relatively small with only 893 fish reported harvested. An estimated 44,469 fish (98% of the total catch) were caught and released by anglers.

**British Columbia**

Recreational salmon harvests in British Columbia tidal waters during 1998 were the lowest on record, due in part to new regulations prohibiting the retention of coho salmon. The harvest estimate of 222,100 salmon of all species is considered preliminary. Salmon harvests were 62% lower than in 1997 and 76% lower than the previous 10-year average.

Anglers in British Columbia harvested an estimated 6,861 steelhead during the April 1998 through March 1999 season, 17% more than the 1997-98 season but 33% less than the previous 10-year average. An estimated 97,455 fish (93% of the total catch) were caught and released.

**Washington**

Marine recreational anglers in Washington harvested a total of 61,177 chinook salmon, 138,091 coho salmon, 221 pink salmon, 18,939 chum salmon, and 136 sockeye salmon in 1998. The total of 218,564 salmon harvested in marine Catch Record Card Areas 1 - 13 in 1998 was 14% lower than the harvest in 1997 and 52% below the previous ten-year mean.

The 1998 Washington sport harvest of steelhead was 60,141 fish. This is 11% below 1997 and 52% below the previous ten-year mean.

**Oregon**

Oregon ocean recreational anglers harvested a total of 6,293 salmon of all species in 1998. This was substantially below the 13,660 seen in 1997, due largely to continued closures for coho salmon in all areas south of Cape Falcon and reduced catches of chinook along the southern Oregon coast. Chinook salmon harvest by the ocean sport fishery fell from 7,686 in 1997 to 4,021 in 1998, which is well below the 1979-1997 average of 23,662 chinook. Traditionally chinook salmon in the Oregon ocean fishery have been taken incidentally by anglers targeting coho salmon, and the low recreational chinook catch is due largely to the coho salmon closures. The ocean recreational harvest of coho was the second lowest on record due to a coho catch prohibition in all fisheries south of Cape Falcon. The only area open to the retention of coho salmon was north of Cape Falcon. A total of 2,272 coho salmon were landed in 1998 compared to the 5,972 coho landed in 1997. The 1998 catch was only 1% of the 1979-97 average of 155,932.

Table 8. Salmon and steelhead sport harvests in 1998

| State/Province | Chinook | Coho | Pink | Other Salmon* | Steelhead | Total |
|---|---|---|---|---|---|---|
| Alaska | 78,426 | 362,031 | 112,697 | 49,609 | 893 | 603,656 |
| British Columbia | 126,502 | | 27,000 | 68,592 | 6,861 | 228,955 |
| Washington | 61,177 | 138,091 | 221 | 19,075 | 60,141 | 278,705 |
| Oregon | 4,021 | 2,272 | | | 63,339 | 69,632 |
| Idaho | 271 | | | | 26,008 | 26,279 |
| California | 122,100 | | | | NA | 122,100 |
| Total | 392,497 | 502,394 | 139,918 | 137,276 | 157,242 | 1,329,327 |

* Sockeye and chum salmon

† Marine salmon fishery harvests only.

Table 9. Pacific coast salmon and steelhead sport harvest in thousands of fish.

| | Alaska | | British Columbia | | Washington | | Oregon | | Idaho | | California | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Salmon | Steelhead | Salmon | Steelhead | Salmon | Steelhead | Salmon | Steelhead | Salmon | Steelhead | Salmon | Steelhead | Salmon | Steelhead |
| 1975 | NA | 2.2 | 947.5 | | 1,297.8 | 92.9 | 329.1 | 185.5 | 0.0 | 0.0 | 125.0 | | 2,699.4 | 280.6 |
| 76 | NA | 2.3 | 982.6 | | 1,649.0 | 89.1 | 580.7 | 118.3 | 0.0 | 2.0 | 139.0 | | 3,351.2 | 211.7 |
| 77 | 146.3 | 3.7 | NA | 18.2 | 1,094.6 | 100.0 | 260.7 | 145.1 | 3.5 | 13.0 | 117.8 | | 1,622.9 | 280.0 |
| 78 | 171.1 | 4.3 | NA | 14.7 | 1,021.0 | 163.1 | 282.6 | 200.6 | 7.0 | 11.5 | 114.0 | | 1,595.7 | 394.2 |
| 79 | 142.0 | 3.0 | NA | 12.7 | 1,035.2 | 94.8 | 202.3 | 122.4 | closed | 5.7 | 140.9 | | 1,520.4 | 238.6 |
| 1980 | 168.5 | 4.8 | NA | 10.9 | 747.4 | 151.1 | 344.9 | 203.7 | closed | 9.1 | 106.4 | Steelhead | 1,367.2 | 379.6 |
| 81 | 152.2 | 3.3 | 514.3 | 10.0 | 702.0 | 125.1 | 230.6 | 155.0 | closed | 13.0 | 94.6 | harvests | 1,693.7 | 306.4 |
| 82 | 221.3 | 3.7 | 538.9 | 13.5 | 658.1 | 104.2 | 213.8 | 135.1 | closed | 20.5 | 165.4 | were | 1,797.5 | 277.0 |
| 83 | 203.9 | 5.4 | 792.1 | 15.1 | 751.8 | 78.6 | 171.7 | 84.2 | closed | 32.2 | 91.0 | not | 2,010.5 | 215.5 |
| 84 | 202.5 | 6.5 | 828.1 | 18.9 | 419.3 | 149.5 | 139.6 | 198.4 | closed | 25.1 | 106.8 | estimated | 1,696.3 | 398.4 |
| 85 | 239.7 | 4.7 | 1,096.1 | 19.4 | 578.6 | 165.8 | 246.4 | 188.9 | 2.5 | 34.5 | 187.1 | in | 2,350.4 | 413.3 |
| 86 | 204.9 | 5.9 | 896.4 | 24.8 | 715.2 | 168.5 | 241.7 | 149.4 | 4.0 | 40.0 | 160.3 | California | 2,222.5 | 388.6 |
| 87 | 236.4 | 5.9 | 922.4 | 16.7 | 633.6 | 134.5 | 240.9 | 161.0 | 0.7 | 30.2 | 239.8 | before | 2,273.9 | 348.3 |
| 88 | 241.5 | 6.3 | 1,297.2 | 14.9 | 550.8 | 138.0 | 265.2 | 174.1 | 0.7 | 21.3 | 206.2 | 1993 | 2,561.6 | 354.6 |
| 89 | 330.1 | 6.4 | 848.1 | 12.2 | 713.0 | 236.2 | 306.6 | 112.8 | closed | 38.6 | 236.2 | | 2,434.0 | 406.2 |
| 1990 | 373.6 | 5.6 | 926.5 | 9.4 | 716.2 | 103.0 | 227.2 | 142.3 | 0.9 | 30.6 | 191.4 | | 2,435.8 | 290.9 |
| 91 | 389.1 | 5.1 | 933.0 | 10.1 | 778.7 | 103.0 | 273.8 | 95.0 | closed | 26.4 | 150.1 | | 2,524.7 | 239.6 |
| 92 | 327.9 | 3.1 | 1,195.0 | 10.9 | 483.1 | 153.6 | 198.4 | 122.7 | 0.5 | 36.9 | 85.1 | | 2,290.0 | 327.3 |
| 93 | 408.4 | 3.8 | 1,616.3 | 7.2 | 453.8 | 124.3 | 64.5 | 95.0 | 0.4 | 34.7 | 139.8 | 40.5 | 2,683.2 | 305.4 |
| 94 | 468.3 | 2.3 | 749.9 | 7.8 | 95.7 | 124.2 | 6.1 | 71.0 | closed | 21.4 | 183.7 | 52.8 | 1,503.6 | 279.6 |
| 95 | 389.6 | 1.0 | 611.0 | 6.7 | 334.1 | 105.7 | 18.6 | 75.1 | closed | 22.4 | 397.2 | 31.4 | 1,750.5 | 242.4 |
| 96 | 497.3 | 0.1 | 374.6 | 6.3 | 216.4 | 100.4 | 18.4 | 79.8 | closed | 26.2 | 164.2 | 37.7 | 1,271.0 | 250.5 |
| 97 | 526.1 | 0.4 | 583.3 | 5.9 | 255.5 | 67.8 | 13.7 | 83.0 | 3.5 | 32.9 | 228.9 | NA | 1,610.9 | 190.0 |
| 1998 | 602.8 | 0.9 | 222.1 | 6.9 | 218.6 | 60.1 | 6.3 | 63.3 | 0.3 | 26.0 | 122.1 | NA | 1,172.1 | 157.2 |
| 10-Year Mean | 395.2 | 3.4 | 913.5 | 9.1 | 459.7 | 125.6 | 139.2 | 105.1 | 1.2 | 29.2 | 198.3 | 40.6 | 2,106.5 | 288.6 |

† Marine salmon fishery harvests only.
NA Not Available

Preliminary license tag estimates indicate that anglers harvested an additional 73,448 chinook salmon, 9,933 coho salmon, and 63,339 steelhead from Oregon estuary and freshwater sites in 1998. Note that less than 0.1% of the steelhead are taken in ocean waters off Oregon.

**Idaho**

Steelhead anglers in Idaho harvested a total of 26,008 fish in 1998, 13,545 from the 1997-98 run (spring season) and 12,463 from the 1998-99 run (fall season). The 1998 harvest was 21% less than the 1997 harvest, and 11% below the recent 10-year average. Anglers released an estimated 27,007 steelhead during the spring season (19,720 hatchery and 7,287 wild) and 44,359 during the fall season (29,016 hatchery and 15,343 wild).

Sport seasons for spring chinook salmon were opened on the Little Salmon River and on the Clearwater River. Anglers on the Little Salmon River fished for 12 days, harvesting 172 chinook and releasing 33. On the Clearwater River, anglers harvested 99 spring chinook and released 36.

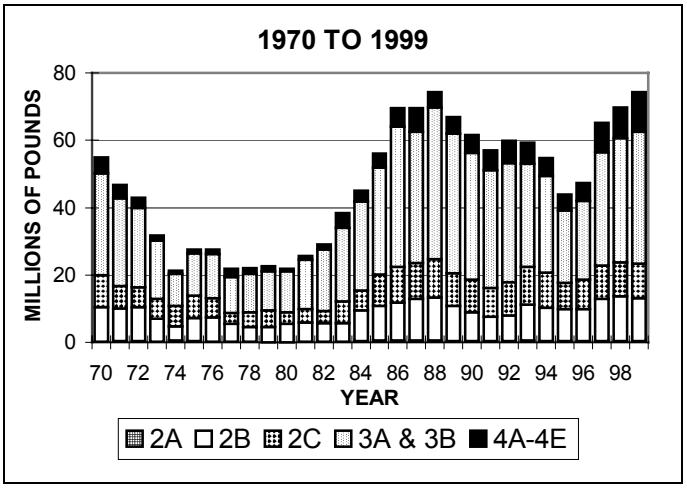
**California**

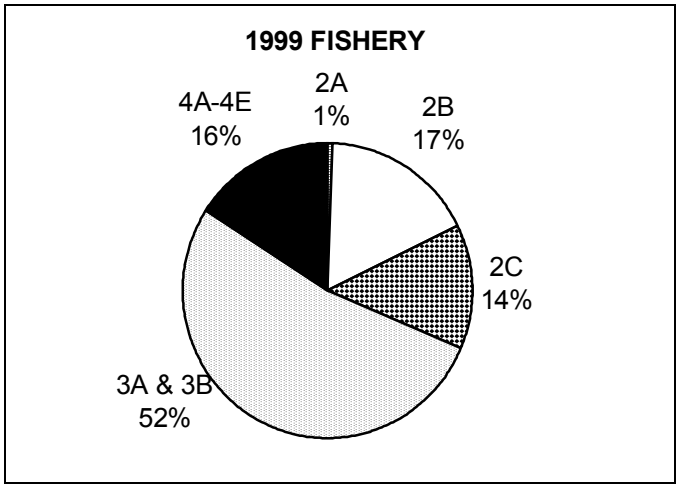
In 1998, recreational fishing was allowed along the entire California coast for salmon (all species except coho); however, fishing north of Horse Mountain was generally more restrictive. The Oregon border to Horse Mountain was open May 23- June 10, June 21 - July 5 and August 11-September 13. Horse Mountain to Pt. Arena was open Feb 14-July 5 and Aug 1-Nov 15; Pt. Arena to Pigeon Pt. was open March 28-November 1; Pigeon Pt. to the U.S.-Mexico Border was open March 14-September 7.

Approximately 122,100 chinook salmon were landed by the recreational fishery during 1998; most of the recreational catch and effort occurred in the Monterey and San Francisco port areas. This is about 45% lower than the 1997 catch of 229,000 and under the 10-year chinook salmon average of 173,600.

Contributors:
Allen Howe, Alaska Department of Fish and Game
Terry Gjernes, Department of Fisheries and Oceans, Canada
George Scholten, British Columbia Ministry of Fisheries
Wendy Beeghley, Washington Department of Fish and Wildlife
Justine Benson, Oregon Department of Fish and Wildlife
Gregg Mauser, Idaho Department of Fish and Game
Matt Erickson, California Department of Fish and Game

## PACIFIC HALIBUT FISHERY IN 1999




Area 2A was managed to provide a total allowable catch for all user groups of 760,000 pounds. IPHC issued 696 Area 2A vessel licenses for 1999; 284 licenses for the incidental commercial catch of halibut during the salmon troll fishery, 286 for the directed commercial fishery, and 126 for the sport charter fishery. The number of licenses for the directed commercial fishery decreased over the last three years, from the highest issued (430) in 1997 to the lowest (286) in 1999. The number of licenses issued for the incidental commercial fishery increased slightly in 1999 compared to 1998. For the last five years, the total number of sport charter licenses has ranged from 126 to 140 by year.

In the Area 2A incidental commercial halibut fishery conducted during the salmon troll season, fishers may land up to one halibut per five chinook, plus one "extra" halibut regardless of ratio, with a maximum of thirty-five incidental halibut landed. The allowed ratio has increased over the last five years from one in twenty in the first year of the program (1995) to one in five in 1999. Even with the new ratio, incidental halibut landings were lower in 1999 than in 1998. An estimated 10,000 pounds were landed during the May and June salmon troll fishery, instead of the 25,344 pounds projected. Since the commercial halibut fishery was closed after two directed fisheries, the incidental halibut fishery did not reopen August 1.

The Area 2A directed commercial fishery consisted of two 10-hour fishing periods with fishing period limits. Although the limits were thought to be conservative for the second fishing period, the total commercial catch limit was exceeded by 4,400 pounds, or 3%. The treaty Indian catch of 264,000 pounds exceeded the catch limit by 8,000 pounds or 3%. The tribal fishery was 37 days, significantly longer than the three to six-day fishing season in 1998, and the 14-day season in 1997. Tribal managers estimate that the CPUE was as good in 1998, but the 1999 season was longer due to bad weather and the use of fishing period limits for part of the commercial fishery.

For the ninth year, the Individual Vessel Quota (IVQ) fishery was in effect in Area 2B. The IVQ fishery allowed each vessel to catch a predetermined poundage of halibut as calculated by DFO, based on the 12.1 million pound catch limit approved by IPHC and an additional 119,000 pounds available as carryover from the 1998 fishery. For the first year since the implementation of the IVQ program, the catch was over the catch limit. The rules regarding reallocation of IVQ were amended in 1999, and vessel owners were permitted to take unlimited permanent or temporary reallocation of IVQ (subject to minimum and maximum holdings). As a result, the number of active vessels decreased in 1999 to 257 from around 280 and the number of licenses involved in transfers increased to 347 from 196 in 1998. The Native communal commercial fishing program (F licenses) had seven active vessels landing a total estimated catch of 260,911 pounds of halibut, approximately 50,000 pounds more than in 1998. Four small sub-areas in Area 2B were closed to halibut fishing to protect localized stocks of non-halibut species and to provide improved access to food

Table 10. Preliminary catch summary of the 1999 Pacific halibut fishery (in thousands of pounds), including research catch.

| | Regulatory Area | Fishing Period | Number of Days | Catch Limit | Total Catch |
|---|---|---|---|---|---|
| 2A | 2A Treaty Indian | 3/15 - 4/21 | 37 | 256 | 264 |
| 2A | Incidental [a] | May-June | 61 | 23.5 | 10 |
| 2A | CA/OR/WA [a,b,c] | 7/7, 7/21 | 20 hrs | 133 | 176 |
| 2B | British Columbia [c,d,e] | 3/15-11-15 | 245 | 12,100 | 12,704 |
| 2C | Southeast Alaska [c,f,g] | 3/15-11-15 | 245 | 10,490 | 10,168 |
| 3A | Central Gulf of AK [c,g] | 3/15-11-15 | 245 | 24,670 | 25,292 |
| 3B | Western Gulf of AK [c,g] | 3/15-11-15 | 245 | 13,370 | 13,835 |
| 4A | Eastern Aleutian Is. [c,g] | 3/15-11-15 | 245 | 4,240 | 4,369 |
| 4B | Western Aleutian Is. [c,g] | 3/15-11-15 | 245 | 3,980 | 3,571 |
| 4C | Pribilof Is. [g] | 3/15-11-15 | 245 | 2,030 | 1,762 |
| 4D | Western Bering Sea [g] | 3/15-11-15 | 245 | 2,030 | 1,891 |
| 4E | Eastern Bering Sea | 3/15-11-15 | 245 | 390 | 264 |
| | Total | | | 73,713 | 74,306 |

[a] Pounds were carried over from the incidental to directed commercial catch limit
[b] Fishing period limits by vessel class
[c] Includes research catch in 1,000s of pounds: 2A=19; 2B=490; 2C=266; 3A=982; 3B=675; 4A=149; 4B=119.
[d] Includes pounds landed by Native communal commercial licenses (F licenses)
[e] An additional 119,000 pounds available as carryover from 1998
[f] Includes 35,000 pounds taken by Metlakatla Indians during additional fishing within reservation waters.
[g] Additional carryover in 1,000's of pounds from the underage program were: 2C=384; 3A=748; 3B=208; 4A=95; 4B=160; 4C=51; 4D=40

fish for the aboriginal community.

For the fifth year, the Individual Fishing Quota (IVQ) halibut and sablefish fishery was in effect in Alaska. NMFS allocated halibut QS to recipients by IPHC regulatory area. An underage/overage program was again in effect, but there were some revisions to the IFQ overage policy. In 1999, all of the overage was seized and forfeited when the IFQ catch exceeded the 110% balance. For the second year, vessels over 26 feet in length were required to employ one of the acceptable measures to avoid catching seabirds, such as towing an object such as a tori line, buoy, or broom; setting the gear at certain times of the day; or deploying the hooks underwater. The total 1999 catch from the IFQ fishery off Alaska was 59 million pounds, 3.5% under the catch limit but approximately 3 million pounds higher than in 1998.

The Metlakatla Indian Community conducted thirteen 48-hour fishing periods between May 22 and October 31, 1999 within the Annette Island Reserve. The total catch of 34,996 pounds was included in the Area 2C commercial catch. The catch was 11,000 and 88,000 pounds in 1998 and 1997 respectively.

One noticeable change in the commercial halibut fishery from 1998 to 1999 was that fishers received a higher ex-vessel price. The average coast-wide ex-vessel price in 1999 was slightly lower than the 1997 level of approximately $2.25 (US dollars) per pound and substantially higher than the $1.00 to $1.40 received in 1998.

Homer was once again the leading Alaskan port for commercial halibut landings with approximately 11.5 million pounds. Landing patterns changed in Southeast Alaska, where Juneau surpassed both Sitka and Petersburg for total pounds landed by receiving close to 3 million pounds of halibut. The reason for the change was good daily service of ferries running from Juneau to Haines, allowing halibut to be transported from Haines to southern ports by truck.

The quota-share fishery landings are spread over 8 months of the year. The landing pattern from all Area 4 regulatory areas did not change from last year, with the busiest months generally being July and August. The busiest months for all other areas were earlier in 1999. For example, 51% of the Area 2C catch was landed by the end of May 1999 compared to approximately 42% in 1998.

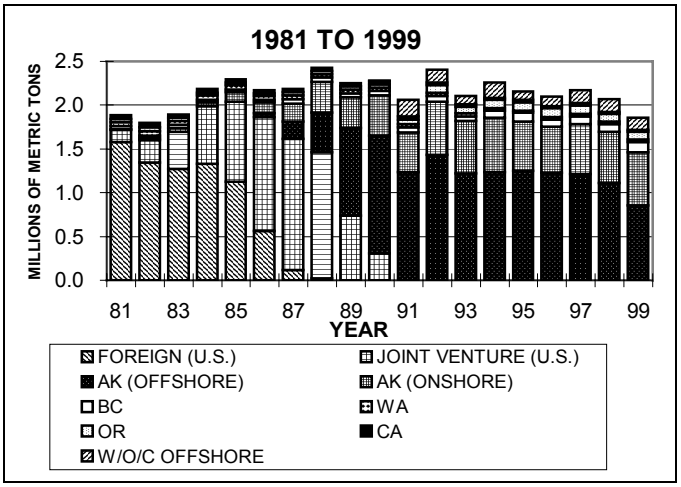
The landing of live halibut from Area 2B was allowed by DFO in 1999. One operation landed 82,000 pounds of live halibut in 20 landings. Although the program was labor intensive, the goal was to sell premium fish during the fishing season and to have fresh halibut available when the fishery closed. The fish were placed in holding pens long-term for holding of three to four months or short-term for selling within 12 hours.

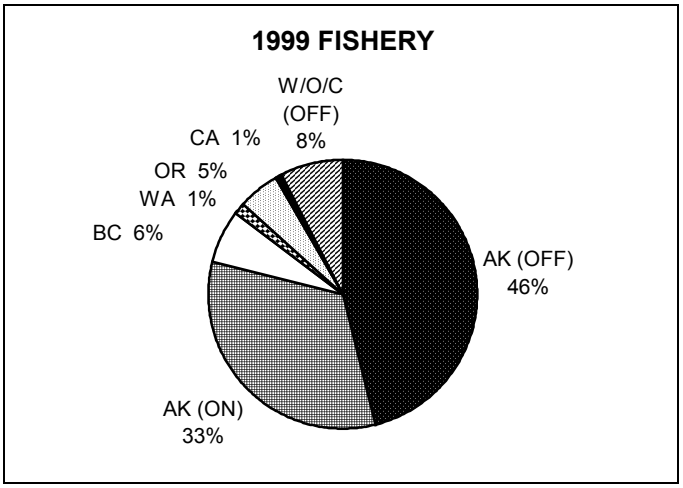
Contributed by Heather Gilroy, International Pacific Halibut Commission

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

| Year | Canada | 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 | 14.5 | 17.3 | 31.7 |
| 74 | 7.4 | 13.9 | 21.3 |
| 75 | 11.4 | 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 | 6.7 | 15.9 | 22.5 |
| 1980 | 7.6 | 14.3 | 21.9 |
| 81 | 5.7 | 20.1 | 25.7 |
| 82 | 5.5 | 23.5 | 29.0 |
| 83 | 5.4 | 32.9 | 38.4 |
| 84 | 9.1 | 35.9 | 45.0 |
| 85 | 10.4 | 45.7 | 56.1 |
| 86 | 11.2 | 58.4 | 69.6 |
| 87 | 12.2 | 57.2 | 69.5 |
| 88 | 12.9 | 61.5 | 74.3 |
| 89 | 10.4 | 56.5 | 66.9 |
| 1990 | 8.6 | 53.0 | 61.6 |
| 91 | 7.2 | 49.9 | 57.1 |
| 92 | 7.6 | 52.3 | 59.9 |
| 93 | 10.6 | 48.6 | 59.3 |
| 94 | 9.9 | 44.8 | 54.7 |
| 95 | 9.6 | 34.3 | 43.9 |
| 96 | 9.6 | 37.8 | 47.3 |
| 97 | 12.4 | 52.8 | 65.2 |
| 98 | 13.2 | 56.6 | 69.7 |
| 99 | 12.7 | 61.6 | 74.3 |

## GROUNDFISH FISHERY IN 1999




**Alaska**

In the Southeast District, including all waters east of 140° N. Longitude and inside state waters, the total number of groundfish metric tons landed in 1999 was 22% lower than the number of tons landed in 1998. This decline was due mostly to a 35% reduction in the sablefish quota in the Chatham Strait sablefish fishery. The overall decline in sablefish landings in state waters was only 30% because of the 10% increase in the quota for the Clarence Strait fishery. Landings in other groundfish fisheries also declined in 1999 except for the Pacific cod fishery, which increased 24% from 1998. Demersal shelf rockfish (DSR) catches dropped 18% from 1998 to 1999 primarily due to a decline in the number of pounds taken in the directed fishery. Slope, pelagic and black rockfish declined by about a third; 28%, 37%, and 33% respectively. Lingcod landing decreased 8% in 1999. The longline lingcod catches in the East Yakutat area dropped compared to 1998 and the dinglebar lingcod catches increased in all management areas except the Northern Southeast Inside Subdistrict. The Alaska Board of Fisheries (BOF) adopted major changes to the lingcod management plan by significantly reducing Guideline Harvest Levels in most management areas and reallocating the resource among user groups. The BOF also passed regulations requiring fishermen to retain all rockfish in internal waters of the Southeast District and all DSR in 0-3 miles on the outer coast landed as bycatch in other fisheries.

In 1999, on-going research projects in Southeast Alaska to assist in the management of groundfish fisheries included port sampling, skipper interview, logbook data, tissue collection for DNA studies, DSR and state-managed sablefish longline surveys, lingcod dinglebar surveys, and black rockfish jig surveys. DSR research conducted in 1999 included line transect surveys using the submersible to estimate DSR densities in the Southern Southeast Outside and East Yakutat Subdistricts. The area estimates of DSR rocky habitat were revised in 1999 using sidescan sonar data, submersible dive observations, National Ocean Services (NOS) database and logbook information. GIS tools were used to integrate this information. The annual surveys for gauging the relative abundance of sablefish were conducted in Chatham and Clarence Straits to observe trends in CPUE, to obtain biological samples and to tag fish for movement information. Lingcod dinglebar surveys continue to emphasize tagging and to collect biological data. Black rockfish research included a pilot study to conduct a depletion experiment/mark-recapture study on schooling fish. Biological and habitat data were also collected.

Groundfish harvests from Central Region state waters, including both state-managed and parallel fisheries, totaled 15.2 million pounds during 1999. While this appears to be a dramatic increase, previous reports accounted only for "state managed" fisheries and did not include parallel fishery harvests which occur in state waters and are state managed as well. For example, the actual 1998 harvest total was actually 19.8 million pounds rather than the 6.2 million pounds previously reported. Therefore, the 1999 harvest actually represents a decline of 33% in overall Central Region groundfish harvests. Virtually all of the change is explained by a 6.7 million pound decline in Cook Inlet area pollock harvests that was partially offset by an increase of approximately 2.0 million pounds in Pacific cod harvests. Rockfish harvest in 1999 declined by 31,000 pounds to 158,000 pounds. The department's conservative management approach, including early closure of the directed fishery and a 10% bycatch allowance, contributed to the decline in rockfish harvest. These management actions were maintained to avoid exceeding the 300,000-pound annual harvest cap. Similar to 1997 and 1998, the 3.5 million pound

Table 12. Total commercial groundfish landings in tonnes by port of landing with percent change.

| Region | 1998 (mt) | 1999 (mt) | Percent Change |
|---|---|---|---|
| Alaska | 586,911 | 609,227 | 4% |
| Alaska At-Sea | 1,108,459 | 852,879 | -23% |
| Washington | 26,740 | 24,042 | -10% |
| Oregon | 90,298 | 93,218 | 3% |
| California | 22,421 | 15,446 | -31% |
| WOC At-Sea | 143,501 | 140,565 | -2% |
| Total U.S. | 1,978,329 | 1,735,377 | -12% |
| | | | |
| Canada (B.C.) | 88,137 | 119,774 | 36% |
| Canada Joint Venture | 39,906 | 17,293 | -57% |
| Total Canada | 128,043 | 137,067 | 7% |
| | | | |
| Total U.S.-Canada | 2,106,372 | 1,872,444 | -11% |

state waters season allocation of Pacific cod was not attained, although 1.9 million pounds, just over half of the allocation, was taken in 1999. In 1999, ADF&G conducted a sablefish survey for the fourth consecutive year and also for the first time in the Cook Inlet Area. This survey provides relative abundance information not only on sablefish but also on other species such as rockfish and sharks. The PWS directed pollock fishery developed in 1995. ADF&G and other agencies have increased assessment efforts using acoustic surveys in 1995, 1997, and 1998. They have also collected genetic, DNA, and isotope samples in 1997 and 1998 from PWS and adjacent areas of the Gulf of Alaska. Last, ADF&G has expanded the number of its trawl survey stations to encompass more of PWS.

ADF&G continues to sample commercially important groundfish species caught in annual trawl surveys in Cook Inlet and biennial trawl surveys in Prince William Sound. Assessment of Pacific cod fisheries, through dockside sampling and analysis of historical trawl survey data, continued in 1999. Overall landings from state waters declined at the port of Seward during 1999 and resulted in fewer sampling opportunities for North Gulf District fisheries. Intensive port sampling in Homer, Cordova, Whittier, and Seward following the PWS sablefish fishery continues to yield valuable biological information on both sablefish and rockfish. During the 1998-99 meeting cycle the BOF adopted changes to Cook Inlet Area groundfish regulations. These included; moving the directed rockfish season opening date to July 1, a jig gear only restriction in the directed rockfish/lingcod fisheries, a later season opening date change in the sablefish fishery and change in season opening in the state waters Pacific cod fishery. These latter changes included reducing the 7-day closure between the state managed and parallel fisheries to 24 hours and changing the pot season closure date from April 7 to May 1.

The ADF&G is continuing the Marine Assessment Survey in Western Alaska conducted aboard the R/V Resolution. ADF&G has improved the groundfish sampling procedures to provide compatible data to NMFS for stock assessment purposes and is working cooperatively with NMFS in studying seasonal variations in groundfish distribution and feeding habits. A state waters Pacific cod fishery began in 1997 with a guideline harvest of 15% of the allowable biological catch and gear restricted to pots and jigs. A total of 200 vessels landed 18.1 million pounds of Pacific cod in this established fishery in Western Alaska. The fishery expanded in 1999 with a total of 297 vessels landing 29 million pounds. The ADF&G also continued a tagging program for Pacific cod. It is designed to better understand cod migration patterns and to document the occurrence of any localized depletions in the state cod fishery.

The ADF&G continues to monitor the catch of black rockfish in Central and Western Alaska. Although interest in this fishery has increased, the department has restricted the fishery with conservative harvests to reduce the possibility of over exploitation. The department has received funds from a near shore fishery initiative to study black rockfish habitat and densities with acoustical gear. The state waters sablefish fishery in Western Alaska is restricted to the Aleutian Islands. The ADF&G in Dutch Harbor monitors this fishery for both IFQ and non-IFQ landings. State waters are closed to fishing for sablefish when the guideline harvest level is obtained.

**British Columbia**

The preliminary estimated landings of groundfish (excluding halibut) to Canadian ports were 119,774 mt in 1999, an increase of 36% from 1998 levels. This increase was mainly due to the large increase in domestic landings of Pacific whiting. Trawlers landed 107,115 mt to Canadian ports, 90% of the total catch and 36% above 1998 levels. Major species in the trawl landings were Pacific whiting (69%), Pacific ocean perch (5%), yellowtail rockfish (5%) and Dover sole (3%). Almost all of the Pacific whiting (99%) was caught by midwater trawl gear. In 1999 the management of the fishery continued to be based on a year beginning April 1, 1999 and ending March 31, 2000. Landings data reported here, however, are by calendar year.

Canadian landings of groundfish caught by gear other than trawl in 1999 totalled 12,659 t. Sablefish landings by trap gear accounted for 3,844 t. Landings by longline, handline and troll gear accounted for 8,777 t (58% dogfish, 17% rockfish, 16% lingcod and 7% sablefish). Catches incidental to other gear types, including shrimp trawl, crab traps, seines and gillnets, totalled 34 t (92% dogfish).

Each year, Fisheries Branch (Fisheries and Oceans Canada) conducts creel surveys of the recreational angling fishery in the Strait of Georgia. Principal target species are chinook and coho salmon. In 1999 these surveys covered the months of April to September. Provisional estimates of 1999 catches, landings and discards, for this 6-month period were 32,991 fish for lingcod, 107,636 fish for all rockfish species, 17,665 fish for flatfish species, 49,710 fish for dogfish, 2,494 fish for halibut, 2,089 fish for ratfish and 96 fish for herring. There was also an estimate of 1,552 fish for other unspecified groundfish.

In 1999 only one foreign nation, Russia, was involved in the joint-venture fishery for Pacific whiting off the southwest coast of Vancouver Island (Area 3C). Thirty-five Canadian catcher vessels delivered Pacific hake and incidental species to two processing vessels in co-operative fishing arrangements. A total of 17,201 t of Pacific hake was

Table 13. Domestic groundfish landings in tonnes by gear and first port of landing.

| Region | Trawl | | Hook & Line | | Pots | | Other Gear* | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1998 | 1999 | 1998 | 1999 | 1998 | 1999 | 1998 | 1999 | 1998 | 1999 |
| Alaska | 527,139 | 547,575 | 29,663 | 22,970 | 29,852 | 38,520 | 263 | 163 | 586,911 | 609,227 |
| Alaska At-Sea | 990,577 | 740,231 | 113,209 | 103,874 | 4,672 | 8,774 | 0 | 0 | 1,108,459 | 852,879 |
| Washington | 24,351 | 21,633 | 2,242 | 2,297 | 41 | 10 | 106 | 103 | 26,740 | 24,042 |
| Oregon | 88,602 | 91,045 | 1,092 | 1,221 | 371 | 637 | 232 | 315 | 90,298 | 93,218 |
| California | 19,410 | 13,247 | 2,169 | 1,709 | 151 | 189 | 691 | 302 | 22,421 | 15,446 |
| WOC At-Sea | 143,501 | 140,565 | 0 | 0 | 0 | 0 | 0 | 0 | 143,501 | 140,565 |
| Total U.S | 1,793,580 | 1,554,296 | 148,375 | 132,070 | 35,088 | 48,129 | 1,292 | 883 | 1,978,329 | 1,735,377 |
| . | | | | | | | | | | |
| Canada (B.C.) | 78,775 | 107,115 | 5,171 | 8,777 | 4,165 | 3,848 | 26 | 34 | 88,137 | 119,774 |
| Total U.S. Canada | 1,872,355 | 1,661,411 | 153,546 | 140,847 | 39,253 | 51,977 | 1,318 | 917 | 2,066,466 | 1,855,151 |

* Other Gear includes the following PSMFC Gear groupings: Nets, Trolls, Shrimp Trawls, and Other

processed by 2 Russian vessels. There were no national or supplemental fisheries for Pacific whiting off southwest Vancouver Island (Area 3C) in 1998.

**Washington**

Washington's total commercial groundfish landings for all gears in 1999 (excluding the at-sea whiting fishery) were 24,042 mt. Pacific whiting comprised 40% of the total. Rockfish and flatfish comprised approximately equal amounts of the non-whiting landings at 32% and 43% respectively. Two-thirds of the total flatfish landings were arrowtooth flounder. Although total 1999 landings decreased ten percent from the 1998 level of 26,740 mt, total exvessel groundfish revenue increased seven percent to $13,980,000. Revenue for all gear types other than hook & line decreased between 1998 and 1999. However, while hook & line landings increased only 2% in total weight, revenues from that gear type increased by 42%. Sablefish and higher prices for rockfish entering specialty markets accounted for the increase. Washington groundfish catch was dominated by trawl gear that accounted for 90% of total landings by weight and 60% of total exvessel revenue.

**WOC At-Sea**

Without plans for a new stock assessment for whiting in 2000, the Pacific Fishery Management Council recommeded averaging the coastwide ABC for the US and Canada for 1999-2000, applying precautionary default harvest policy (because whiting is at 37 percent of its unfished biomass). They then allocated 80 percent of the whiting to the US, which resulted in a 1999 OY of 232,000 metric tons. The US ABC was set equal to OY.

As in previous years, a portion of the OY was set aside for treaty Indian tribes on the coast of Washington State. The Makah and Quileute tribes initially requested 35,000 mt of whiting for 1999, but later reduced the request to 32,500 (14% of the 232,000 mt OY) when the Quileutes decided not to participate. This resulted in a commercial OY of 199,500 mt, 7,500 mt lower than in 1998. The commercial OY was divided among the non-tribal commercial fisheries as follows: 34% or 67,830 mt for catcher/processors; 24% or 47,880 mt for motherships; and 42% or 83,790 mt for the shore-based vessels.

A license limitation ("limited entry") program has been in effect in the Pacific coast groundfish fishery since 1994. Non-tribal trawl vessels that target groundfish are required to possess a limited entry permit to operate in the fishery. No catcher/processors initially qualified for permits, but several have since purchased them. Since mid-1997, the catcher/processor fishery has operated as a cooperative where each of the catcher/processor companies has agreed voluntarily to harvest a specific share of the allocation. This has resulted in a less competitive fishery with a prolonged season and fewer vessels, reduced from 10 in 1997 to 6 in 1999. The mothership sector continued to operate under more competitive conditions (first come first served).

The primary season for the at-sea processing sectors began May 15 north of 42° north latitude. Six catcher/processor vessels landed 67,679 mt and discarded 364 mt of whiting before closing on July 21, 1999. Six mothership vessels landed 47,580 mt and discarded 621 mt of whiting before closing on June 2, 1999. For the tribal fishery, one mothership landed 25,844 mt and discarded 95 mt of whiting.

The at-sea processing vessels have onboard surimi production capacity. In addition to surimi, most of these vessels have the capacity to produce frozen fillet blocks and have fishmeal plants to process incidentally caught groundfish species and fish offal. During 1999, 81% of the product produced (by weight) by the at-sea fleet was surimi, 0.5% was fillets, and 18% was fishmeal.

Major groundfish incidental species in the whiting fishery are yellowtail and widow rockfish. Whiting usually comprises over 98% of the catch, and this was again true in 1999 although the incidental catch of yellowtail was higher than normal. Incidental catch of yellowtail rockfish was 1,135 mt (431 mt by catcher/processors, 253 mt by non-tribal motherships, and 451 mt by the tribal fishery) of which 452 mt were retained. Incidental catch of widow rockfish was 186 mt (101 mt by catcher/processors, 48 mt by non-tribal motherships, and 37 mt by the tribal fishery) of which 33 mt were retained. This was the first year that most of the rockfish bycatch taken during the tribal whiting fishery was retained for food bank distribution. In 1999, the Coastal Pelagic Species fishery management plan, which included jack mackerel, became effective and jack mackerel was removed from the groundfish plan (and is no longer reported in groundfish statistics).

As in previous years, all at-sea processors carried at least one NMFS-trained observer while participating in the whiting fishery. To provide additional data for monitoring their voluntary allocations, catcher/processor vessels carried two observers, as did the tribal mothership.

**Oregon**

Oregon's total commercial groundfish landings in 1999 were 93,218 metric tons, with an ex-vessel value of $28.1 million. The landings increased just over 3%, and the ex-vessel value increased 22% compared to 1998. Much of this increase in ex-vessel value was due to a higher price paid for Pacific whiting in that high-volume fishery.

Pacific whiting continued to dominate Oregon's total groundfish landings comprising 79% of the 1999 total. Landings of Oregon's deep water Dover sole-sablefish-thornyhead-arrowtooth group increased 26%. Much of this increase reflects changing fishing strategies due to continued regulatory reductions. The rockfish complex landings were down 15%.

Trawl gear caught 98% of all commercial groundfish landed in Oregon and showed a modest 3% increase. Groundfish landings by hook and line, pot and trap, and shrimp trawls increased 12%, 72%, and 60% respectively.

**California**

The California commercial groundfish harvest for 1999 was 15,446 metric tons. Total 1999 landings decreased 31 % (6,975 metric tons) from 1998 and compared to 1997 have decreased 47% (13,745 metric tons). The ex-vessel value for 1999 was approximately $18.8 million, a drop of $2.9 million or 13% from 1998 revenues of $ 21.7 million. When compared with 1997 revenues of $31.6 million, ex-vessel value has dropped nearly 41% or $12.8 million.

In 1999, bottom and midwater trawl gear took 86% of the groundfish landed, a slight decrease from the 87% observed in 1998. Line gear accounted for the second largest amount at 11%, a slight increase from the 10 % observed in1998 and similar to that seen in 1997. The line gear contribution was at a recent high of 18% in 1992. The gill and trammel net component remains at just under 1% after a steady decline

from 5% in 1993 to 1% in 1996. Traps accounted for approximately 1% of total 1999 groundfish landings.

Dover sole (*Microstomus pacificus*), thornyheads (*Sebastolobus* spp.), sablefish (*Anoplopoma fimbria*), Pacific whiting (*Merluccius products*) and rockfish, continue to dominant landings, however the 1999 harvest of Pacific whiting and rockfish was off sharply from the previous year, while landings of many flatfish species and sablefish were higher in 1999. The sharp decline in Pacific whiting landings reflects their reduced availability to the Eureka area shore-side fishery and not a drop in overall coastwide abundance. The redistribution may be linked to the onset of La Niña conditions following the strong 1997-1998 El Niño. Many of the rockfish declines reflect increasingly restrictive Pacific Fishery Management Council landing limitations, although the decline in splitnose rockfish (*Sebastes diploproa)* landings is also associated with the transition to La Niña conditions. The drop most likely reflects a return to their more normal distribution on the slope where targeting is minimal.

The reduction in overall ex-vessel revenues when compared to total landings was moderated by an increase in high valued sablefish landings and the increasing value of rockfish in the live-fish fishery. While Pacific whiting landings were down sharply, the effect on total groundfish revenues was relatively small because it is a high-volume low-value fish.

Contributors:
Meg Cartwright, Alaska Department of Fish and Game
Charlie Trowbridge, Alaska Department of Fish and Game
Bill Bechtol, Alaska Department of Fish and Game
Wayne Donaldson, Alaska Department of Fish and Game
Bob Piorkowski, Alaska Department of Fish and Game
Kate Rutherford, Department of Fisheries and Oceans, Canada
Brian Culver, Washington Department of Fish and Wildlife
Becky Renko, National Marine Fisheries Service
Gary Hettman, Oregon Department of Fish and Wildlife
David Thomas, California Department of Fish and Game

Table 14. Landings (tonnes) into Alaska ports during 1999 by gear and by species.

| SPECIES | HOOK & LINE | POT & TRAP | TRAWLS | TROLLS | NON-TRAWL† | TOTAL |
|---|---|---|---|---|---|---|
| ARROWTOOTH FLOUNDER | C | C | 1,845 | | | 1,858 |
| ALASKA PLAICE | | | 127 | | | 127 |
| BUTTER SOLE | | | 138 | | | 138 |
| DOVER SOLE | C | | 1,719 | | | 1,719 |
| ENGLISH SOLE | | | 1 | | | 1 |
| FLATHEAD SOLE | C | C | 722 | | | 722 |
| GREENLAND TURBOT | C | C | 1 | | | 250 |
| REX SOLE | | | 238 | | | 238 |
| ROCK SOLE | C | C | 1,716 | | | 1,716 |
| YELLOWFIN SOLE | C | C | 1,324 | | | 1,324 |
| REMAINING FLATFISH | 0 | 1 | 606 | | | 607 |
| THORNYHEADS (MIXED) | 349 | C | 138 | | | 487 |
| BLACK ROCKFISH | 118 | C | 1 | 16 | | 134 |
| CANARY ROCKFISH | 7 | | C | C | | 7 |
| DUSKY ROCKFISH | 27 | C | 1,407 | 0 | | 1,435 |
| NORTHERN ROCKFISH | C | | 2,014 | | | 2,014 |
| QUILLBACK ROCKFISH | 29 | | C | 0 | | 29 |
| REDBANDED ROCKFISH | 39 | | 2 | C | | 41 |
| ROUGHEYE ROCKFISH | 203 | C | 38 | | | 242 |
| SHORTRAKER ROCKFISH | 131 | | 33 | | | 164 |
| SILVERGREY ROCKFISH | 9 | | C | 1 | | 9 |
| STARRY ROCKFISH | C | | 93 | | | 93 |
| TIGER ROCKFISH | 1 | | C | | | 1 |
| YELLOWEYE ROCKFISH | 413 | C | 6 | 3 | | 422 |
| PACIFIC OCEAN PERCH | 0 | C | 2,676 | | | 2,677 |
| UNSPECIFIED PELAGIC ROCKFISH | C | | 3 | | | 3 |
| REMAINING ROCKFISH | 9 | 0 | 35 | 1 | | 45 |
| ATKA MACKEREL | | C | 171 | | | 171 |
| LINGCOD | 116 | 3 | 1 | 93 | | 214 |
| PACIFIC COD | 9,701 | 38,434 | 61,934 | 49 | | 110,118 |
| SABLEFISH | † | † | 459 | † | 11,531 | 11,990 |
| WALLEYE POLLOCK | 56 | 3 | 469,906 | C | | 469,965 |
| UNSPECIFIED SKATE | 23 | C | 154 | | | 177 |
| SPINY DOGFISH | C | | 5 | | | 5 |
| OTHER GROUNDFISH | 0 | | 13 | | | 14 |
| UNSPECIFIED GRENADIERS | | | 46 | | | 46 |
| UNSPECIFIED GROUNDFISH | C | C | 2 | | | 26 |
| ALL GROUNDFISH | 22,970 | 38,520 | 547,575 | 163 | | 609,227 |

NOTE: 0 = landed catch less than 0.5 tonnes
C = Confidential; less than four vessels or processors

† Non-Trawl is a composite of the Hook & Line, Pot & Trap, and Troll categories used where necessary to preserve confidentiality.

Source: AKFIN / PacFIN

Table 15. Landings (tonnes) to domestic at-sea processors during 1999 by area, gear, and species.

| SPECIES | ALASKA | | | | WASHINGTON OREGON CALIFORNIA AT-SEA | TOTAL DOMESTIC AT-SEA PROCESSING |
|---|---|---|---|---|---|---|
| | HOOK & LINE | POT & TRAP | TRAWLS | TOTAL | | |
| ARROWTOOTH FLOUNDER | | | | | 1 | 1 |
| ARROWTOOTH+KAMCHATKA | 172 | 0 | 4,924 | 5,096 | | 5,096 |
| FLATHEAD SOLE | 19 | | 14,119 | 14,138 | | 14,138 |
| GREENLAND TURBOT | 3,544 | 27 | 1,431 | 5,002 | | 5,002 |
| OTHER FLATFISH | 11 | 0 | 1,736 | 1,747 | 0 | 1,747 |
| REX SOLE | | | 2,654 | 2,654 | | 2,654 |
| ROCK SOLE | 36 | 0 | 15,803 | 15,839 | | 15,839 |
| YELLOWFIN SOLE | 74 | 0 | 55,542 | 55,616 | | 55,616 |
| THORNYHEADS (MIXED) | 69 | | 326 | 395 | 0 | 395 |
| BOCACCIO | | | | | 0 | 0 |
| CANARY ROCKFISH | | | | | 4 | 4 |
| OTHER ROCKFISH | 3 | | 5,532 | 5,536 | 13 | 5,548 |
| YELLOWTAIL ROCKFISH | | | | | 453 | 453 |
| PACIFIC OCEAN PERCH | 48 | 0 | 17,745 | 17,793 | 3 | 17,796 |
| SHORTRAKER+ROUGHEYE | 116 | 1 | 716 | 832 | | 832 |
| SRKR+REYE+NRCK+SHRP | 35 | 14 | 748 | 797 | | 797 |
| UNSPECIFIED DEMERSAL-91 | 5 | | 40 | 45 | | 45 |
| UNSPECIFIED ROCKFISH | 96 | 2 | 275 | 373 | | 373 |
| UNSPECIFIED SLOPE-93 | 114 | | 62 | 176 | | 176 |
| WIDOW ROCKFISH | | | | | 33 | 33 |
| ATKA MACKEREL | 4 | 58 | 51,231 | 51,293 | | 51,293 |
| LINGCOD | | | | | 0 | 0 |
| PACIFIC COD | 92,920 | 8,621 | 40,258 | 141,799 | 0 | 141,799 |
| PACIFIC WHITING | | | | | 140,024 | 140,024 |
| SABLEFISH | 2,062 | 10 | 753 | 2,825 | 1 | 2,826 |
| WALLEYE POLLOCK | 3,376 | 3 | 525,640 | 529,018 | | 529,018 |
| OTHER GROUNDFISH | | | | | 33 | 33 |
| UNSPECIFIED GROUNDFISH | 1,167 | 38 | 530 | 1,735 | | 1,735 |
| ALL GROUNDFISH | 103,874 | 8,774 | 740,231 | 852,879 | 140,565 | 993,444 |

NOTE: 0 = landed catch less than 0.5 tonnes

Source: PacFIN

Table 16. Landings (tonnes) into British Columbia ports during 1999 by gear and by species.

| SPECIES | HOOK & LINE[a] | POTS | TRAWLS | SHRIMP TRAWLS | NETS | TOTAL |
|---|---|---|---|---|---|---|
| ARROWTOOTH FLOUNDER | TR | - | 2,578 | - | - | 2,578 |
| DOVER SOLE | 2 | - | 2,716 | - | - | 2,718 |
| ENGLISH SOLE | 1 | - | 822 | - | - | 823 |
| OTHER FLATFISH | TR | - | 84 | - | - | 84 |
| PETRALE SOLE | TR | - | 366 | - | - | 366 |
| REX SOLE | TR | - | 340 | - | - | 340 |
| ROCK SOLE | 6 | - | 1,075 | - | - | 1,081 |
| STARRY FLOUNDER | - | - | 44 | - | - | 44 |
| UNSPECIFIED FLATFISH | - | - | 3 | - | - | 3 |
| THORNYHEADS (MIXED) | 29 | TR | 1,680 | - | - | 1,709 |
| BLACK ROCKFISH | 21 | - | 3 | - | - | 24 |
| BOCACCIO | 12 | - | 208 | - | - | 220 |
| CANARY ROCKFISH | 70 | - | 825 | - | - | 895 |
| DARKBLOTCHED ROCKFISH | TR | - | 45 | - | - | 45 |
| DUSKY ROCKFISH | TR | - | 1 | - | - | 1 |
| OTHER ROCKFISH | 107 | - | 32 | - | - | 139 |
| QUILLBACK ROCKFISH | 232 | TR | 1 | - | - | 233 |
| REDBANDED ROCKFISH | 216 | TR | 258 | - | - | 474 |
| REDSTRIPE ROCKFISH | 1 | - | 848 | - | - | 849 |
| ROSETHORN ROCKFISH | 3 | - | 13 | - | - | 16 |
| ROUGHEYE ROCKFISH | 279 | 4 | 438 | - | - | 721 |
| SHARPCHIN ROCKFISH | TR | - | 226 | - | - | 226 |
| SHORTRAKER ROCKFISH | 51 | - | 59 | - | - | 110 |
| SILVERGREY ROCKFISH | 76 | - | 1,352 | - | - | 1,428 |
| SPLITNOSE ROCKFISH | TR | - | 65 | - | - | 65 |
| VERMILION ROCKFISH | 5 | - | TR | - | - | 5 |
| YELLOWEYE ROCKFISH | 399 | - | 7 | - | - | 406 |
| YELLOWMOUTH ROCKFISH | 9 | - | 1,600 | - | - | 1,609 |
| YELLOWTAIL ROCKFISH | 19 | - | 4,988 | - | - | 5,007 |
| PACIFIC OCEAN PERCH | 1 | - | 5,346 | - | - | 5,347 |
| WIDOW ROCKFISH | 1 | - | 1,902 | - | - | 1,903 |
| LINGCOD | 1,384 | TR | 1,025 | - | TR | 2,409 |
| PACIFIC COD | 6 | - | 799 | - | - | 805 |
| PACIFIC WHITING | - | - | 73,839 | - | - | 73,839 |
| SABLEFISH | 585 | 3,844 | 392 | - | - | 4,517 |
| WALLEYE POLLOCK | TR | - | 1,157 | - | - | 1,157 |
| SPINY DOGFISH | 5,104 | - | 350 | - | 32 | 5,486 |
| OTHER GROUNDFISH | 158 | - | 1,544 | - | 2 | 1,704 |
| UNSPECIFIED GROUNDFISH | - | - | - | - | - | 0 |
| OTHER SPECIES[b] | - | - | 84 | - | - | 84 |
| ALL GROUNDFISH | 8,777 | 3,848 | 107,115 | 0 | 34 | 119,774 |

[a] Includes longline, hook & line and troll.
[b] Includes invertebrates, misc. pelagic species.

Table 17. Landings (tonnes) by British Columbia joint-venture fisheries during 1999.

| SPECIES | LANDINGS |
|---|---|
| PACIFIC WHITING | 17,201 |
| WALLEYE POLLOCK | TR |
| ROCKFISH | 74 |
| OTHER | 18 |
| TOTAL | 17,293 |

Source: Department of Fisheries and Oceans, Canada

Table 18. Landings (tonnes) into Washington ports during 1999 by gear and by species.

| SPECIES | HOOK & LINE | NETS | POT & TRAP | SHRIMP TRAWLS | TRAWLS | TROLLS | TOTAL |
|---|---|---|---|---|---|---|---|
| ARROWTOOTH FLOUNDER | 2 | | | 0 | 4,131 | | 4,133 |
| DOVER SOLE | 2 | | | 15 | 1,113 | | 1,129 |
| ENGLISH SOLE | 0 | | | 0 | 438 | | 438 |
| OTHER FLATFISH | | | | | 10 | | 10 |
| PETRALE SOLE | 0 | | | 1 | 313 | | 314 |
| REX SOLE | | | | 0 | 25 | | 25 |
| ROCK SOLE | | | | | 22 | | 22 |
| STARRY FLOUNDER | 0 | | | | 84 | | 84 |
| UNSPECIFIED FLATFISH | 0 | | | | 11 | | 11 |
| THORNYHEADS (MIXED) | 17 | | | 0 | 93 | 0 | 110 |
| BOCACCIO | | | | | 77 | | 77 |
| CANARY ROCKFISH | 4 | | | 1 | 241 | 1 | 248 |
| CHILIPEPPER | | | | | 2 | | 2 |
| DARKBLOTCHED ROCKFISH | | | | | 38 | | 38 |
| OTHER ROCKFISH | | | | | 26 | | 26 |
| REDBANDED ROCKFISH | | | | | 52 | | 52 |
| REDSTRIPE ROCKFISH | | | | | 15 | | 15 |
| ROSETHORN ROCKFISH | | | | | 0 | | 0 |
| ROUGHEYE ROCKFISH | | | | | 90 | | 90 |
| SHARPCHIN ROCKFISH | | | | | 30 | | 30 |
| SHORTRAKER ROCKFISH | | | | | 167 | | 167 |
| SILVERGREY ROCKFISH | | | | | 193 | | 193 |
| SPLITNOSE ROCKFISH | | | | | 3 | | 3 |
| YELLOWEYE ROCKFISH | | | | | 58 | | 58 |
| YELLOWMOUTH ROCKFISH | | | | | 25 | | 25 |
| YELLOWTAIL ROCKFISH | 9 | 0 | | 19 | 1,261 | 16 | 1,305 |
| PACIFIC OCEAN PERCH | 0 | | | 0 | 1,039 | | 1,040 |
| UNSPECIFIED ROCKFISH | 235 | 0 | 0 | 6 | 18 | 5 | 264 |
| WIDOW ROCKFISH | 0 | | | 0 | 890 | 0 | 890 |
| LINGCOD | 21 | 0 | | 2 | 129 | 2 | 154 |
| PACIFIC COD | 3 | 0 | | 0 | 317 | 0 | 321 |
| PACIFIC WHITING | | | | | 9,724 | | 9,724 |
| SABLEFISH | 1,550 | | 10 | 6 | 303 | 0 | 1,867 |
| WALLEYE POLLOCK | | | | | 78 | | 78 |
| SPINY DOGFISH | 442 | 28 | | | 401 | | 872 |
| OTHER GROUNDFISH | | | | | 0 | | 0 |
| ALL GROUNDFISH | 2,297 | 28 | 10 | 50 | 21,633 | 25 | 24,042 |

NOTE: 0 = landed catch less than 0.5 tonnes

Source: PacFIN

Table 19. Landings (tonnes) into Oregon ports during 1999 by gear and by species.

| SPECIES | HOOK & LINE | OTHER GEARS | POT & TRAP | SHRIMP TRAWLS | TRAWLS | TROLLS | TOTAL |
|---|---|---|---|---|---|---|---|
| ARROWTOOTH FLOUNDER | 1 | | 0 | 13 | 2,265 | | 2,278 |
| DOVER SOLE | 0 | | 0 | 82 | 4,431 | | 4,514 |
| ENGLISH SOLE | | | | 10 | 339 | | 349 |
| FLATHEAD SOLE | | | | 0 | 3 | | 3 |
| OTHER FLATFISH | 0 | | | 1 | 354 | | 356 |
| PETRALE SOLE | 0 | | 0 | 10 | 665 | 0 | 675 |
| REX SOLE | | | | 4 | 278 | | 282 |
| ROCK SOLE | 0 | | | 0 | 4 | | 4 |
| STARRY FLOUNDER | 0 | | | | 22 | | 22 |
| THORNYHEADS (MIXED) | 2 | | 0 | 1 | 1,060 | | 1,062 |
| BLACK ROCKFISH | 122 | | 0 | | 2 | 1 | 125 |
| BOCACCIO | 8 | | | | 8 | | 16 |
| CANARY ROCKFISH | 97 | | | 32 | 294 | 2 | 425 |
| CHILIPEPPER | | | | | 2 | | 2 |
| DARKBLOTCHED ROCKFISH | | | | 4 | 189 | | 193 |
| OTHER ROCKFISH | 35 | | | 2 | 43 | | 80 |
| QUILLBACK ROCKFISH | 5 | | | | | | 5 |
| REDBANDED ROCKFISH | 0 | | | | 9 | | 9 |
| REDSTRIPE ROCKFISH | | | | | 15 | | 15 |
| ROSETHORN ROCKFISH | 1 | | | | 2 | | 3 |
| ROUGHEYE ROCKFISH | 5 | | | 1 | 47 | | 53 |
| SHARPCHIN ROCKFISH | 0 | | | | 8 | | 8 |
| SHORTRAKER ROCKFISH | | | | | 5 | | 5 |
| SILVERGREY ROCKFISH | 1 | | | | 10 | | 11 |
| SPLITNOSE ROCKFISH | | | | | 34 | | 34 |
| VERMILION ROCKFISH | 7 | | | | | | 7 |
| YELLOWEYE ROCKFISH | 54 | | | | 3 | | 56 |
| YELLOWMOUTH ROCKFISH | | | | | 16 | | 16 |
| YELLOWTAIL ROCKFISH | 58 | | | 44 | 1,519 | 1 | 1,622 |
| PACIFIC OCEAN PERCH | 4 | | 0 | 9 | 406 | 0 | 419 |
| SHORTBELLY ROCKFISH | | | | | 0 | | 0 |
| UNSPECIFIED ROCKFISH | 51 | | 4 | 15 | 233 | 4 | 306 |
| WIDOW ROCKFISH | 15 | | 0 | 6 | 3,199 | 0 | 3,220 |
| CABEZON | 26 | | 0 | | 0 | 0 | 27 |
| LINGCOD | 43 | | 0 | 28 | 98 | 5 | 174 |
| PACIFIC COD | | | | 0 | 37 | | 38 |
| PACIFIC WHITING | | | | | 73,012 | | 73,012 |
| SABLEFISH | 683 | | 632 | 39 | 1,635 | | 2,989 |
| WALLEYE POLLOCK | | | | | 0 | | 0 |
| SPINY DOGFISH | 0 | | | 0 | 89 | | 89 |
| OTHER GROUNDFISH | 1 | 0 | | 0 | 124 | | 125 |
| ALL GROUNDFISH | 1,221 | 0 | 637 | 303 | 91,045 | 12 | 93,218 |

NOTE: 0 = landed catch less than 0.5 tonnes

Source: PacFIN

Table 20. Landings (tonnes) into California ports during 1999 by gear and by species

| SPECIES | HOOK & LINE | NETS | OTHER GEARS | POT & TRAP | SHRIMP TRAWLS | TRAWLS | TROLLS | TOTAL |
|---|---|---|---|---|---|---|---|---|
| ARROWTOOTH FLOUNDER | 0 | | | | 0 | 43 | | 43 |
| DOVER SOLE | 10 | 0 | 5 | 0 | 8 | 3,789 | 4 | 3,817 |
| ENGLISH SOLE | 1 | 0 | 0 | 0 | 1 | 382 | 0 | 385 |
| OTHER FLATFISH | 6 | 0 | 0 | 0 | 1 | 957 | 1 | 966 |
| PETRALE SOLE | 1 | 0 | 2 | 0 | 6 | 557 | 0 | 566 |
| REX SOLE | 0 | 0 | 1 | 0 | 1 | 284 | | 286 |
| ROCK SOLE | 0 | | | 0 | 0 | 6 | 0 | 7 |
| STARRY FLOUNDER | 0 | 1 | 0 | 0 | 0 | 33 | 0 | 35 |
| UNSPECIFIED FLATFISH | 1 | 1 | 0 | 0 | 13 | 17 | 0 | 32 |
| THORNYHEADS (MIXED) | 127 | 0 | 2 | 4 | 2 | 1,356 | 3 | 1,495 |
| BLACK ROCKFISH | 53 | 0 | 0 | 0 | | 5 | 0 | 59 |
| BOCACCIO | 18 | 7 | 0 | 0 | 1 | 44 | 3 | 72 |
| CANARY ROCKFISH | 4 | 1 | 1 | 0 | 2 | 86 | 0 | 95 |
| CHILIPEPPER | 81 | 10 | 1 | 0 | 5 | 787 | 33 | 917 |
| DARKBLOTCHED ROCKFISH | | | | | | 80 | | 80 |
| OTHER ROCKFISH | 144 | 2 | 1 | 6 | 5 | 229 | 1 | 387 |
| QUILLBACK ROCKFISH | 3 | | | | | 0 | | 3 |
| REDBANDED ROCKFISH | 1 | | | | | 4 | 0 | 5 |
| REDSTRIPE ROCKFISH | | | | | | 6 | | 6 |
| ROSETHORN ROCKFISH | | | | | | 9 | | 9 |
| ROUGHEYE ROCKFISH | | | | | | 1 | | 1 |
| SHARPCHIN ROCKFISH | | | | | | 11 | | 11 |
| SHORTRAKER ROCKFISH | | | | | | 7 | | 7 |
| SILVERGREY ROCKFISH | 0 | | | | | 1 | | 1 |
| SPLITNOSE ROCKFISH | 1 | 0 | | 0 | | 141 | | 141 |
| VERMILION ROCKFISH | 20 | | | | | 1 | 0 | 22 |
| YELLOWEYE ROCKFISH | 5 | | | | | 7 | 0 | 12 |
| YELLOWTAIL ROCKFISH | 31 | 3 | 0 | 0 | 1 | 65 | 5 | 104 |
| PACIFIC OCEAN PERCH | | | | | | 12 | | 12 |
| SHORTBELLY ROCKFISH | | | | | | 6 | | 6 |
| UNSPECIFIED ROCKFISH | 38 | 7 | 0 | 2 | 9 | 64 | 2 | 121 |
| WIDOW ROCKFISH | 29 | 9 | 0 | 0 | 4 | 583 | 4 | 629 |
| CABEZON | 45 | | | | | | 0 | 45 |
| LINGCOD | 47 | 1 | 0 | 4 | 2 | 86 | 1 | 142 |
| OTHER ROUNDFISH | 4 | | | | | | 0 | 4 |
| PACIFIC COD | | | | | | 0 | | 0 |
| PACIFIC WHITING | 0 | 0 | | | 0 | 1,307 | | 1,308 |
| SABLEFISH | 650 | 1 | 2 | 114 | 2 | 1,205 | 1 | 1,974 |
| SPINY DOGFISH | 0 | 0 | | | | 25 | | 25 |
| OTHER GROUNDFISH | 131 | 89 | 1 | 1 | 0 | 197 | 0 | 419 |
| ALL GROUNDFISH | 1,709 | 152 | 18 | 189 | 72 | 13,247 | 59 | 15,446 |

NOTE: 0 = landed catch less than 0.5 tonnes

Source: PacFIN

# PERSONNEL IN 1999

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|---|---|---|---|
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## PSMFC EXECUTIVE STAFF

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David Hanson, Deputy Director
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Stephen Phillips, ANS Program Coordinator
Russell Porter, Field Programs Administrator
Craig Miller, Field Programs Data Technician
Wade Van Buskirk, RecFIN Programmer/Analyst
Sharon Perkins, Executive Assistant
Teresa Fairchild, Clerical Specialist
Genna Golden, Clerical Specialist (part time)
Kathy Shimojima, Clerical Specialist (part time)
Liza Bauman, Technical Information Specialist
Karen McGill, Technical Information Specialist

Stan Allen, IMS Chief
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J. Kenneth Johnson, RMPC Manager
James Longwill, RMPC Computer Analyst / Programmer
Will Daspit, PacFIN Program Manager
Brad Stenberg, Assistant PacFIN Data Manager
Christian Bantzer, PacFIN Analyst / Programmer
Deepa Dinendra, PacFIN Computer Programmer
Dave Colpo, Fisheries Economics Program Manager
Sara Douglass, Assistant Fisheries Economics Data Mgr.
Peggy Murphy, AKFIN Program Manager
Gary Christofferson, Assistant AKFIN Data Manager
Carter Stein, PTAGIS Program Manager
Dave Marvin, PTAGIS Programmer / Analyst
Don Warf, PTAGIS Field Systems Engineering Supervisor
John Tenney, PTAGIS Computer Software Engineer
Scott Livingston, PTAGIS Field Systems Engineer
Darren Chase, PTAGIS Engineering Technician
Bruce Schmidt, StreamNet Program Manager
Doug Burch, StreamNet Regional Data Manager
Mike Banach, StreamNet Fishery Biologist
David Graves, StreamNet GIS Data Technician